Design Unit, Engineering and Operations, Tweed Shire Council

EVIRON ROAD QUARRY AND LANDFILL PROPOSAL

CONCEPT PLAN, STAGE 1 APPLICATION, AND PRELIMINARY ENVIRONMENTAL ASSESSMENT

April 2009

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Document History

Version	Date	Comments
Draft - Preliminary Environmental Assessment	October 2007	Draft report to support Planning Focus Meeting
Final Draft - Preliminary Environmental Assessment	January 2008	Amended PEA following DoP comments from Planning Focus Meeting
Final - Preliminary Environmental Assessment	February 2008	Updated following inclusion of full Domestic Solid Waste report into Appendix 2
Final - Preliminary Environmental Assessment	April 2009	Updated to reflect amended Stage 1 Project Application

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Executive Summary

Tweed Shire Council is proposing to establish the Shire's new landfill facility at Eviron Road, Eviron, located within the Tweed Shire Local Government Area. A Concept Plan is proposed which includes development of two (2) quarries followed consecutively by three (3) landfills and includes necessary operational infrastructure such as haul roads, a dedicated acid sulphate soils treatment area, and other service buildings/storage facilities as required. The Concept consists of two (2) stages. Approval for Stage 1 (described below) of this Concept Plan is being sought concurrently with this Concept Plan application.

The proposed quarry and landfill sites fall entirely within Council owned land zoned 5(a) Special Purpose (Garbage Depot) under the Tweed Local Environment Plan 2000 (TLEP). The Concept involves working an existing approved quarry (known as Quirks Quarry) until 2011, then establishing two new quarry sites (known as West Valley and North Valley) and working these consecutively until about 2040. Each of the three quarry sites are intended to be used progressively as Tweed Shire Council primary regional putrescibles landfill site.

The Concept Plan includes two major stages. Stage 1 includes construction of a haul (or link) road from the existing Stott's Creek Landfill Facility to the proposed Eviron Road Quarry and Landfill site, landfill within the existing Quirks Quarry site, and quarrying at the West Valley site. Stage 2 of the concept includes landfill at the West Valley site, then quarrying and landfill at the North Valley site within the Eviron Road proposal area. The scope of the Stage 2 application would be reviewed prior to submitting an application.

This report aims to provide background information on the proposal through provision of a detailed description of the Concept, Stages, details of the permissibility and relevant statutory controls, and a general overview of the environmental issues potentially associated with the project (including identification and preliminary consideration of key issues).

1.0 INTRODUCTION

This report has been prepared in response to notification by the Department of Planning (DoP - Reference S07/01027) that the Eviron Road Quarry and Landfill proposal is development referred to in Schedule 1 of the Major Projects SEPP, and is declared to be a project to which Part 3A of the *Environmental Planning and Assessment Act, 1979* applies.

The proposal is for a Concept Plan which includes development of two (2) quarries followed consecutively by three (3) landfills and includes necessary operational infrastructure such as connecting internal roads, a dedicated acid sulphate soils treatment area, and other buildings/storage facilities as required. The Concept Plan consists of two (2) stages. Approval for Stage 1 (described in Section 2) of this Concept is being sought concurrently with the Concept Plan approval.

This report has been prepared for submission to the Director-General of the NSW Department of Planning to accompany a project application under Part 3A of the EP&A Act and to facilitate the development of the Director-General's requirements for the Environmental Assessment (EA) of the proposal. This report aims to provide background information on the proposal through provision of:

- A description of the Concept and associated project Stages;
- Details of the permissibility and relevant statutory controls; and
- A general overview of the environmental issues potentially associated with the project (including identification and preliminary consideration of key issues).

Tweed Shire Council (Council) is proposing to establish the Shire's new landfill facility at Eviron Road, Eviron, located within the Tweed Shire Local Government Area (refer Figure 1). The proposal, except for a link road to Council's primary landfill facility known as Stott's Creek Landfill Facility, falls entirely within Council owned land zoned 5(a) Special Purpose (Garbage Depot) under the Tweed Local Environment Plan 2000 (TLEP) (refer Figure 2). Acquisition of land required for the link road to Stott's Creek Landfill Facility is currently being negotiated with the relevant landowner.

2.0 PROJECT BACKGROUND, DESCRIPTION AND SITE SELECTION

2.1 Background to Site Selection

Approximately 20 years ago Tweed Shire Council realised that the existing landfill had a limited life expectancy and Council needed to acquire additional land for the construction of future landfills to satisfy the areas needs into the twenty first century.

Council developed a set of selection criteria for a proposed landfill site to cater for Council's needs for the foreseeable future. An options assessment for a suitable site was based on the selection criteria outlined as follows:

- The proposed site would need to be flood free.
- The proposed site would not be situated on prime agricultural land.
- The proposed site should be predominantly gently sloping.
- The proposed site should be easily accessible from major population centres.
- The proposed site should be remote from residential areas.
- The proposed site should have few adjoining landowners.
- The existing property owners would need to be agreeable to sell the properties.

After an exhaustive search of possible sites and considerable negotiations with affected landowners, the Eviron Road site was chosen as the best option to comply with the above requirements. Steps were then taken to purchase the identified properties. The selected site had the additional advantage of being located close to Council's existing landfill.

Discussions were then held with all the adjoining landowners to inform them of Council's intention to construct future landfills on the site. They were also advised that the site would also be developed as a cemetery and botanic gardens.

Once the Eviron Road site was chosen, Council decided that rather than develop two sets of infrastructure at both Stotts Creek and Eviron, Council would invest significant funds into the development and construction of infrastructure at Stotts Creek, including offices, staff facilities, weighbridges and transfer station to service both sites into the future.

The land at Eviron Road was subsequently zoned 5(a) Special Purpose as part of the review and making of the Tweed Local Environment Plan 2000 (TLEP 2000) under the EP&A Act 1979. Consultation with public authorities and other stakeholders during preparation of the draft LEP 2000 was a requirement of this process as per Section 62 of the EP&A Act.

2.2 Concept Plan Description

The method of landfill creation in the Tweed Shire to date has been to use voids created by quarrying. Material won from quarrying is used for road building and other Council civil projects in the shire, and overburden stockpiled for road construction, clay liners (where appropriate) and site rehabilitation purposes. The Concept Plan involves working an existing approved quarry (known as Quirks Quarry) on the site until 2011, then establishing two new quarry sites (referred to as West Valley and North Valley) and working these consecutively until about 2040. After exhaustion of quarry materials, each of the three quarry sites are intended to be used progressively as Tweed Shire Council's primary putrescibles landfill facility. Tweed Shire's existing primary putrescibles landfill facility, known as Stotts Creek Landfill facility, is expected to reach capacity in 2011 after which a new landfill site would be required. The Eviron Road proposal aims to satisfy Tweed Shire's land fill requirements to at least 2050.

A summary of the quarry and landfill program is summarised in Table 1 below.

Table 1: Eviron Road Quarry and Landfill operation

Site Reference	Works	Timing (est.)	Capital Investment Value (est.) ($M)	Comments
Quirks	Hard rock extraction	2006 – 2011		Existing approved EPA Licensed Hard Rock Quarry (EPA Li: 12777)
	Landfill	20011/12 – 2015/16	1.5	
West Valley	Hard rock extraction	2009 – 2020	4.0	Clay overburden used for road building, capping for landfill etc.
	Landfill	2016– 2025	2.5	Landfill duration is a best estimate based on predicted rates.
North Valley	Hard rock extraction	2018 – 2040	8.0	Clay overburden used for road building, capping for landfill etc.
	Landfill	2026 – 2050	5.0	Landfill duration is a best estimate based on predicted rates.
			Total = 21M	

Tweed Shire Council commissioned a site investigation addressing soils, stratigraphy and proposed management measures in relation to the Eviron

Road proposal (Gilbert and Sutherland, 2007 – report presented in Appendix 1). This study summarised the resource potential in two primary areas where quarrying and subsequent landfill is proposed (does not include Quirks Quarry as this site is presently in operation). These areas are referred to as the West Valley and the North Valley (refer Figure GJ0544_1_3 with Appendix 1). A summary of extractive materials and volumes are presented in Table 2 below.

***Table 2: Summary of extractive material volumes* (Source: Gilbert and Sutherland, 2007)**

Stratigraphical Unit	North Valley (m^3)	North Valley (tonnes)	West Valley (m^3)	West Valley (tonnes)	Total Resource (m^3)	Total Resource (tonnes)
Greywacke Resource	1,200,000	3,468,000	0	0	1,200,000	3,468,000
Metasediments	398,000	1,054,700	2,480,000	6,572,000	2,878,000	7,626,700
Total extraction (excludes overburden / clay)	1,598,000	4,522,700	2,480,000	6,572,000	4,078,000	11,094,700

2.2.1 Summary of Project Approval Requirements

Schedule 1 of State Environmental Planning Policy (Major Projects) 2005 describes classes of development which are likely to be identified as a Part 3a project. The proposed quarry operation is captured under Schedule 1, Group 2 (7) Extractive Industries, Item 1b as:

- The total resource exceeds the 5 Million Tonne threshold (refer Table 2).

The Landfill rate in the Tweed Shire is presently at about 50,000 tonnes per year (t/yr). Despite Council's commitment to reduce waste to landfill (refer Section 2.4 and Appendix 2), population growth in the shire means that this landfill rate is expected to increase gradually to about 55,000 t/yr by the year 2010 and possibly to 75,000 t/yr by the year 2030, and increase further after that date. As mentioned, Stott's Creek Landfill Facility is expected to reach capacity in 2011 after which a new landfill site would be required. The Eviron Road proposal aims to satisfy the Tweed Shire's landfill requirements to at least 2050.

Under the Major Projects SEPP, the landfill component of the proposal is captured under Schedule 1, Group 9 Resource Recovery or Waste Facilities, Item 27(1b) as:

- The regional putrescible landfill has the capacity to receive over 650,000 t of putrescible waste over the life of the site.

The Department of Planning considers a regional landfill is one that accepts waste from more than one local government area. Tweed Shire Council, at

present, receives about 10,000 to 12,000 tonnes of commercial putrescible waste from Gold Coast City Council per year, representing about 20% of total putrescible waste received.

Based on an annual estimated landfill rate of 55,000 t/yr commencing in 2011/12, the Eviron Road Quarry and Landfill site would reach the total putrescible waste threshold by 2023/24.

As discussed, the Department of Planning considers a regional landfill is one that accepts waste from more than one local government area. Council is presently receiving about 3,000 tonnes per quarter of commercial putrescibles waste form the Gold Coast City. There is no intergovernmental agreement regarding the receiving of this putrescible waste from the Gold Coast City Council. Nonetheless, the landfill component of the proposal is still captured as related development under Section 75(B)(3) of the EP&A Act. That is, the Quarry component of the proposal is the project with the Landfill component captured as related development under the Act and therefore part of the project.

2.3 Site Description

2.3.1 Site Location

The site is accessed via Eviron Road, Eviron (refer Figure 1) and comprises approximately 158 hectares on lots:

- Lot 1 DP 34555
- Lot 26 DP 615931
- Lot 602 DP 1001049

All lots are presently owned by the Tweed Shire Council. The site in its present form comprises a quarry (known as Quirks Quarry), farming land (grazing and sugar cane production), a cemetery and Botanic Gardens, with a portion of these lands occurring on either side of the Pacific Highway (refer Figure 3).

2.3.2 Flora and fauna

The existing vegetation at the site is dominated by cleared land. Remnant sclerophyll open forest vegetation occurs on the steeper slopes and is dominated in most cases by Camphor laurel, an introduced woody weed suggesting extensive past land clearing and under-scrubbing. Further description of the flora and fauna at the site is provided within Section 5.0 of this report.

2.3.4 Geology and Landscape

Elevated portions of the site is dominated by Palaeozoic Neranleigh-Fernvale group comprising shales, siltstones and sandstones, and massive cobble conglomerates (Gilbert and Sutherland 2007). The low lying portions of the site are underlain by deep Quaternary alluvium and estuarine sediments, with marine clays present (Gilbert and Sutherland 2007).

The majority of the site is characterised by erosional landscapes of the Burringbar Lansdscape consisting of rolling hills, long slopes to moderately broad crests (Morand 1996). Low lying portions of the site are characterised by Alluvial landscapes of the Tweed and are characterised by extensive marine plains consisting of deep quaternary alluvium and estuarine sediments (Morand 1996).

The central region of the site, and a small area east of the Pacific Highway, is mapped as transferral landscapes of the Ophir Group (Morand 1996). The Ophir group is characterised by sheet-flood-fans, alluvial fans and valley fill-ins. Soils range from poorly drained soils on lower portions of some costal fans to Deep, well-drained Red Podzolic Soils.

2.3.3 Catchment Description

Land elevation ranges from RL < 3 m in the north eastern portion of the site to RL 80 m in the south west where the site forms part of the Condong range. The slopes within the site range from very gently inclined (< 3 %) to steep (40 %).

The site consists of closely spaced insipient and erosional drainage lines. These drainage lines discharge from the site at three locations to surrounding man-made agricultural drains. The surrounding agricultural drainage lines eventually discharge into Stotts Channel about 2.5 km downstream from the site, which eventually flows to the Tweed River (Gilbert and Sutherland, 2007).

2.4 Tweed Shire Council's Commitment to Resource Recovery

2.4.1 Background

Tweed Shire Council's commitment to resource recovery is primarily guided by adopting best practice waste and landfill management, community expectations, and ultimately, the NSW State Waste Strategy target of 66% of municipal waste diversion from landfill by 2014. To assist Council in addressing its resource recovery responsibilities APrince Consulting (APC) was contracted to prepare a Domestic Solid Waste Management Strategy. An overview of the Strategy is followed by Council's response (in red) to the 35 recommendations (refer section 2.4.2 below). In addition to the recommendations of the Strategy, Council also promotes resource recovery

through biannual e-waste drop-off collections, subsidised commercial commingled recycling services, free multi-unit dwelling recycling, and a comprehensive education and promotion campaign.

