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Shoalhaven City Council

Proposed Resource Recovery
Park, West Nowra, City of
Shoalhaven

Preliminary Environmental
Assessment

December 2009



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Executive Summary

Shoalhaven City Council (the proponent) is seeking to have a Resource Recovery Park assessed and considered for approval under Part 3A of the NSW *Environmental Planning and Assessment Act 1979*.

The development is necessary due to the limited life of the current landfill for the City of Shoalhaven. Without the Resource Recovery Park, and other waste initiatives, the City's landfill site at West Nowra could be exhausted within 12 years. To extend the life of the West Nowra Landfill, Shoalhaven City Council is proposing to develop a Resource Recovery Park which would comprise a range of waste and resource processing activities aimed at maximising resource recovery and minimising the amount of waste destined for landfill disposal. The Resource Recovery Park would include:

- ▶ a composting facility (food and garden organics) to initially process approximately 26,000 tonnes per annum from both domestic and commercial waste sources;
- ▶ a materials recovery facility for sorting through approximately 30,000 tonnes of dry (non-putrescible) solid wastes per annum from both domestic and commercial waste sources;
- ▶ a sorting and recovery facility for sorting through approximately 15,000 tonnes per annum of construction and demolition waste; and
- ▶ other stockpile areas for storing and processing approximately 10,000 tonnes per annum of recyclable materials, such as green waste, scrap steel and concrete.

In total, the proposed Resource Recovery Park would process more than 80,000 tonnes of waste each year.

Apart from hazardous wastes, all incoming materials would be intercepted and subjected to at least one phase of inspection and processing to maximise the potential for resource recovery and opportunity to extract saleable products. Discards, rejects, and unsaleable products that eventually end up in the landfill would be subject to at least a single-stage size reduction operation and remaining organic matter would be stabilised before disposal.

According to Council, if the Resource Recovery Park is constructed, the total amount of waste requiring landfill disposal over the next 20 years would reduce from 1.6 million tonnes to approximately 1 million tonnes. This means that the West Nowra Landfill may have the potential to serve the community's needs for a further 20 years (instead of the predicted 12 years). In the process, Shoalhaven City Council expects to attain and exceed the State's waste diversion target for municipal waste within the time frame allocated by the State Government through the *NSW Waste Avoidance and Resource Recovery Strategy 2007*. Other benefits of the project include the following:

- ▶ The West Nowra Landfill operations would benefit significantly with improved compaction ratio, reduced greenhouse gas production and less toxic leachate. Litter and odour would also be reduced, resulting in reduced bird activity and potential for odour nuisance;
- ▶ The Resource Recovery Park should generate revenue for Council;
- ▶ The Resource Recovery Park would generate significant employment for the local area; and
- ▶ The Resource Recovery Park would increase the recovery of resources, subsequently reducing greenhouse gas emissions both at the landfill site and in the manufacture of replacement products.



Successful operation of the Resource Recovery Park may also encourage the development and/or expansion of similar facilities in the surrounding local government areas, thereby further contributing to the achievement of State-wide waste reduction targets.

The location of each component of the Resource Recovery Park, and thereby the overall development footprint, would be determined via a subsequent master planning process. Some facilities could be located on a completed section of the landfill, thereby reducing the overall footprint of the proposal, if this does not interfere with the viability, operation, and functionality of the Resource Recovery Park. However, at this stage, it is assumed that the proposed development would require 3.5 hectares of bushland immediately adjacent to the existing landfill.

This Preliminary Environmental Assessment has been prepared to provide the NSW Department of Planning with information on the project so that the Director-General's Requirements for the Environmental Assessment under Part 3A of the *Environmental Planning and Assessment Act 1979* can be prepared. Specifically, this Preliminary Environmental Assessment has identified the key environmental issues relevant to the proposal. These are summarised below.

| Issue | Relevance | Environmental Assessment Requirement |
|--|---|---|
| Planning and legislative requirements and State guidelines | | |
| <i>Environment Protection and Biodiversity Conservation Act 1999</i> | The development may impact Grey-headed Flying Fox habitat. | A flora and fauna study would be prepared to determine the significance of any impact. |
| <i>State Environmental Planning Policy 33 – Hazardous and Offensive Development</i> | This SEPP provides for consideration of measures to reduce the impact of the development and contains matters of consideration by consent authorities in determining an application to carry out hazardous and offensive industry including consideration of relevant circulars and guidelines published by the Department of Planning. | The planning provisions within the SEPP would need to be considered during the preparation of the Environmental Assessment. |
| <i>Shoalhaven Local Environmental Plan 1985 clause 28 Danger of Bushfire</i> and <i>Planning for Bushfire Protection 2006</i> (NSW RFS 2006) | The proposed development is within bush fire prone land and therefore clause 28 of the Shoalhaven Local Environmental Plan applies. | The Environmental Assessment would address clause 28 of Shoalhaven Local Environmental Plan and the requirements set out in <i>Planning for Bush Fire Protection 2006</i> . |



| Issue | Relevance | Environmental Assessment Requirement |
|---|---|---|
| State Environmental Planning Policy (Infrastructure) 2007 | The development is considered to be “ <i>Traffic-generating Development</i> ” pursuant to clause 104 of the SEPP. | The Environmental Assessment would undertake a traffic impact assessment to address clause 104 of the SEPP. This Preliminary Environmental Assessment should be forwarded to the NSW Roads and Traffic Authority for comment. |
| <i>Protection of the Environment Operations Act 1997</i> | It is expected that the proposed Resource Recovery Park would require licensing under the provisions of the Act. | In order to ensure the proposed development is designed and approved in accordance with the Act, this Preliminary Environmental Assessment should be forwarded to the Department of Environment, Climate Change and Water for comment. |
| <i>National Parks and Wildlife Act 1974</i> | There is potential for scarred trees, isolated artefacts, and small open campsites to be within the development site. | An Indigenous Heritage Assessment would be undertaken as part of the Environmental Assessment. |
| <i>Threatened Species Conservation Act 1995</i> | The development may impact species on the schedules of the Act, <i>i.e.</i> , Yellow-bellied Glider and the Grey-headed Flying Fox. | A flora and fauna assessment and an Assessment of Significance would be prepared as part of the Environmental Assessment. |
| <i>Environmental Guidelines for Composting and Related Organics Processing Facilities</i> (NSW DEC 2004) | The Guideline is relevant to the green waste processing and stabilisation facility. | The design and operation of the Resource Recovery Park would need to be taken with due consideration of the Guideline. The Environmental Assessment would specify how the proposed development would be compliant with the relevant outcomes. |
| <i>Technical Framework – Assessment and Management of Odour from Stationary Sources in NSW</i> (NSW DEC 2006) | The Framework is relevant to the green waste processing component and the stabilisation facility. | Although the Resource Recovery Park is not expected to exacerbate odour from the existing Landfill site, the application of this Guideline would be considered during the design of the facility and the preparation of the Environmental Assessment. |



