



WorleyParsons

resources & energy

Incorporating
planning workshop australia

UTILA PTY LTD

EcoNomics™

Environmental Assessment for Project Application

Lyons Road, North Bonville

PART 2

301015/01381 –

24 January 2011



Landscape Masterplan – Proposed residential subdivision, Lyons Rd North Bonville (Terras Landscape Architects)

Infrastructure & Environment

Level 12, 141 Walker Street
North Sydney NSW 2060
Australia

Telephone: +61 2 8923-6866

Facsimile: +61 2 8923-6812

www.worleyparsons.com

ABN 61 001 279 812

© Copyright 2011 WorleyParsons



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

3.7.2 Coffs Harbour Priority Habitats and Corridors Strategy 2010 – 2030

The Coffs Harbour Priority Habitats and Corridors Strategy 2010 – 2030 is a draft document that was recently placed on public exhibition. The Strategy maps priority habitats and corridors and regional vegetation communities. The latter is dealt specifically in the Ecological Assessment for the subject site.

The proposed subdivision will not impact on the identified habitats and corridors. The land to the south and west of the site is identified as “Category 1 – National Park and Nature Reserve, while the land within the subject site currently zoned Environmental Protection 7A Habitat and Catchment is identified as Category 2 – High Conservation Value.

3.7.3 Coffs Harbour Koala Plan of Management (Revised Edition)

The Coffs Harbour Koala Plan of Management (KPoM) was revised in September 2009 by Coffs Harbour City Council. The new KPoM contains revised mapping of areas identified as containing koala habitat. The portion of the subject site zoned Open Space 6A Public Recreation and the land zoned Environmental Protection 7A Habitat and Catchment is also noted as containing Primary Koala Habitat. Secondary Koala Habitat is identified in the National Park abutting the site on the western and southern boundaries.

An Ecological Assessment was prepared for the proposed development by James Warren and Associates. This report is at **Appendix 15**. It contains an assessment against the requirements of the KPoM.

The proposed development will marginally impact on land identified by Council mapping as containing Primary Koala Habitat. Stormwater infrastructure will be located in these areas, as shown in **Figure 13**.

According to calculations by consultant, James Warren and Associates, 0.2024 hectares (1.6%) of the total area of the subject site (12.4520 hectares) that is identified by Coffs Harbour City Council mapping to contain Primary Koala Habitat will be impacted by the proposed development through habitat clearing. Habitat Clearing is defined as a 1st order disturbance (RFA Analysis, Environment Australia, 1999). However the consultant maintains:

*This species has not previously been recorded from the subject site however suitable habitat is considered to occur (Community 1: Tall open swamp sclerophyll forest – refer to **Figure 12**).*

However ground truthing by JWA has concluded that not all of this area offers suitable habitat for Koalas.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

The removal of a small area of potential habitat from the subject site is not considered to represent a significant impact in relation to the distribution of habitat for the local population of this species.

Options for ameliorating potential impacts on Koalas are suggested including ensuring the stormwater discharge into this area is of a high quality / standard and planting additional Koala food trees in the riparian rehabilitation area. A movement corridor will also be created between mapped Primary Koala habitat and Bongil Bongil National Park.

It should be noted that the Vegetation Management Plan includes revegetation of the riparian zone of the site with *Eucalyptus robusta*, which is the key tree representative of Community 1 on site, and is a koala food tree. Furthermore, stormwater modeling shows that stormwater discharge from the proposed development will be of a higher quality than the existing situation.



Figure 12: Impact of Proposed Layout on Vegetation (James Warren & Associates)

(Reproduced – refer to Appendix 15)



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

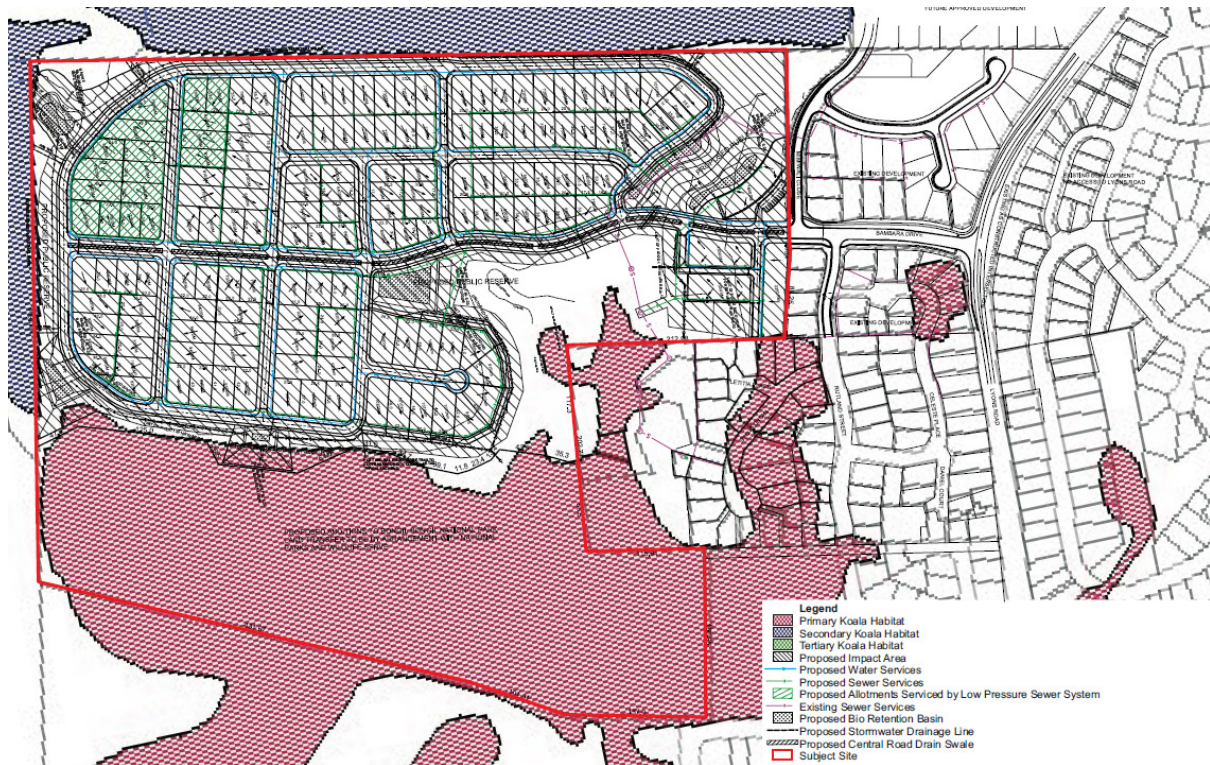


Figure 13: Impact of Proposed Layout on Koala Habitat (James Warren & Associates)

(Reproduced – refer to Appendix 15)

The ecological assessment makes the following recommendations:

- Controls on domestic animals;
- Feral animal control;
- A range of measures to reduce vehicle impacts on fauna including: traffic calming features (e.g. speed humps), reduced traffic speeds, lighting;
- Lighting is designed to minimise spill;
- Regeneration and revegetation works on the subject site should utilise preferred Koala food trees where appropriate;
- Rehabilitation works on the subject site (in accordance with the VMP) will create a fauna movement corridor from mapped Primary Koala habitat to the Bongil Bongil National Park;



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

- *Fire management to protect habitat in the long-term in accordance with the Bushfire Hazard Assessment Report (Holiday Coast Bushfire Solutions, 2010);*
- *Contiguous areas of retained vegetation are to be fenced with permeable fencing (e.g. post and rail) to discourage access from human visitation and from trail bikes etc;*
- *Weeds within habitat areas are controlled and managed and habitat restoration is to be implemented in accordance with the Vegetation Management Plan (JWA 2010);*
- *Public education (signage, literature) is to be used wherever possible to educate residents and direct behaviour.*

The Ecological Assessment report concludes in relation to these recommendations:

It is considered that, with the adoption of recommended management practices, the proposed development is unlikely to result in the local extinction of this species.

3.7.4 Water Sensitive Urban Design (WSUD) Policy

The Coffs Harbour Council WSUD Policy has been addressed in the Stormwater Management Strategy at **Appendix 14**.

3.7.5 Tree Preservation Order Policy

Coffs Harbour City Council's Tree Preservation Order Policy provides:

A Tree Preservation Order applies to all Australian native vegetation on land within the following zones where the lot has an area greater than the minimum indicated

Council's TPO defines a tree as protected if it has a girth of 30cm or more, measured at 1.5m above ground level.

Zone	Minimum Lot Size
Residential Zones 2A, 2B, 2C, 2E	2,000 m ²
Environmental Protection Zones 7A, 7B, 7C	No minimum

[Extract]

The subject site contains land subject to Environmental Protection 7A Habitat and Catchment Zone. Therefore, the entire area of the site zoned 7A is subject to a Tree Preservation Order under LEP 2000. There may be some trees that will be impacted by the development of bio-retention basins and swales at the boundary between the proposed subdivision and the Environmental Protection 7A



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

Habitat and Catchment Zone. However, this activity will be compensated by dedication of the land subject to Environmental Protection 7A Habitat and Catchment Zone to NPWS and rehabilitation and expansion of the EECs associated with the riparian corridor.

That portion of the site subject to Residential 2A Low Density Zone is greater than 2,000m². Therefore those areas of the site in this zone that contain native vegetation are subject to a Tree Preservation Order. The vegetation located in the Residential 2A Low Density Zone on the site is largely confined to the drainage lines running east-west and north-south. However, there will be one tree impacted by the development of roads to the south of the centrally located bio-retention basin.

Refer to the Vegetation Clearing Plan at **Appendix 26** - for areas of the site that need to be cleared of vegetation to accommodate proposed road, stormwater, and other related infrastructure.

3.8 Coffs Harbour Development Control Plan (DCP)

3.8.1 North Bonville DCP

The North Bonville DCP is specific to the subject site. It contains direction on proposed planning strategy for the site including a masterplan and planning controls.

An assessment of the proposed subdivision against the relevant provisions of the DCP is at **Appendix 3**.

In summary, key requirements of the DCP for the site include:

- Target number of lots is 154 lots across subject site and across the area of the approved subdivision to the north of the site
- Bus shelters; bicycle and pedestrian paths
- Neighbourhood park, seating and playground
- General store
- Street tree planting
- Fire trails adjacent to the western and southern boundaries of the site in National Park land that are indicated to be maintained by NPWS.

3.8.2 Low Density Housing DCP

An assessment of the proposed subdivision against the relevant provisions of the DCP is at **Appendix 3**.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

3.8.3 Medium Density Housing DCP

An assessment of the proposed subdivision against the relevant provisions of the DCP is at **Appendix 3**.

3.8.4 Subdivision DCP

An assessment of the proposed subdivision against the relevant provisions of the DCP is at **Appendix 3**.

3.9 Other Coffs Harbour Council Plans

3.9.1 North Bonville Developer Contributions Plan 2008

The North Bonville Developer Contributions Plan 2008 sets out requirements for the developer to contribute financially towards the cost of key infrastructure and supporting studies for the proposed development. Note that these requirements also applied to the approved subdivision to the north of the proposed development. The key infrastructure and supporting studies include:

Proposed facilities

- Playground equipment
- Park seats
- Landscaping

Neighbourhood Park

- Land acquisition, landscaping and fill, playground and park seat
- Street trees

Collector road

- First 200m of restricted access road, plus intersection construction at Lyons Road.

Traffic Management

- Cycle and pedestrian paths
- No-right turn barrier (at minor entrance)
- 3 bus shelters
- Refuge for bicycles on Lyons Road
- Route lighting 200m
- 15% design and supervision
- 15% contingencies



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

Wetland

- Wetland (including acquisition)
- Coarse sediment and gross pollutant traps

Plans and Studies

- Water quality study
- Development Control Plan

Given that the proposed development (proposed residential subdivision) differs marginally from the development layout and facilities set out in the North Bonville DCP, it is suggested that these requirements may need to be reviewed.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

4. ENVIRONMENTAL ASSESSMENT

4.1 Site Suitability

The suitability of the site for development has been endorsed by:

- State Government in the *Mid North Coast Regional Strategy* by nominating the site as a growth area;
- Coffs Harbour City Council in their *Interim Coffs Harbour "Our Living City" Settlement Strategy* by identifying the site as "Zoned Urban Area – Not Developed";
- Council's zoning of the majority of the site for residential purposes in the Coffs Harbour City LEP 2000; and
- Council identifying a residential development strategy for the site in a site-specific DCP.

Refer to the Site Analysis at **Section 2.3** and **Appendix 7**.

4.2 Appropriateness of Use/s

The appropriateness of the site for residential use has already been confirmed by LEP 2000 zoning the majority of the site as Residential 2A Low Density, and by the adoption of the North Bonville DCP and the North Bonville Developer Contributions Plan.

The proposal for the site is consistent with the objectives of the EP&A Act, and is consistent with the objectives of the relevant zones and their permissible land uses in Coffs Harbour City LEP 2000. Refer to **Section 3.2.3** and **Section 3.5.1** for details.

4.3 Hazard Management and Mitigation

4.3.1 Contamination

The DGRs issued for the project require:

6. Hazard Management and Mitigation

Contamination

6.1 Identify any contamination on site and appropriate mitigation measures in accordance with the provisions of SEPP 55 – Remediation of Land.

A Phase 1 Environmental Site Assessment report was prepared for the project by Coffey Geotechnics (dated 24 February 2009). This report is at **Appendix 18**.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

The objectives of the Phase 1 ESA was to identify potentially contaminating past and present activities at the site, provide assessment of site contamination, and provide recommendations for further assessment if considered appropriate.

SEPP 55 requires that if a change in use is proposed from an activity identified in Table 1 of the contamination land guidelines to another use including residential, then:

the consent authority must consider a report specifying the findings of a preliminary investigation of the land concerned carried out in accordance with the contaminated land planning guidelines

The 'Planning Guidelines SEPP 55 – Remediation of Land' provide the detail to support SEPP No. 55. The Guidelines set out under Table 1. *Some Activities that may Cause Contamination, "agricultural/horticultural activities"*. Recent past uses of the subject site include market gardening and banana plantation cultivation, and current uses comprise cattle grazing.

The methods undertaken to test for contaminants included:

Soil sampling was undertaken by Coffey's to detect potential contaminants, Coffey Geotechnics collected a limited number of soil samples from the site to screen for potential contaminants of concern, including; metals (arsenic, cadmium, chromium, copper, lead, nickel, zinc, and mercury), total recoverable hydrocarbons (TRH), , benzene toluene ethylbenzene and xylene (BTEX), polycyclic aromatic hydrocarbons (PAH), organochlorine pesticides (OCP's), organophosphorus pesticides (OPP's) and asbestos.

The findings from testing of the soil samples included:

Concentrations of contaminants of samples analysed were below the adopted soil investigation levels (SIL's) or below the laboratories limits of reporting (LOR). Sample A2 initially reported elevated levels of TRH, however, following further analysis this result was found to be related to degraded organic matter encountered in the low lying water logged soils and was not sourced from petroleum hydrocarbon compounds.

Low but detectable concentrations of OCP's were identified in the areas of the former banana plantation and market gardens. The results suggest that OCP pesticides had been used in these areas with low levels of residues remaining in surface soils. The concentrations had degraded to marginal concentrations well below the adopted SIL's. These areas are considered to have a low potential for contamination.

The Phase 1 Contamination Report concludes that:

The Phase 1 ESA identified no areas of environmental concern (AECs) on the site. Based on the findings of the Phase 1 ESA, it is concluded that the site has a low potential for



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

contamination and that additional Phase 2 Environmental Site Assessment is not required for this site.

4.3.2 Acid Sulfate Soil

The DGRs issued for the project require:

6. Hazard Management and Mitigation

Acid Sulfate Soils

6.2 Identify the presence and extent of acid sulfate soils on the site and, where relevant, appropriate mitigation measures.

A Geotechnical and Acid Sulfate Soil Assessment report was prepared for the project by consultants Coffey Geotechnics. This report is at **Appendix 19**.