2.4.2 Summary of the Council's Domestic & Solid Waste Management Strategy

In 2006, Council appointed APC to prepare a Waste Management Strategy for the council. The recommendations in the Strategy were based on:

- Reviews of previous studies, reports and correspondence on waste management relating to the past and current systems.
- Extensive stakeholder consultation.
- Market research to determine the current attitudes, views, opinions and behaviour of local residents and visitors.
- Detailed analysis of historical and current data to determine usage patterns at waste disposal facilities.
- Exploration of a range of options for the collection, treatment and disposal of the various waste streams generated.
- Detailed community consultation program.

Council currently contracts out the collection of household waste, recycling and optional green waste services and public litter bins, and provides a bi-annual bulky household waste collection

Council introduced a divided 240-litre garbage and recycling service for which the divider was originally positioned for a 70:30 division with 70% of the space for garbage and 30% for recycling. A community survey in 2003 clearly indicated that there was insufficient room for recyclables with the current configuration and, as a result, Council required the new contractor to reposition the divider to a 50:50 position.

The current waste management program has been audited as part of a North East Waste Forum waste characterisation project, and it was found that, on average, 15% of the recycling was contamination. This is consistent with an annual audit conducted in September 2006 by the contractor, which found 17.9% contamination.

As part of this project a community survey was undertaken, in which 215 residents were randomly selected and interviewed. The key results reveal that 36% of people indicated the rubbish side of their domestic waste bin was full to overflowing each collection, while 37% indicated the recycling side was full to overflowing and 28% indicated that both sides of the bin were overflowing. When asked what people did with any excess recyclables, the majority placed it in the rubbish bin, kept it until the next collection, used the neighbour's bin or took it to work.

When asked if Council should introduce a dedicated kerbside recycling container the majority of the residents, 59%, supported this outcome. When the analysis was undertaken based on household size, households with 1–2 people were fairly equally represented, with 47% supportive and 49%

opposed to its introduction. However, in families with three or more people, the results were very clear, with 82% in support and only 18% in disagreement. Clearly Council has a mandate to introduce a separate recycling bin.

Council provides a voluntary user-pays garden organics service in a 240-litre bin on a fortnightly collection schedule. Currently 25% of households have signed up for the service. During the survey, 47% of respondents indicated they did not know about the service. When asked if this should become a standard service, overall 42% supported this. However, when the results were analysed by type of dwelling and location, 50% of single households in townships supported the introduction, while those living on acreage mulched their garden waste, and medium-density dwellings tended to contract garden services.

In total, 116 suggestions for improvements to the waste management programs were offered by the survey participants, with the key common emerging themes relating to the need for greater recycling and waste capacity, the need for a three-bin system, the quality of the mulch and the need for continued education of the community.

A detailed community consultation program followed the delivery of the draft waste strategy and included:

- promotion of the Draft Waste Plan in the Tweed Link which is delivered to all residents.
- preparation of a community consultation document summarising the eleven key recommendations and the Executive Summary of the draft Waste Plan was available upon request from Council offices or web site.
- an opportunity to meet or talk with the consultants was provided the week of 5th March.
- presentations to Progress Associations.
- briefing with the current contractor.
- Tweed Link advertisements sought feedback on draft strategy.

Council's website recorded 81 hits on the Community Consultation Summary document and 291 hits on the Draft Waste Strategy Executive Summary. Consultants and Council staff attended and presented at three Progress Association meetings. In total, five letters and nineteen emails were received.

The approach recommended in the APC report, following the community consultation program, provides Tweed Shire Council with the most socially responsible, economically viable and environmentally sustainable outcome to achieve both community expectations and that of the state government.

Outlined below are the 35 recommendations in the order as they appear within the APC report which does not necessarily reflect their priority.

1. That Council continue to monitor the activities of the South East Queensland Waste and Recycling Network Group and the NEWF.

It would appear that Tweed Shire has more in common with the Queensland group and its activity better reflects the immediate and long-term needs of Council.
Council is now a member of NEWF, and actively promotes regional resource recovery opportunities through this forum.

2. ***That Council request the waste contractor to have trained staff available at all times to receive and process DrumMUSTER containers.***
   Trained staff available at Stotts Creek Landfill.
3. ***That the contractor uses the service of the free DrumMUSTER training program.***
   Council, and its waste contractor Solo Resource Recovery, both actively promote and participate in the DrumMuster program.
4. ***That Council continue to support the efforts of DrumMUSTER through community education and promotion of either continuous receipt of containers or one-off collection programs.***
   Council has recently increased to a biannual collection, in addition to allowing for all year round drop off of large amounts of containers.
5. ***Council continue to promote that asbestos should be removed, handled and stored in accordance with the Work Cover Regulation.***
   This practice is continued.
6. ***That all batteries received at all waste depots be correctly stored.***
   All batteries received at Council's landfills are diverted from landfill, correctly stored, ready for reprocessing.
7. ***That Council include the correct disposal of gas cylinders and bottles in future community educational material and promote the drop-off of these materials at each waste disposal facility.***
   Council promotes the drop-off of gas bottles at both landfills, which are stored correctly, ready for reprocessing.
8. ***That Council continue to support the operation of reuse facilities at all waste disposal facilities.***
   Both of Council's licenced landfills operate a tip-shop reuse centre, to maximise reuse and resource recovery inline with the waste hierarchy principles.
9. ***Council ensures the community is informed about household hazardous collection programs.***
   Council responsibly manages household hazardous waste through an annual drop-off collection event.
10. ***That Council continue to promote the current practice of source-separation and free delivery of recyclables at all waste facilities.***
    Recyclables can be dropped off at both licenced landfills at no charge.
11. ***That Council should introduce a new fully commingled recycling service in a 240-litre bin collected fortnightly to all of its residents.***
    Council will be introducing a fortnightly commingled recycling service to all residents at the end of the current Contract in December 2009. This will align with best practice and promote further resource recovery and decrease contamination.

12. ***That Council should introduce a garden service in a 240-litre bin collected fortnightly to all single residential dwellings in townships.***
    In order to divert household green organics from landfill, Council currently makes available a separate fortnight green organics collection service to residents on request. This practice will continue.
13. ***That Council offers an optional garden waste service to all medium-density and multiple-occupancy residential buildings.***
    Council will offer the fortnight green organics service to multiple occupancy dwellings.
14. ***That Tweed Council offer residents a 140-litre bin as the standard service with the option of a differential service rate for an 80-litre or 240-litre in the interests of social equity. The price differential for these service options will be assessed once the tender for domestic waste management services is completed.***
    In December 2009 Council will offer residents the opportunity of a 80L bin at a reduced rate to promote waste minimisation. The default bin will be 140L, with a significantly higher rate for those wishing to have a 240L.
15. ***That new lids in accordance with the Australian Standard 4123 Mobile Waste Container be provided to all existing and new domestic waste, recycling and garden organics bins as part of the collection contract.***
    The lids will comply with AS4123.
16. ***Council should continue to monitor developments by other local governments which have introduced or are proposing to introduce organic waste collection programs, in particular, Coffs Coast and Hastings Councils, to learn from their experiences. Council should also assess new and emerging technologies and processes which have applicability for the area.***
    In 2007 Council Waste Management Staff have inspected the Coffs Coast Resource Recovery Park, Remondis ORRF in Part Macquarie, UR-3R in Eastern Creek, BEST Energies Pyrolysis Plant. Council will continue to monitor the alternative technologies and infrastructure with keen interest.
17. ***That Council introduce dedicated collections for specific materials, that is, metals / whitegoods and continue with the bi-annual household cleanup service.***
    Council has introduced a free continual metal and whitegoods collection on request, to increase metal resource recovery and compliment the biannual cleanup.
18. ***Should Council maintain its own MRF, then the future collection contract should specify a maximum compaction for the collection of recycling at 180 kg/m^3 and in accordance with best practice.***
    Council is currently developing its options for future resource recovery of dry recyclables. Should Council maintain its own MRF best practice compaction rates would be specified.
19. ***That Council enter into discussions with third parties in relation to the acceptance of Tweed Shire Council recyclables.***

Council is currently developing its options for future resource recovery of dry recyclables.

20. ***That a two-bin system – garbage and 'containers only' or alternate litter bin system be trialled in key strategic areas.***
Council is investigating options for resource recovery in public places.
21. ***That a performance review of the system be undertaken three months after the system is introduced.***
A performance review will be performed on the adopted system.
22. ***Recycling stations should be provided in strategic visitor locations to reduce the incidence of visitors using private or commercial bins.***
Council is investigating options for resource recovery in public places.
23. ***That the existing blue litter bins should be replaced with green bins with red lids for rubbish and yellow lids for recycling.***
The lids will comply with AS4123.
24. ***That Council develop a Waste Not DCP and place a notation or condition on all Development Approvals requiring the source separation and containerisation of all waste on building sites to minimise waste generation and prevent unintended pollution.***
Council is developing a Waste Not DCP in conjunction with NEWF to address resource recovery in the construction and demolition waste steam. It is expected that Council will adopt the Waste Not DCP in 2008.
25. ***That source-separation of loads prior to delivery is desirable due to the differential pricing policy to be applied to mixed loads at Stotts Creek and Murwillumbah landfills.***
In the 2007/2008 fees and charges Council introduced differential pricing for self haul domestic waste and builders waste at both licenced landfills, in an effort to use pricing mechanisms to increase resource recovery.
26. ***That Council undertakes a community education and industry information campaign to promote source-separation of all loads delivered to the Stotts Creek landfill.***
All licenced transporters of waste were advised in writing of the new pricing structure and advised that sorted loads assist in resource recovery and thus would attract a considerably lesser charge.
27. ***That Council directly approaches the significant users of its landfills on a personal basis to inform and educate them regarding the role of source-separation and of Council's intention to introduce a substantial change to the future fee structure and charges for disposal of waste.***
All licenced transporters of waste were advised in writing of the new pricing structure and advised that sorted loads assist in resource recovery and thus would attract a considerably lesser charge.
28. ***That Council resolves to introduce differential landfill fees for sorted and unsorted loads and offer a significant price variation to***

create the necessary motivation for source-separation within the community.

In the 2007/2008 fees and charges Council introduced differential pricing for self haul domestic waste and builders waste at both licenced landfills, in an effort to use pricing mechanisms to increase resource recovery.

29. ***That council introduces a significant differential pricing policy to encourage source – separation by waste generators of building materials.***

In the 2007/2008 fees and charges Council introduced differential pricing for self haul domestic waste and builders waste at both licenced landfills, in an effort to use pricing mechanisms to increase resource recovery.

30. ***That the current education and communication program delivered by the contractor be reviewed to assess and evaluate the effectiveness and value for money prior to developing the new contract specification.***

Council is currently developing options for new collection and disposal contracts. As part of this development process, Council has identified a need to resume primary responsibility for education and promotion, rather than bundle this with a waste collection contract.

31. ***Given the high proportion of visitors to the area, that the use of graphic images supported by the English words must be incorporated into all communication modes***

Council produces high quality educational material on recycling, home composting and sustainable behaviours.

32. ***That Council must commit sufficient and ongoing budgetary resources to continue the education of both residents and visitors.***

Council is committed to education, and is currently developing a Sustainable Living Centre to effectively engage the community in sustainable behaviours.

33. ***That the waste depots should be renamed as Resource Recovery Centres.***

Council will rename Stotts Landill as Stotts Creek Resource Recovery Centre.

34. ***That Council ensure that the new waste education centre is a demonstration site for green building and sustainable living and be called The Sustainable Living Centre.***

The Sustainable Living Centre will be fully functioning by mid 2008. The Centre will be an educational focal point for the region, based on sustainability themes of waste, water, energy, transport, climate change and human behaviour. The fit out of the Centre will be guided by sustainable purchasing and green procurement and will guide participants through smart behaviours to lessen their 'footprints'.

35. ***That concurrently with developing plans for the local landfill, Council reviews other long-term disposal options for the Shire's waste as identified in the Strategy having regard to transport and***

disposal costs, method and number of vehicle movements to accurately assess traffic impact.
Council is currently developing plans for the future landfill site, however will continue to monitor developments in alternative technology and other disposal options.

A complete copy of the APC 2006 document is provided in Appendix 2.

2.5 Summary Statement of the Concept

This Concept Plan application is for the construction of two (2) quarries followed consecutively by three (3) landfills and includes necessary operational infrastructure such as a haul road connecting the existing Stott's Creek Landfill Facility and internal roads, a dedicated acid sulphate soils treatment area, and other buildings/storage facilities as required.

2.6 Summary of the Project Application Stages

2.6.1 Stage 1 Project Application

The Stage 1 project application is for an approval to undertake:

- Construction of a haul road from Stott's Creek Landfill Facility to the Eviron Quarry and Landfill site
- Landfill within the Quirks Quarry site (due to commence in 2011/12 until 2015/16).
- Quarrying at the West Valley site (2009 – 2020).

The Stage 1 Project Application is being sought concurrently with this Concept Plan Application.

2.6.2 Stage 2 Project Application

The Stage 2 project application seeks approval to undertake:

- Landfill at West Valley (2016-2025)
- Quarrying at North Valley (2018-2040)
- Landfill at North Valley (2026-2050)

With emerging technologies in the field of resource recovery and increasing regulation of landfill targets, it is likely that the scope of works for Stage 2 would be reviewed and revised prior to submission of the Stage 2 application.

3.0 ENVIRONMENTAL PLANNING CONTROLS

3.1 Environmental Planning and Assessment Act 1979

The proposal has been determined as development referred to in Schedule 1 of the Major Projects SEPP, and is declared to be a project to which Part 3A of the Environmental Planning and Assessment Act 1979 (EP&A Act) applies (DoP Reference S07/01027).

The following sections identify the State Environmental Planning Policies (SEPP's) that potentially apply to the project. Other environmental planning instruments that would, but for Section 75R of the EP&A Act, have otherwise applied to the proposal are also discussed.