| Issue | Relevance | Environmental Assessment Requirement |
|---|---|--|
| Key Environmental Issues | | |
| Flora and Fauna | The development may impact species on the schedules of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> and the <i>NSW Threatened Species Conservation Act 1995, i.e.</i> , Yellow-bellied Glider and the Grey-headed Flying Fox. | A flora and fauna assessment and an Assessment of Significance would be prepared as part of the Environmental Assessment. |
| Indigenous Heritage | There is potential for scarred trees, isolated artefacts, and small open campsites to be within the development site. | An Indigenous Heritage Assessment would be prepared as part of the Environmental Assessment. |
| Water quality | Stormwater coming into contact with materials produced by composting and related organic-processing facilities has the potential to pollute groundwater and surface water bodies. Surface water run-off from composting and related organics-processing facilities can cause sediment and suspended solids in receiving waters. Surface water run-on can lead to excessive generation of affected stormwater. | The potential impact on water quality would be addressed in the Environmental Assessment, with particular reference to NSW DECC (2004) <i>Environmental Guidelines: Composting and related organics processing facilities</i> . |
| Contamination of organics and subsequent off-site impacts | Incomplete or inadequate processing of organics such as mulches and compost can lead to the spreading of pathogens, pests, and diseases. | The Environmental Assessment would detail how these risks are to be managed, especially with reference to <i>Australian Standard AS4454-2003 Composts, Soil Conditioners, and Mulches</i> and the <i>Environmental Guidelines for Composting and Related Organics Processing Facilities</i> (NSW DECC 2004). |



| Issue | Relevance | Environmental Assessment Requirement |
|-----------------------|--|---|
| Air quality | The green-waste processing and stabilisation facilities may contribute to an increase in odours, thereby creating a cumulative impact when combined with odours from the existing landfill site. | <p>With regard to the green waste processing and stabilisation facilities, the Environmental Assessment would assess air quality impacts and how they are to be addressed with reference to:</p> <ul style="list-style-type: none"> ▶ <i>Environmental Guidelines for Composting and Related Organics Processing Facilities</i> (NSW DECC 2004) ▶ <i>Technical Framework: Assessment and Management of Odour From Stationary Sources in NSW</i> (NSW DEC 2006) ▶ <i>Technical Notes – Assessment and Management of Odour From Stationary Sources in NSW</i> (NSW DEC 2006b). |
| Noise | Shredding of green waste may result in high noise levels depending upon the type of shredder used, and whether it is located within a building or outdoors, and thereby contribute to a cumulative impact. | Although noise is likely to be only a minor issue due to the site location, impacts on the closest sensitive receivers during shredding operations would be addressed in the Environmental Assessment, especially in relation to cumulative impacts. |
| Geology and soils | Development would involve extensive vegetation removal and earthworks. These actions could increase the rate of erosion at the site, and would likely have an impact on the local soil and geology. | The impact on geology and soils would be assessed as part of the Environmental Assessment. |
| Transport and Traffic | The proposed Resource Recovery Park is anticipated to result in increases in traffic due to exporting of recovered resources from the site (compared to the current situation, where most material that enters the site is landfilled there). Additional recyclables may also be processed by the MRF. | A traffic impact assessment would be prepared as part of the Environmental Assessment. This is to have due consideration of current and future land uses in the vicinity of the Resource Recovery Park and Yalwal Road. |



Abbreviations and Acronyms

| | |
|------------------------|---|
| AHIMS | Aboriginal Heritage Information Management System |
| CAA | Controlled Activity Approval |
| cl. | Clause (<i>i.e.</i> of a regulation or SEPP) |
| DGRs | Director General's Requirements |
| DoP | Department of Planning (NSW) |
| EA | Environmental Assessment |
| EP&A Act | <i>Environmental Planning and Assessment Act 1979</i> (NSW) |
| EPBC Act | <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth) |
| EPI | Environmental Planning Instrument |
| Ha | Hectare |
| LALC | Local Aboriginal Land Council |
| LEP | Local Environmental Plan |
| LGA | Local Government Area |
| MRF | Materials Recovery Facility |
| PEA | Preliminary Environmental Assessment |
| POEO Act | <i>Protection of the Environment Operations Act 1997</i> (NSW) |
| RDF | Refuse Derived Fuel |
| RRP | Resource Recovery Park |
| s. | Section (<i>i.e.</i> of an Act) |
| SCC | Shoalhaven City Council |
| SEPP | State Environmental Planning Policy |
| SEPP 44 | <i>State Environmental Planning Policy 44 Koala Habitat</i> |
| SEPP Major Development | <i>State Environmental Planning Policy (Major Development) 2005</i> |
| SLEP | <i>Shoalhaven Local Environmental Plan 1985</i> |



1. Introduction

Shoalhaven City Council (the proponent) is seeking to have a Resource Recovery Park (RRP) assessed and considered for approval under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

GHD has been engaged by the proponent to prepare this Preliminary Environmental Assessment (PEA) to support the project application for the proposed RRP located on Flat Rock Road in West Nowra.

1.1 Purpose of the PEA Report

The purpose of this PEA is to provide the Department of Planning (DoP) with information on the project so that DoP can prepare Director-General's Requirements (DGRs) for the Environmental Assessment (EA) under Part 3A of the EP&A Act. The PEA outlines the approval process for the project, describes the existing environment and the proposed development, and outlines key issues that would be addressed in the EA.

1.2 Background

Shoalhaven City Council (SCC) recently acquired 14.5 hectares (ha) of land immediately adjacent to the West Nowra Recycling and Waste Facility for the proposed construction and operation of the RRP and expansion of the existing landfill facility (refer to Figure 1-1).

Following a threatened biodiversity survey undertaken by Hyder Consulting in 2007, SCC resolved to forego expansion of the landfill and utilise 3.5 hectares in the north-western corner of the 14.5 ha property for the development of the RRP (refer to Figure 1-2).

The RRP would comprise the following operations:

- ▶ a composting facility (food and garden organics) to initially process approximately 26,000 tonnes per annum from both domestic and commercial waste sources;
- ▶ a materials recovery facility (MRF) for sorting through approximately 30,000 tonnes of dry (non-putrescible) solid wastes per annum from both domestic and commercial waste sources;
- ▶ a sorting and recovery facility for sorting through approximately 15,000 tonnes per annum of construction and demolition waste; and
- ▶ other stockpile areas for storing and later processing of approximately 10,000 tonnes per annum of previously sorted recyclable materials, such as green waste, scrap steel, and concrete.

In total, the proposed RRP would handle more than 80,000 tonnes of waste per year. Further details are provided in Section 2.



1.3 Need for the Project

1.3.1 State-wide Perspective

There is increasing concern across NSW about the management of waste, limited re-use and recycling, and heavy reliance on landfills. The underlying policy drivers behind current State waste management strategies is the need to maximise conservation of natural resources and minimise environmental harm from waste management and disposal of solid waste. These drivers become increasingly important in NSW due to a growing population and an economy that is producing more goods and services (DECC 2007).

The need for resource recovery and waste reduction is highlighted in the *NSW Waste Avoidance and Resource Recovery Strategy 2007* (DECC 2007). This strategy provides the framework that is to guide the Government's policy objectives of minimising environmental harm from waste generation through to disposal, and conserving and maximising resource use with the Broad Targets specified as:

"By 2014, to:

Increase recovery and use of materials from the municipal waste stream, from 26% (in 2000) to 66%

Increase recovery and use of materials from the commercial and industrial waste stream, from 28% (in 2000) to 63% and

Increase recovery and use of materials from the construction and demolition sector, from 65% (in 2000) to 76%."