Attachment 2 'Plans and Documents to accompany the documentation' of the DGRs specify that specialist advice is to include an "Acid Sulfate Soil Management Plan". The Geotechnical and Acid Sulfate Soil Assessment report prepared by Coffey's investigates the presence of acid sulfate soils (ASS). Soil samples were collected in accordance with the ASSMAC Manual. The report explains that ASS is a problem where there is:

disturbance or poorly managed development and use of acid sulfate soils can generate significant amounts of sulfuric acid, which can lower soil and water pH to extreme levels (generally less than 4) and produce acid salts, resulting in high salinity.

The low pH, high salinity soils can reduce or altogether preclude vegetation growth and can produce aggressive soil conditions which may be detrimental to concrete and steel components of structures, foundations, pipelines and other engineering works.

Generation of the acid conditions often releases aluminium, iron and other naturally occurring elements from the otherwise stable soil matrices. High concentrations of some such elements, coupled with low pH and alterations to salinity can be detrimental to aquatic life. In severe cases, affected waters flowing off-site into aquatic ecosystems can have a detrimental effect on these ecosystems.

The significance of the ASS potential is assessed by comparing laboratory results to action criteria in the Acid Sulfate Soil Manual. The action criteria specified in the manual trigger the requirement for an Acid Sulfate Soil Management Plan and development approval to be sought.

The findings of soil sample testing are set out below.

*The findings of soil sample testing are: the soils are acidic, but extractable sulfur testing indicates that the acidity is not sulfuric in nature. Based on this the soils are **not** AASS.*



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

Sample HA10 (0.5m) recorded TAA above the action criteria and sulfur (% Scr) concentrations slightly above (0.12%) the action criteria of 0.1%, indicating that this sample was PASS. The sample was collected from the low lying area in the south-west corner of the site.

The soil is considered to be predominantly an acidic soil, with some PASS present in the south-west corner of the site.

The recommended mitigation and management measures for the south-west corner of the site are set out below. These measures represent an acid sulfate soil management plan.

It is recommended that if soils are to be removed from the low lying area in the southwest of the site where PASS was encountered that the upper 0.5m of soils be stripped, stockpiled and treated with lime to increase the pH.

Liming ratios have been calculated for the PASS and acidic soils should liming be required. Good quality fine agricultural lime should be used to treat excavated PASS. In calculating the liming ratios a factor of safety of 1.5 has been allowed above the theoretical requirement to take into account the rate of lime reactivity and the possibility of inhomogeneous mixing, particularly in the cohesive soils. Using a 95% confidence limit for the liming results provided, the liming ratio requirements were assessed to be 13.5kg of lime per tonne of soil for the PASS soils.

4.3.3 Geotechnical

The DGRs issued for the project require:

6. Hazard Management and Mitigation

Geotechnical

6.4 Provide an assessment of any geotechnical limitations that may occur on the site and if necessary, appropriate design considerations that address these limitations.

Attachment 2 'Plans and Documents to accompany the documentation' of the DGRs specify that specialist advice is to include geotechnical.

A Geotechnical and Acid Sulfate Soil Assessment report was prepared for the project by consultant, Coffey Geotechnics. This report is at **Appendix 19**.

The objectives of Coffey's geotechnical assessment were to:

broadly identify specific site features and site constraints which may affect the design and planning for the development. In particular:

- *Identify areas of steep slopes and potential instability,*
- *Provide a preliminary assessment of likely foundation conditions,*



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

- *Provide an assessment of areas of erosion potential and areas affected by poor drainage.*

The preliminary investigation work to inform the geotechnical assessment comprised:

- Interpretation of geological mapping and aerial photography
- Site walkover by an Engineering geologist
- Sampling of site soils
- Laboratory testing

The resulting categorisation of the geotechnical terrain units of the site comprised low-lying watercourse areas and elevated hillslopes.

Construction on Hillslopes

A small portion of the site contains sloping ground (10° to 15°). The area on the site that is steeper is shown on **Figure 11**.

The recommended construction methods in these areas include “*split level residential construction, pole house construction or other similar mode of construction that limits slope modifications*”.

In relation to slopes under 10° , the report recommends:

Construction on gently sloping ground (say less than 10°) is likely to be less critical in terms of slope instability and is considered to be at lower risk of potential instability. These areas of the site are more likely to be suited to single level slab on ground construction or split level residential construction.

It is recommended that intrusive investigations (such as test pitting) be undertaken over the site to further assess the subsurface conditions and the potential for slope instability.

The Concept Earthworks Plan at **Appendix 21** shows that there is cut and fill proposed to areas of land that are steeper on the site.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

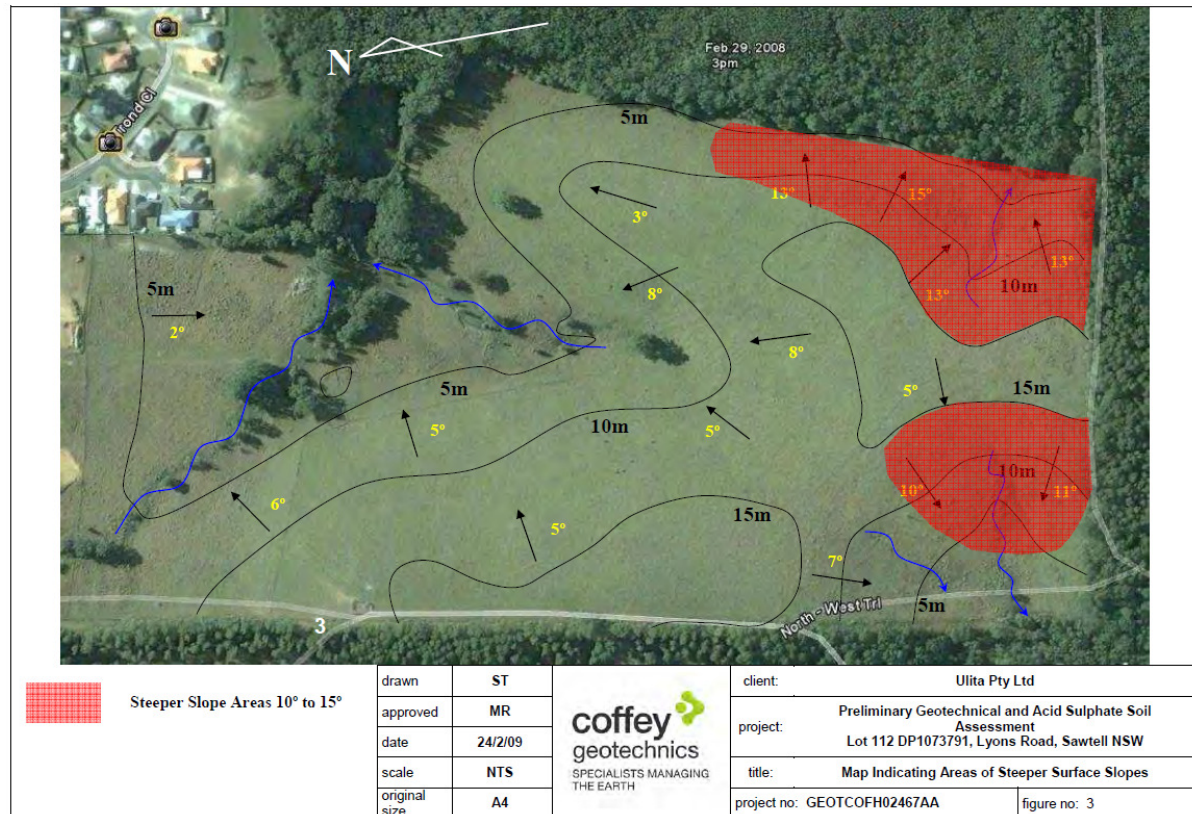


Figure 14: Map indicating areas of Steeper Surface Slopes

(Source: Preliminary Geotechnical and Acid Sulfate Soil Assessment (Coffey Geotechnics))

Construction in Low Lying Areas

Low-lying areas on the site are shown on **Figure 12**.

Coffey Geotechnics provides the following recommendations in relation to construction in low-lying areas.

Based on our investigations within the watercourses areas, the subsurface conditions are likely to comprise firm alluvial clay and silty soils overlying stiffer alluvial clay and residual clay soils. For construction in these areas, consideration may need to be given to the shallow groundwater table, soils with inadequate bearing pressures and the presence of soils with high silt contents which can be problematic for fill placement and compaction. Construction in these areas may require dewatering, excavation and replacement with controlled Level 1 fill or piled foundations to suitable founding strata below and uncontrolled fill or unsuitable natural materials.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

Construction in these low lying areas is likely to be governed by set back distances provided by flood studies. Should structures be required in these low lying areas then further investigation is recommended. A plan of the site (Figure 4) has been produced which indicates the locations and extent of the low lying areas.

The Concept Earthworks Plan in the engineering drawings at **Appendix 21** show that fill will be placed in the low-lying area in the south-west corner of the site. Housing lots are not proposed at this location but fill is required to support the level of the proposed road and the bio-retention basin above 5m AHD.

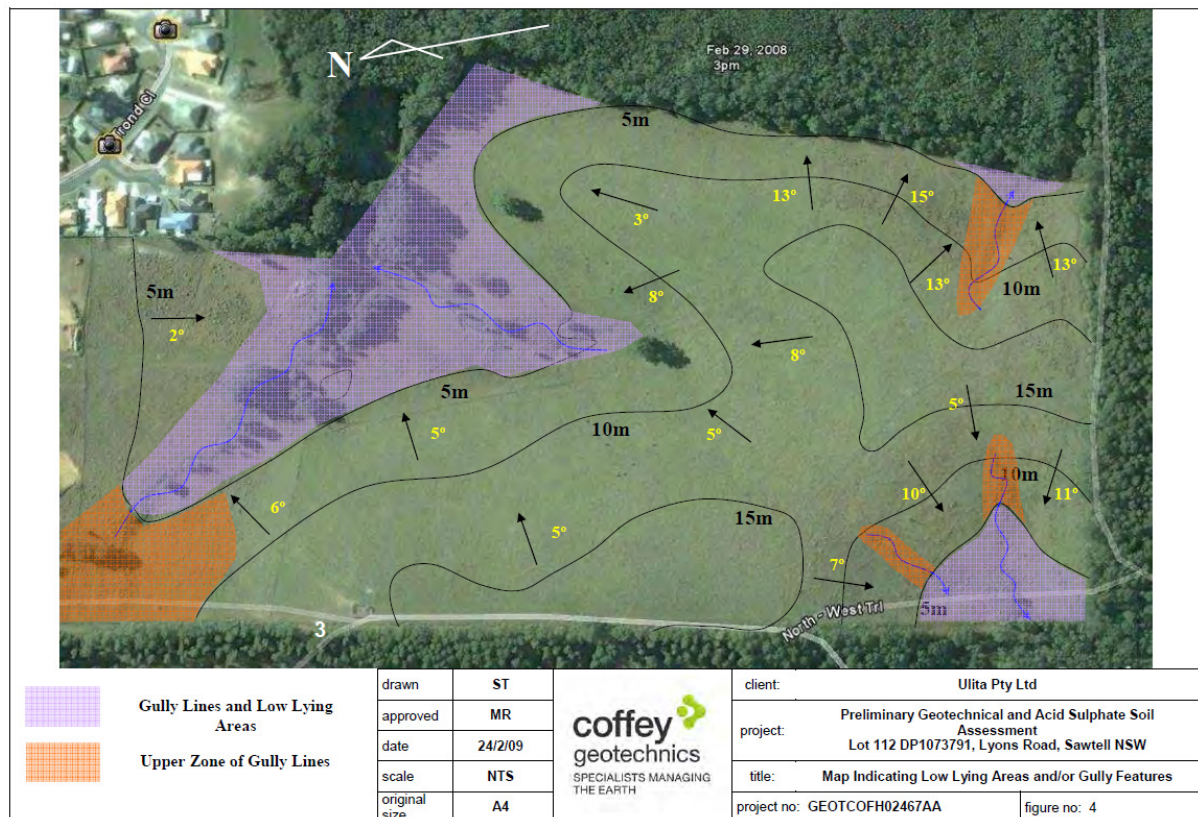


Figure 15: Map indicating Low Lying Areas and/or Gully Features

(Source: Preliminary Geotechnical and Acid Sulfate Soil Assessment (Coffey Geotechnics))



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

Preliminary Assessment of Foundation Parameters

The recommended parameters for foundations include:

For shallow footings founded in stiff clay materials (i.e. as encountered on the hillslopes) an allowable bearing pressure of 100kPa may be adopted for design purposes.

Presence of Fill

A portion of land on the western boundary (approximately 80m by 80m) was excavated for use as fill for adjacent development. The excavation was backfilled. It is not known to Coffeys the quality of the fill and whether the fill had been placed under Level 1 supervision in accordance with AS3798-2007. If this was not the case, the fill will not be able to support structural footings.

It is therefore recommended that if fill had not been placed under Level 1 supervision, and the land is included as potential development land, then:

the fill will need to be removed and replaced and compacted with approved fill under Level 1 conditions, or all structures in that part of the site will require piercing through the fill to suitable natural ground.

The Concepts Earthworks Plan in the Engineering Drawings at **Appendix 21** shows the location of the existing fill. This plans also shows that this area of fill will be removed from the site through “cut”.

Soaks and Springs

The areas of the site that contains soaks and springs are shown on **Figure 13**. The recommendations for these areas are:

Several areas of seepage were observed within the watercourse catchment in the southwest of the site. Due to the likely wet subsurface conditions associated with such seepage consideration needs to be given to further assessing the subsurface conditions in this area prior to development. Associated with these seepage zones were gully erosion features which have developed downslope of the seepage points. To limit the effects of erosion in these areas, it is likely that permanent drainage structures such as gravel drains will be required which manage the water flow and prevent further erosion.

There are permanent drainage structures proposed in these locations, comprising bio-retention basins. These are shown on the Concept Stormwater Plan at **Appendix 21**, the plan showing WSUD measures in the Stormwater Management Strategy at **Appendix 14**, and the Landscape Masterplan at **Appendix 11**.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

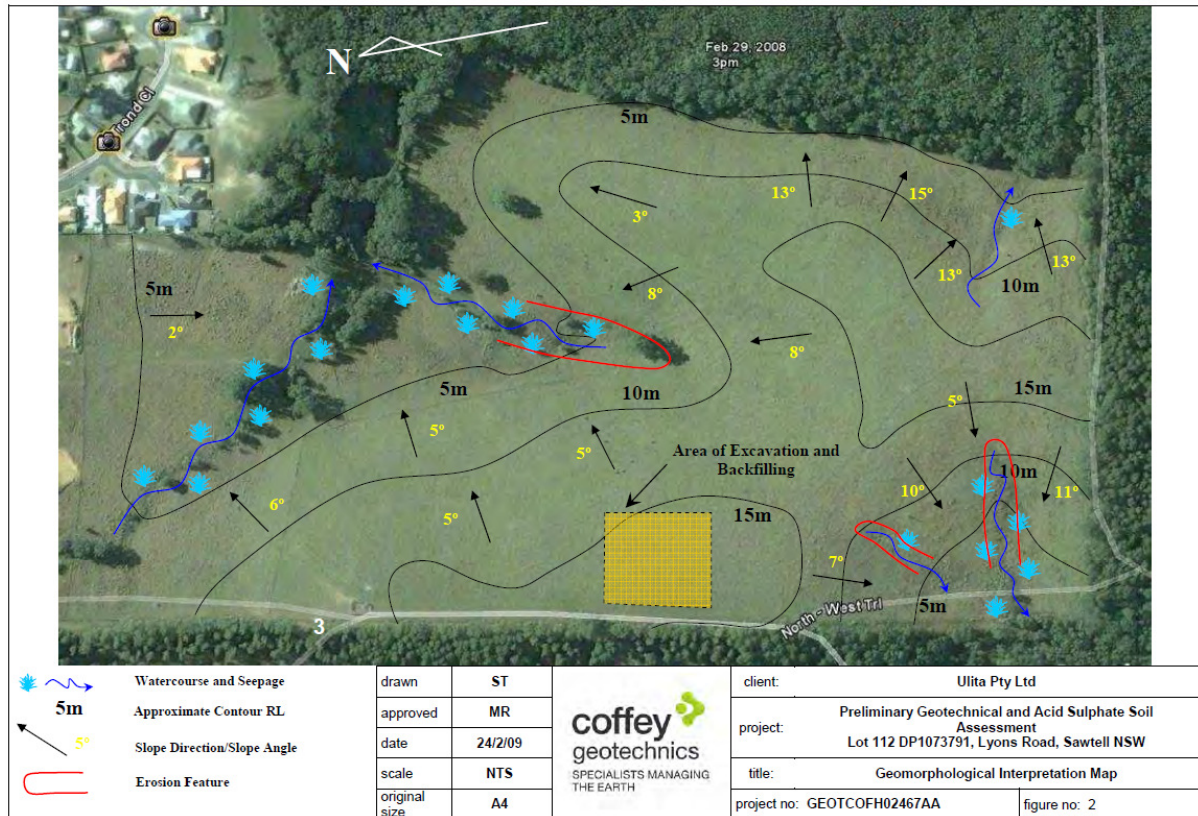


Figure 16: Geomorphological Interpretation Map

(Source: Preliminary Geotechnical and Acid Sulfate Soil Assessment (Coffey Geotechnics))

Erosion Potential

The erosion potential of the site is summed up as:

The soils tested are classified as non-dispersive, however it should be recognised that no soils are completely resistant to erosion and as such appropriate erosion protection measures should be adopted during design and construction of the development.