3.2 State Environmental Planning Policies

State Environmental Planning Policy 14 (SEPP 14) – Coastal Wetlands

This Policy is not applicable as the proposed site is not within a designated coastal wetlands area.

State Environmental Planning Policy 26 (SEPP 26) – Littoral Rainforest

This Policy is not applicable as the proposed site is not on, or within, the 100m buffer zone of littoral rainforest.

State Environmental Planning Policy No 33 (SEPP 33) – Hazardous and Offensive Industries

Mitigation measures would be proposed to limit any hazardous of offensive discharges. Blasting would be undertaken within noise and vibration parameters set by the NSW EPA. Site water would be treated prior to any discharges from site. There would be no storage of explosives and/or detonators on the land and subsequently, given these measures, the development is unlikely to be a 'hazardous industry', 'hazardous storage establishment', 'offensive industry' or 'offensive storage establishment'.

State Environmental Planning Policy No 44 – Koala Habitat Protection

The Koala (*Phascolarctos cinereus*) is a threatened fauna species listed under Schedule 2 (vulnerable) of the Threatened Species Conservation Act 1995.

SEPP No. 44 aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for Koalas to ensure a permanent free-living population over their present range and reverse the current trend of Koala Population decline by:

a) requiring the preparation of plans of management before development consent can be granted in relation to areas of core koala habitat and

b) encouraging the identification of areas of core koala habitat and

c) encouraging the inclusion of areas of core koala habitat in environmental protection zones.

SEPP No. 44 outlines a number of steps or considerations to be assessed to determine whether or not the Policy applies.

In general, only scattered polygons of Secondary Habitat Class A and Class B habitats occur in the area. As much of the site is already cleared, this habitat may be further under threat.

An assessment would be required as to the applicability of SEPP 44 to the area. This assessment would involve establishing whether potential koala habitat is present, and if so, whether this habitat is core Koala habitat.

State Environmental Planning Policy 55 (SEPP 55) – Remediation of Land

A primary objective of SEPP 55 is to provide for a State-wide planning approach to the remediation of contaminated land. An assessment of past landuse at the site was undertaken to determine whether any contaminating industries or sites are present. Sources of information included:

- Tweed Shire Council GIS layer of cattle Dip sites and Landuse mapping.
- DPI Cattle Dip Site Register.
- Historical Photography from the site from 1962, 1970, 1987, and 1996.
- Communication with Council staff responsible for the management of the Eviron Road site.

A review of 1962 aerial photography identified areas of mixed bushland and unimproved pasture on slopes and cultivation for sugar cane on a small potion of low lying land. The Quirks Quarry operation was evident on the 1970 aerial photography. More recently, development has also occurred for the botanical gardens and the Cemetery.

A land use review undertaken as part of the Quirks Quarry EIS found that cropping activities only occurred on adjacent lots outside the Development proposal boundary (i.e. Lot 25 DP 615931 and Lot 1 DP 783802) and on the southern portion of Lot 1 DP 34555 within the subject land (Mackney & Associates, 1995). The latter cropping areas are not within the proposed development footprint.

A review of the Cattle Dip sites did not locate any dip sites within lots associated with the proposal. The nearest dip site is Kelleher's Dip located on the eastern side of the pacific Highway on Eviron Road.

In summary, there is no evidence of contaminating activities at the proposed Eviron Quarry and Landfill site.

State Environmental Planning Policy 71 (SEPP 71) – Coastal Protection

This policy does not apply to the proposal, as the site does not occur within the coastal zone.

State Environmental Planning Policy (Infrastructure) 2007

The State Environmental Planning Policy (Infrastructure) 2007 aims to facilitate effective delivery of infrastructure across the State by improving regulatory certainty and efficiency through a consistent planning regime for infrastructure and the provision of services. It identifies the environmental assessment category into which different types of infrastructure and services development falls, including the identification of certain development having minimal environmental impact as being exempt from development approval. It also provides for greater flexibility in the location of infrastructure and services facilities.

The policy commenced on January 1st, 2008.

Clause 8 of the SEPP Infrastructure notes that if there is an inconsistency between this Policy and State Environmental Planning Policy (Major Projects) 2005, then the SEPP Major Projects prevails to the extent of the inconsistency.

Under Division 23 (Waste or Resource Management Facilities), Clause 121 (1) of the SEPP Infrastructure, development for the purpose of waste or resource management facilities may be carried out by any person with consent on land in a prescribed zone. A resource recovery facility is defined under the SEPP (Clause 120) as a facility for the recovery of resources from waste, including such works or activities as separating and sorting, processing or treating the waste, composting, temporary storage, transfer or sale of recovered resources, energy generation from waste gases and water treatment, but not including re-manufacture of material or goods or disposal of the material by landfill or incineration.

However, due to the provisions in Clause 8 of the SEPP Infrastructure, the SEPP Major Projects prevails.

SEPP 11 Traffic Generating Developments was repealed with the commencement of the SEPP Infrastructure. Schedule 3 (Clause 104) of the SEPP Infrastructure outlines the provisions for Traffic Generating

Developments. Development for the purpose of a landfill of any size or capacity must be referred to the RTA

State Environmental Planning Policy (Major Projects) 2005

The quarrying component of the proposal is captured under Schedule 1, Group 2(7) Extractive Industries Item 1(b) and the landfill component is captured under Schedule 1, Group 9 Resources Recovery or Waste Facilities Item 27(1b) of the Major Projects SEPP.

The definition of a regional landfill as described in State Environmental Planning Policy No. 48 - Major Putrescible Landfill Sites and also within Clause 1(4) of Schedule 2 of the Major Projects SEPP is one that accepts waste from more than one local government area. The proposed Eviron Road landfill is not an intergovernmental shared waste management facility and for the purpose of any State Environmental Planning Policy, it will not receive ***domestic*** or ***household*** putrescible waste from outside the Tweed Shire. However, approximately 10,000 tonnes of commercial putrescible waste is received from Gold Coast City Council annually, representing about 20% of total putrescible waste received.

The proposal was declared by the Department of Planning to be a project to which Part 3A of the *Environmental Planning and Assessment Act, 1979* applies (DoP Reference S07/01027).

State Environmental Planning Policy (Mining, Petroleum Production, and Extractive Industries) 2007

This SEPP consolidates and updates existing planning provisions related to mining, petroleum production and extractive industries as well as introducing new provisions to ensure that potential environmental and social impacts are adequately addressed during the assessment and determination of development proposals.

An assessment of land-use compatibility is required as part of an application for a new quarry. The assessment is used to determine the potential for land-use conflict and land-use constraints in respect to adjacent land uses. Consent authorities must consider:

- the existing uses and approved uses of land in the vicinity of the development, and
- whether or not the development is likely to have a significant impact on the uses that, in the opinion of the consent authority having regard to land use trends, are likely to be the preferred uses of land in the vicinity of the development, and
- any ways in which the development may be incompatible with any of those existing, approved or likely preferred uses, and
- evaluate and compare the respective public benefits of the development and the land uses, and

- evaluate any measures proposed by the applicant to avoid or minimise any incompatibility.

The existing uses and approved uses of land in the vicinity of the site are discussed in more detail in Section 3.4. In summary, the area of land designated for the proposal has been zoned 5(a) Special Use (Garbage Depot). The proposal is considered permissible with consent under Item 2 (point 1) of the 5(a) zoning provisions. Lands immediately adjacent the Eviron Road site are zoned 1(a) Agriculture, 1(b) Agricultural Protection, and 5(a) Special Purpose (Cemetery / Crematorium). Stotts Creek Landfill, which is zoned 5(a) Special Purpose (Garbage Depot and Quarry), is located about 300m north of the Eviron Road site and would be connected by a link road as part of the proposal. It is argued in Section 3.4 that despite quarrying not being specifically identified on the zoning plan in red lettering over the Eviron Road site, the proposal is still considered consistent with the objectives of the zone and with development allowed with consent within the 5(a) zone and within adjacent zones.

Regarding land use trends and preferred uses of land in the vicinity of the development, the proposal was identified during the mid 90's and has been factored into landuse planning since this time evident through the special use zoning and the consideration of the proposal in documents such as the Botanic Gardens Master Plan developed in 1998. At this time, it was also recognised that the existing primary landfill facility for the Shire, the Stott's Creek Landfill, would reach capacity in 2011. Subsequently, the public benefits of planning and developing a new landfill site are obvious.

3.3 Regional Environment Plans, Strategies, and existing Plans of Management

Under Section 75 R(3), Environmental Planning Instruments (other than SEPPS) do not apply to, or in respect of, an approved project under Part 3a of the EP&A Act.

The following regional environmental plans and strategies would normally be considered for development in the region:

3.3.1 North Coast Regional Environmental Plan 1988

Clause 15 requires consideration of a range of issues when consenting to developments adjoining or upstream of a river or stream, coastal or inland wetland or fishery habitat area, or within the drainage catchment of a river or stream, coastal or inland wetland or fishery habitat area.

The proposal is within the Tweed River Catchment. Therefore, the following points would normally need to be considered:

The need to maintain or improve the quality or quantity of flow of water to the wetland or habitat;

Section 5.6 of the attached report by Gilbert and Sutherland (2007) sets out surface water management of the site. Management of surface water include protection from flooding waters, diverting clean waters around the the site, and managing dirty site water within appropriately sized sedimentation ponds.

The need to conserve the existing amateur and commercial fisheries;

No commercial or amateur fisheries will be affected by the proposal.

Any loss of habitat which will or is likely to be caused by the carrying out of the development;

There will be no clearing of aquatic or riparian vegetation, although terrestrial vegetation would require clearing as a result of proposed works. Sediment and erosion control measures will minimise loss of sediment from the site to drainage lines during construction works and during operational phases of the project.

Whether an adequate public foreshore reserve is available and whether there is adequate public access to that reserve;

The works will not impact on the availability or access to any public foreshore reserve.

Whether the development would result in pollution of the wetland or estuary and any measures to eliminate pollution;

Proposed management measures in relation to the proposal are set out in detail within the attached proposed Environmental Management Plan (refer Attachment 1 of the Gilbert and Sutherland 2007 report).

The proximity of aquatic reserves dedicated under the Fisheries Management Act 1994 and the effect the development will have on these reserves;

There are no aquatic reserves dedicated under the Fisheries Management Act 1994 in the vicinity of the proposed works.

Whether the watercourse is an area of protected land as defined in section 21AB of the Soil Conservation Act 1938 and any measures to prevent soil erosion;

Section 21AB of the Soil Conservation Act 1938 has been repealed and replaced by the Native Vegetation Act 2003.

The need to ensure that native vegetation surrounding the wetland or fishery habitat area is conserved; and

There will be no disturbance to native vegetation or fish habitat.

The recommendations of any environmental guidelines or water quality study prepared by the Environment Protection Authority.

The EPA has published the "Tweed River Catchment: Water Quality and River Flow Interim Environmental Objectives – Guidelines for River, Groundwater and Water Management Committees". Surface water quality and ground water characterisation and ongoing monitoring is set out within section 3.9 and 3.10 respectively of Appendix 1 (report by Gilbert and Sutherland, 2007). Trigger values would be in compliance with the *Protection of the Environment Operations Act 1997.* Parameters would be measured for both the quarrying stage and the landfilling stage. Strategies for monitoring, auditing, reporting, and corrective actions are set out within the attached draft Management Plan (Appendix 1).

3.3.2 Strategic Planning Documents

Tweed 04/24 Draft Strategic Plan 2004–2024

The proposal is consistent with the Tweed 04/24 Draft Strategic Plan 2004–2024 (Tweed Futures Steering Committee 2004), which provides broad directions for future planning and sustainable development in the Shire, with regard to environmental, economic and social considerations. The proposal is consistent with the objectives of the Strategy.

NSW Coastal Policy 1997

This policy does not apply, as the works are not within the coastal zone.

The Far North Coast Regional Strategy

The purpose of the Regional Strategy is to manage the Region's expected high growth rate in a sustainable manner. Due to its proximity to the high growth area of South East Queensland, the urban coastal areas of the Tweed Shire have demonstrated the strongest growth in the Region over the past decade.

The Eviron Road quarry and landfill proposal aims to meet the growing demands of the shire through the establishment of a new landfill site. Subsequently, the proposal is considered to be consistent with the aims and objectives of the Far North Coast Regional Strategy.

Tweed Regional Botanic Gardens Plan of Management

The Tweed Shire Regional Botanic Gardens are located on lands contained within the proposal boundary. In 1998, a Master Plan was prepared to

develop an integrated relationship between the botanic gardens, cemetery, and proposed landfill areas (Master Plan Report, Tweed Shire Regional Botanic Gardens, Landplan, September 1998). As summarised in Gilbert and Sutherland (2007), the objective of the report was a planning concept for the overall site and to provide a strategy for optimum environmentally responsible procedures for: the existing quarry / landfill operations to continue; the cemetery to continue; the core botanic garden to be established; appropriate adjacent land uses to be considered.

The quarry and landfill proposal has endeavoured to maintain consistency with recommendations outlined within the Botanic Gardens Master Plan. That is, it is proposed that quarrying is to be limited to the West and North Valleys' (despite suitable hard rock resources being located throughout the Eviron Road site) and that landfill would occur following quarrying in these locations in accordance with the Tweed Shire Regional Botanic Master Plan.

3.4 Tweed Local Environment Plan 2000

Clause 11 sets out the objectives of the zones and the development that is allowed without consent or only with consent, or that is prohibited, within them. The proposed Eviron Road quarry and landfill site is located within land zoned 5(a) Special Uses (Garbage Depot) under the Tweed Local Environment Plan 2000 (TLEP 2000). Generally, special purpose zonings refer to lands developed (or proposed to be developed) by public authorities for community facilities and services. The proposal is considered permissible with consent under Item 2 (point 1) of the 5(a) zoning provisions, which reads in part: Unless it is allowed without consent under Item 1, the particular use indicated by red lettering on the zone map and any development ordinarily incidental or ancillary to that use.