In their cost benefit analysis, Wright Corporate Strategy Pty Ltd (2008) demonstrated that the proposed RRP would contribute significantly to these state-wide targets.

1.3.2 Local Perspective

Regardless of the *NSW Waste Avoidance and Resource Recovery Strategy 2007*, SCC is striving to become a leader in the recovery of recyclable materials and minimise the quantities of waste to landfill by re-using and re-processing other waste types.

Wright Corporate Strategy Pty Ltd (2008) analysed the proposal and assessed the relative benefits of the RRP. Their assessment made the following conclusions:

- ▶ *"In twenty years time, it is expected that Council will be disposing an additional 20,000 tonnes each year to landfill – up nearly 30% on the current disposal rate...over the 20 years this will amount to some 1.6 million tonnes disposed to landfill; which, when compared with the estimated remaining capacity for the West Nowra landfill of 1 million tonnes presents Council with a major challenge."*
- ▶ *Within twelve (12) years from now, West Nowra landfill will be exhausted and a new site must be ready to receive waste destined for disposal. Allowing for modest time to acquire, approve, design and construct that new facility, Council has perhaps seven (7) years remaining to identify and acquire the next suitable site for Shoalhaven's landfill demands."*

The need for the development is therefore underpinned by the limited life of the current landfill at West Nowra. Without the RRP (and other waste reduction initiatives) the West Nowra landfill could be exhausted within 12 years and a new site would have to be made ready prior to this period (Wright



2008). To extend the life of the West Nowra Landfill, SCC is proposing a suite of waste reduction initiatives that will feed materials through the RRP and reduce the amount of waste disposed at the landfill.

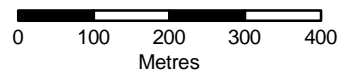
1.4 Benefits of the RRP

If the RRP is constructed, Wright (2008) predicts that over the next 20 years, the total demand for landfill space would reduce from 1.6 million to a little over 1 million tonnes. This means that the West Nowra Landfill may have the potential to serve the community's need for a further 20 years (instead of the predicted 12 years). In the process, SCC should also attain and exceed the State waste diversion target for municipal waste within the time frame allocated by the State Government through the *NSW Waste Avoidance and Resource Recovery Strategy 2007*.

Other benefits that are likely to be realised through the operation of the RRP are as follows:

- ▶ The adjacent landfill operations would benefit significantly with improved compaction ratio, reduced greenhouse gas production and less toxic leachate. Litter would also be reduced along with odour, less bird activity and less potential for odour nuisance.
- ▶ The RRP may be capable of generating revenue (Wright 2008).
- ▶ The RRP would generate significant employment for the local area (refer Table 2-9).
- ▶ The RRP would recover more resources which may reduce greenhouse gas emissions both at the landfill site and in the manufacture of replacement products.

Successful operation of the RRP may also see expansion of similar facilities in the surrounding local government areas, thereby further contributing to the achievement of state-wide waste reduction targets.



1:10,000 (at A3)

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56



Legend

- Potential Development Area
- Lot 436 DP 808415 Stage 1 Completed Landfill
- Lot 1 DP 1018193 Stage 1 Completed Landfill
- Lot 1 DP 847203 Stage 2 Existing Landfill
- Lot 1 DP 870268 Stage 3 Future (approved) Landfill
- Lot 1 DP 1104402
- SCC Animal pound
- DECCW Nowra Area Office and Depot
- Cadastre



Shoalhaven City Council
West Nowra Recycling and Waste Facility



Site Location

| | |
|------------|-------------|
| Job Number | 23-13393 |
| Revision | C |
| Date | 22 Dec 2009 |

Figure 1-1



Legend

-  Potential Development Footprint
-  Cadastre Info



Shoalhaven City Council
Proposed Resource Recovery Park
Preliminary Environmental Assessment

Job Number | 23-13393
Revision | B
Date | DEC 2009

Potential Development Footprint

Figure 1_2

57 Graham Street Nowra NSW 2541T 61 2 4424 4900 F 61 2 4424 4999 E noamail@ghd.com W www.ghd.com



2. The Proposed Resource Recovery Park (RRP)

2.1 Location

The proposed RRP would be located on Flatrock Road in West Nowra (City of Shoalhaven), specifically, 3.5 ha of the northwest corner of Lot 1 DP 1104402 (refer to Figure 1-2).

Where the viability, operational, and functional requirements of the facility allow, some components of the RRP may be established on “Stage 1” (a completed section) of the existing landfill (Lot 1 DP 1018193 and Lot 436 DP 808415). The development footprint will ultimately be determined during subsequent development planning stages.

2.2 The Existing Environment and Local Setting

The site of the proposed RRP is approximately five kilometres to the west of the Nowra Central Business District and is accessed from Flatrock Road, off Yalwal Road in West Nowra (refer to Figure 1-1).

The site is within close proximity to the Department of Environment, Climate Change and Water’s (DECCW) Nowra Area Office and Depot and the SCC animal shelter and pound (refer to Figure 1-1). A small number (approximately six) of rural residential properties are located approximately 500 metres south of the proposed RRP site and the Shoalhaven Campus of the University of Wollongong is located approximately 1.5 km to the east. The remaining land surrounding the site is undeveloped bushland; primarily the Bamarang Nature Reserve and/or land owned by the Nowra Local Aboriginal Land Council and the SCC.

This SCC owned property which is adjacent to the existing landfill site consists of 14.5 ha of naturally occurring, mixed-species, eucalypt woodland. It is relatively undisturbed and weed free. Three primary vegetation communities are present, including (Hyder 2007):

- ▶ Grey Gum – Stringybark Woodland;
- ▶ Scribbly Gum – Casuarina Forest; and
- ▶ Scribbly Gum – Bloodwood Woodland.

Field surveys conducted by Hyder (2007) located three (3) threatened animals and one (1) threatened plant occurring on the 14.5 ha site, *i.e.*:

- ▶ Powerful Owl *Ninox strenua*;
- ▶ Glossy Black Cockatoo *Calyptoryhynchus lathamii*;
- ▶ Yellow-bellied Glider *Petaurus Australia*; and
- ▶ Nowra Heath-myrtle *Triplarina nowraensis*.

Hyder (2007) also concluded that potential exists for the Grey-headed Flying Fox to occur on the site at certain times of year.

In addition to threatened species and their habitat, a number of other constraints to the development of the 14.5 ha site were identified. This included the presence of protected native fauna and flora and their habitat, the presence of healthy and naturally functioning ecosystems, and the presence of extensive native vegetation and linkages (Hyder 2007).