An erosion and sediment control plan for the site is at **Appendix 21**.

In summary the findings of the geotechnical assessment are:

Based on the information collected during the preliminary investigation and the results of the laboratory testing it is considered that the site is suitable for residential development. Coffey recommends that a more detailed investigation be undertaken of the site prior to construction.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

This investigation would be aimed at further assessing the site and in particular the steeper slopes in the southern portion of the site.

4.3.4 Bushfire

The DGRs issued for the project require:

Bushfire

6.3 Address the requirements of Planning for Bush fire Protection 2006 (RFS)

The DGRs require that specialist advice to support the Environmental Assessment is to include bushfire.

Part 3A of the EP&A Act, Section 75U *Approvals etc legislation that does not apply*, specifies:

(1) The following authorisations are not required for an approved project (and accordingly the provisions of any Act that prohibit an activity without such an authority do not apply):

(g) a bush fire safety authority under section 100B of the Rural Fires Act 1997,

The site is located on bushfire prone land according to Coffs Harbour City Council's Bushfire Prone Land map.

A site assessment was conducted by the bushfire consultant that included ground truthing 140m from the land parcel boundaries. The assessment classified land to the north as managed lands, land to the east as forested wetlands, and land to the south and west as forested wetlands and forest.

A 6m wide fire trail exists along the western and southern boundaries in National Park land. This trail is shown on the North Bonville DCP and in NPWS's Bongil Bongil National Park Fire Management Strategy. It is proposed that the fire trail be used as part of the APZ for the proposed subdivision.

The vegetation classifications together with a slope assessment have determined an APZ for the site in accordance with the requirements of *Planning for Bushfire Protection* (2006). These APZ thresholds are shown on the Subdivision Concept Layout and Constraints Plan at **Figure 7**.

The 'Bushfire Assessment – Residential Subdivision' at **Appendix 17**, addresses the requirements of the Planning for Bushfire Protection document and the matters raised by the NSW Rural Fire Service (RFS).

The matters raised by the NSW Rural Fire Service have been addressed throughout this Report, specifically the proposed development has been assessed against the Acceptable Solutions contained within the section 4.1 of PBP-2006, which are:

- *Asset Protection zone and appropriate separation from bushfire hazard vegetation;*
- *Water supplies;*



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

- *Public road access;*
- *Fire trails;*
- *Appropriate building construction standards;*
- *Additional protection measures such as maintenance.*

Throughout section 7 of this Report it has been demonstrated that not only have the required Acceptable Solutions been provided, in some instances the required bushfire protection measures (BPM) have been augmented (such as fire trails and static water supplies).

All of the relevant Acceptable Solutions of PBP-2006 relating to urban subdivisions have been addressed and complied with.

Some specific recommendations are provided below in an attempt to ensure appropriate bushfire protection measures are maintained:

- *SR1 The Acceptable Solutions of PBP-2006 in relation to road widths, road grades, water supply locations and pressures, and parking provisions are to be incorporated into the subdivision layout and construction.*
- *SR2 Landscaping of the individual allotments will be required to comply with the principles of Appendix A of this Report, once an occupation certificate is issued for each dwelling constructed.*
- *Vegetation management over vacant allotments should be carried out by the property owner, in accordance with the principles for Outer Protection Areas of Appendix A of this Report.*
- *This vegetation management plan should be monitored by the Consent Authority on a regular basis to ensure the standards required for APZ are maintained.*
- *SR3 The construction requirements of future dwellings are to comply with the provisions of AS3959 Construction of buildings in bushfire-prone areas as provided by the Table on page 25, and plan on page 26, of this Report.*

Therefore, having satisfied the Intent and Acceptable Solutions of the PBP-2006, it is my recommendation that the proposal should be granted approval.

4.4 Flora and Fauna, Native Vegetation Removal and Regeneration

4.4.1 Threatened Species and Habitat and Native Vegetation Removal

The DGRs require:



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

9.1 Outline potential impacts on aquatic and terrestrial flora and fauna and their habitats (within the meaning of the Threatened Species Conservation Act 1995 and the Fisheries Management Act 1994), where relevant.

9.2 Assessment should be undertaken in accordance with the Draft Guidelines for assessment of the impacts on Threatened Species under Part 3A. Any identified threatened species should be discussed in detail, and measures provided for their conservation. Particular consideration should be given to the presence of Wallum Froglet habitat in and near waterways on the development site.

9.3 Outline measures for the conservation of existing wildlife corridor values and/or connective importance of any vegetation on the subject land, including options for incorporating lands zoned Environmental Protection 7A Habitat and Catchment into the adjoining Bongil Bongil National Park.

9.4 Address impacts of the development on the surrounding ecologically sensitive area including Bongil Bongil National Park and the Bonville Creek/ Pine Creek estuary system. The proposal should specifically address potential issues associated with informal access, weed invasion, rubbish dumping and domestic animals (including measures to protect Koalas).

An Ecological Assessment was prepared for the proposed development by James Warren and Associates. This report is at **Appendix 15**.

The scope, methodology and purpose of the ecological assessment included:

- *Mapping and ground truthing vegetation units and determining their conservation status with reference to the Comprehensive Regional Assessment completed for NSW Forest and Non-forest ecosystems as part of the Regional Forestry Agreement (RFA) process (CRA Unit 1999), and with reference to the Coffs Harbour Vegetation Management Strategy (Ecograph 2002);*
- *Searching for and recording Threatened (TSC Act 1995) plant species and assessing the occurrence of Endangered Ecological Communities (EECs);*
- *Determining the suite of Threatened fauna (TSC Act 1995) that occurs in the locality and assessing their potential occurrence in the Study area;*
- *Assessing habitat provided by the site in relation to adjacent habitat and making an assessment of the corridor value of the site;*
- *Addressing statutory requirements including State Environmental Planning Policy No. 44 (SEPP 44 – Koala Habitat Protection), Section 5A of the Environmental Planning & Assessment Act (1979) (EPA Act) and the Commonwealth Environment Protection and Biodiversity Act 1999 (EPBC Act).*



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

The extent and location of ecological features, including Endangered Ecological Communities (EECs), existing vegetation communities, and other information, are provided on maps in the report.

The ecological assessment identified six (6) vegetation communities on site. Three of these communities are representative of two EECs. The three communities are:

- Community 1 – Tall open swamp sclerophyll forest (*Eucalyptus robusta*) - it is considered to have high conservation significance on the subject site.
- Community 2 – Tall open/closed swamp sclerophyll forest (*Melaleuca quinquenervia*) - it is considered to have high conservation significance on the subject site.
- Community 4 – Low closed sedgeland/wet pasture (*Juncus usitatus* +/- *Chorizandra cymbaria* / *Philydrum lanuginosum*) - Due to continued disturbance by grazing cattle and its degraded state this community is considered to have moderate conservation significance on the subject site.

Vegetation communities 1 and 2 are representative of *Swamp sclerophyll forest on the floodplain* EEC. This is located predominantly in that portion of the site zoned Environmental Protection 7A and a small area along the watercourse. Vegetation community 4 is representative of the *Freshwater wetlands on coastal floodplain* EEC. It is located along the watercourses.

The impacts of the proposed development on plant communities, threatened flora, EECs, fauna, threatened fauna, Bongil Bongil National Park, and Wildlife Corridors, and associated recommendations for mitigation measures, are set out below.

Plant Communities

Impacts

The proposed development will result in the loss of vegetation for the construction of buildings, access roads, driveways and associated infrastructure. The majority of this loss however is from Community 5 – Low closed grassland with scattered trees. The impact of the proposed development on vegetation communities on the site is shown in Figure 8.

In total 23.1526 hectares of vegetation will be lost from the subject site, the majority of which (over 95%) will be the loss of Low closed grassland with scattered trees. Approximately 40% of the subject site is proposed to be retained as open space and/or environmental protection.

Apart from the direct impact of vegetation clearing, potential additional impacts on vegetation communities include:

- *Clearance of areas of the Subject site represents a loss of habitat available for dispersal for plants and will reduce visits by pollination and dispersal vectors;*
- *Disturbance to the Subject site creates opportunities for weeds to colonise. Weeds may be introduced to the Study site in construction materials or by vehicles. Occupation of*



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

the Subject site creates opportunities for weeds to become established. Landscape species may escape to retained areas of vegetation;

- *The removal of vegetation from the Subject site represents the loss of organic material from the site;*
- *Residents may create walking tracks through bushland areas to gain access to the adjoining Bongil Bongil National Park. This may result in direct loss of vegetation, change in vegetation structure and increased opportunities for weeds and disturbance adapted animal species; and*
- *Occupation of the site may increase the risk of fire release into the surrounding bushland.*

Refer to the Vegetation Clearing Plan at **Appendix 26** - for the areas of vegetation on site that will need to be removed to accommodate road, stormwater and other related infrastructure and Asset Protection Zones as part of the proposed development.

Amelioration

The proposed development has been designed to utilise cleared portions of the subject site.

Over 40% of the subject site is proposed to be retained as open space and/or environmental protection. A Vegetation Management Plan (JWA 2010) has been prepared for the proposed development and should be read in conjunction with this Ecological Assessment. In total, approximately 4.22ha of revegetation works are proposed to offset the removal of 0.3554 hectares of degraded Freshwater wetland EEC. Details of the revegetation/regeneration works are combined within the Vegetation Management Plan (JWA 2011). The VMP provides guidelines for the restoration and management of the native vegetation to be retained and rehabilitated the subject site.

Other amelioration measures include:

- *Weeds should be controlled during construction;*
- *Vegetation removed during construction should be mulched for use on the site. This will prevent the introduction of weeds from seeds in mulch brought in from elsewhere;*
- *Weeds should be controlled in landscaped areas and areas of retained vegetation;*
- *Known environmental weeds (e.g. Umbrella tree) should be avoided;*
- *Landscape plantings should include a majority of native species that will provide forage habitat for nectarivorous and frugivorous birds and bats; and*
- *Landscaping trees should be situated where possible to reduce the amount of disturbance to retained areas of habitat.*



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

Threatened flora

No Threatened flora species were recorded from the subject site.

Endangered Ecological Systems

Impacts

Approximately, 0.35 hectares on the EEC Freshwater wetland will be lost to the proposed development. This area is however highly degraded as is subject to continued disturbance by grazing cattle.

Refer to the Vegetation Clearing Plan at **Appendix 26** - for the areas of vegetation on site that will need to be removed to accommodate road, stormwater and other related infrastructure and Asset Protection Zones as part of the proposed development.

Amelioration

The implementation of the VMP (JWA 2011) will result in the rehabilitation of the Core Riparian Zone in the north of the site. This will significantly improve and extend areas of Freshwater Wetland.

Fauna

Impacts

The proposed development will result in some minor loss of foraging, sheltering and breeding habitat for native fauna occurring in the locality. This loss may have a range of impacts, including:

- Loss of forage habitat for nectarivorous and insectivorous fauna species, including the loss of autumn/winter flowering plants;*
- Minor decrease in the size of local fauna populations and increased susceptibility to threatening processes acting in the locality;*
- Minor decrease in the size of the prey base for carnivorous species;*
- Loss of sheltering and breeding habitat for native fauna;*
- Reduction in opportunities for movement through the site;*
- Loss of sub-mature eucalypts represents a decrease in the future recruitment of hollows;*
- Loss of eucalypts, paperbarks, banksias and flowering shrubs decrease the food supply for nectarivores;*
- Animals may be killed or injured during the clearance of vegetation;*



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

- *Domestic dogs and cats prey on native fauna and may have significant impacts on the populations of native species;*
- *Development of the Subject site may favour native and introduced disturbance adapted competitors. For example, Cane toads may out-compete other Amphibians and Reptiles, aggressive open country birds species (eg Noisy miner, Crow, Pied currawong) may out-compete other Birds, and non-native mammals (Black rat and House mouse) may out-compete other native small mammals);*
- *Increased light, noise and activity may cause reclusive species to move away from habitat edges;*
- *The Proposed development will result in an increase in traffic on and to the Subject site. This increases the likelihood of animals being killed or injured by vehicles; and*
- *Alterations to site hydrology and land use may alter the water quality or hydrological regime in Paperbark Communities.*

Amelioration

The following amelioration measures apply:

- *Landowners should control dogs and cats. All animals should reside within fenced enclosures and be on a leash when outside of the enclosure.*
- *Consideration should be given to banning cats to reduce likely impacts on local fauna;*
- *Appropriate disposal of rubbish and food scraps reduces opportunities for nonnative predators and disturbance adapted competitors;*
- *Landscape and landfill materials should be sourced from a supplier where Cane toads do not occur;*
- *Mature habitat trees should be retained where possible;*
- *A qualified fauna handler should be on site when clearing occurs; and*
- *40 km/hr speed limit to be imposed on internal access roads.*

Threatened Fauna

No Threatened fauna species have been recorded from the subject site. The impact of the proposed development on Threatened fauna species considered a possible occurrence on the subject site over time is discussed in accordance with Section 5A of the Environmental Planning & Assessment Act (1979) in Section 5.2.4.

Bongil Bongil National Park

Impacts



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

The proposed development has the potential to impact on Bongil Bongil National Park in the following ways:

- *Residents from the proposed development may create walking tracks through the National Park, resulting in direct loss of vegetation, reduced visitation by pollinators and dispersal vectors, changes in vegetation structure, and increased opportunities for weeds and disturbance-adapted pest species.*
- *Occupation of the subject site may increase the risk of fire release into the National Park.*
- *Occupation of the proposed development may cause an increase in local populations of invasive pest species (e.g. rats, cane-toads, foxes) and invasive weeds.*
- *Residents of the proposed development may dump rubbish and garden wastes into or near the National Park encouraging pest species and allowing the release of weed species, parasites and diseases into the National Park.*
- *Domestic animals may predate on or disturb fauna within the National Park if they are allowed to roam.*
- *Increased light and noise from the proposed development may disturb the more reclusive species, in effect increasing the penetration of edge effects into the National Park.*

Amelioration

The following measures will implemented to ameliorate potential impacts on the Bongil Bongil National Park:

- *Formal walking tracks should be provided to established access to Bongil Bongil National Park. Access points could be adjacent to the locked gates at the fire trail access points. This will prevent the formation of a larger number of informal tracks;*
- *A koala proof fence will be constructed on the western and southern boundaries of the proposed development site adjacent to the National Park*
- *Restrictions should be placed on the use of fires, within the residential development site, during extended dry weather periods;*
- *Regulation should be formulated regarding domestic dogs, within the residential development site (i.e. dogs should be contained within fenced yards and/or leashed at all times; and*
- *A buffer ranging between the 20-50m is provided to the National Park, comprising of the outer road, along the west and south of the residential lots.*



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

Wildlife Corridor

The NPWS Key Habitats and Corridors database shows several regional habitat corridors within the locality of the site. However, the subject site itself does not occur within any of the mapped corridors (FIGURE 9). The proposed development will utilise cleared portion of the subject site and will retain all intact areas of vegetation.