The method of landfill creation in the Tweed Shire to date has been to use voids created by quarrying. Material won from quarrying is used for road building and other civil projects in the shire, and overburden stockpiled for clay liners (where appropriate) and site rehabilitation purposes. The establishment of the Eviron Road Landfill facility would similarly involve significant excavation to create a number of voids suitable for landfill; the void created by Quirks Quarry would form the first landfill. In the case of the Eviron Road proposal, the winning of material is incidental to the need to create the landfill pits as Tweed Shires' existing primary landfill site (known as Stotts Creek Landfill Facility), is reaching its final design life. Subsequently, quarrying at the site is considered to be development ordinarily incidental or ancillary to the primary use within the zoning being Garbage Depot.

Lands immediately adjacent the Eviron Road site are zoned 1(a) Agriculture, 1(b) Agricultural Protection, and 5(a) Special Purpose (Cemetery / Crematorium). Stotts Creek Landfill, which is zoned 5(a) Special Purpose (Garbage Depot and Quarry), is located about 300m north of the Eviron Road site and would be connected by a link road as part of the proposal.

In addition to the above, the proposal is also considered permissible with consent under Item 2 (point 2) of the 5(a) Zoning provisions which reads: "any use which is compatible with adjacent uses and with uses allowed (with or without consent) in adjacent zones". Offensive or hazardous industries are permissible with consent under Item 3 of the zoning provision for lands zoned 1(a), and extractive industries permissible with consent under Item 3 for lands zoned 1(b).

Subsequently, despite quarrying not being specifically identified on the zoning plan in red lettering over the Eviron Road site, the proposal is still considered consistent with the objectives of the zone and with development allowed with consent within the 5(a) zone and within adjacent zones.

The term 'Landfill facility' is used interchangeably with the term 'garbage depot' in the Tweed Shire. For example, Stott's Creek Landfill, which at present is Council's primary landfill site, occurs within a 5(a) Special Purpose zoning labelled 'Garbage Depot and Quarry' in red lettering on the TLEP 2000 Zoning Map. Note that the quarry in that case was set up with the specific intention of winning material for gain not for the creation of a landfill pit, although the added benefit is obvious. In the present case the winning of material is incidental to the need to create the landfill pits, which remains the purpose for the work.

Clause 34 refers to flood liable land and aims to minimise future potential flood damage. The location of the proposed link road connecting the proposal with the existing Stott's Creek Landfill facility is proposed to provide a moderately included haul road option for the quarrying and landfill activities. It is proposed that the road would have Q100 flood immunity and as such provide a bund to prevent flood waters from impacting on the quarrying and landfill activities. A schematic showing the indicative location of the link road is provided within Figure 4.

In addition, quarrying activities are proposed to be limited to above 3.9m AHD. Tweed Shire Council Flood level information indicates this is the modelled Q100 ARI level.

Clean waters would be diverted around exposed areas using cut-off drains and subsequently, the proposed works are not anticipated to have an impact on the drainage of adjacent land.

Clause 35 requires an assessment of the likely impacts of acid sulfate soils. Preliminary studies have been undertaken as part of background studies for the proposal (Gilbert and Sutherland 2007). Preliminary acid sulfate soil sampling was taken from three borelogs over the site. Analysis indicated the presence of both actual and potential acid sulfate soils. Subsequently, an acid sulfate soils management plan is required for the site and a draft plan included within the site Environmental Management Plan within the report prepared by Gilbert and Sutherland (2007) (Refer Appendix 1).

Clause 40 of the TLEP ensures development does not adversely affect the heritage significance of heritage items and heritage conservation areas. Past studies associated with quarry sites (Quirks Quarry, Bartlett's Quarry) summarised within the Botanic Gardens Master Plan did not identify any significant artefacts or discrete places of importance for the aboriginal people on or adjacent to the subject site (being the botanic gardens section of the proposal area). In the Master Plan report, it is noted that the Tweed Byron Aboriginal Land Council concluded that the nature of the landform indicates that it is unlikely any significant sites would be found but that care be exercised to safe guard any archaeologically significant sites that may be found during development.

There are no heritage items listed under Schedule 2 of the TLEP which occur in or adjacent the proposal area.

Clause 54 of the TLEP refers to tree preservation orders and aims to protect vegetation for reasons of amenity or ecology. The proposed site does not occur within a Tree Preservation Order area.

3.5 Other Approvals

Except for an Environmental Protection Licence under the Protection of the Environment Operations Act 1979, the authorisations below are not required for an approved project under Part 3A of the of the EP&A Act 1979 according to Section 75U of that Act. Their relevance to the proposal is discussed in general terms only.

3.5.1 National Parks and Wildlife Act 1974

A permit under Section 87 or consent under Section 90 of the National Parks and Wildlife Act 1974 is normally required where projects may impact on Aboriginal Objects or Places. There has been extensive assessment of cultural heritage issues at the site as part of past development assessments for quarry operations and no aboriginal artefacts or places have been recorded. Section 3.22 Cultural Heritage Management within the draft Management Plan within Appendix 1 outlines protection measures and responsibilities in the event that artefacts are encountered.

3.5.2 Native Vegetation Act 2003

Under Clause 18(A)(b) of the Native Vegetation Regulation 2005, infrastructure works by Council which include the construction of waste disposal landfill operations is consistent with the definition of Routine Agricultural Management Activities and is permitted clearing under Section 22 of the Native Vegetation Act 2003.

3.5.3 Rural Fires Act 1997

Bush fire prone land is mapped over the site. Authorisation under Section 100B of the Rural Fires Act 1997 would be required for the proposed development.

3.5.4 Water Management Act 2000

Further drilling to investigate soils and geology may be required and given that the acid sulfate soils investigation was preliminary in nature and that the extent of earthworks is undefined at this stage, it is likely that further drilling may be required. In the event that drilling intercepts the groundwater aquifer, a permit under the Water Management Act would be required.

3.5.5 Fisheries Management Act 1994

The proposal does not intercept any high order streams and subsequently, there would be no impact on fish passage, fish habitat or marine vegetation. No permits or approvals are therefore required under the Fisheries Management Act 1994.

3.5.6 Existing EPA Licences

Quirks Quarry presently operates under the terms and requirements of an Environment Protection Licence No. 12777 for a 'Fee Based Activity Hard Rock Gravel Quarry (36) Scale 50,000 - 100,000 tonnes issued by the Department of Environment and Climate Change under the Protection of the Environment Operations Act 1997.

There would be no increase in the rate of production at this site.

4.0 STAKEHOLDER ENGAGEMENT

4.1 Summary of Stakeholder Engagement to Date

Stakeholder engagement has evolved to date through initial site selection for the Eviron Road quarry and landfill site, re-zoning prior to the TLEP 2000, and for development of the Tweed Shire Regional Botanic Gardens Master Plan (1998) and via advertising and notification of the expansion of Quirks Quarry.

4.1.1 Tweed Shire Regional Botanic Gardens Master Plan

There were three formal community consultation activities that occurred as part of the Botanic Gardens Master Plan development that enabled the local population to display their interest in the botanic gardens. These events occurred during 1998 and included formation of a volunteers group, a community consultation meeting informing a range of stakeholders on the botanic gardens proposal, and an onsite presentation of the Botanic Gardens concept plan. Existing adjacent land use, which includes quarrying and landfill sites, and a proposal to locate Tweed Shire Council's new landfill facility at the site, was described within the Master Plan. That is, the Master Plan outlines the Quarry and Landfill proposal and notes that quarrying and landfilling be planned in such as way that the resultant landscape, once remediated, is appropriate for the progressive expansion of the Botanic Gardens.

4.1.2 Quirks Quarry

Quirks Quarry has been operating since the early 1950's and was purchased by Tweed Shire Council in 1996. A Development Application and subsequent amended Development Application was submitted to Council during 1995 and 1996 respectively for the expansion of the existing Quarry. A deferred Commencement Development Application (DA98/148) was issued on 15th December 1999 by the Tweed Shire Council for the continuation and expansion of Quirks Quarry. The deferred commencement was in relation to an approved Plan of Management and description of an access route to the site.

A Plan of Management, which incorporated haul road details, was approved in June 2000. During 1995, a Section 96 application was submitted and subsequently approved to include the use of haul trucks with trailers to travel along Duranbah Road (S96 Application D95/0148.01; 14/2/2006). Conditions on this approval were required to be written into the Plan of Management.

Community consultation has occurred as a consequence of the various development applications and amendments for Quirks Quarry. It was explained in the amendment to the original DA that Tweed Shire Council had acquired land east and west of the quarry site for future landfill needs.

5.0 PRELIMINARY ENVIRONMENTAL ASSESSMENT AND MANAGEMENT

5.1 Groundwater, Surface Water, and Flood Management

Groundwater characterisation and assessment to date has consisted of establishing eight groundwater bores at the site. Groundwater bores were installed primarily to allow for the commencement of background investigations. Depth of bores was variable between 4 and 12 meters and their locations described within Appendix 1.

Surface Water catchments are described in Section 2.2.3 and shown within Drawing GJ0544_1_4 in Appendix 1. Surface water management is described within Section 5.6 of Appendix 1. In summary, surface water would be managed using controls such as sedimentation ponds and clean water diversion drains. Controls would be in place prior to quarrying and maintained for landfill which would follow the quarry component of the project.

Sedimentation basins have been sized using the CALM method and sized for worst case scenario of the catchment being striped of all vegetation totally exposing the site. The ponds have been designed for a target principle of 0.02 mm and have one year sediment storage (Gilbert and Sutherland 2007).

5.1.1 Groundwater and surface water management

Details of the monitoring and management of groundwater and surface water is outlined within the draft Management Plan within Appendix 1. Both groundwater and surface water would be characterised prior to commencement of works. Target parameters would be established based on the results of background monitoring and would comply with requirements under the Protection of the Environment Operations Act 1997.

Typical parameters and suggested monitoring frequencies are proposed within Appendix 1 for both the quarrying and landfill components of the proposal. Also outlined are strategies to mitigate impacts on offsite water quality and include:

- Sediment and erosion controls including clean water diversion and appropriately sized sedimentation basins.
- Measures to ensure servicing and refuelling to be within contained areas away from water courses and off-site wherever possible.
- A waste management policy which ensures no waste is discharged to stormwater.
- Surface water monitoring at seven nominated locations and monitored on a rainfall event-based program at least 8 times prior to

commencement of works and then event-based during the operational phase of the project.
- Sediment pond monitoring at the controlled discharge point during periods of discharge.
- Reporting of monitoring as per annual licence requirements.
- Compilation of an incidents / complaints register maintained on-site.

Groundwater is proposed to be monitored monthly for a minimum of 8 months prior to commencing quarrying works for parameters specified within the draft Management Plan (refer Appendix 1). Quarterly monitoring would be employed during operational phase quarrying. A similarly frequency is proposed prior to landfill and during landfill operations. A total of 6 monitoring wells would be used for groundwater monitoring.

The attached draft Management Plan provides further detail on monitoring parameters, operational policy and performance criteria, auditing, reporting and corrective action procedures.

5.1.2 Flood Management

As discussed within Section 3.4, the location of the proposed link road connecting the proposal with the existing Stott's Creek Landfill facility is proposed to provide a moderately included haul road option for the quarrying and landfill activities. It is proposed that the road would have Q100 flood immunity and as such provide a bund to prevent flood waters from impacting on the quarrying and landfill activities (refer Figure 4 which provides an indicative location of the linking road).

In addition, quarrying activities are proposed to be limited to above 3.9 m AHD. Tweed Shire Council Flood level information indicates this is the modelled Q100 ARI level.

5.2 Acid Sulfate Soils

Gilbert and Sutherland (2007) provide a detailed description of the methods undertaken to assess the presence of acid sulfate soils at the site, and subsequent results of this testing (refer Appendix 1). In summary, TAA results indicated widespread existing acidity in the soils. Where PASS materials were encountered (as defined by the Chromium Reducible Suite testing), the acidity may be attributed to past oxidation of the iron sulfide component of these materials. The report notes that some acidity was also likely to be derived from naturally occurring soils.

5.2.1 Acid Sulfate Soils Management

The proposal will disturb acid sulfate soils and subsequently, a draft acid sulfate soils management plan has been prepared. As noted within the attached draft Management Plan (refer Appendix 1), the requirements for

treatment and management of acid sulfate soils will depend on the nature and extent of soil disturbance at associated with the development. An implementation strategy outlined within the draft Management Plan sets out procedures for the identification and management of all soils of marine origin excavated from below RL 5 m AHD. Sampling follows the ASSMAC guidelines and would be tested using the Chromium Reducible Suite testing method.

A comprehensive strategy for treating acid sulfate soils is outlined within the draft Management Plan within Appendix 1. Treatment rates would depend on liming rates derived from laboratory analysis of collected samples.

5.3 Flora and Fauna

5.3.1 Introduction and Methods

A preliminary assessment of flora and fauna values at the site involved reviewing past assessments for adjacent development and ecological database information. No site survey has been undertaken as part of this preliminary assessment.

Literature reviewed included:

- Tweed Shire Regional Botanic Gardens Master Plan Report (Landplan, 1998)
- Quirks Quarry Environmental Impact Assessment (Mackney & Associates, 1995)

Ecological database information reviewed included:

- NSW National Parks and Wildlife Flora and Fauna Records Atlas database.
- Department of Environment and Climate Change register of critical habitats.
- NSW NPWS regional and subregional fauna corridor mapping.
- Commonwealth Department of Environment and Water Resources, EPBC Protected Matters search Tool, on-line database.
- Tweed Shire Council GIS layers such as the register of osprey nests and koala habitat mapping.
- Tweed Shire Vegetation mapping including ecological status and sensitivity assessments.

5.3.2 Database limitations

The Atlas of NSW Wildlife is based on records of specific sightings. Each point is entered on a 1 km grid and hence location is only accurate to within 1 km. Surveys are not systematic surveys across NSW and the number of records is generally biased towards coastal sites and areas where people commonly visit, such as National Parks. In addition, surveys are biased towards particular species, reserves and roads.