SCC commissioned Hyder Consulting Pty Ltd to identify an 'area of least impact' for the development of the RRP. Hyder "*rigorously assessed*" a one hectare portion in the northwest corner and an additional 2.5 ha portion along the western boundary for threatened species and habitat. In their assessment Hyder (2007) made the following "*general comments*" regarding the total 3.5 ha portion:

- "1. The area's northern and western boundaries adjoin the existing landfill facility, favouring opportunities for development.*
- 2. The site itself is naturally covered and the eastern and southern boundaries adjoin naturally covered land known to support threatened species and their habitat (potential development constraint).*
- 3. No threatened plants or animals were identified on site during field investigations*
- 4. No grey gum or bloodwood trees with Yellow-bellied Glider feeding scars (incisions) were located during investigations. Although grey gum and blood wood trees were detected.*
- 5. Scratches were commonly detected on the trunks of scribbly gums and grey gums however it is not known what animal/s caused these scratches.*
- 6. Many large habitat trees with a girth of greater than 1 metre at breast height were detected and mapped."*

Based on the Hyder (2007) assessment, SCC resolved to forego expansion of the landfill and seek to utilise only the identified 3.5 hectare portion in the northwest corner of the property for the development of the RRP (refer to Figure 1-2).

2.3 Proposed RRP Facilities and Activities

The RRP would comprise a range of waste and resource processing activities aimed at maximising resource recovery and minimising the amount of waste destined for landfill disposal. Facilities and activities are likely to include:

- ▶ a Mulching and Composting Facility for organics / green waste stockpiling and processing;
- ▶ a Material Recovery Facility (MRF) for the sorting of dry (non-putrescible) solid waste;
- ▶ a Sorting and Recovery Facility for construction and demolition waste sorting, stockpiling, and processing; and
- ▶ Stockpiling / Sorting / Processing Facility for other waste types such as scrap steel.

Locations for the facilities and sub-components would be determined through the preparation of a Masterplan. This would include consideration of current site conditions and space requirements for individual facilities and activities.

This project aims to increase the recovery of recyclable materials and minimise the quantities of waste to landfill through re-using and re-processing within the Shoalhaven Local Government Area (LGA). No materials would be permitted to be disposed directly to landfill (other than hazardous wastes). Apart from hazardous wastes, all incoming materials would be intercepted and subjected to at least one phase of inspection and processing to maximise the potential for resource recovery and opportunity to extract saleable products.

Discards, rejects, and unsaleable products that eventually end up in the landfill would be subject to at least a single-stage size reduction operation and remaining organic matter would be stabilised before



disposal. Under these circumstances, the landfill operations would benefit significantly with improved compaction rates, reduced greenhouse gas production and a less reactive leachate. Litter and odour would also be reduced, resulting in reduced bird activity around the landfill and less potential for odour nuisance.

2.3.1 Mulching and Composting Facility – Organics / Green waste

Green waste would be processed via single-stage size reduction and screening plus maturation in open windrows. Oversize material from the primary size reduction would be stockpiled for either dispatch as 'refuse derived fuel' (RDF) if a market exists, or for grinding. Products from the grinding operations would be co-fed into the open windrows for maturation with the other shredded green waste.

The main products sought from green waste processing are a soil component and mulch. RDF may also be considered if a market becomes available.

Green waste would be sourced from regional depots and by Nowra-region residents dropping off self-haul green waste. As shredding and screening would be undertaken on a campaign basis (*i.e.* as required when accumulated quantities enable efficient use of equipment), incoming material would be stockpiled in a temporary drop-off location prior to shredding and screening.

Rainwater falling on, and shedding off the stockpiled green waste and the open windrows would be classified as leachate and therefore require retention and treatment.

The five steps of green waste processing are described below.

Table 2-1 Green Waste Processing

| Step | Activities | Plant | Notes |
|------|--------------------------------|--|--|
| 1 | Pre-sort | Hand and small excavator | Delivered materials are dropped off in a designated area and sorted for the removal of gross contaminants. |
| 2 | Size reduction and screen | Front end loader, shredder and screens | Materials are loaded into the shredder for a single-stage size reduction followed by a single-stage screen – undersize (<80 mm) to maturation, oversize (>80 mm) to grinding or RDF. |
| 3 | Maturation | Open Windrows | Shredded Material (<80 mm) is heaped into open windrows for static maturation. |
| 4 | Stockpile and 'campaign' grind | Front end loader and mobile grinder | Stockpile oversize material (>80 mm) for either dispatch to RDF or campaign grinding. |
| 5 | Screen | Front end loader | Matured product is screened into three fractions – soil (<25 mm) and mulch (>25 - < 80 mm) product streams. |

Source: Wright, 2008.



2.3.2 Stabilisation

This process is primarily aimed at stabilising the organic component contained in the waste stream coming from kerbside collection and source-separated mixed wet commercial wastes. Although a modest amount of resource recovery is expected, significant benefits in landfill compaction are expected with the inclusion of a size reduction stage (Wright 2008). The three steps of the stabilisation process are described in Table 2-2 below.

The covered static stabilisation phase would be undertaken with an active passage of air through the pile to maintain aerobic conditions and thereby reduce odour emissions. Once stabilisation is achieved, the material would be disposed directly to landfill.

The receiving and pre-processing activities would be undertaken in a roofed building with sufficient side enclosure to prevent litter dispersal. A concrete slab would provide the surface area for the drop-off and sorting facility. The slab and roof would also provide protection against rainwater and run-off (Wright 2008).

Table 2-2 Stabilisation process

| Step | Activities | Plant | Notes |
|------|--|--|---|
| 1 | Pre-sort | Hand and excavator | Delivered materials are dropped off in a designated area and sorted for gross contaminants and bulky wastes – green, metals, timber, and construction and demolition wastes. |
| 2 | Size reduction, screen, and metal recovery | Front end loader, shredder and screens | Materials are loaded into the shredder for a single-stage size reduction. Shredded material is screened into two components - undersize (<80 mm) for stabilisation, and oversize (>80 mm) for re-shredding, disposal or RDF. |
| 3 | Stabilisation | Covered windrows | Shredded undersize material is heaped into windrows for covered static stabilisation prior to disposal to landfill. |

Source: Wright, 2008.

2.3.3 Material Recovery Facility (MRF)

The MRF process would be designed to capture some recoverable products from an essentially dry waste stream, that is, source separated commercial and industrial waste and self-haul drop-off domestic waste at depots. The remaining waste would be disposed to the landfill following size reduction to enhance landfill compaction.

The process would involve a semi-manual / mechanical sort to recover bulky wastes and recoverables, then a single-stage reduction operation followed by screening to achieve the separate product and waste streams sought. The two steps of the MRF process operations would be as described in Table 2-3 below.



Table 2-3 MRF Process

| Step | Activities | Plant | Notes |
|------|--|--|---|
| 1 | Pre-sort | Hand and Excavator | Delivered materials are dropped off in a designated area and sorted for removal of gross contaminants and bulky wastes – green, metals, timber, construction and demolition. |
| 2 | Size reduction screen and metal recovery | Front end loader, shredder and screens | Materials are loaded into the shredder for a single-stage size reduction and recovery of metals by magnet. Shredded material is screened into three fractions – fines (<25 mm), mid-size (>25 mm <80 mm) for disposal, plus oversize (>80 mm) for RDF or disposal. |

Source: Wright, 2008.

In the pre-sort stage (Step 1 of Table 2-3) it is proposed that bulky wastes that can be diverted to processing elsewhere (e.g. scrap metals, green waste and large construction and demolition waste) would be extracted along with any gross contaminants prior to the size reduction activity (Step 2 above).