For a discussion of the proposed development in relation to the Coffs Harbour Koala Plan of Management (revised edition 2009), refer to **Section 3.7.3** above.

The key findings of the ecological assessment are set out below.

An initial site survey was completed between the 4th & 8th November 2008 and a subsequent visit (October 2009) verified previous vegetation mapping.

Six (6) vegetation communities were identified including two (2) Endangered Ecological Communities (i.e. Swamp sclerophyll forest and Freshwater wetlands).

Eighty-five (85) flora species were recorded with none listed as threatened (TSC Act).

The fauna survey recorded seven (7) species of amphibian, seven (7) reptile species, sixty (60) bird species and sixteen (16) mammal species. No Threatened fauna species were recorded however, based on the results of the habitat assessment, sixteen (16) Threatened fauna species known from the locality were considered a possible occurrence over time.

The proposed development will result in the loss of 23.1526 ha of vegetation for the construction of buildings, access roads, driveways and associated infrastructure. The majority of this (approximately 95%) will be from Low closed grassland with scattered trees. Over 40% of the site will be retained as open space and/or environmental protection.

Furthermore, degraded areas of the subject site will be rehabilitated in accordance with the Vegetation Management Plan (JWA 2010). In total, approximately 4.22ha of revegetation/regeneration works are proposed to offset the removal of 0.3554 hectares of degraded Freshwater wetland EEC.

An Assessment of Significance (DECC 2007) was completed for the EECs and each of the Threatened fauna species, considered a possible occurrence in the site. This assessment concluded that the impacts of the Proposed development would be unlikely to result in the local extinction of any of these species, and that there would be no significant impact upon any of the EECs occurring on the site. A Species Impact Statement is not required.

The site contains areas of Primary Koala habitat, as mapped by the CHCC KPoM (2009). There will be a small loss (0.2024ha, 1.6%) of land mapped as Primary Koala Habitat for construction of stormwater infrastructure. Some of the areas classified by Coffs Harbour City Council as Primary Koala Habitat were found to contain conditions not ideal for Koala habitation during ground truthing by JWA. Options for ameliorating potential impacts on Koalas are suggested



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

including ensuring the stormwater discharge into this area is of a high quality / standard and planting additional Koala food trees in the riparian rehabilitation area. A movement corridor will also be created between mapped Primary Koala habitat and Bongil Bongil National Park.

An assessment under the Commonwealth Environment Protection and Biodiversity Conservation Act (1999) concluded that the Proposed development will not have a significant impact on any matters of National Environmental Significance. Commonwealth assessment of the proposal is therefore not required.

4.4.2 Regeneration Strategy

A Vegetation Management Plan (VMP) was prepared for the proposed development by James Warren and Associates. The VMP is at **Appendix 16**. Specifically the VMP applies to the Core Riparian Zone (CRZ) comprising Freshwater Wetlands, the east-west and north-west drainage lines, and a portion of the Swamp Sclerophyll Forest in the east of the site.

A riparian corridor for the existing watercourse on the site has been established which will involve significant rehabilitation and planting of appropriate riparian and other native and indigenous plant species which will enhance the habitat and water quality value of this portion of the site. This will significantly rehabilitate the EECs that have been identified in this area as degraded.

The specific objectives of the VWP are:

- *To enhance the conserved vegetation by revegetating with indigenous species;*
- *To buffer the waterways from edge effects and other disturbance related impacts;*
- *To ensure retained vegetation is of low fire risk;*
- *To improve the value of the subject site as habitat for fauna groups;*
- *To improve the value of the subject site as a wildlife corridor;*
- *To manage weeds using revegetation best practice weed control methods; and*
- *To utilise revegetation to reduce nutrient and sediment loads and other potential impacts arising from the proposed development.*

The objectives of the site regeneration strategy are to:

- *Remove weeds utilising "best practice" protocols (APPENDIX 4);*
- *Improve the current habitat values of the site; and*
- *Provide a buffer to ecological features from potential impacts of the proposed development.*

The site regeneration strategy consists of three phases as follows:



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

- *Weed Control*
- *Assisted Regeneration*
- *Revegetation*

The VMP identifies existing weeds species and appropriate species for replanting in order to rehabilitate areas. The riparian areas currently contain native and exotic weeds. The VMP details a weed program that is divided into two phases: primary and secondary weeding. Primary weeding refers to the removal of weeds and secondary weeding refers to maintenance of the Rehabilitation Areas to prevent subsequent weed infestations.

Assisted regeneration will take place with an emphasis on natural regeneration to achieve full vegetation cover. Revegetation will take place in cleared areas. The VMP details a planting methodology, maintenance requirements for plants, protective measures (signage, fencing) and outlines monitoring and reporting requirements.

4.5 Heritage – Aboriginal and European

The DGRs issued for the project require:

8 Heritage and Archaeology

8.1 Identify whether the site has significance to Aboriginal cultural heritage and identify appropriate measures to preserve any significance in accordance with the Draft Guideline for assessment of impacts on Aboriginal heritage under Part 3A. Aboriginal community consultation should be undertaken in accordance with DEC's Interim community consultation requirements for applicants.

8.2 Identify any items of European heritage significance and, where relevant, provide measures for the conservation of such items.

A Cultural Heritage Assessment report was prepared by consultant, Bonhomme Craib and Associates in accordance with these requirements. Refer to **Appendix 12** for the Cultural Heritage Assessment.

The scope of the Cultural Heritage Assessment includes matters relating to aboriginal archaeological item/remnants, aboriginal cultural heritage values and European heritage.

The DGRs also require:

"Please notify the department should any sub-surface testing be required during the preparation of your Environmental Assessment."

Bonhomme Craib and Associates advised WorleyParsons on 24th March 2010 that they recently submitted a current status report notifying the Department of Planning of the excavation dates and the participants, and advised that the draft report had been offered to all stakeholders.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

4.5.1 Aboriginal Archaeological Items/Remnants and Impact on Aboriginal Cultural Heritage Values

A desktop review of cultural heritage literature and heritage registers was undertaken to identify cultural heritage significance of the area. The key findings from the literature review and heritage register are set out below.

The relevant heritage registers were searched as part of the background information obtained for the project.

- *The DECC Aboriginal Heritage Information Management System) lists sites in the vicinity. Except for the Lyons Road PAD (AHIMS #22-1-0357), none of the registered sites occur within Lot 112. AHIMS site #22-1-0225/22-1-0298 is the closest site to Lot 112 and is located on the adjacent Lot 2 DP1065589 approximately 200 m to the north. Searches of the following registers were made:*
- *Commonwealth and National Heritage Registers (Department of Environment, Water, Heritage and the Arts);*
- *NSW State Heritage Register;*
- *Schedule 2 (Heritage Items) of the North Coast Regional Environmental Plan 1988; and*
- *Schedule 5 (Heritage Items) of the Coffs Harbour Local Environmental Plan 2000.*

Searches of the following databases were made for the Coffs Harbour LGA (16th September 2009):

- *National Native Title Register;*
- *Register of Native Title Claims; and*
- *Register of Indigenous Land Use Agreements.*

No entries for Aboriginal sites close or within the study area were found in the Coffs Harbour LGA documents.

Consultation was undertaken with Aboriginal stakeholder representatives to identify the cultural heritage significance of the area and provide the opportunity to influence a cultural heritage survey of the site. This consultation was undertaken in accordance with DECCW (2004) *Interim Community Consultation Requirements for Applicants*. The Aboriginal stakeholders consulted as part of this process are identified at Appendix 2 of the Cultural Heritage Assessment report.

A resulting field survey was undertaken with interested aboriginal stakeholder representatives and an archaeologist, comprising the Coffs Harbour Local Land Council (CHLALC) representatives, to identify appropriate locations for test excavations (research design). The field survey revealed five Potential



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

Archaeological Deposits (PADs) along the ridgelines, through the discovery of three flakes, and a split pebble chopper. The CHLALC advised that transects should be identified along ridgelines and in the area bordering the watercourse. They also advised that the area had "Aboriginal cultural heritage values associated with the use of the area for Traditional resource procurement" (Bonhomme Craib and Associates).

The test excavation involved the identification of five transects along which test pits were established. Within these test pits the top soil was "scraped" using a 1m wide flat edged bucket and deployment of a sieving system to retrieve artefacts. A mechanical sieve is used for this purpose which does not damage artefacts. In total, 144 test pits were excavated along the five transects.

Test excavation results revealed "*a total of 1328 stone artefacts displaying diagnostic features, typical of purposeful modification or use were recorded*" (Bonhomme Craib and Associates). These artefacts were categorised according to artefact type; raw material; size range of artefacts; and variations in type across the site.

Archaeological investigation is primarily used to assess the scientific significance of a site, while the significance of a site to the aboriginal community is determined by the Aboriginal stakeholders.

High scientific significance is ascribed to sites where the contents are demonstrably rare of where the site represents a type of site which was once common but is now under threat regionally.

The scientific significance of the site has been assessed as high. The site has provided insight into use of hinterland gullies and swamp areas behind the coastal zone by indicating that the area has probably been accessed to undertake short term gathering or foraging activities.

The significance of the material found during the sub surface programme was discussed with the representatives of the CHLALC. The representatives considered the material to have a high scientific and educational significance and asserted that the material was culturally significant as it provided evidence of Aboriginal use of the area.

Particularly the material demonstrates the repeated use of the ridge areas which access Bonville Creek to the south and the Boambee Creek Valley.

Given the cultural significance of the site, and as the proposed development is to occupy the land assessed as significant, CHLALC expressed the wish for topsoil on ridgelines to be removed prior to development. This is then to be relocated into the reserve area on site, but the location is not to be made known to the general public. Accordingly, Bonhomme Craib and Associates has made the following management recommendations and mitigation strategies for the removal and relocation of topsoil and the identification and management of artefacts:

Recommendation 1

Remove the ridge topsoil and relocate to the reserve area of the proposed development.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

Recommendation 2

Record the relocated location of the ridge topsoil as a relocated site with DECC Aboriginal Heritage Information Management System.

Recommendation 3

Relocation of ridge topsoil should be monitored by CHLALC.

Recommendation 4

After the ridge topsoil has been relocated, a walkover of the removal areas should be conducted by the CHLALC and any visible artefacts collected.

Recommendation 5

Collected artefacts will be redeposited by CHLALC representatives in a secure location on site negotiated between Utila PL and the CHLALC.

Recommendation 6

Street names in the development should acknowledge the Traditional Owners of the area. Consultation with the CHLALC and the CHCC should be undertaken to ascertain suitable names for the streets.

Development impact and mitigation

The development will impact the ridges and slopes across the lot with the establishment of a residential precinct with associated infrastructure. A riparian zone will be created along the central gully but water management facilities will be established within the zone and these will impact artefacts present along the water course.

A Management Plan and Work Methodology (Section 6.3) has been developed to manage the identified and potential cultural heritage issues associated with the sites.

This management plan has been reviewed by Utila and has been accepted. Utila agrees to involve the stakeholders in the implementation of the plan.

The Work Method Statement that has been developed for the site (refer Section 6.3 of the Cultural Heritage Assessment report) reveals that there will not be sieving of topsoil, but rather excavation by a bulldozer scraping fill and dumping fill into a truck to transport it to the relocation site. This has been agreed by the CHLALC and this will provide them with the opportunity to collect more items. It is their view that sieving of fill is unlikely to provide more information than has already been revealed. Visual inspection and collection of topsoil by CHLALC is to occur at the beginning and end of scrapes.

The Cultural Heritage Management Plan is identified in the Cultural Heritage Assessment report, which identifies possible management issues that may arise, and associated procedures/actions to deal with them.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

4.5.2 European Heritage

The Cultural Heritage Assessment report prepared by consultancy, Bonhomme Craib and Associates included an assessment of Non Indigenous (European/Other) cultural heritage significance of the site by undertaking a review of heritage registers and other literature.

The methodology employed for the assessment included:

Searches of the following registers of Non Indigenous sites were made:

- *Australian Heritage Database;*
- *NSW State Heritage Register;*
- *National Trust of Australia (NSW) Register;*
- *Schedule 2 (Heritage Items) of the North Coast Regional Environmental Plan 1988;*
and
- *Schedule 5 (Heritage Items) of the Coffs Harbour Local Environmental Plan 2000.*

The findings of the assessment were:

No historical sites or items were listed in or close to the study area.

The test excavations did not discover any non-indigenous artefacts at the subject site.

4.6 Subdivision Design, Layout and Desired Future Character

4.6.1 Visual Impact Analysis

The DGRs issued for the project state in relation to Visual Impact Analysis:

Address the visual impact of the proposal in the context of surrounding development and relevant mitigation measures. In particular, address impacts on the amenity of the foreshore, overshadowing of public reserves, loss of views from public places and cumulative impacts.

The Visual Impact Assessment (VIA) was prepared for the project by consultant, Terras Landscape Architects, and is provided at **Appendix 10**.

The methodology employed for the assessment included a viewpoint analysis to determine which parts of the development would be visible from existing roads, existing residential areas, or other. This is illustrated using photographs in the report that are taken at each of these viewpoints. Factors determining the visual significance include the degree of exposure based on the number of people who would view the development from a particular point. Topography can enhance or limit visual prominence.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

A plan was prepared (Figure 12) in the VIA report that shows the *Visual Access to the Site*. It indicates that the viewpoints are mostly from Lyons Road, with limited viewpoints from the adjacent residential subdivision. Areas in the south-west and south-east of the site are not visible from these locations. As the site is located approximately 3.2km from the coastline, and due to surrounding bushland, it is not possible to view the site from the coastline.

An analysis of the visual catchment of the site confirms that views of the site are from limited areas along Lyons Road:

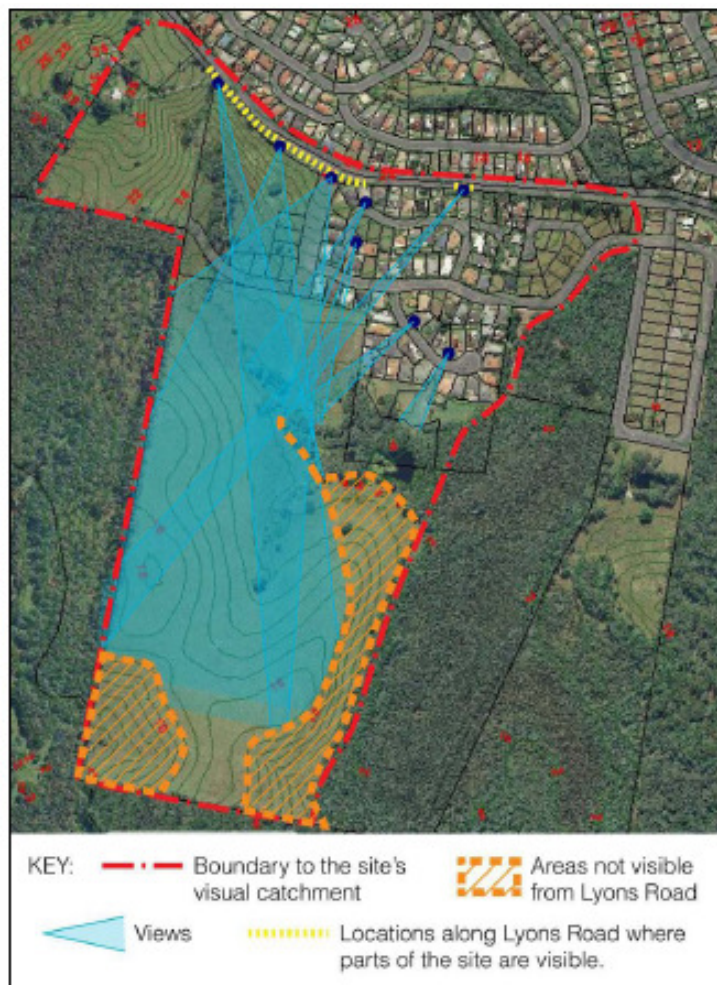


Figure 17: Visual Access to the Site

(Source: Terras Landscape Architects)



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

The visual catchment containing the site is relatively small. Views into the site are restricted to small sections of Lyons Road, approximately 300m in combined length and those lots and streets that adjoin the subject site. Other views from within the nearby residential areas are to the upper canopies of trees occurring on the site and adjoining properties. Views of this vegetation add to the visual amenity of the residential areas. Generally, these trees will not be affected by the proposal.