The Department of Environment and Water Resources On-line Protected Matters Database is based on predicted distributions compiled from a number of sources at various resolutions. Generally, where distributions are well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery, and detailed habitat studies. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps. For species whose distributions are less well known, point locations are collated from various sources and bioclimatic distribution models generated and validated by experts. In some cases, distribution maps are based solely on expert knowledge.

5.3.3 Summary of existing studies

The Tweed Botanic Gardens Master Plan presents a summary of the various flora and fauna studies for quarry development in the area. Five vegetation types were mapped and included Camphor laurel / blackwood wattle dominated closed forest, wet sclerophyll closed / open forest, blackbutt open forest, mixed eucalypt open forest, and closed slashpine forest. The most dominant species on site at this time was Camphor laurel which has colonised much of the site and grows in pure stands in some areas.

Two threatened plant species are known from the area. These are the Black Walnut (*Endiandra globosa*) and Marblewood (*Acacia bakeri*). The Black Walnut was recorded south of the existing Quirks Quarry and near Bartlett's Quarry beyond the northern study boundary. No records for Marblewood were mapped on the site.

Fauna surveys summarised in the Botanic Gardens Master Plan recorded four threatened species from the site including the Koala (*Phascolarctus cinereus*), the Little Bent-winged Bat (*Miniopterus australis)*, the Greater Broad-nosed Bat (*Scoteannax ruepelli*) and the Yellow-bellied Sheathtail Bat (*Saccolaimus flaviventrus*). Except for the Koala, all threatened fauna species recorded are highly mobile bat species and their site usage would be opportunistic.

5.3.4 Preliminary Flora Assessment

Tweed Shire vegetation mapping (Ecograph, 2004) is presented in Figure 5 and Figure 6 and is described as follows:

Vegetation Type 201 (green):

This is a "moist" or "dry" sclerophyll open forest community, depending on the understorey vegetation composition that is influenced by soil fertility and aspect.

Blackbutt (Eucalyptus pilularis) may be present as a dominant or sub-dominant, in conjunction with a variety of other co-dominant or sub-dominant

Eucalypt species. It occurs on soils of varying fertility; highly fertile sites support the best developed stands and include co- or subdominant species such as Tallowwood (E. microcorys), Flooded Gum (E. grandis), Sydney Blue Gum (E. saligna), Brush Box (L. confertus), and Turpentine (Syncarpia glomulifera). Less fertile sites are shared with co-and sub-dominant species including White Mahogany (E. acmenoides), Red Mahogany (E. resinifera), Pink Bloodwood (Corymbia intermedia), Grey Ironbark (E. siderophloia), Grey Gum (E. propinqua) and Broad-leaved White Mahogany (E. umbra).

The understorey in both types is substantially altered by fire.

May inter-grade with Camphor Laurel Dominant Open to Closed Forest – (Type 1004 – see below).

This type contains Koala food tree species.

Vegetation Type 207 (green)

This type occurs as a wet sclerophyll open forest over a range of terrains from wetter sheltered gullies to sites with fertile soils extending to the ridgetops. Frequently this type colonises lower slopes that have been cleared or rainforest areas that have been disturbed by fire. This type is considered to be an intermediate stage that will eventually revert to a rainforest community.

Vegetation Type 998 (light green)

A non native bushland type not assessed under the vegetation mapping study. Vegetation is assumed to be pure stands of Camphor Laurel.

Vegetation Type 1004 (grey)

This type is dominated by Camphor Laurel (Cinnamomum camphora) and often occurs as pure, even-aged stands or where disturbance has been extensive in other vegetation types some emergents or remnants of this type may remain. Other species, such as Brush Box (Lophostemon confertus), may occur within this type having established at the same time as the Camphor.

This type occurs on more fertile soils especially those of volcanic origin and in areas of high soil moisture, typically colonising areas that may have previously supported rainforest or wet sclerophyll forest that had been cleared for agriculture.

Co-dominant species recorded within this type include: Blackwood Wattle (Acacia melanoxylon), Macaranga (Macaranga tanarius), River She-oak (Casuarina cunninghamiana), Brush Box (Lophostemon confertus), Bangalow Palm (Archontophoenix cunninghamiana), Hoop Pine (Araucaria cunninghamii) and Broad-leaved Paperbark (Melaleuca quinquenervia). Sub-dominant or locally dominant species include: Red Ash (Alphitonia excelsa), Guioa (Guioa semiglauca), Foambark (Jagera pseudorhus), Red Kamala

(Mallotus phillipensis), Brown Kurrajong (Commersonia bartramia), Black Bean (Castanospermum australe), Grey Myrtle (Backhousia mytrifolia), Lilly Pilly (Acmena smithii), Water Gum (Tristaniopsis laurina), Weeping Lilly Pilly (Waterhousea floribunda), Lantana (Lantana camara), Large-leaf Privet (Ligustrum lucidum), Small-leaf Privet (L. sinense), Cat's-claw Creeper (Macfadyena unguiscatii), Umbrella Tree (Schefflera actinophylla) and Wild Tobacco (Solanum mauritianum).

Vegetation Type 1099 (Grey)

This type forms approximately half of the area of the Shire and includes areas cleared for agriculture, recreation facilities, roads and urban development. Vegetated areas occurring in this type are generally dominated by exotic grass species; if native vegetation is present it is very sparse and highly disturbed. It may include naturally clear areas such as beach sands and associated coastal rocks.

5.3.5 Threatened flora species

Searches for threatened flora species were undertaken based on a 5 km radius of the site using both State and Commonwealth database sources. Searches of the NSW NPWS Atlas database found a total of six NSW threatened flora species consisting of four endangered species and two vulnerable species (refer Table 3). No threatened plant records occurred on the subject site.

Table 3: NSW NPWS Wildlife Atlas Records for threatened Fauna and Flora in a 5km radius of the subject site

Common Name	Legal Status	Scientific Name
Flora Records		
Brush Cassia	E	*Cassia brewsteri var. marksiana*
Stinking Cryptocarya	V	*Cryptocarya foetida*
Durobby	V	*Syzygium moorei*
Pink Nodding Orchid	E	*Geodorum densiflorum*
Basket Fern	E	Drynaria rigidula
Small-leaved Tamarind	E	Diploglottis campbellii

Codes are E = Endangered and V = Vulnerable under the Schedules of the NSW Threatened Species Conservation Act 1995

Commonwealth database searches returned a total of 20 flora species predicted to occur within a 5 km radius from the site (refer Table 4). Of these, nine species are listed as endangered and 11 as vulnerable species. As mentioned, the occurrence of species returned form database searches may have been derived from predictive models and subsequently, field validation of habitats would be essential to confirm presence or absence.

Table 4: Commonwealth Protected Matters database search results for threatened plants predicted to occur within a 5km radius of the site

Scientific Name	Common Name	Status
Acronychia littoralis	Scented Acronychia	E
Baloghia marmorata	Marbled Balogia, Jointed Baloghia	V
Bosistoa selwynii	Heart-leaved Bosistoa	V
Bosistoa transversa	Three-leaved Bosistoa	V
Cryptocarya foetida	Stinking Cryptocarya, Stinking Laurel	V
Davidsonia jerseyana	Davidson's Plum, Ooray	E
Davidsonia johnsonii	Smooth Davidsonia, Smooth Davidson's Plum, Small-leaved Davidson's Plum	E
Desmodium acanthocladum	Thorny Pea	V
Diospyros mabacea	Red-fruited Ebony, Silky Persimmon, Ebony	E
Diploglottis campbellii	Small-leaved Tamarind	E
Endiandra floydii	Floyd's Walnut	E
Gossia fragrantissima	Sweet Myrtle, Small-leaved Myrtle	E
Hicksbeachia pinnatifolia	Monkey Nut, Bopple Nut, Red Bopple, Red Bopple Nut, Red Nut, Beef Nut, Red Apple Nut, Red Boppel Nut, Ivory Silky Oak	V
Macadamia tetraphylla	Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut	V
Marsdenia longiloba	Clear Milkvine	V
Ochrosia moorei	Southern Ochrosia	E
Randia moorei	Spiny Gardenia	E
Syzygium hodgkinsoniae	Smooth-bark Rose Apple, Red Lilly Pilly	V
Syzygium moorei	Rose Apple, Coolamon, Robby, Durobby, Watermelon Tree, Coolamon Rose Apple	V
Tinospora tinosporoides	Arrow-head Vine	V

5.3.6 Fauna

In summary, the preliminary desktop assessment found:

- A review of the NSW NPWS Wildlife Atlas found records for Koala's east of the Pacific Highway and directly south of Eviron Road.
- Secondary Koala Habitat (Class A) has been mapped in the area (Definition - Tree species preferentially utilised by koalas, on average, constitute less than 35% of the overstorey vegetation).
- No 'critical habitat' has been mapped in the area.
- A sub-regional fauna corridor has been mapped over the site. This corridor tends to follow ridgelines and slopes in the area and includes a mosaic of disturbed, cleared, and remnant vegetation
- In total, 18 threatened fauna species and one Endangered Population, were returned from a 5km radius search of the site (refer Table 5).

These records include historical records and subsequently, habitat validation is required to confirm their presence in the study area. In addition, some records are from very specific locations (Cobaki Lakes) or habitats (wallum) which can automatically be discounted from the site.

- A Commonwealth EPBC Protected Matters Search recorded 15 threatened fauna species (vertebrates and invertebrates combined) and nine migratory species potentially occurring within a 5km radius of the site (refer Table 6). Records are based on known and predicted distributions only. Field validation of habitats would be required to determine the likelihood of species occurrence.

Table 5: NSW NPWS Wildlife Atlas Records for threatened Fauna and Flora in a 5km radius of the subject site

Common Name	Legal Status	Scientific Name	Probability of occurrence
Fauna Records			
Wallum Froglet	V	*Crinia tinnula*	*2*
Black Bittern	V	*Ixobrychus flavicollis*	*2*
Black-necked Stork	E	*Ephippiorhynchus asiaticus*	*3*
Osprey	V	*Pandion haliaetus*	*3*
Bush-hen	V	*Amaurornis olivaceus*	*2*
Bush Stone-curlew	E	*Burhinus grallarius*	*3*
Wompoo Fruit-Dove	V	*Ptilinopus magnificus*	*2*
Rose-crowned Fruit-Dove	V	*Ptilinopus regina*	*2*
Glossy Black-Cockatoo	V	*Calyptorhynchus lathami*	*3*
Grass Owl	V	*Tyto capensis*	*3*
Olive Whistler	V	*Pachycephala olivacea*	*2*
Koala	V	*Phascolarctos cinereus*	*4*
Cobaki Lakes and Tweed Heads West population of the Long-nosed Potoroo Potorus tridactylus	E	*Potorous tridactylus*	*1*
Long-nosed Potoroo	V	*Potorous tridactylus*	*1*
Black Flying-fox	V	*Pteropus alecto*	*4*
Grey-headed Flying-fox	V	*Pteropus poliocephalus*	*4*
Little Bentwing-bat	V	*Miniopterus australis*	*4*
Eastern Bentwing-bat	V	*Miniopterus schreibersii oceanensis*	*4*
Eastern Long-eared Bat	V	*Nyctophilus bifax*	*3*

Codes are E = Endangered and V = Vulnerable under the Schedules of the NSW Threatened Species Conservation Act 1995. Probability codes are: **1**= no habitat present (i.e. oceanic/pelagic species, aquatic species), **2** = Unlikely (i.e. species with specific habitat requirements that are not known from the site such as rainforest dependent species, wetland birds, aerial species), **3** = Low likelihood of occurrence (i.e. species with well known habitats and unlikely to occur based on sub-optimal habitats present), **4** = Potential to occur (i.e. species known to utilise habitats on the subject site for part of their lifecycle requirements and are substantiated by records in the wider locality <5km), **5** = highly likely to occur (i.e. those species recorded during the field assessment or considered to utilise the subject site due to the presence or proximity of local records and/or high habitat suitability).

Table 6: Commonwealth Protected Matters database search results for threatened plants predicted to occur within a 5km radius of the site

Scientific Name	Species Name	Status	Probability of Occurrence
Birds			
Cyclopsitta diophthalma coxeni	Coxen's Fig-Parrot	E	2
Lathamus discolor	Swift Parrot	E	2
Poephila cincta cincta	Black-throated Finch (southern)	E	2
Rostratula australis	Australian Painted Snipe	V	2
Turnix melanogaster	Black-breasted Button-quail	V	2
Xanthomyza phrygia	Regent Honeyeater	E	2
Frogs			
Litoria olongburensis	Wallum Sedge Frog	V	2
Mixophyes iteratus	Southern Barred Frog, Giant Barred Frog	E	2
Insects			
Phyllodes imperialis (southern subsp. - ANIC 3333)	a moth	E	2
Mammals			
Chalinolobus dwyeri	Large-eared Pied Bat, Large Pied Bat	V	3
Dasyurus maculatus	Spot-tailed Quoll,	E	3
Potorous tridactylus tridactylus	Long-nosed Potoroo (SE mainland)	V	2
Pteropus poliocephalus	Grey-headed Flying-fox	V	4
Reptiles			
Coeranoscincus reticulatus	Three-toed Snake-tooth Skink	V	3
Snails, slugs			
Thersites mitchellae	Mitchell's Rainforest Snail	CE	2
Migratory Terrestrial Species			
Birds			
Cyclopsitta diophthalma coxeni	Coxen's Fig-Parrot	M	2
Haliaeetus leucogaster	White-bellied Sea-Eagle	M	4
Hirundapus caudacutus	White-throated Needletail	M	4
Merops ornatus	Rainbow Bee-eater	M	4
Monarcha melanopsis	Black-faced Monarch	M	3
Monarcha trivirgatus	Spectacled Monarch	M	3
Myiagra cyanoleuca	Satin Flycatcher	M	3
Rhipidura rufifrons	Rufous Fantail	M	3
Xanthomyza phrygia	Regent Honeyeater	M	2

E = Endangered, V = Vulnerable, CE = Critically Endangered, M = Migratory under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999. Probability codes are: **1**= no habitat present (i.e. oceanic/pelagic species, aquatic species), **2** = Unlikely (i.e. species with specific habitat requirements that are not known from the site such as rainforest dependent species, wetland birds, aerial species), **3** = Low likelihood of occurrence (i.e. species with well known habitats and unlikely to occur based on sub-optimal habitats present), **4** = Potential to occur (i.e. species known to utilise habitats on the subject site for part of their lifecycle requirements and are substantiated by records in the wider locality <5km), **5** = highly likely to occur (i.e. those species recorded during the field assessment or considered to utilise the subject site due to the presence or proximity of local records and/or high habitat suitability).