The source for the MRF operation would arrive at the site at various times during the day and week and would be from three waste streams, *i.e.*:

1. transfers from regional depots;
2. self-haul drop-off waste from Nowra residents;
3. source-separated dry commercial waste from local businesses.

The drop-off point and pre-sorting location would be a covered concrete slab of approximately 1,000 square metres in area. The roof and concrete floor would be designed to minimise rainwater run-off from the site.

Waste would then be uplifted from the drop-off and pre-sort area for 'campaign-based' shredding and screening followed by direct disposal of un-recoverable materials to the adjacent landfill (Step 3 in Table 2-3 above).

2.3.4 Construction and Demolition Waste Recovery

Processing of construction and demolition waste would follow a relatively conventional approach of size reduction and screening (refer to Table 2-4), except that low-speed high torque shredding would be utilised (as opposed to the more traditional crusher).

Table 2-4 Construction and Demolition Resource Recovery Process

| Step | Activities | Plant | Notes |
|------|------------|--------------------|--|
| 1 | Pre-sort | Hand and Excavator | Delivered materials are dropped off in a designated area and sorted for removal of gross contaminants. |



| Step | Activities | Plant | Notes |
|------|--|--|--|
| 2 | Size reduction screen and metal recovery | Front end loader, shredder and screens | <p>Materials are loaded into the shredder for a single-stage size reduction and recovery of metals by magnet.</p> <p>Shredded material is screened into three fractions <i>i.e.</i> fines (<10 mm), coarse aggregate (>10 to <50 mm) for disposal, plus oversize (>50 mm) for RDF or disposal.</p> |

Source: Wright, 2008.

Construction and demolition wastes would be dropped off on a designated hardstand area. This area would measure approximately 1,000 square metres and be uncovered. Pre-sorting would be on a 'campaign' basis followed by delivery to the shredding and screening facility.

Following shredding and basic screening, smaller mobile screens and stacking conveyors would be used for final sorting and stockpiling of products for sale.

2.3.5 Stockpiling/Sorting/Processing Facility for Other Waste Types

Kerbside collected and depot drop-off dry recyclables would be processed through a conventional MRF.

Recovered products (such as conventional dry packaging recyclables and paper, scrap metal, oils, batteries, etc) would be aggregated and stockpiled for uplift by transporters for delivery to buyers.

2.4 Proposed RRP Footprint

The facilities and their exact location are yet to be determined. Some facilities (such as the MRF) may be located off-site depending on the needs and requirements of contractors. Some facilities could be located on a completed section of the adjacent West Nowra Landfill, thereby reducing the overall footprint of the proposal, if this does not interfere with the viability, operation, and functionality of the Resource Recovery Park. The exact location of each facility would be determined in subsequent planning phases. However, at this stage it has been assumed that the proposed development would require the 3.5 hectares of land shown in Figure 1-2.

2.5 Project Cost Estimate

Wright Corporate Strategy Pty Ltd carried out a cost benefit analysis (2008) for the RRP, which presented the following key findings:

- ▶ The RRP (as an independent business unit) may be capable of generating a modest surplus of around \$5 million in net present value terms over a 20-year project modelling life;
- ▶ When the impact of the activities at the RRP are considered in terms of other independent business units within Council, such as the landfill, there is likely to be a further surplus of \$5 million in net present value terms over a 20-year project modelling life;
- ▶ In the first three years of operation, the RRP would require the investment of almost \$7.5 million in capital to establish the plant, buildings and site infrastructure;



- ▶ The benefits from the capital invested in the RRP will be seen from year one with revenue exceeding operational costs from the first year of operation, and growing over time; and
- ▶ With strong and positive operating cash flows from year one, the RRP has the potential to repay the capital invested after seven (7) years of operation.

2.6 Utilities and Services

Power and water would be drawn from local reticulated main supplies.

Standard telephone cabling and two-way radio / mobile telephones would provide the required telecommunication services.

Shoalhaven's reticulated sewerage system does not currently service the site. Alternative waste systems such as septics or pump-outs would need to be provided to service the expected increases in staff, RRP visitors, and customers. Although detailed layout and design of the RRP has yet to be completed, these facilities are expected to be placed within the proposed footprint of the RRP.

2.7 Hours of Operation

The RRP is anticipated to be operational from 0800 – 1700 hours every day except Christmas Day and Easter Sunday.

2.8 Current and Future Waste Statistics

Currently SCC, through contractors, operates the following recycling and waste collection and disposal, depot operation, and processing services:

- ▶ recycling – fortnightly kerbside collection of 240 litre mobile recycling bins;
- ▶ waste – weekly kerbside domestic waste collection from a mixture of 80, 120 and 240 litre sized mobile garbage bins and disposed of at SCC's only licensed solid waste landfill at West Nowra;
- ▶ organics – although green waste collection trials were carried out (SCC 2009) a LGA-wide kerbside bin collection service is not currently available for organic wastes. Residents are encouraged through interpretative and education programs to minimise waste and home compost their green and food wastes. Residents also have an option of using an on-call collection service or disposing materials at one of Council's ten (10) recycling and waste facilities where green waste is stockpiled for processing;
- ▶ green waste – on-call collection of domestic green waste;
- ▶ bulky waste - on-call collection of domestic bulky waste;
- ▶ transfer of waste – waste delivered to transfer bins at each of Council's recycling and waste facilities is collected, transported, and disposed of at the West Nowra Landfill; and
- ▶ operation of depots – gatehouse operations and supervision at Council's recycling and waste facilities, including operation of buy-back centres and the recovery and sale of saleable goods and recyclable materials.

Data from the SCC on waste generation and resource recovery within the LGA provides the following benchmark based on the 2006/07 financial year (Table 2-5).



Table 2-5 Waste Generation and Resource Recovery 2006/07

| | Tonnes | Percentage of resource recovery |
|-----------------|--------|---------------------------------|
| Waste generated | 93,672 | |
| Waste recovered | 27,614 | 29% |
| Waste disposed | 66,065 | 71% |

Source: Wright 2008

Without waste minimisation and recovery systems such as the RRP, forecasted waste generation, landfill disposal and resource recovery tonnages are expected to increase significantly due to population growth (refer to Table 2-6). It is expected that over a 20 year period the demand for landfill within the Shoalhaven LGA would increase from around 70,000 tonnes per annum to around 90,000 tonnes per annum (refer Table 2-6). The cumulative amount of waste requiring landfill disposal at West Nowra Landfill over the next 20 years would be in the order of 1.6 million tonnes in total, well in excess of the 1.0 million tonnes capacity of the current approved site.

Table 2-6 Forecast Waste Generation, Recovery and Disposal Rates without the RRP and other initiatives

| | 2008/09 | 2017/18 | 2027/28 |
|-----------------|---------|---------|---------|
| Waste Generated | 93,783 | 111,410 | 133,176 |
| Waste recovered | 26,405 | 34,724 | 44,997 |
| Waste disposed | 67,378 | 76,686 | 88,179 |

Source: Wright, 2008.

With the introduction of waste reduction initiatives, including the operation of the RRP, substantial reduction in disposal tonnages are anticipated (refer Table 2-7). The gains in resource recovery are also significant.