It is concluded that the proposed subdivision will have a low to moderate impact within its visual catchment and a very low visual impact on the coastal town of Sawtell:

The proposed subdivision will have a low to moderate impact within its visual catchment, however, it will have a very low impact on the broader coastal town of Sawtell. The main reasons for this are as follows:

- *the visual catchment is relatively small;*
- *views into the subject site and of the proposed development are limited mainly to a small section of Lyons Road and will be seen primarily by the occupants of passing vehicles;*
- *views of the site from the adjoining residential development will be restricted to lots immediately adjoining the proposed development and a few locations towards its western end;*
- *the proposed development will be seen as an extension to the existing suburban development;*
- *the proposed development will not require the removal of existing trees, apart from some isolated specimens, resulting in the retention of vegetation that acts as borrowed landscape to the existing development meaning that the visual amenity of these areas will not be compromised;*
- *the required revegetation work proposed for the riparian area will assist in screening the development that is to occur to the southern parts of the subject site; and,*
- *the approved development occurring as Stage 1, located between Miniwali Drive and Lyons Road, will have a more significant impact on the visual quality of the area and will assist in screening the Stage 2 works, further reducing the visual impact of development occurring on the subject site.*

The VIA report makes the following recommendations:

- *It is important that the landscape plan and vegetation management plan be properly implemented to ensure that screening is provided and that the visual amenity of the subdivision itself is enhanced.*



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

- *It is recommended that consideration be given to providing planting along Lyons Road so that views of Stages 1 and 2 can be screened and that the drive into Sawtell can be enhanced.*
- *It is further recommended that Council extend this planting east of Bambara Drive to screen the rear fences of the existing subdivisions that front Lyons Road.*

4.6.2 Built Form Controls

CONSISTENCY OF PROPOSAL WITH EXISTING DEVELOPMENT

The DGRs issued for the project require:

2.1 Demonstrate the consistency of the proposal with the character of existing development in terms of the locality, street frontage, scale, building envelopes and future built form controls, aesthetics, energy and water efficiency and safety.

The consistency of the proposed residential subdivision with the character of existing (surrounding) development is depicted in **Figure 8** which shows the proposed subdivision layout within the context of the surrounding residential areas. This shows that while the medium density housing form will be inconsistent with the existing immediately adjacent low density housing in terms of lot size and massing of built form, the way in which the topography travels means that the medium density housing will sit lower and not visually dominate the adjacent existing housing. Refer to discussion below on 'Justification of Lot Layout'.

Built form controls have been determined for the proposed development in relation to proposed low density housing and medium density housing. These are shown on **Appendix 9**.

As the proposed subdivision layout adopts the requirements of Council in relation to road dimensions, setbacks of dwellings, and other controls, this will ensure the proposed subdivision is consistent with existing surrounding development. The proposed development is consistent with the requirements of the North Bonville Development Control Plan (DCP), Subdivision DCP, Low Density Residential DCP, and Medium Density DCP.

Refer to 'Design Controls' further below.

JUSTIFICATION OF LOT LAYOUT

The DGRs issued for the project require:

2.2 Justification with the proposed lot layout including identification of mitigation measures such as setbacks and buffer zones.

The proposed lot layout has been developed on the basis of the prevailing existing topography and to accommodate natural features. Roads and residential lots have been developed to predominantly



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

follow contours. Lots have been orientated to address open space, which would provide an attractive view and provide passive surveillance of open space areas.

Medium density housing has been accommodated in the north of the site. It was considered that the size and configuration of the land on which this housing type will be sited; the proximity to the main road (Lyons Road); the opportunity for a high level of amenity due to the proximity of open space; the desire to provide for a diversity of housing types; and the opportunity for a bus stop at this location, would combine to make this a favourable location for this housing type.

A potential maximum building footprint has been shown for each low density and medium density lot in the Subdivision Concept Layout at **Appendix 8**. The location of these building footprints is in every instance outside the Building Exclusion Zone - Bushfire Construction Level Thresholds.

Refer to the Site Analysis at **Section 2.3**.

The size of each lot and the dimensions of each lot are shown on the Plan of Subdivision (noted as 'Development Application – Overall Development') at **Appendix 8**.

CONSISTENCY OF LOT LAYOUT WITH PLANNING POLICY AND GUIDELINES

The DGRs issued for the project require:

2.3 Demonstrate the consistency of the proposed subdivision design and layout with the Coastal Design Guidelines for NSW, NSW Coastal Policy 1997, State Environmental Planning Policy (SEPP) 71 – Coastal Protection and SEPP (Housing for Seniors or People with a Disability) 2004.

Assessment of proposed subdivision design and layout against the planning policy and planning guidelines referred to above has been provided at **Appendix 3 – Compliance Tables**.

Note: assessment against the provisions of SEPP (Housing for Seniors or People with a Disability) 2004 is no longer required because this housing type is not proposed.

TYPE OF SUBDIVISION PROPOSED

The DGRs issued for the project require:

2.4 Identify the type of subdivision proposed across the site ie. community, Torrens, strata.

There are 151 low density Torrens title housing lots proposed which are accommodated in the south and west of the site. These are shown on the subdivision concept plan at **Figure 8**, the **Plan of Subdivision** at **Figure 9**, and will be subject to the built form controls at **Appendix 9**.

The medium density housing precinct is proposed as three Community title lots. These will be subject to future subdivision into approximately 42-lots as shown indicatively on the subdivision concept plan



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

at **Figure 8**, the **Plan of Subdivision** at **Figure 9** and will be subject to the built form controls at **Appendix 9**.

DESIGN CONTROLS

The DGRs issued for the project require:

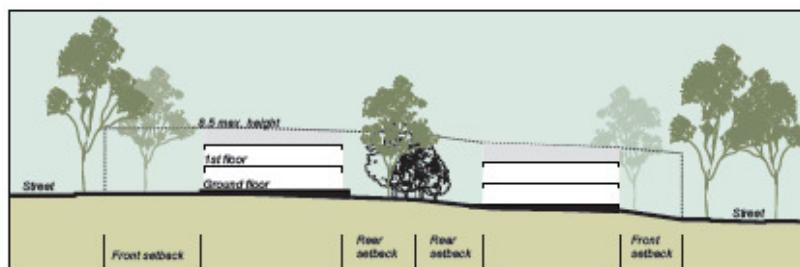
2.5 Provide details of potential building envelope, built form and design quality controls and the means for implementing them.

The development of building footprint and built form controls for the proposed medium density housing precinct have been guided by Coffs Harbour City Council's Medium Density Housing Development Control Plan and the North Bonville Development Control Plan. A potential maximum building footprint has been shown for each low density and medium density lot on the Subdivision Concept Layout at **Appendix 8**. Built form controls for low and medium density housing are at **Appendix 9**.

The maximum building height is two storeys, equating to a maximum building height is 8.5 metres above existing ground level for each housing type. The street front setbacks and other setbacks are to conform to the building footprints shown on the subdivision concept plan.

Residential development within the medium density subdivision is to generally comply with the Coffs Harbour City Council Medium Density Housing Development Control Plan. Garages and carports are to be generally behind the front building line unless shown on the Subdivision Concept Plan and the Built Form Controls plan.

Residential development within the low density subdivision is to generally comply with the Coffs Harbour City Council Low Density Housing Development Control Plan. Garages and carports are to be generally behind the front building line.



Section A-A

Figure 18: Low density residential – built form controls – indicative site section (extract)



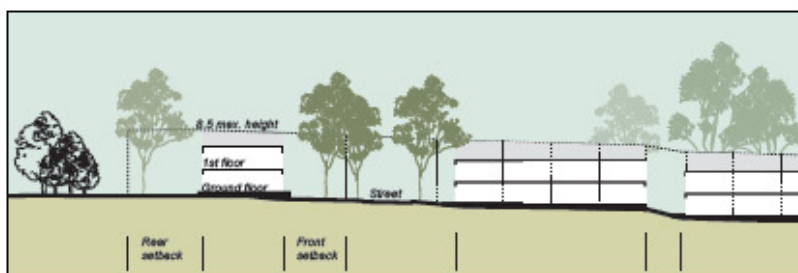
UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE



Figure 19: Medium density residential – built form controls - lot layout detail (extract)



Section B-B

Figure 20: Medium density residential – built form controls – Indicative Site Section (extract)



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

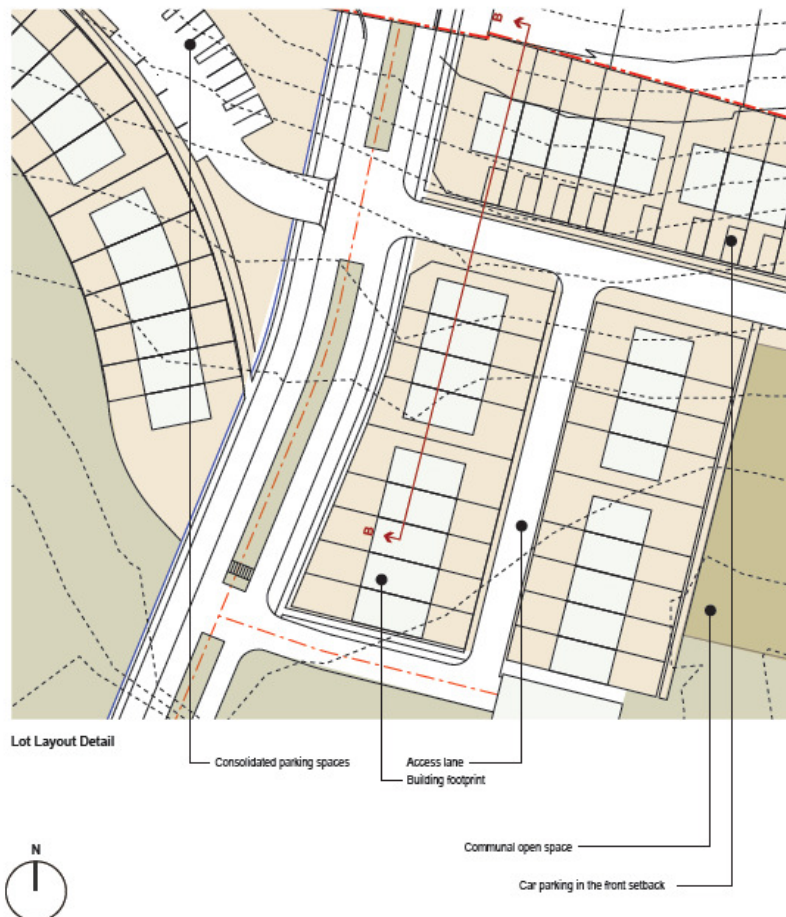


Figure 21: Medium density residential – built form controls - lot layout detail (extract)

STAGING DETAILS

The DGRs issued for the project require:

2.6 Provide details of any staging that demonstrates the lots will be released in an orderly and coordinated manner.

A Staging Plan has been developed for the proposed subdivision layout. This plan is at **Appendix 8** and reproduced below at **Figure 10**. This plan shows that land parcels will be released according to their ability to efficiently stage servicing infrastructure. The low density residential lots will be developed first, and in an order which permits the logical development of associated roads and infrastructure servicing. Finally, the medium density residential lots will be developed.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

MANAGEMENT AND MAINTENANCE

The DGRs issued for the project require:

2.7 Outline the long-term management and maintenance of any areas of open space of conservation including ownership and control, management and maintenance funding, public access, revegetation and rehabilitation works and bushfire management.

The long term management and maintenance of areas of open space and conservation areas on site are set out below.

Ownership and control

Figure 9 sets out the proposed land parcels dedications and ownership arrangements.

The land nominated on the plan as “Proposed Public Reserve” is to be dedicated to Coffs Harbour City Council.

The land nominated on the plan as “proposed additions to Bongil Bongil National Park” is to be dedicated to the National Parks and Wildlife Service (NPWS) for its care, control and management. It should be noted that all infrastructure associated with the proposed subdivision (including stormwater infrastructure) is not located on land to be transferred to NPWS.

Conservation areas on site comprise land to the east of the site included in the Environmental Protection 7A zone. This portion of land is proposed for dedication to NPWS. This will ensure the ongoing ecological values of this land are preserved. It will reinforce the significance of Bongil Bongil National Park.

The following open space areas on site are proposed for dedication to Council:

- land included in the Open Space 6A Public Recreation zone;
- land under Core Riparian Zone;
- buffer areas to the National Park (comprising Asset Protection Zone).

The land parcels that form the medium residential subdivision include some land that does not comprise the development footprint. This is open space that will be landscaped or form a carpark and will be under the care, control and management of the Community Association. The notional community facility building shown on the Subdivision Concept Plan is shown as part of the proposed Public Reserve to be dedicated to Council.

Management and maintenance funding

Those areas nominated for dedication to Coffs Harbour City Council will be managed and maintained by Council and therefore subject to its funding arrangements for this purpose. This includes proposed bio-retention swales and bio-retention basins. The bio-retention swales proposed in the road reserves are also proposed to be maintained by Council.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

The Landscape Design Report at **Appendix 11** states the following in relation to management and maintenance funding.

A maintenance period of 52 weeks for all proposed public reserve areas will be undertaken by the contractor engaged by the developer before handing over to Council. The system adopted by Council is for the land to be dedicated as public reserve at time of the release of the linen plan and that a maintenance bond (bank guarantee) be allocated for the maintenance period. At the completion of the 52 week period, if all work is deemed to be acceptable, the maintenance bond will then be returned.

Those areas nominated for dedication to the NPWS will be managed and maintained by NPWS and subject to its funding arrangements for this purpose.

The Landscape Design Report at **Appendix 11** states the following in relation to management and maintenance funding.

In order for the eastern area of the subject property zoned 7(a) Environmental Protection to be added to the Bongil Bongil National Park, there is no maintenance to be undertaken by the developer. The land will be handed over to the NSW Department of Environment, Climate Change and Water (National Parks and Wildlife Service) at an agreed time.

Public access

The areas of the site that are proposed as public reserve, and therefore subject to public access, are shown in the **Figure 9**, above. The Landscape Concept Masterplan for the proposed development at **Appendix 11** shows an indicative location for walking trails and boardwalks through public reserve areas, providing *controlled* public access so that impacts on ecological and aesthetic values of those areas are minimised.

The Masterplan also shows proposed vehicular and pedestrian access points to Bongil Bongil National Park from the proposed perimeter road, which provides access to an existing fire trail that is maintained by NPWS. These access points will comprise a lockable gate for use only by emergency vehicles, and bollards which will permit only pedestrian access and no motorcycle access.

The proposed fencing type is typical detail to the boundary of the National Park land. A plan view of pedestrian access (bollards) is shown in the landscape drawing package at **Appendix 11**. This is a permeable fencing type that does not impede koala access.