5.3.7 Flora and Fauna Management

Specific management measures for fauna protection, management of existing vegetation, and weed management are described within the attached draft Management Plan within Appendix 1.

A more comprehensive assessment of the likely impacts of the proposal, and the management of these issues, would be undertaken and included as part of the Environmental Assessment. This would specifically include targeted surveys for threatened plant species, targeted habitat assessment for threatened fauna species considered likely to occur on site, detailed vegetation mapping to fully describe the type and extent of all communities, and an assessment of the likely impacts of the proposal in accordance with the DECC's Threatened Species Assessment Guidelines. In addition, field assessments would determine any requirements for referrals under the Environment Protection and Biodiversity Conservation Act 1999.

5.4 Cultural Heritage

Cultural heritage studies for quarry development within and adjacent the Eviron Road Quarry and Landfill site have indicated that there are no significant artifacts or discrete places of importance for the Aboriginal people on or adjacent to the subject site. As described in the Botanic Gardens Master Plan (Landplan 1998), the Tweed Byron Local Aboriginal Land Council concluded that the nature of the landform indicates that it is unlikely that any significant sites would be found bit that care should be exercised to safe ground any archaeologically significant sites that may be found during development.

The Botanic Gardens Master Plan encourages Aboriginal cultural participation in the development and management of the botanic gardens site. This participation would be similarly sought during the consultation aspects of this proposal.

5.4.1 Cultural Heritage Management

Protection and management of cultural heritage sites, artefacts and areas of significance has been addressed within the draft Management Plan in Appendix 1. The operational policy for cultural heritage management is an awareness of the potential to expose artefacts. In the event that artefacts are encountered, a Stop Works procedure would be implemented in accordance with the draft Management Plan and the Department of Environment and Climate Change would be contacted.

5.5 Air Quality

Dust deposition would be generated from quarry operations including blasting and excavation, crushing and screening, and hauling. Dust is currently managed at Quirks Quarry site using a water truck to control dust on internal haulage access roads. All trucks are covered during external haulage.

5.5.1 Air quality management

Measures to minimise dust and particulate matter from impacting offsite have been outlined in the attached draft Management Plan. In summary, measures would include:

- Limiting stockpiles on site where possible with dry stockpiles covered or sprayed to prevent emissions.
- Site vehicles and machinery using external roads to be covered at all times.
- Methods to prevent mud tracking onto public roads.
- Regular watering of disturbed areas and additional watering during high risk periods such as high winds and low rainfall periods
- Limited or no dust creating during high wind periods.
- All rock drilling, crushing and screening equipment to employ dust suppression devices.
- Ongoing training for all staff regarding dust suppression.

In addition to dust suppression, management of fumes and odours would be managed as part of the proposal. Similarly, dust minimisation during haulage has been addressed within the draft Management Plan and would entail regulating haulage speeds to 40km/hr on internal roads, and treating semi-permanent roads (greater than 3 month length of operation) with gravel or sealing if required for long term access.

5.6 Noise, Blasting and Vibration

A complete noise assessment would be required for the proposed quarries at the West and North Valleys'. Noise impact assessment and blast vibration monitoring has been undertaken as part of the Quirks Quarry EIS and subsequent operations. Results from ground vibration and blast over-pressure were kept well within EPA's limiting criteria at the two nearest residences to the Quirk's Quarry site. Blasting would be a feature of the proposed West and North Valley Quarry sites and therefore, sensitive receptors would be identified during the noise study.

5.6.1 Noise and vibration management

Strategies to minimise noise and vibration are summarised within the attached draft EMP. Measures include:

- Limiting work hours to set times.
- Sighting of noise generating works as far away from sensitive receptors as possible.
- Restricting vehicle movements to main routes and during set work times.
- Maintaining plant and equipment in accordance with manufactures specifications.
- Fitting plant and equipment with noise limiting devices where appropriate.
- Maintaining noise suppression equipment.
- Restricting the use of horns, sirens, reverse signals where appropriate to the satisfaction of work place health and safety requirements.
- Maintaining a complaints register for noise related complaints and responding and reporting on complaints.
- Managing noise from traffic movements on haulage routes as per the requirements within the draft EMP.

These strategies would be reviewed as part of the acoustic assessment. Blasting management would also be reviewed as part of this assessment.

5.7 Visual Amenity

An integrated approach to visual amenity would be required for the proposal which would consider buffering of quarry and landfill operations whilst considering the planning requirements for the Botanic Gardens. The proposal would be naturally screened to the north-west, west and south west. A visual impact assessment would be required to determine the extent of increase in visibility to the east and subsequently, the extent of buffer screening required.

The extraction plan for Quirks Quarry is such that the quarry operations (other than Rock Drill) is shielded from the existing residences. Rehabilitation of Quirks Quarry is outlined within the Quirks Quarry Environmental Management Plan which essentially involves buffer plantings designs as per the Botanic Gardens Design Plan.

5.7.1 Management of Visual Amenity

Visual amenity would be managed with the use of buffer plantings and staged regeneration of cleared areas, bunds and quarry edges, and the use of non-reflective materials for construction site amenities and facilities. Further detail is provided within the attached draft EMP.

5.7 Traffic and Transport

The study site is currently accessed via Eviron Road. Haulage of material from Quirks Quarry utilises this access with consent for trucks and trailers to cart quarry material along Eviron road east to Duranbah Road then on to the

Pacific Highway. This haulage route is likely to be maintained until the link road from the proposed Eviron road quarry and landfill site to the existing Stott's Creek Landfill Facility is constructed.

No transporting of landfill waste is proposed for Eviron Road. All access for the landfill component would be via the link road with Stott's Creek Landfill Facility acting as a transfer Station where 60 metre skips would be hauled on semi trailers to the proposed landfill sites. As discussed, once the Eviron Road site was chosen, Council invested significant funds into the development and construction of infrastructure at Stotts Creek, including offices, staff facilities, weighbridges and transfer station to service both sites into the future.

5.7 Future Planning Consideration

Figure 7 shows the zoning plan for the broader locality. Lands adjacent to the Eviron Road site is zoned a mixture of 1(a) Agriculture or 1 (b2) Agricultural Protection. No lands are zoned for 1(c) Rural Living or in the higher density living classes represented by the 2 zoning.

A review of the draft LEP 2007 (referred to as the Standard Template or Standard LEP) found that all lands bordering the site are to be zoned RU1 (Primary Production) and RU2 (Rural Landscape) (refer Figure 8). No adjacent lands are zoned RU5 (Village).

Subsequently, there is considered to be no identified conflicts with any future residential development in the locality.

5.8 Other Environmental Considerations

Other environmental and operational considerations have been outlined within the draft EMP attached and include:

- Management of site and contractor management.
- Personnel training.
- Material extraction.
- Contamination arising from operational factors.
- Site access.
- Fire hazard management.

The draft Management Plan would be updated to reflect outcomes of the Environmental Assessment.

6.0 PROJECT JUSTIFICATION AND CONCLUSION

Tweed Shire's existing primary putrescibles landfill facility, known as Stotts Creek Landfill facility, is expected to reach capacity in 2011 after which a new landfill site would be required. The Eviron Road proposal aims to satisfy Tweed Shire's land fill requirements to at least 2050.

The method of landfill creation within Tweed Shire has historically been to utilise the voids created by quarrying operations. The proposal would utilise the void created by the presently operating Quirks Quarry then progressively establish two more quarries (West Valley and North Valley) which would be progressively followed by landfill over the life of the project. This preliminary assessment has attempted to summarise the existing environment and identify planning controls and potential environmental issues associated with the proposal. This preliminary assessment, in combination with the site investigation prepared by Gilbert and Sutherland (2007) has identified a range of potential issues associated with the proposal. The attached draft EMP indicates that through effective management, the environmental impacts could be adequately managed and/or mitigated.

It is acknowledged that further assessment is required to confirm the preliminary assessments of impact. In addition to recommendations outlined by Gilbert and Sutherland (2007 – refer Appendix 1), further assessment is required regarding the following key residual issues:

Groundwater

- Characterisation of the ground water prior to implementation of the project

Surface Water

- Characterisation of background surface water quality prior to implementation of the project.

Ecology

- Detailed vegetation survey and targeted threatened flora and fauna species assessment.

Aboriginal Heritage

- Consultation with the Tweed Byron Aboriginal Land Council regarding the proposal.

Noise

- Undertake noise assessments in relation to sensitive receivers associated with proposed quarry operations in the north and West and North valleys'.

- Design suitable noise controls to reduce noise levels to those compliant with DECC nominated criteria.

Traffic and access

- Undertake detailed design of the haul route to Stott's Creek Landfill facility and finalise negotiations with an affected private landowner.

Air Quality

- Design suitable controls to reduce dust and other particulate matter concentrations to those compliant with DECC nominated criteria.

Community Consultation

- Undertake community consultation to identify issues of greatest concern to the viability of surrounding land uses.

- Review and revise the Project design to minimise the impacts perceived by members of the local community on their current land use.

Visual Amenity

- Undertake detailed design of proposed extraction areas to minimise impacts on visual amenity at surrounding vantage points.

10.0 REFERENCES

Ecograph (2004). Tweed Vegetation Management Strategy.

Environmental Protection Authority (1999) Tweed River Catchment: Water Quality and River Flow Interim Environmental Objectives – Guidelines for River, Groundwater and Water Management Committees.

Mackney & Associates (1995). Quirks Quarry Environmental Impact Assessment. Report prepared by Mackney and Associates for the Tweed Shire Council.

Morand, D.T. (1996) Soil Landscapes of Murwillumbah – Tweed Heads 1:100 000 Sheet Report. Department of Land and Water Conservation, Sydney.

NSW Acid Sulfate Soil Management Advisory Committee (1998) *Acid Sulfate Soil Manual*.

NSW Government – *Environmental Planning and Assessment Act 1979*.

NSW Government – *Environmental Planning and Assessment Regulations 2000*.

NSW Government – *Fisheries Management Act 1994*.

NSW Government – *National Parks & Wildlife Service Act 1974*.

NSW Government – *North Coast Regional Environmental Plan 1988.*

NSW Government – State Environmental Planning Policy No 11 Traffic Generating Developments

NSW Government - State Environmental Planning Policy No 33 – Hazardous and Offensive Industries

NSW Government - State Environmental Planning Policy (Major Projects) 2005

NSW Government - State Environmental Planning Policy (Mining, Petroleum Production, and Extractive Industries) 1997

NSW Government – *State Environmental Planning Policy No 14 Coastal Wetlands*.

NSW Government – *State Environmental Planning Policy No 26 Littoral Rainforests*.

NSW Government – *State Environmental Planning Policy No 44 Koala Habitat Protection*.

NSW Government – *State Environmental Planning Policy No 71 Coast Protection*.

NSW Government – *Threatened Species Conservation Act 1995*.

NSW Government - *Native Vegetation Act 2003*.

Tweed Futures Steering Committee (2004) *Tweed 04/24 Draft Strategic Plan 2004-2024*.

Tweed Shire Council (1997) *Acid Sulfate Soil Planning Map (Edition 1) – Map 1:25 000*.

Tweed Shire Council – *Tweed Local Environment Plan 2000*.

Tweed Shire Regional Botanic Gardens Master Plan Report (1998). Report prepared by Landplan Landscape Architects for the Tweed Shire Council.