Table 2-7 Forecast Waste Generation, Recovery and Disposal Rates with the RRP

| | 2008/09 | 2017/18 | 2027/28 |
|-----------------|---------|---------|---------|
| Waste Generated | 93,783 | 111,410 | 133,176 |
| Waste recovered | 28,658 | 62,239 | 77,309 |
| Waste disposed | 65,125 | 49,171 | 55,867 |

Source: Wright, 2008.

When these tonnages figures are presented as percentages and compared with the 2006/07 results (Table 2-5) significant increases in resource recovery are anticipated with the operation of the RRP (Table 2-8).

The figures presented here assume that high calorific value oversized reject material (refuse derived fuel, RDF) from some of the waste streams has been disposed to landfill. If (RDF) market becomes available and this material is utilised, then resource recovery in 2027/28 is expected to increase by another 5 percent to 63 percent (Wright 2008).



Table 2-8 Anticipated Improvements to Resource Recovery 2006/07 to 2027/28

| | 2006/07 | 2017/18 | 2027/28 |
|-----------------|---------|---------|---------|
| Waste recovered | 29% | 56% | 58% |
| Waste disposed | 71% | 44% | 42% |

Source: Wright, 2008.

2.9 Project Employment

Based on similar projects, it is anticipated that the employment generated during the project would be as shown in Table 2-9 below. These numbers are indicative, and would be subject to the quantities processed and the type of technology used.

Table 2-9 Anticipated Project Employment Generation

| Facility | Staffing (peak numbers) | | | | |
|-------------------------------------|-----------------------------|--------------|------------|-----------|-------------|
| | Throughput (tonnes / annum) | Construction | Commission | Operation | Maintenance |
| Composting facility | 26,000 | 20 | 5 | 5 | 2 |
| MRF | 30,000 | 10 | 5 | 10 | 2 |
| Construction and demolition sorting | 15,000 | 10 | 2 | 2 | 1 |
| Stockpile and sorting | 10,000 | 10 | 2 | 1 | 1 |
| TOTAL | | 50 | 14 | 18 | 6 |



2.10 Project Delivery Program

Indicative timeframes for the delivery of the project are shown in Table 2-10 below. These timeframes are based on timeframes for similar projects.

Table 2-10 Likely Project Delivery Timetable

| Phase | Anticipated Time-frames | Potential Date |
|--------------------------------------|--|-------------------------------|
| Design of facilities | 12 weeks | February – April 2010 |
| Environmental Assessment Preparation | 6 months | February – July 2010 |
| Development Approval | 3 – 6 months | July – November 2010 |
| Tendering | 18 weeks (2 weeks on documentation, advertise for 6 weeks, 4 weeks to assess and report to council for resolution, 6 weeks for tenderer to mobilise) | November 2010 – February 2011 |
| Construction | 12 months | February 2011 – January 2012 |



3. Planning and Legislative Requirements

3.1 The EP&A Act and the Project Approval Process

Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) establishes an assessment and approval regime for development that is declared to be Part 3A Project by either a state environmental planning policy (SEPP) or ministerial order (s.75B).

Under clause 6 of SEPP (Major Development) 2005 (SEPP Major Development), “*development for the purpose of resource recovery or recycling facilities that handle more than 75,000 tonnes per year of waste or have a capital investment value of more than \$30 million*” is a type of development to which the development assessment and approval process under Part 3A of EP&A Act applies. As the proposed RRP is expected to handle more than 80,000 tonnes, it is considered a “*Major Development*” under the SEPP and the assessment and approval process under Part 3A of the EP&A Act therefore applies.

Under the Part 3A process, the NSW Department of Planning (DoP) prepares and makes publically available the key issues that a proponent must address in an environmental assessment (EA) of the proposal. These are known as the Director-General’s requirements (DGRs). Once the proponent has prepared the environmental assessment, it is checked that it addresses the DGRs and, if satisfactory, the DoP will arrange to exhibit the environmental assessment for public comment for a minimum of 30 days. A determination by the Minister of Planning is made post-exhibition.

This Preliminary Environmental Assessment informs the DoP in the preparation of the DGRs by providing an overview of the local environmental setting and the proposed development, outlining the planning provision applying to the site, and identifying potential key issues that would be addressed in the subsequent EA.

3.1.1 Environmental Planning Instruments

Environmental Planning Instruments (EPIs) are made in accordance with Part 3 of the EP&A Act for the purposes of achieving the objectives of the Act. EPIs that are relevant to the proposed development are listed in Table 3-1 along with an analysis of any implications the EPI has on the proposal and the preparation of the EA.