Revegetation and rehabilitation works

The land identified for core riparian zones contains the degraded endangered ecological community, Freshwater Wetland on Coastal Floodplain. A Vegetation Management Plan (VMP) has been prepared by James Warren and Associates for the Core Riparian Zone to outline the rehabilitation and revegetation works necessary to re-establish the ecological community and enhance the riparian



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

and water quality functions. The VMP is discussed at **Section 4.4.2** above, while the VMP report is at **Appendix 16**.

Bushfire management

Bushfire management issues are dealt with under **Section 4.3.4** and a bushfire assessment is at **Appendix 17**.

The Landscape Concept Masterplan proposes that the road reserve areas to the National Park will be planted with indigenous trees, groundcovers and low grasses in accordance with the Bushfire Assessment report and the Vegetation Management Plan.

4.7 Traffic and Access

The DGRs require in respect of traffic and access:

5.1 Prepare a traffic impact study in accordance with Table 2.1 of the RTA's Guide to Traffic Generating developments which addresses, but is not limited to the following matters:

- *The capacity of the road network to safely and efficiently cater for the additional traffic generated;*
- *Access to and within the site, including impacts associated with the proposed collector road dissecting the seniors housing area;*
- *Servicing and parking arrangements;*
- *Intersection site distances;*
- *Connectivity to existing developments;*
- *Impacts on public transport (including school bus routes);*
- *Provision of access for pedestrians and cyclists to, through and within the site*
- *Identify suitable mitigation measures, if required to ensure the efficient functioning of the road network.*

5.2 Protect existing public access through Bongil Bongil National Park and provide, where appropriate, new opportunities for controlled public access including consideration for disabled access, where appropriate.

A Traffic Management Plan has been prepared for the proposed development. This is at **Appendix 23**.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

4.7.1 Existing Traffic Conditions and Traffic Generation

The salient traffic and access issues comprise:

- Lyons Road is a regional trunk road and is classified as a main road under the RTA.
- Bambara Drive has been constructed as a Collector Road, forms the intersection with Lyons Road, and provides access to the site.
- The proposed development proposes extending Bambara Drive.
- There are currently 150 allotments able to exit via the intersection. Based on the RTA Guide for Traffic Generating Development, this would equate to 750 vehicles per day (vpd).
- Lyons Road has a sign-posted speed of 60km/hr.
- Bambara Drive has a sign-posted speed of 50km/hr.

4.7.2 Proposed Traffic Generation

Based on the rates for standard residential allotments and medium density allotments in the RTA's Guide for Traffic Generating Developments, the proposed development is anticipated to generate a total of 881 new vehicle movements per day. This will therefore result in the Bambara Drive-Lyons Road intersection accommodating a total of 1631 vpd .

4.7.3 Capacity at Intersection

The capacity at the Lyons Road – Bambara Drive intersection for through and turning traffic will be maintained at a Service level A (defined in Austroads and RTA guidelines).

4.7.4 Internal Circulation

The development layout has been done to achieve the following traffic circulation:

- *All traffic directed to enter and exit Lyons Road via the major intersection.*
- *Central road in the development to act as a local collector.*
- *External roads of the development to act as circulating roads.*
- *Other roads are local streets and connect to central and outer roads.*

4.7.5 Servicing and Parking Arrangements

- *The largest service vehicle anticipated in the development is the regular garbage collection truck. Anticipated vehicles are an Austroads single unit truck/bus 2.5m in length.*
- *The development layout of roads, intersections, and cul de sac allow for good access, manoeuvring and effective circulating of all vehicles.*
- *All emergency vehicles have good access to allotments.*



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

On-site parking for low density lots can cater for the parking of 2 vehicles per dwelling house (in garage and driveway).

Selected medium density lots are shown, indicating their capacity to accommodate a carport forward of the building line.

Visitor parking is catered for by on street parking. The collector road has dedicated parking on each side of the road. Other roads are of a local road width, allowing for parking on the road side with continuing slow-moving through traffic.

4.7.6 Provision for Pedestrians and Cyclists

Footpaths will be provided on both sides of the collector road, with a footpath provided on one side of all other roads, only, in the low density subdivision.

4.7.7 Impacts on Public Transport

There is an existing bus service along Lyons Road. It is proposed to alter this bus route and make provision for its entry to the proposed development.

The location of bus stops and a bus route for the proposed development is shown on the Concept Road Layout and accompanying road profiles in the engineering drawing package at **Appendix 21**. This shows that all proposed dwellings will be sited within 400m of a bus stop.

4.7.8 Access to National Park

Parking associated with the adjacent National Park can be catered for by on-street parking.

A fence is proposed at the boundary of the site to the National Park and only controlled pedestrian and vehicular access permitted.

Vehicular and pedestrian access to the National Park is addressed at **Sections 4.10.1 and 4.11.1**.

4.8 Water Cycle Management

4.8.1 Flooding

The DGRs state the following requirements in relation to flooding for the project:

Provide an assessment of any flood risk on site including the potential effects of sea level rise and an increase in rainfall intensity in consideration of any relevant provisions of the NSW Floodplain Development Manual (2005) and Practical Consideration of Climate Change – Floodplain Risk Management Guideline (DECC, October 2007) and the draft NSW Coastal Planning Guideline: Adapting to Sea Level Rise.

Consider the potential impacts of any filling on the flood regime of the site and adjacent lands



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

A Flood Investigations Report was prepared by consultant, Bewsher Consulting, for the project. This report is at **Appendix 13**.

The key findings of this report are provided below.

Council's 1995 Bonville Creek Flood Study mapping (Reference 4) shows that part of the area of Lot 112 is within the 100 year floodplain.

This portion of Lot 112 is part of a much broader floodprone area which is characterised in the flood study as a "Flood Storage" area.

The area is classified as a "High Hazard Flood Storage" area. This 'local' high hazard flood storage area is defined as the Lyons Road flood storage area for the purposes of this report.

The 1995 study report defined the 100 year flood level in the Lyons Road flood storage area as a level pool RL 4.1m AHD.

In the 2005 Floodplain Development Manual it also states that flood storage areas may also be delineated by their adverse impact on flood levels "if completely filled with solid material". Hence the impact of potentially filling such areas needs to be assessed.

Based on the percentage and water level increases presented in Tables 1, 2 and 3, it follows that the 100 year water level in Bonville Creek might potentially increase by 600mm if the rainfall intensities were to increase by about 40%.

Based on additional flow volume calculations, together with incremental flood depth calculations to determine the peak water level and impact on the flood storage area, it was concluded that:

The addition of 0.42m to the current flood storage area peak level of 4.1m generates a new RL of about 4.5m. It is therefore considered that the 100 year flood level in the Lyons Road flood storage area might increase to a maximum of RL 4.5m AHD if the rainfall intensities were to increase by about 40%. However since the upper bound percentage increase in the DECC 2007 guideline is 30%, it also follows that a flood level of RL 4.5m is conservative relative to the DECC upper bound guideline.

The 2009 study of Boambee Creek examined the impacts of all three sea level rise scenarios that are presented in the 2007 DECC guidelines.

Since the Boambee Creek and Bonville Creek (excluding Pine Creek) catchments are very similar in size and their ocean entrance conditions are similar it is considered that the likely impact of a 0.91m sea level rise would also be similar; i.e. about 0.6m. The resultant flood level in the Lyons Road flood storage area would therefore be $RL\ 4.1 + 0.6 = RL\ 4.7m\ AHD$.

For the purposes of this report, a value of RL 4.7m AHD has been adopted.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

The loss of floodplain storage was assessed in the report based on flood levels of 4.1m and 4.7m AHD, respectively, and known fill volumes for the proposed development, compared with approximate flood storage compartment over the respective fill ranges. It was concluded that:

the percentage loss of floodplain storage is very small and therefore there would effectively be no adverse impact on the flood regime.

The potential cumulative impact of other similar developments was assessed in accordance with requirements of the Floodplain Development Manual. It was concluded:

that the total length of development related fill works around the perimeter of the Lyons Road flood storage area would only be related to this subject development. Hence the overall potential cumulative loss of floodplain storage in the Lyons Road flood storage area would only be the 0.6%.

In relation to potential for flood damage, the report concludes:

All of the developable areas will have ground levels of at least RL 5.50m AHD and habitable floor levels will be not less than RL 5.80m AHD. This means that the minimum subdivision ground levels represent freeboards of 1.4 metres relative to the current 100 year flood level and 0.8 metres relative to the potential climate change 100 year flood level. It also follows that there will be nil flood damages for all flood events up to and including RL 5.50m AHD.

In relation to the consideration of larger flood events, the report concludes:

The 2005 Floodplain Development Manual also requires the consideration of floods bigger than the design (i.e. 100 year) event. However since the 1995 Bonville Creek flood study did not model events larger than the 100 year flood, the flood levels actually associated with such very rare events are unknown.

The principal planning issue associated with these rare events is whether evacuation routes are available. In this regard it is noted that the subdivision design is such that road levels are a minimum of approximately RL 5.50 AHD and constantly rising to the ridge line which corresponds to the alignment of Lyons Road. Hence there are no situations where residents might potentially be trapped through living in neighbourhoods where road access might be cut and hence access to higher flood free areas might be denied.

4.8.2 Groundwater

The DGRs issued for the project require:

7.3 Assess the impacts of the proposal on surface and groundwater hydrology and quality during both construction and operation of the site.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

A Preliminary Groundwater Assessment has been prepared by WorleyParsons for the project (refer to **Appendix 20**).

The Office of Water (DECCW) issued a submission accompanying the DGRs containing matters of interest that include groundwater issues. In summary, the DECCW submission required the groundwater assessment define the nature and profile of the groundwater regime at the site and provide an assessment of the potential for the proposed development to adversely impact on this regime. These submission requirements were discussed between Chris Thomas (WorleyParsons) and the submission author, Rod Browne (NOW), as it was considered that the defined scope of work for the groundwater report was too onerous. Subsequent email correspondence between Chris Moon (WorleyParsons) and Rod Browne (NOW), dated 28 September 2009, requested comments regarding:

The revised scope of groundwater investigations. This being four monitoring wells that will provide groundwater levels and characteristics at key locations. The monitoring and testing regime will be limited to establishing groundwater table level and basic physico and chemical parameters (pH, salinity, temp and dissolved oxygen). It is anticipated that three months of data will be collected prior to submission of the Project Application. This data will feed into the appropriate design of future landform and WSUD measures and ensure that groundwater is not adversely impacted.

A letter from Rod Browne (NOW) addressed to Chris Moon (WorleyParsons) dated 2 October 2009 provided a response to his as follows:

The discussions we had on piezometer installation and groundwater monitoring were satisfactory. The key outcome is to ensure the general water table across the site doesn't decline beyond normal seasonal fluctuations, to ensure that any groundwater dependent vegetation in the surrounding national park is not affected, particularly during dry seasons. IWCM and Water Sensitive Urban Design practices employed for the development should factor in the possible consequences on the groundwater regime.

Accordingly, the scope of the groundwater report was revised from the DGRs in line with the scope detailed above, to include the following:

- *Installation of four groundwater monitoring wells at the site;*
- *Groundwater elevation monitoring and sampling for physio-chemical testing;*
- *Development of groundwater profile;*
- *Determination of potential for groundwater / WSUD system connectivity and identification of associated mitigation measures;*

Analysis was carried out of the baseline groundwater conditions, specifically:

- *current water table elevation*



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

- *groundwater flow directions*
- *inferred quality determined from the monitoring.*

WorleyParsons conducted a desktop review of the Phase 1 Environmental Site Assessment report prepared by Coffey Geotechnics (refer to **Appendix 18**) and the Geotechnical and Acid Sulphate Soil Assessment report (refer to **Appendix 19**).

WorleyParsons recommendations arising from a review of these reports that have implications for groundwater comprise:

- *During the field investigation for that investigation, a portion of land on the western boundary was being excavated for select fill and replaced with imported fill of unknown source which did not appear to be uniformly well compacted. It is understood that during site regrading that this fill will be removed from site, however if it is to remain then the soil should be tested to confirm that the fill does not contain leachable contamination that could impact on regional groundwater quality.*
- *The ASS assessment identified material classified as Potentially Acid Sulphate Soils (PASS) in the southwest corner of the site. During construction, when the soil is exposed to the air, PASS can oxidise and produce sulphuric acid and result in acidic runoff, if the PASS soils are not stabilised. An ASS management plan should therefore be prepared for the construction phase to stabilise the PASS soils that have been exposed to oxygen, so that acidic run-off does not impact on regional groundwater.*

(Refer to **Section 4.3.1** on Contamination and **Section 4.3.2** on Acid Sulphate Soils).

Rainfall data was obtained from the Bureau of Meteorology for the Coffs Harbour area for dates over the monitoring period.

Falling head hydraulic conductivity tests were conducted to estimate the near-surface hydraulic conductivity of the soils.

In summary, the hydraulic conductivity (K) values of the near-surface soils in the upper 1m of the site is typically in the range of 10-6m/s and 10-6m/s (approximately between 10-1m/d and 10-3m/d) corresponding to clayey silt to silty clay soils.

The report recommends that, if infiltration forms of WSUD are proposed, then the average near-surface hydraulic conductivity in this range should be used over the whole site.

Water quality test results across the four boreholes on site revealed that the “groundwater is relatively low salinity such that it would be suitable for a potable water supply. The pH of the groundwater was in the range of 5.6 to 6.8 which indicates that it is slightly acidic, slightly more acidic than potable water supply target range of a pH of 6 to 8”.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

Groundwater levels in each monitoring well were manually monitored on a fortnightly basis and the levels recorded using PT/DLs datalogger every ten minutes for 3 of every 4 boreholes. The results of this monitoring indicate that, following heavy rainfall, the groundwater level can rise to within 0.5m of the surface. A reduction in level can take between 2 days and two weeks.

The implications of the proposed development on groundwater are set out below.

Development of the site is likely to change near surface soil structure even in unsealed areas effectively lowering the vertical hydraulic conductivity and, by implication, rainfall infiltration. This will have the effect of lowering recharge to groundwater. Previous clearance of indigenous vegetation however, has probably allowed greater recharge to groundwater since the time of clearance to the present i.e. there are two competing effects which will take some time to reach a new equilibrium. It is unlikely however that development will have a demonstrable effect on groundwater dependent vegetation associated with the adjacent riparian zone or the national park.

The implications of groundwater on site development are set out below.

Cuts made for site levelling works may encounter surficial groundwater particularly after high intensity or prolonged rainfall events. It is recommended that spoon drains be installed at the base of the cuts to manage this eventuality. Controls would need to be put in place to minimise overland flow of sediment laden water caused by earthworks from entering any surface water drainage.

If there is development on the site, reduced infiltration would mean groundwater would not be expected within 1m of the surface. If the base of the spoon drain is above 5m AHD the probability of groundwater intersection is assessed to be low.

The stability of any cuts and retaining walls should consider the presence or the potential presence of surficial groundwater.

Because groundwater quality beneath the site is potable, water produced by site works could be released to surface drainage without treatment unless contaminated by site work activity.

(Note: the base of all proposed WSUD infrastructure measures is set above 5m AHD).

The implications of Groundwater on WSUD are set out below.

Site development is likely to lead to reduced infiltration which in turn would affect surficial groundwater levels in the short term. However, as stated in Section 5.3, previous clearance of indigenous vegetation has probably increased infiltration of rainfall into the near surface soil profile causing short term saturation which dissipates over time as a result of deeper infiltration, evapotranspiration and possibly, a contribution to surface drainage i.e. a new equilibrium will be established between post vegetation clearance and residential development.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

The expected implication of groundwater on WSUD is for minimal impact with the exception of relatively short term saturation of the soil profile following rainfall events.

The need for additional investigations is described below.

It is recommended that no additional investigation is required with respect to answering the NSW Office of Water's main groundwater concern [Note: this is detailed further above].

It is recommended, however that the four monitoring wells established at the site (MW1-4) be monitored monthly during construction and for 12 months post development so as to assess impact the development may have on groundwater in the immediate vicinity of the site. The results of monitoring should be reviewed by a competent groundwater practitioner and recommendations made on modifying, or the need for, further groundwater monitoring.