FIGURES

Figure 1: Eviron Road Quarry and Landfill Proposal - Locality Plan

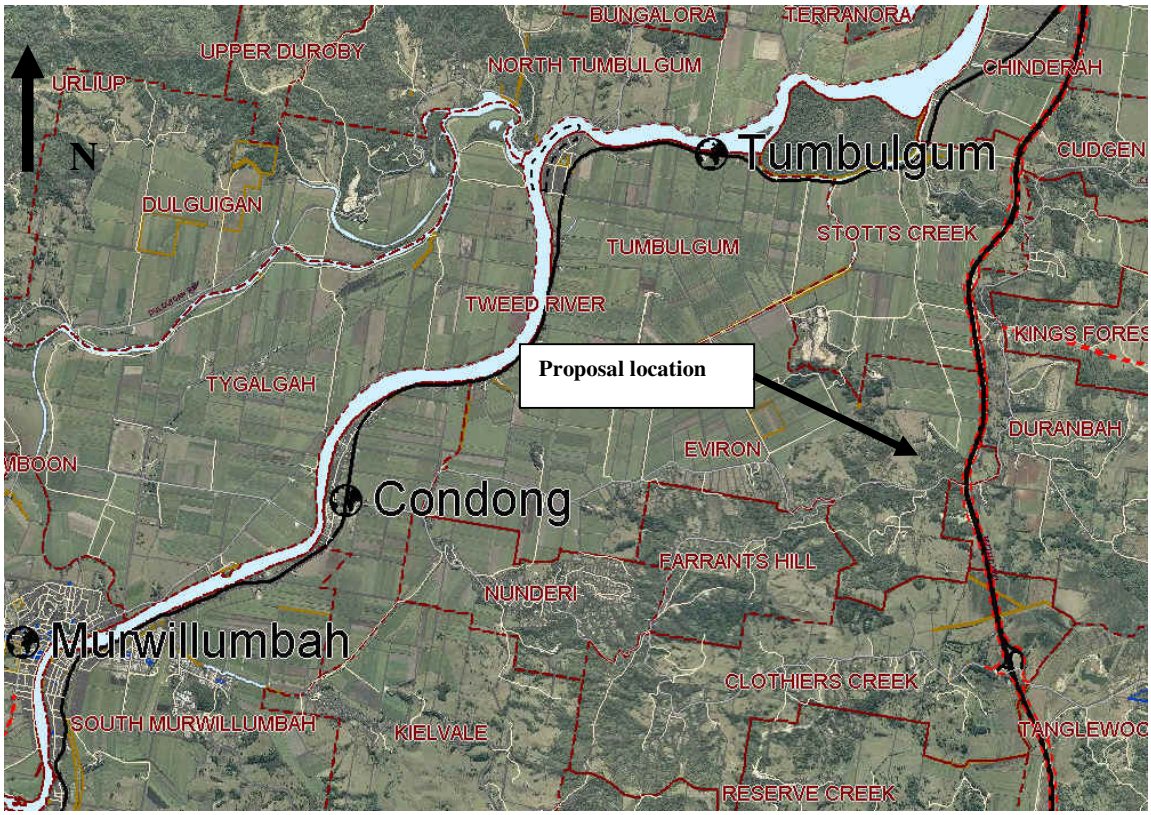

Figure 2: Zoning and site boundaries

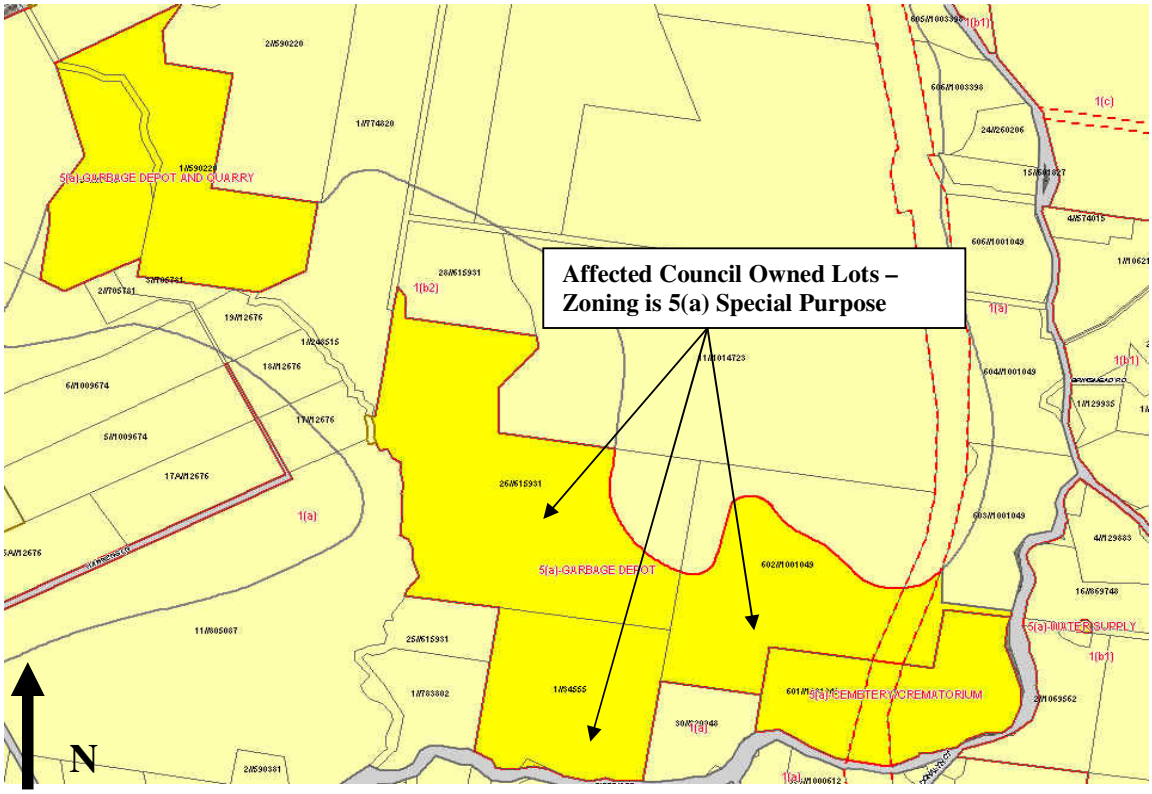

Figure 3: Site boundaries showing existing quarry operation (Quirks Quarry) and existing Landfill operation (Stott's Creek Landfill)

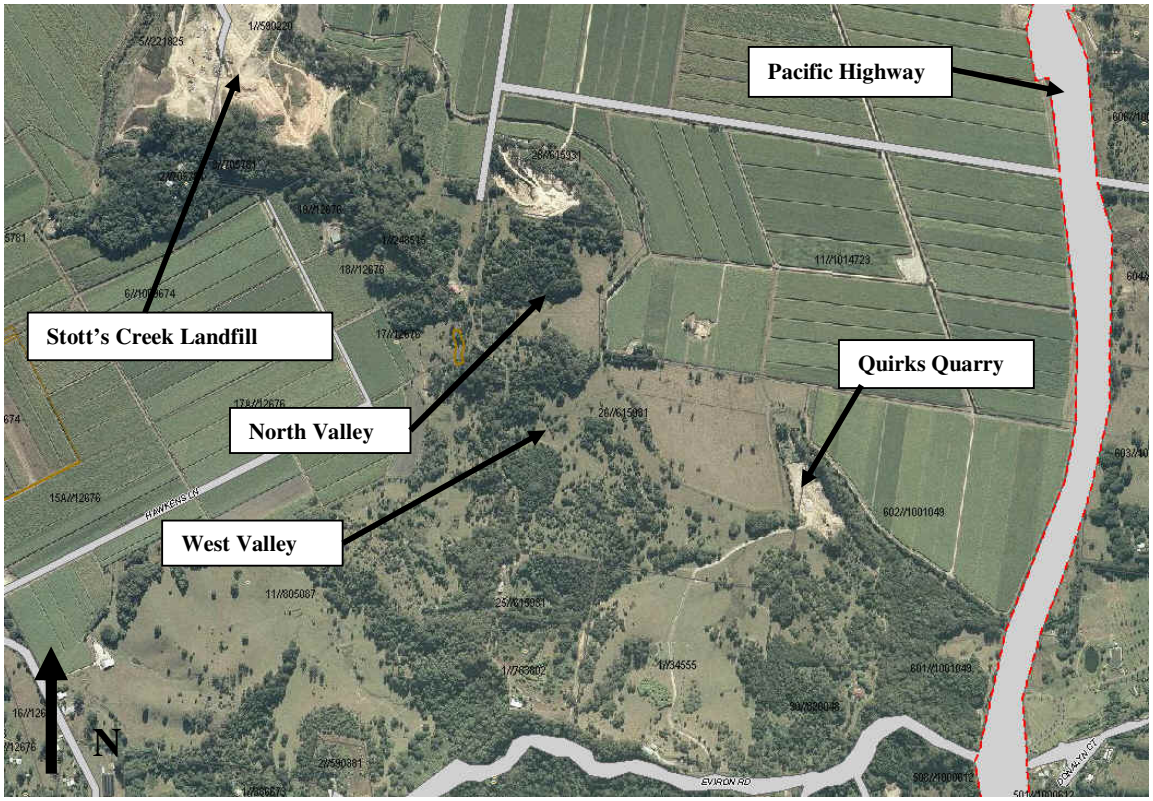

Figure 4: Proposed haul road (link road) from the existing Stott's Creek Landfill Facility to the proposed Eviron Road Quarry and Landfill site

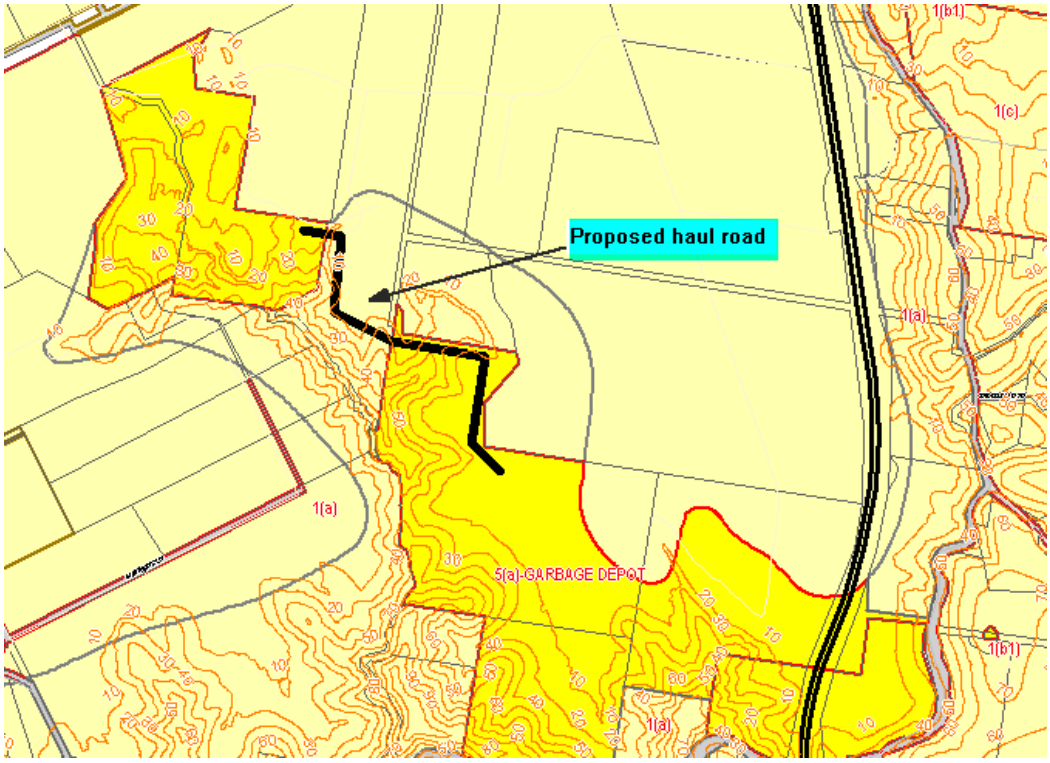

Figure 5: Vegetation mapping over the site (Source: Ecograph 2004)

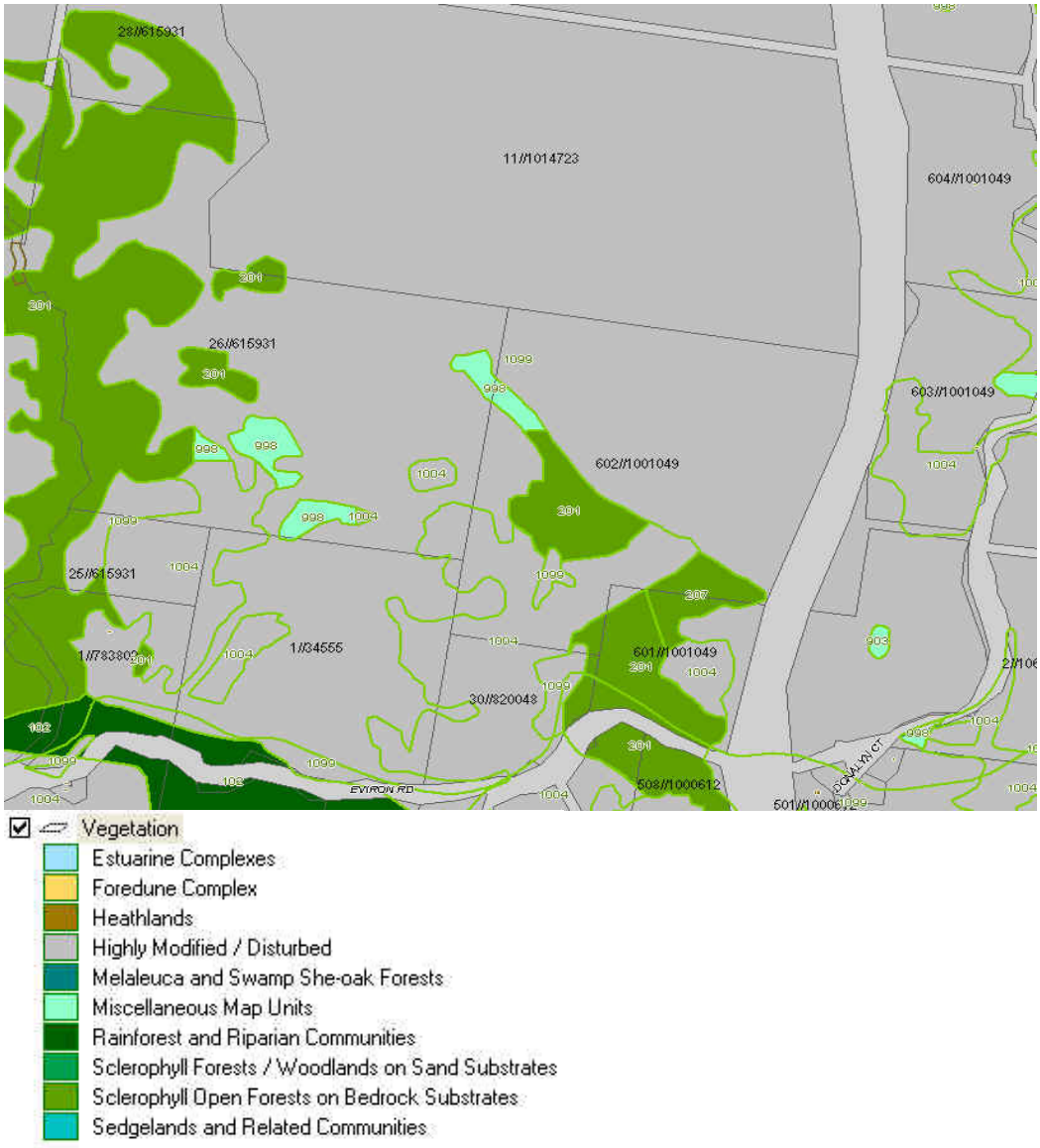

Figure 6: Aerial photography showing mapped vegetation polygons overlaying existing vegetation (Source: Tweed Shire Council GIS and Ecograph 2004)