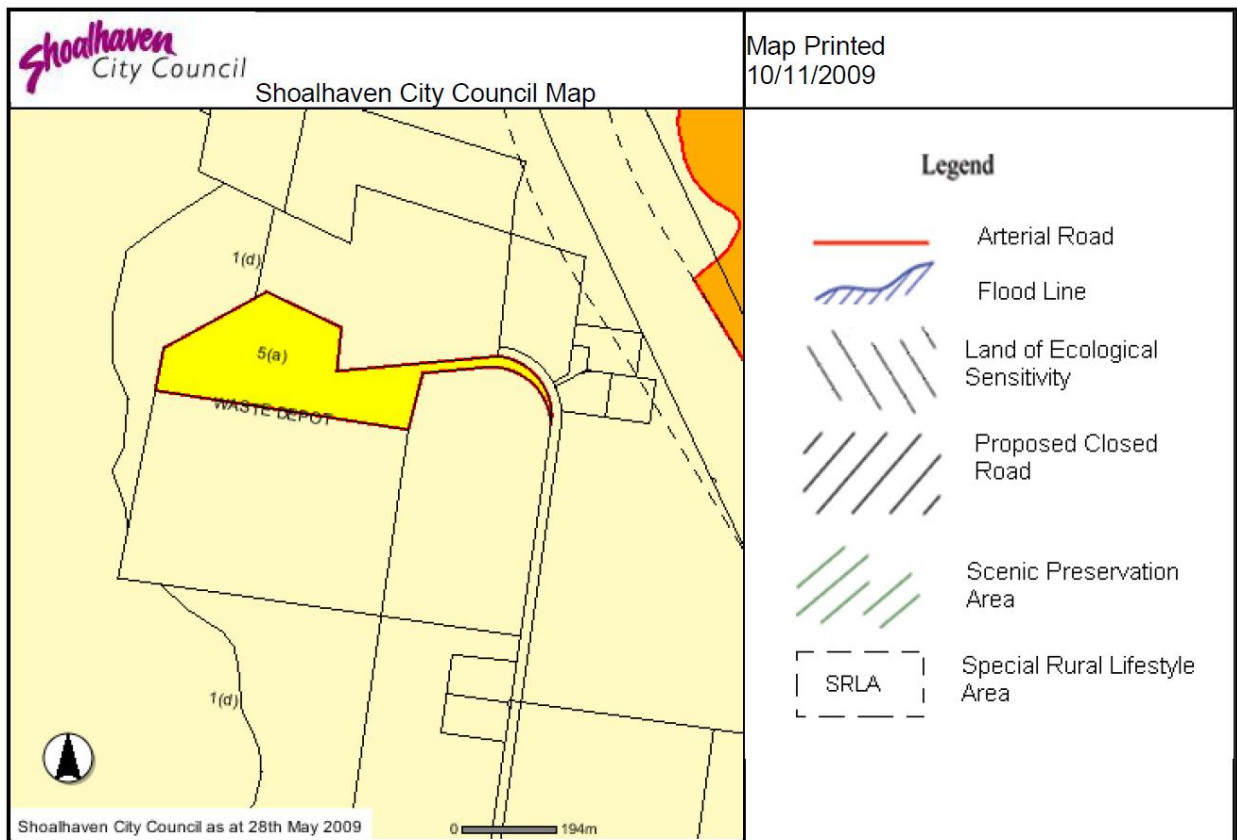


Table 3-1 Relevant EPIs

| Legislation | Comment | Implications |
|---|---|--|
| SEPP (Major Development) | Discussed in Section 3.1 above. | |
| SEPP (Infrastructure) 2007 | <p>The aim of this SEPP is to facilitate the effective delivery of infrastructure across NSW.</p> <p>The SEPP is relevant to the proposed development as it is a “<i>prescribed zone</i>” and the proposal fits the description of “<i>resource recovery facility</i>” and “<i>waste or resource management facility</i>”. In determining a development application the consent authority (in this case the Minister of Planning) must take matters listed in clause 123 of the SEPP into consideration.</p> <p>According to Schedule 3 of the SEPP, any increase in size or capacity of “<i>Landfill, recycling facilities, waste transfer station</i>” is regarded as “<i>Traffic generating development to be referred to the RTA</i>” pursuant to cl.104 of the SEPP.</p> | <p>Development for the purpose of a “<i>waste or resource management facility</i>” in a prescribed zone is permitted with development consent.</p> <p>Clause 123 Matters of Consideration relate only to “<i>the construction, operation or maintenance of a landfill for the disposal of waste</i>”. The proposal involves the construction and operation of a resource recovery facility and no expansion or alteration of the currently licensed landfill is proposed. As a consequence cl.123 <i>Matters of Consideration</i> may not apply.</p> <p>Clause 104 applies to the proposal. As such, the RTA must be consulted and the accessibility of the site must be assessed (refer also to Section 0). The consent authority (Minister of Planning) must also give the RTA a copy of the determination of the application within 7 days after the determination is made.</p> |
| SEPP 33 Hazardous and Offensive Development | The SEPP provides for consideration of measures to reduce the impact of the development and contains matters of consideration by consent authorities in determining an application to carry out hazardous and offensive industry including consideration of relevant circulars and guidelines published by the DoP. | The planning provisions within the SEPP would need to be considered during the preparation of the EA. |
| SEPP 44 Koala Habitat Protection | <p>SEPP 44 aims to encourage the conservation and management of “<i>Core Koala Habitat</i>”.</p> <p>Hyder (2007) determined that the study area does not constitute “<i>Core Koala Habitat</i>” within the meaning of the SEPP.</p> | No implications for the proposed development. |

| Legislation | Comment | Implications |
|-----------------------|--|---|
| Shoalhaven LEP (SLEP) | <p>SLEP is the principal planning instrument for the City of Shoalhaven providing controls on land use within the city.</p> <p>Division 5 of the SLEP also provides for assessment of environmental matters such as bushfire, land of ecological sensitivity, vegetation linkages, protection of streams, development on acid sulphate soils, development of flood liable land, and scenic protection.</p> | <p>The land proposed to be developed for the RRP is zoned part 1(d) (Rural "D" (General Rural) Zone) and part 5(a) (Special uses "A" Zone) (Waste Depot) (refer Figure 3-1). The Zone objectives and development control tables, as specified in SLEP, do not prohibit the development of the RRP in either of the two land use zones and can be undertaken "only with development consent".</p> <p>Division 5 matters of relevance (in this case only <i>cl.28 Danger of bush fire</i>) would need to be addressed in an EA.</p> |

Figure 3-1 Shoalhaven LEP Zoning Map



Legend

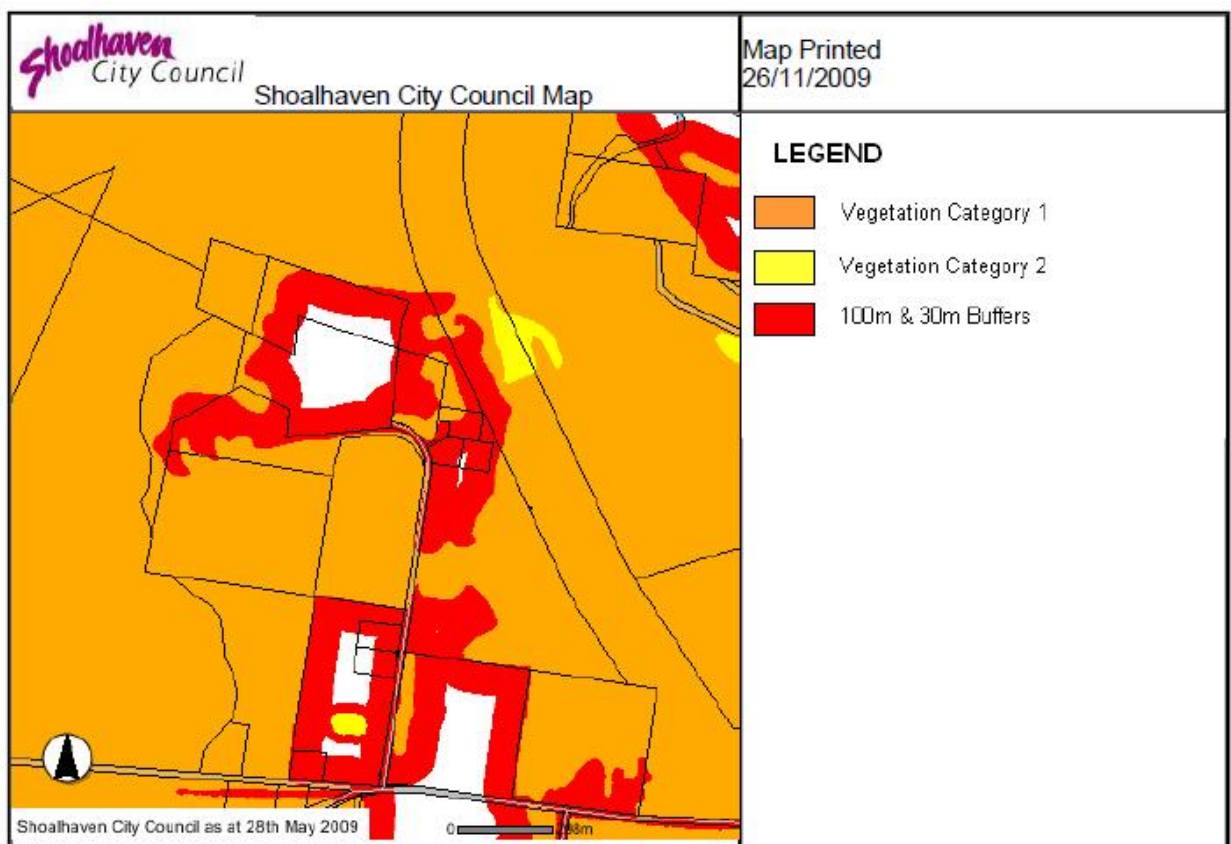
- 1(d) Zone No 1(d) (Rural "D" (General Rural) Zone)
- 5(a) Zone No 5(a) (Special uses "A" Zone) (Waste Depot)

3.1.2 Bushfire prone land

The proposed development would be on land mapped as bushfire prone (refer Figure 3-2). Any development of bushfire prone land would be undertaken in accordance with *Planning for Bushfire Protection 2006* (NSWRFS 2006) and cl.28 of the SLEP. This may include the provision of bushfire asset protection zones, fire trails, water supplies (for fire fighting purposes), and appropriate access for fire fighting.