4.8.3 Stormwater and Water Sensitive Urban Design

The DGRs issued for the project require the following:

7. Water Quality Management

7.1 Address and outline measures for Integrated Water Cycle Management (including stormwater) based on Water Sensitive Urban Design principles which addresses impacts on the surrounding environment, drainage and water quality controls for the catchment, and erosion and sedimentation controls at construction and operational stages.

7.2 Outline management of site drainage and runoff, and the impact on water courses, including consideration of aquatic and riparian environment and proposed buffer zones.

7.3 Assess the impacts of the proposal on surface and groundwater hydrology and quality during both construction and occupation of the site.

A Stormwater Management Strategy has been prepared for the proposed development based on water sensitive urban design principles. This Stormwater Management Strategy report is at **Appendix 14**. It contains a riparian corridor assessment for the watercourses located on the site as follows:

All controlled development on or under waterfront land is regulated by the Water Management Act (WMA) 2000. The Act aims to minimise impacts on waterfront land and water courses and requires buffer zone, called the riparian corridor, between the waterfront and the adjacent development.

The width of a riparian zone as specified by DWE depends on the order of the watercourse / water body that fronts the site. Water courses can be ordered according to the Strahler method as first, second and third order and so on.

DWE recommends core riparian zone (CRZ) widths for various order water courses, as classified by the Strahler system, in their document Guidelines for controlled activities, Riparian corridors, February 2008. The CRZs widths are:



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

- *First order, 10m;*
- *Second order, 20m; and*
- *Third order, 20-40m.*

In order to assess the riparian corridors located on the subject site the following has been undertaken:

- *Review of topographic mapping;*
- *Detailed site inspection; and*
- *Merit based assessment.*

Interrogation of local mapping provides an initial assessment of the stream order of the watercourses located on site. The assessment has been undertaken utilising the Strahler methodology as outlined in Section 3.7.1. In our opinion the subject site contains one watercourse that would be classified as first order [running north-south] and one water course that would be classified as second order [running east-west].

The proposed development incorporates a stormwater treatment train having the following measures.

It is proposed to utilise 5kL rainwater tanks allocated to each residential dwelling and medium density dwelling to collect and capture rainwater for re-use in irrigation, toilet flushing and in the laundry.

The proposed stormwater strategy includes the following bioretention systems:

- *6 downstream bio-retention basins;*
- *A 4m wide perimeter bio-retention swale adjacent to the perimeter road; and*
- *A 4m wide bio-retention swale located centrally within the spine road.*

GPT's are proposed at the end of the main stormwater lines and will be located adjacent to the proposed bioretention basins. GPT's capture litter, coarse sediment, some nutrients, oils and greases hydrocarbons).

The objectives of the Coffs Harbour City Council's Water Sensitive Urban Design (WSUD) Policy have been incorporated into the proposed water management strategy.

A summation of the stormwater strategy and its key features and benefits is provided below.

A best practice water sensitive urban design strategy has been formulated in concert with the ecological and landscape design experts to provide an integrated water management strategy which significantly improves the runoff management and adds value in terms of ecological outcome and visual amenity of the area. The stormwater management strategy proposed for the development which is based on water sensitive urban design principles including:



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

- *rainwater tanks to reuse runoff which reduces the runoff volume and pollutant loads and slows down the flow;*
- *bio-retention swales along the roads to treat and slow down runoff from lots and roads, and to promote subsurface flows;*
- *gross pollutant traps to remove sediment, debris, organic matter and litter;*
- *rehabilitate riparian corridors with native vegetation to stabilise banks and provide significantly improved habitat value;*
- *provide stormwater quality treatment, storage and promote infiltration in bioretention systems of runoff to balance the surface/subsurface flows and slow down flows; and*
- *proposes a stormwater monitoring program that will ensure the long term objectives of sustainable development are being achieved.*

The strategy would significantly improve the stability, natural function and water quality of the downstream creek systems. This would contribute to the long term improvement in these receiving waters.

The development proposed would significantly reduce runoff pollutant loads below existing levels thereby ensuring no net increase in nutrient/pollutant loads entering watercourses. Best management practice soil and water management practices in accord with the Managing Urban Stormwater guidelines would ensure no net increase in runoff pollutant loads during construction.

Water quality modelling results show that the following two water quality objectives are met:

- *No increase in the pollutant export loads from the existing to the post developed state; and*
- *Treatment requirements, i.e. an 80% reduction in TSS, 65% reduction in TP and 45% reduction in TN when comparing the proposed development (no treatment) and proposed development (with treatment).*

This combination of measures will achieve better than industry best management practice and will contribute significantly to the long term improvement in receiving water quality.

4.8.4 Stormwater Drainage

The Concept Stormwater Plan contained in the engineering drawings at **Appendix 21** implements the recommendations for Water Sensitive Urban Design measures contained in the Stormwater Management Strategy prepared by WorleyParsons. It shows the proposed location of bio-retention basins, bio-retention swales, grassed table drains, stormwater drainage lines, stormwater pits, stormwater outlets and Gross Pollutant Traps.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

4.9 Utilities and Infrastructure

The DGRs state:

4.1 Address existing capacity and requirements for the development for sewerage, water, electricity, waste disposal, telecommunications and gas in consultation with relevant agencies, Identify and describe staging, if any, of infrastructure works.

4.2 Address and provide the likely scope of a planning agreement and/or developer contributions with Council/Government agencies (including reference to the North Bonville Developer Contributions Plan).

An Engineering Services Report has been prepared by Geoff Slattery and Partners. This report is at **Appendix 22**.

Engineering drawings, comprising the following drawings, have also been prepared by Geoff Slattery and Partners, and are contained at **Appendix 21**.

- Concept earthworks
- Concept Road Layout
- Road Profiles
- Concept Stormwater
- Concept Sewer
- Concept Water
- Concept Sediment and Erosion
- Concept Staging
- Concept Staging Earthworks
- Overall Development (Plan of Subdivision)
- Traffic Management

4.9.1 Existing and Proposed Capacity

The following is a summary of the key water supply and sewerage capacity issues:

- A 150mm water supply main has been constructed by Council to the boundary of the proposed development.
- *Water supply is available to the site in sufficient volume and pressure and can be reticulate to all proposed lots.*



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

- *Sewer connection is available to the site with adequate capacity in the downstream system for the demand.*
- All lots can be sewered by gravity mains and connect to the trunk main, except for 17 allotments in the south-west that will not gravitate to the system. *For these lots it is proposed to install a low pressure system which utilises a small household pump at each lot and a common rising main to a discharge manhole.*

4.9.2 Requirements for Development and Staging

Refer to **Section 2.6** and **Appendix 8** regarding the proposed Staging Plan, and **Appendix 21** regarding the Concept Staging Earthworks Plan.

4.9.3 Planning Agreement and/or Developer Contributions

Refer to **Section 3.9.1** regarding the Coffs Harbour City Council's North Bonville Developer Contributions Plan.

4.10 Landscaping

4.10.1 Landscape Concept Masterplan

A Landscape Concept Masterplan and landscape design report has been prepared for the proposed development by Terras Landscape Architects. This landscape package is at **Appendix 11**.

The landscape design report describes the site as follows:

The site is currently comprised of cleared pastures with remnant vegetation of trees and shrubs occurring along drainage lines. The majority of the site is surrounded by vegetation comprised of Forest some of which belongs to the Bongil Bongil National Park.

Overview of landscape design

The landscape design addresses the street tree selection, the treatment of bio-retention swales and stormwater detention basins, pedestrian access and walking trails, as well as outlining long term management and maintenance issues.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE



Figure 22: Proposed Landscape Concept Masterplan (reproduction)

Street tree selection

The trees suggested for the Sawtell Park Estate Stage 2 have been adopted from the Coffs Harbour Street Tree Masterplan 1999 using the selection for Coastal Villages and street tree selection as included in Appendix 3 of this document.

The main road will continue the street tree planting of the adjoining subdivision.

Bio-retention swales and stormwater detention basins

The main road bio-retention swale is a rocklined swale with swale planting such as *Lomandra longifolia*, *Ficinia nodosa* and *Carex apressa*.

There are six stormwater detention basins set out for the subdivision.

While Basins 4, 5 and 6 are located to the eastern and southern side of the subdivision, Basins 1, 2 and 3 are more central and therefore have a larger obligation for acting as open space within the subject site. The turfed sections of the basins will also allow these areas to be used as casual open play and kick around areas.

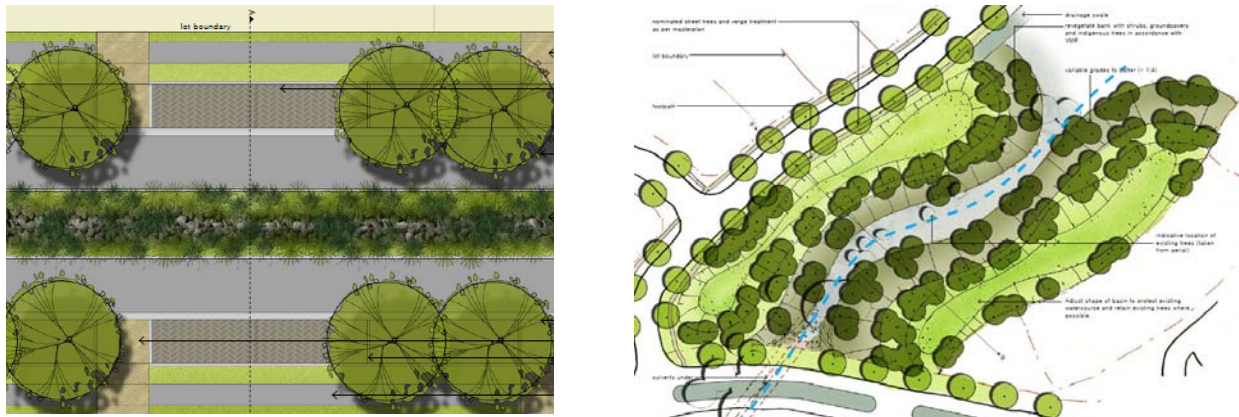


Figure 23: Bio-retention swale in collector road (left) and bio-retention basins next to watercourse (right)

Pedestrian access

The proximity of the site to the National Park is a major incentive for the subdivision's pedestrian network to be linked with existing walking trails. The pedestrian network consists of footpaths as part of all road sections as well as walking trails and supplementary boardwalks to allow controlled access to the National Park and riparian zone. Fire access trails have the further function of pedestrian walking trails. Lockable gates will allow the fire brigade to access fire trails. Additional bollards to the fire trails will permit pedestrian access but prevent motorbikes from entering the National Park.

Revegetation

While some areas of revegetation can be nominated at this stage, others will fall into the adaptive management scheme as outlined in the Vegetation Management Plan. The landscape masterplan identifies all banks constructed as part of the stormwater detention works to be revegetated.

Bushfire management

For planting within the APZ and future maintenance, the following points are to be implemented:

- 1. selection of plants suitable within fire prone areas*
- 2. removal of limbs and manage understorey by regular slashing*



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

3. supplement existing vegetation with indigenous trees and groundcovers and low grasses in accordance with bushfire assessment and VMP. Allow a minimum 2m gap between canopies of nearby trees to avoid the transfer of fire.

Conclusion

The landscape masterplan for Sawtell Park Estate Stage 2 puts together a scheme for an attractive subdivision benefitting from the amenity of the adjoining National Park and reflecting the street tree character of other coastal towns within the Coffs Harbour City Council area. The use of native species to supplement existing vegetation will strengthen the local character and keep irrigation and maintenance issues to a minimum.

The Landscape Concept Masterplan has been developed in accordance with the Coffs Harbour Open Space Strategy; North Bonville DCP; the Coffs Harbour Landscape Guidelines; and Coffs Harbour Council Policies.

Generous opportunities have been provided for soft landscaping on site, with the central swale to the entry road, landscaped road verges to distinguish the various road hierarchy levels, communal open space areas for recreation, and rehabilitation of EEC corridors along the creeks.

Significant effort has been undertaken in the landscape design to achieve an attractive outcome with the design and planting of stormwater basins and their setting. These basins and swales will significantly enhance the visual amenity of the subdivision, create the opportunity for controlled pedestrian access adjacent to these facilities, create potential new habitat areas, and significantly improve the water quality of the existing watercourses.

4.10.2 Long Term Management and Maintenance

The Landscape Design Report at **Appendix 11** describes the arrangements for maintenance and maintenance funding for public areas of the site, as follows:

A maintenance period of 52 weeks for all proposed public reserve areas will be undertaken by the contractor engaged by the developer before handing over to Council. The system adopted by Council is for the land to be dedicated as public reserve at time of the release of the linen plan and that a maintenance bond (bank guarantee) be allocated for the maintenance period. At the completion of the 52 week period, if all work is deemed to be acceptable, the maintenance bond will then be returned.

In order for the eastern area of the subject property zoned 7(a) Environmental Protection to be added to the Bongil Bongil National Park, there is no maintenance to be undertaken by the developer. The land will be handed over to the NSW Department of Environment, Climate Change and Water (National Parks and Wildlife Service) at an agreed time.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

In respect of the rehabilitation of the riparian areas, the developer will undertake Primary Weeding and establish Revegetation Planting for rehabilitation, in accordance with the Vegetation Management Plan (VMP) at **Appendix 16**. Any Secondary Weeding in accordance with the VMP will be undertaken by Council.

4.11 Management

The DGRs state:

9. 4 Address impacts of the development on the surrounding ecologically sensitive area including Bongil Bongil National Park and the Bonville Creek /Pine Creek Estuary system. The proposal should specifically address potential issues associated with informal access, weed invasion, rubbish dumping and domestic animals (including measures to protect koalas).

4.11.1 Informal Access

As the subject site is located adjacent to Bongil Bongil National Park, an effort has been made to discourage informal public access by providing a fence to the boundary of the National Park, and providing controlled vehicular and pedestrian access at certain points. Vehicular access is only for emergency vehicle access for bushfire purposes. The pedestrian access points are facilitated through bollards and links to an existing fire trail.

The public reserve areas within the subject site will have a combination of pedestrian trails and boardwalks to provide controlled public access, discouraging informal access that may impact on ecological and visual amenity values.

4.11.2 Weed Invasion and Rubbish Dumping

The potential for weed invasion to areas of the Riparian Corridor has been addressed in the Vegetation Management Plan (VMP) (refer to **Appendix 16**) and the Ecological Assessment report (refer to **Appendix 15**). The VMP indicates that the existing riparian corridor consists of both native and exotic weeds which it attributes to cattle grazing. The VMP provides an inventory of existing weed species present and provides a plan for weed control. The weed control program is divided into primary and secondary weed control. The “primary” control refers to the initial removal of weed species, while “secondary” control refers to the subsequent maintenance required to ensure removal of weeds species. The secondary weeding process occurs for up to 5 years from primary weeding.

The report indicates that the proposed development may have the following impacts as a result of rubbish dumping:

Occupation of the proposed development may cause an increase in local populations of invasive pest species (e.g. rats, cane-toads, foxes) and invasive weeds. Residents of the proposed development may dump rubbish and garden wastes into or near the National Park



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

encouraging pest species and allowing the release of weed species, parasites and diseases into the National Park.

A fence is proposed at the western and southern boundaries of the site to Bongil Bongil National Park. This will prevent the dumping of rubbish and the spread of weeds into the National Park.

4.11.3 Domestic Animals

An Ecological Assessment was prepared by James Warren and Associates for the proposed development. This report is at **Appendix 15**. The report indicates that the proposed development may have the following impacts from domestic animals:

Fauna

Domestic dogs and cats prey on native fauna and may have significant impacts on the populations of native species;

Development of the Subject site may favour native and introduced disturbance adapted competitors. For example, Cane toads may out-compete other Amphibians and Reptiles, aggressive open country birds species (eg Noisy miner, Crow, Pied currawong) may out-compete other Birds, and non-native mammals (Black rat and House mouse) may out-compete other native small mammals);

Bongil Bongil National Park

Occupation of the proposed development may cause an increase in local populations of invasive pest species (e.g. rats, cane-toads, foxes) and invasive weeds. Residents of the proposed development may dump rubbish and garden wastes into or near the National Park encouraging pest species and allowing the release of weed species, parasites and diseases into the National Park.