Figure 7a: 1(a) Rural zoned land adjacent to the Eviron Road site (Source: LEP 2000, Tweed Shire Council GIS)

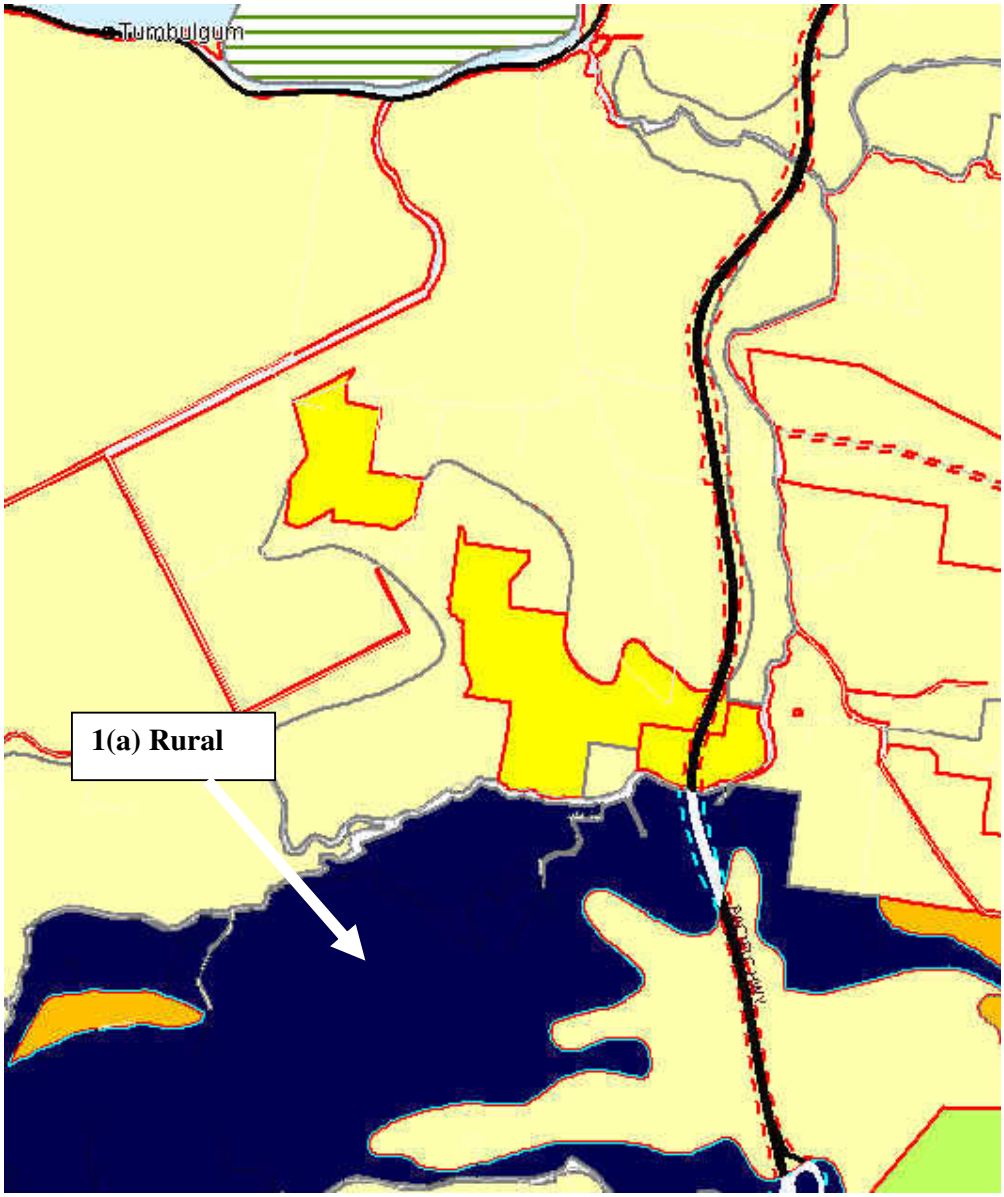

Figure 7b: 1(a) Rural zoned land adjacent the Eviron Road site (Source: LEP 2000, Tweed Shire Council GIS)

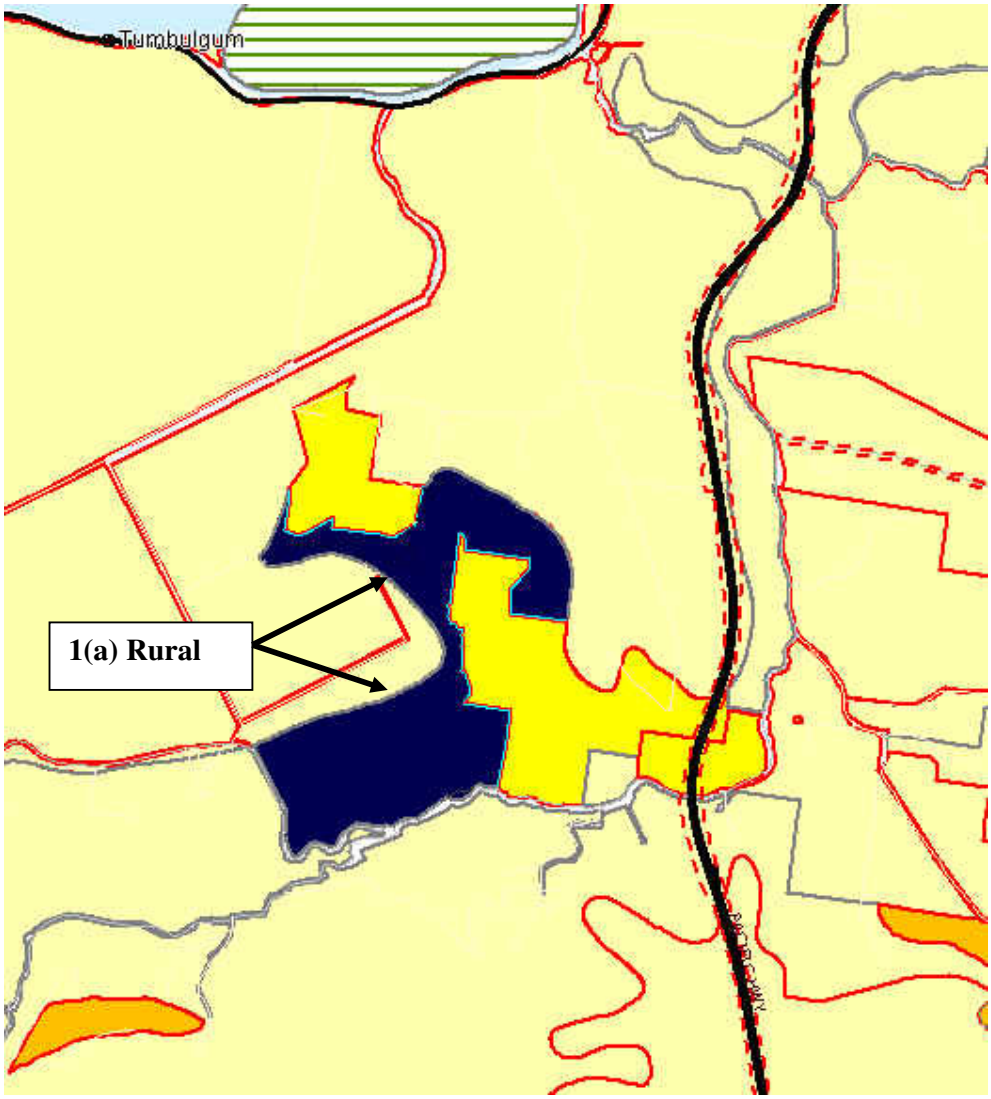

Figure 7c: 1(b2) Agricultural Protection zoned land adjacent to the Eviron Road site (Source: LEP 2000, Tweed Shire Council GIS)

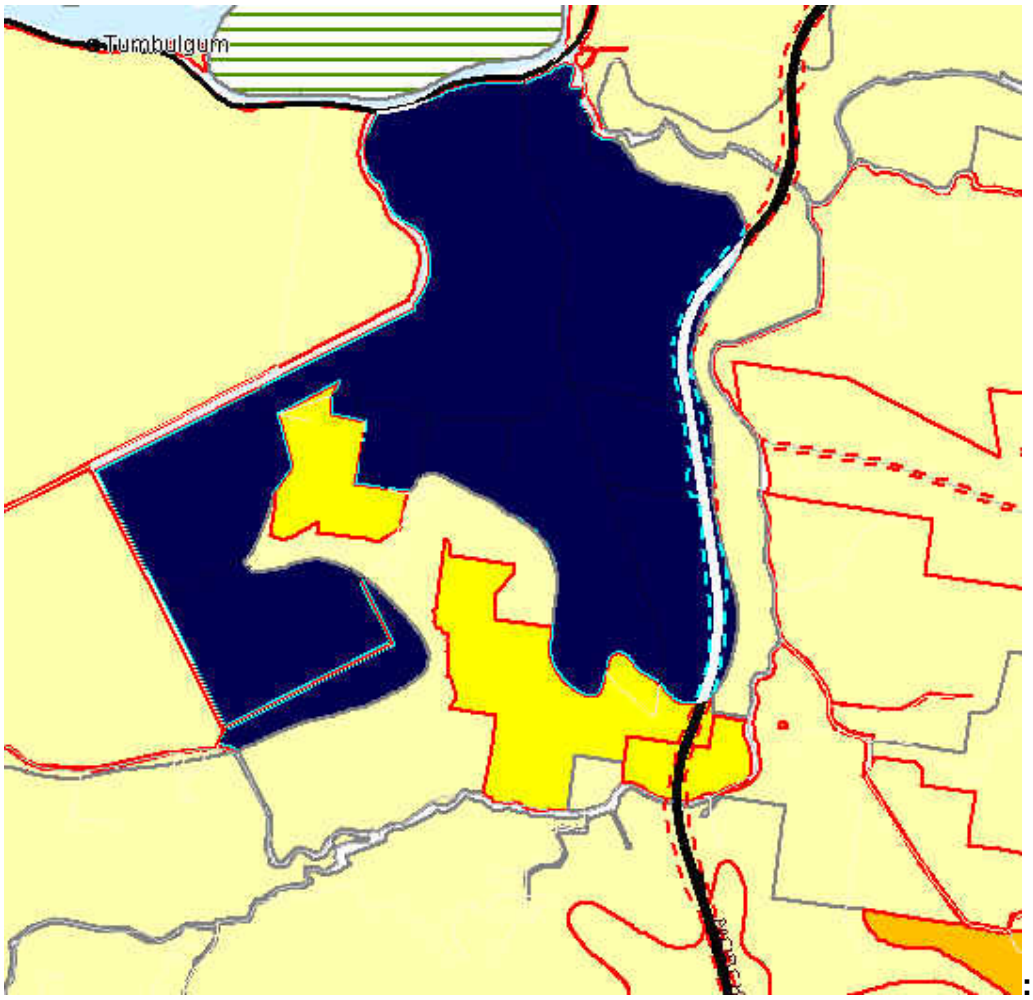

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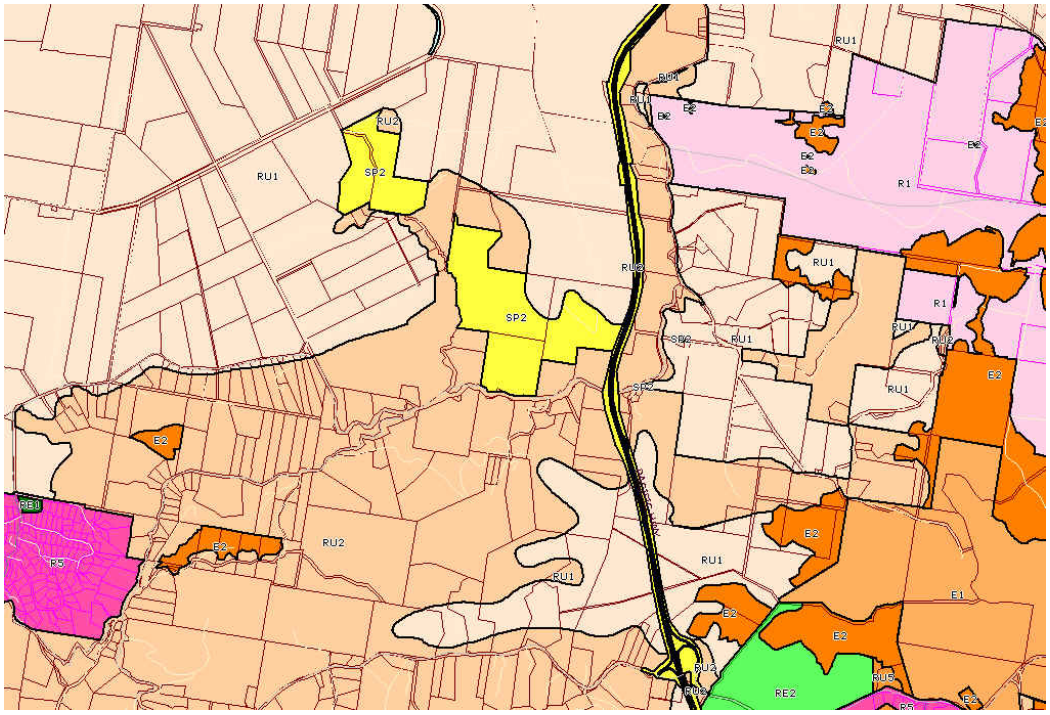
Figure 8: Draft Tweed LEP 2007 Zoning Plan of the broader locality (Source: Tweed Shire Council GIS)



APPENDIX 1: Site Investigations Addressing Soils, Stratigraphy and Proposed Management Measures in relation to Council Land at Eviron, NSW (Gilbert and Sutherland, 2007)

APPENDIX 2: Domestic Solid Waste Management Strategy for Tweed Shire Council