Domestic animals may predate on or disturb fauna within the National Park if they are allowed to roam.

The following amelioration measures are proposed in the Ecological Assessment report:

Fauna

Landowners should control dogs and cats. All animals should reside within fenced enclosures and be on a leash when outside of the enclosure. Consideration should be given to banning cats to reduce likely impacts on local fauna;

Bongil Bongil National Park

Regulation should be formulated regarding domestic dogs, within the residential development site (i.e. dogs should be contained within fenced yards and/or leashed at all times;



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

4.12 Noise

The DGRs state:

10.1 Address potential noise impacts, in particular road traffic noise, for future residents and appropriate mitigation measures.

4.12.1 Noise from Traffic

The subject site is located approximately 180 metres south of the existing intersection of Bambara Drive with Lyons Road. This means that any dwellings in the proposed subdivision will be largely buffered from noise impacts emanating from Lyons Road.

As the proposed collector road (an extension of Bambara Drive) will only serve the proposed development, this will result in limited traffic movements, which, in turn, suggests that noise impacts from traffic on the proposed dwellings will be low. (Refer to the Traffic Assessment at **Section 4.7** and **Appendix 23**).

All proposed low density dwellings have generous front setbacks from all proposed roads (minimum 8 metres). The medium density dwelling precincts are served by their own road. It is recommended that any bedrooms in these medium density precincts near Bambara Drive have their bedrooms sited away from the road.

The east-west riparian corridor provides an additional buffer to any dwellings situated south of this watercourse.

There will be increased impacts from traffic noise on existing adjacent dwellings. However, the subdivision currently under construction north of the site and also owned by the Borsatos (ie Utila Pty Ltd) was approved with prior knowledge of the future extension of Bambara Drive and additional areas of residential subdivision.

4.12.2 Noise from Construction

Any noise emanating from construction of the proposed subdivision (use of earthmoving equipment, etc) will be required to meet minimum standards set by the Department of Planning in Conditions of Consent for any Approval issued for the Project Application.

Refer to the Draft Statement of Commitments at **Appendix 25** for related noise mitigation measures.

4.13 Social

There are significant social benefits afforded by the proposed subdivision and future dwellings for future residents and the local community. The proposed subdivision will provide a range of allotment sizes and housing choice opportunities, with low density lots ranging in size from 460 sqm to 1,040



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

sqm. The potential lots accommodated in the medium density housing precinct will be smaller to accommodate attached dwellings. The provision of medium density opportunities will ensure that smaller, more affordable dwellings are able to be included in the development, providing greater housing choice.

Features of the proposed development that will benefit the residents of the development and the surrounding local community include:

- Provision of significant areas of open space.
- Potential location for community use building.
- Potential location for a children's playground, to a future design by Council.
- Bus stops located in the proposed subdivision so that all dwellings will be sited within a 400m walk from a bus stop.
- Bus services providing links into Sawtell, Toormina and Coffs Harbour city centre.
- Pedestrian footpaths provided for all new roads.
- Walking trails / boardwalks provided along riparian corridor and public open space reserve.
- Pedestrian connections to fire/walking trails in Bongil Bongil National Park

Section 1.6 provides an overview of the surrounding services and facilities. These include a local shopping centre comprising a supermarket and other shops; primary schools; playing fields; golf courses; and other facilities nearby. There are also local shops situated along First Avenue in Sawtell (including the Sawtell Foodstore).

Sawtell train station is located further north-east of the site, providing train services north and south along the coast.

The subject site is situated in close proximity to the Pacific Highway, providing easily accessible links to the Coffs Harbour City Centre and further north and south along the coast.

A bus service currently runs along Lyons Road. This service provides links between Sawtell, Toormina and Coffs Harbour City Centre (via Southern Cross University and Coffs Harbour Airport). Key bus stop locations include Bayldon Community Centre, Boambee Central Shops, Coffs Harbour Hospital, and Sawtell Railway Station). Lyons Road is served by Sawtell Coaches including bus routes 362 and 364. Route 364 operates hourly on weekdays between the hours of 6:20am and 6:51pm and selected hours on weekends. It is proposed to re-route one of all of these bus services to serve future residents of the proposed subdivision.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

4.14 Economic

The development of the land in accordance with the proposed subdivision and the subsequent development of dwellings will contribute to economic development and jobs growth in the Coffs Harbour area. The future residents of the proposed development will also contribute to the local economy by patronising local services and facilities. .

4.15 The Public Interest

Coffs Harbour City Council has identified the importance of the subject land for residential development and has therefore zoned a large portion of the site for residential purposes. This has been supplemented by the preparation of a site-specific DCP and developer contributions plan to facilitate development of the site. All these actions point to the public interest being served by the development proposed under this Project Application.

The proposed development will provide for much-needed housing in an accessible location connected to existing infrastructure (water, sewer, roads, etc). Allotments will be provided that cater for a range of dwelling sizes and types. The subdivision design appropriately respects the topography of the site and lots will be orientated to take in views of open space and bushland. The development will provide significant areas of public open space, potential children's playground and a site for a community use facility.

The proposed development includes the public dedication of land currently zoned Environmental Protection 7A Habitat and Catchment Zone to NPWS/DECCW as an addition to Bongil Bongil National Park, thereby ensuring the environmental values of the land are protected into the future. The proposal also involves the rehabilitation of degraded EECs along the riparian corridors by significant areas of planting in accordance with a Vegetation Management Plan.

Overall, the proposed development is in the public interest and will help fulfil the Council's and the State Government's planning objectives for the area.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

5. CONSULTATION

The DGRs require the following in respect of consultation:

You should undertake an appropriate and justified level of consultation with the following agencies during the preparation of the environmental assessment.

Agencies and authorities

- *Coffs Harbour City Council*
- *Department of Climate Change*
- *Department of Primary Industries*
- *NSW Rural Fire Service*
- *Department of Water and Energy*
- *Roads and Traffic Authority*
- *State Emergency Service*
- *Northern Rivers Catchment Management Authority*
- *Local Aboriginal Land Council/s and other Aboriginal community groups*
- *Relevant infrastructure providers*

Public

Document all community consultation undertaken to date or discuss the proposed strategy for undertaking community consultation. This should include any contingencies for addressing any issues arising from the community consultation and an effective communications strategy.

In support of its approach to consultation the Department of Planning has prepared *Guidelines for Major Project Community Consultation*, which have been observed as part of this Project Application.

As discussed in Section 2.2, above, the DGRs were issued for the project with accompanying agency comments from the following agencies:

- Coffs Harbour City Council
- NSW Rural Fire Service
- NSW Department of Primary Industries
- Department of Water and Energy



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

- Department of Environment and Climate Change

These agencies will also be forwarded the full EA report for comment when it is lodged with DoP.

In addition, the following individual targeted consultation was undertaken with the following agencies during the preparation of the EA report:

- DoP
- National Parks and Wildlife Service (NPWS)
- Office of Water (formerly Department of Water and Energy)
- Coffs Harbour City Council (CHCC)
- CHLALC and other aboriginal representative groups and agencies. (Refer to Appendix 2 in the Cultural Heritage Assessment for details).

The Project Application will be placed on public exhibition for a period of a minimum of 30 days by DoP. This will enable agencies and members of the public to make written submissions on the Project Application.

The proponent will be forwarded all submissions by DoP and will be requested to prepare a *Preferred Project Report*, responding to each issue raised by submissions and, where relevant, makes changes to the project to minimise impacts. A Consultation report will also be prepared in accordance with the requirements of DoPs consultation guidelines.

It should be noted that Coffs Harbour City Council has already undergone a public exhibition process in relation to the rezoning of the land to facilitate residential use on the site. In addition, Council invited public agency and community comments on the site-specific planning documents, i.e. the North Bonville DCP and the North Bonville Developer Contributions Plan.

5.1 Record of Consultation

A record of consultation undertaken to date for the project is at **Appendix 4**.

A record of consultation undertaken with infrastructure service agencies is contained in the Engineering Services report at **Appendix 22**, while a record of consultation related to the cultural heritage report is contained at **Appendix 12**.

A summary of the key issues that were raised during agency consultation, and a demonstration of how each issue has been addressed by the project, is set out in the table below.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

Theme and Agency	Issue	How Project addresses the issue	Refer to
Infrastructure:			
Coffs Harbour Water	- Clarify connection locations and proposed service demand - Existing trunk water main and sewer to which the development connects	Informed servicing design for proposed subdivision.	Engineering Services Report at Appendix 22 and engineering drawings at Appendix 21 .
Country Energy	Preliminary discussions on electrical service supply	Informed servicing design for proposed subdivision.	As above
Telstra (during previous DA)	During previous DA Telecom reticulation issues were discussed regarding construction of Bambara Drive and need for future extension to proposed development.	Informed servicing design for proposed subdivision.	As above
Transfer of 7A land to NPWS			
NPWS CHCC	In principle agreement by Borsato to dedicate at no cost to NPWS the 7A zoned portion of the site, for inclusion in Bongil Bongil National Park.	Plan of Subdivision notates land to be dedicated to NPWS.	Meetings with NPWS & CHCC - Record of Consultation at Appendix 4 .
Riparian corridors, groundwater			
NOW	- Agreement from NOW on stream corridor classifications. - Need for sediment and control plan. - Water quality impacts on National Park and ensure water management structures are	Noted Refer to Appendix 21 for sediment and control plan. Same water quality as pre-development will be achieved. Six water management structures are proposed to meet	Correspondence with Office of Water CHCC - Record of Consultation at Appendix 4 .



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

Theme and Agency	Issue	How Project addresses the issue	Refer to
	- not oversized. - Need to ensure stormwater structure minimise interception of groundwater flow. - Creek crossing – need to consider stability in case of major flood event. - Support discussions on piezometer installation and groundwater monitoring.	water quality targets. The base of the bio-retention basins is to be minimum 5m AHD. Subject to detailed design stage. Noted.	
Stormwater Plan			
CHCC	- Phone calls with CHCC. - WorleyParsons sent email to CHCC with no response. - Meeting held between John Rowe (CHCC) and Geoff Slattery (project consultant engineer). - Council do not support central road and perimeter and swales despite their WSUD policy. They would prefer treatment at end of line.	No change to stormwater strategy plan as the bio-retention swales and bio-retention basins are consistent with Council's WSUD policy; achieve water quality targets; and have visual amenity benefits.	Correspondence with CHCC - Record of Consultation at Appendix 4.
Range of planning issues			
CHCC	- Clearly define type of approval being sought. - Define built form controls. - Clearly define areas to be dedicated to	This has been defined. Built form controls have been developed and are at Appendix 9.	Correspondence with/from CHCC NPWS - Record of Consultation at Appendix 4.



WorleyParsons

resources & energy

Incorporating
Planning Workshop Australia

UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

EcoNomics

Theme and Agency	Issue	How Project addresses the issue	Refer to
	Council or NPWS.	Areas to be dedicated to CHCC and NPWS have been clearly defined on the Plan of Subdivision.	
Cultural Heritage	Refer to the Cultural Heritage Management Report for record of consultation.	-	Cultural Heritage Management Report – refer to Appendix 12 .



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

6. DRAFT STATEMENT OF COMMITMENTS

The DGRs state:

8. An assessment of potential impacts of the project and a draft Statement of Commitments, outlining environmental management, mitigation and monitoring measures to be implemented to minimise any potential impacts of the project.

Refer to Draft Statement of Commitments at **Appendix 25**.

6.1 Environmental Management

A meeting was held on 22 April 2009 regarding the “*status and future for certain lands adjoining Bongil Bongil National Park*”. Coffs Harbour City Council promoted the use of a condition of approval that would be applied to another landholding for the transfer of environmental protection land at no cost to NPWS. This condition is discussed at **Section 5**. It is proposed that a similar condition be applied to the proposed development, as follows:

This development does not create a dwelling entitlement for [Lot 112 DP 107391] currently zoned 7A Environmental Protection under Coffs Harbour LEP 2000.

*Subject to formal approval from the Minister for Environment, this lot is to be **donated** to the Foundation for National Parks and Wildlife (then transferred to the Department of Environment and Climate Change to be managed for conservation) in accordance with the undertaking given in a letter from [Utila Pty Ltd] to [the Department of Planning dated [insert date]].*



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

7. CONCLUSION

The Project Application is for residential subdivision in the Coastal Zone involving in excess of 100 lots on **Lot 112 DP 1073791, Lyons Road, North Bonville**. The proposed development comprises **one-hundred-and-fifty-one (151) low density residential Torrens Title allotments, and three (3) Community Title land parcels for medium density housing** that will accommodate future subdivision into approximately forty-two (42) medium density allotments.

The Project Application also involves the proposed development of **six (6) bio-retention basins, bio-retention swales, rehabilitation of the riparian corridor, vehicular access to fire trail, footpaths, street tree planting, general landscaping** and indicative locations for a community use building, children's playground, and a village green.

The Project Application proposes the dedication of that portion of the site currently zoned Environmental Protection 7A Habitat and Catchment to NPWS/DECCW as an addition to Bongil Bongil National Park. This will occur at no cost to NPWS/DECCW.

The suitability of the site for residential development has been endorsed by:

- The State Government in the *Mid North Coast Regional Strategy* by nominating the site as an urban growth area;
- Coffs Harbour City Council in its *Interim Coffs Harbour "Our Living City" Settlement Strategy* by identifying the site as "Zoned Urban Area – Developed";
- The State Government and the Council zoning of the majority of the site for residential purposes under Coffs Harbour City LEP 2000; and
- The Council adopting a residential development strategy for the site under a site-specific DCP.

The Subdivision Concept Plan has been informed by a rigorous site analysis planning exercise based on information from specialist reports that collectively determined all spatial constraints and opportunities, and underscored other constraints that impact on the way the site should be developed or managed.

The subject site is currently predominately zoned **Residential 2A Low Density Zone** and **Environmental Protection 7A Habitat and Catchment Zone**, with a smaller portion zoned **Open Space 6A Public Recreation** under LEP 2000.

The proposed residential subdivision will occupy land that is currently cleared of vegetation, with the exception of the proposed collector road and stormwater infrastructure.



UTILA PTY LTD

ENVIRONMENTAL ASSESSMENT FOR PROJECT APPLICATION

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 112 DP 1073791, LYONS ROAD, NORTH BONVILLE

Over 40% of the site will be retained as open space and/or dedicated for environmental protection purposes. The proposed development will also involve significant rehabilitation of an existing Endangered Ecological Community (EEC) in the riparian zone. The Freshwater Wetland EEC is severely degraded due to cattle grazing. **Approximately 4.22ha of revegetation/regeneration works are proposed to offset the removal of 0.3554 hectares of degraded Freshwater Wetland EEC.**

The establishment of Core Riparian Zones for existing watercourses on the site and the rehabilitation of riparian planting will ensure that the visual amenity and ecological value of the corridor will be significantly enhanced. Furthermore, the establishment of six bio-retention basins and swales across the site, in addition to proposed street tree planting consistent with the Coffs Harbour Street Tree Masterplan 1999, will further contribute to the high quality presentation of the residential subdivision.

The proposed subdivision layout appropriately respects the topography of the site and dwelling lots are orientated for solar access and to take advantage of views to open space and bushland. Streets define an edge between development and open space/areas of ecological value.

Building footprints have been established for each low density and medium density residential allotment to define the maximum building footprint. Built form controls have also been prepared to guide the future development of housing on the site.

The proposed residential subdivision will be staged in a pattern that represents the most economical and efficient solution, so that all roads and servicing infrastructure are provided when needed. The proposed residential subdivision and associated works represents a sustainable solution to the development of the site.

It is recommended that the Project Application is approved.