The issue of bushfire protection would be addressed in the EA.

Figure 3-2 Bush Fire Prone Land Map (extract)





3.2 Other Relevant State Legislation

Other NSW legislation relevant to the proposal, in terms of approvals and licences, and the preparation of the EA are listed in Table 3-2 below.

Table 3-2 Relevant NSW Legislation

| Legislation | Comment | Implications |
|---|---|--|
| <i>Protection of the Environment Operations Act 1997 (POEO Act)</i> | <p>Activities required to obtain a licence under the Act are detailed in Schedule 1 of the Act. The project satisfies the definitions of Schedule 1 under:</p> <p>Cl.39 – waste disposal (application to land)</p> <p>Cl.40 – waste processing (thermal treatment)</p> <p>Cl.41 – waste processing (non-thermal treatment)</p> <p>Cl.42 – waste storage.</p> | <p>It is expected that the proposed RRP would require licensing under the provisions of the Act.</p> <p>In order to ensure the proposed development is designed and approved in accordance with the Act, this Preliminary Environmental Assessment should be forwarded to DECCW for comment.</p> |
| <i>National Parks and Wildlife Act 1974</i> | <p>The Act provides the primary basis for the legal protection and management of Aboriginal sites within NSW. The purpose of the Act is to prevent unnecessary or unwanted destruction of relics and to protect and conserve relics where such action is considered warranted. Under the Act it is an offence to disturb or move an Aboriginal object on any land without a permit.</p> <p>Aboriginal heritage issues are addressed in Section 4.2 of this PEA.</p> | <p>Due to the potential presence of isolated artefacts, scarred trees, and small open campsites, an Indigenous Heritage assessment would be undertaken as part of the EA.</p> |
| <i>Heritage Act 1997</i> | <p>The Act provides for the protection and conservation of non-Aboriginal cultural heritage, including heritage items, sites and relics.</p> | <p>An approval under Part 4 or an excavation permit under section 139 is not required for Part 3A projects.</p> <p>There are no heritage issues associated with this development (refer to Section 4.3 of this report).</p> |



| Legislation | Comment | Implications |
|---|---|--|
| <i>Threatened Species Conservation Act 1995</i> | The Act requires an assessment of whether threatened species, populations or ecological communities or their habitats are likely to be affected by the activity. This is in the form of an Assessment of Significance (Seven Part Test). If a significant impact on threatened species is likely, a Species Impact Statement must be completed and a Section 91 licence obtained (to harm or pick threatened species, populations or ecological communities or damage habitat). | A flora and fauna assessment and an Assessment of Significance (Seven Part Test) specific to the proposed development would be prepared as part of the EA. |
| <i>Roads Act 1993</i> | Under s.7 of the Act, Shoalhaven City Council is the roads authority for Flatrock Road. As a roads authority, Council may carry out road work on any public road for which it is the roads authority and on any other land under its control (s.71 of the Act). | In the event that any roadwork is considered “major” (\$2,000,000) or is undertaken on a “classified road” Council must notify the NSW Roads and Traffic Authority. Flatrock Road is unlikely to be a “classified road”. However as stated earlier, the RTA has to be consulted as this is considered to be traffic generating development (SEPP Infrastructure). |

3.3 Commonwealth EPBC Act 1999

The objectives of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) are to protect the environment, promote sustainable development, recognise Indigenous heritage and conserve biodiversity through the provision of a rigorous assessment and approvals process. The EPBC Act focuses Commonwealth involvement on matters of national environmental significance, as follows:

- ▶ World Heritage properties;
- ▶ Ramsar wetland of international significance;
- ▶ nationally listed threatened species and ecological communities;
- ▶ internationally listed migratory species as recognised by, amongst others the Japan-Australia Migratory Bird Agreement (JAMBA), China-Australia Migratory Bird Agreement (CAMBA) & Bonn Convention;
- ▶ Commonwealth marine areas; and
- ▶ nuclear actions.

Under the EPBC Act, actions that will have, or are likely to have, a significant impact on matters of National Environmental Significance or on the environment of Commonwealth land must be referred to the Australian Government Department of the Environment and Water Resources.

The Hyder (2007) flora and fauna assessment concluded that the development of the whole 14.5 ha bushland site for the RRP and expansion of the landfill would likely lead to a significant impact on two



matters of national environmental significance, namely, the Grey-headed Flying Fox and the Nowra Heath Myrtle. Restricting development to only 3.5 hectares in the north-western corner of the property avoids the population of the Nowra Heath Myrtle (refer Figure 3-3) and minimises the impact on the Grey-headed Flying Fox habitat. However, a flora and fauna assessment specific to the development of the 3.5 hectare site would be undertaken as part of the Environmental Assessment.

3.4 Nowra Bomaderry Structure Plan

The *Nowra Bomaderry Structure Plan* (SCC 2006) sets out the development-conservation agenda for Nowra and Bomaderry for the next 20 to 30 years. The Structure Plan was endorsed by the DoP in 2008.

The Structure Plan is not a legal planning document. It provides strategic direction and guidance only, identifying land that will be further investigated in detail for possible rezoning and development.

The Structure Plan identifies 2 substantial areas as “*New Living Area*” in the vicinity of the proposed RRP (refer Appendix A) as follows:

- ▶ Mundamia (approximately 720 dwellings); and
- ▶ Cabbage Tree (approximately 2,180 dwellings).

These areas would be located over one kilometre away from the proposed RRP.

Although the identification of these areas does not guarantee that they would be developed for these purposes during the life of the RRP, the potential for increased numbers of ‘sensitive receptors’ would be considered during the preparation of the Environmental Assessment.

The Structure Plan also identifies a “*Future Western Bypass*” which passes close to the proposed RRP (refer Appendix A). It is not known when this bypass would be constructed and become operational.

3.5 Relevant Guidelines, Standards, and Strategies

Relevant guidelines and standards that would require consideration at various phases of the development and during the preparation of the EA are listed and discussed below.

3.5.1 Australian Standard AS4454-2003 Composts, Soil Conditioners, and Mulches

This Standard specifies contamination thresholds from products derived from organic wastes, compostable organic materials, and biosolids. The Standard was developed for assessing the quality of compost produced from segregated green waste and for unrestricted domestic and residential use.

The standard specifies physical, chemical, biological and labelling requirements for composts, mulches, soil conditioners and related products that have been derived from compostable organic materials and which meet the minimum requirements set out in the standard. It covers material marketed or distributed both in bags and in bulk.

Products from the proposed RRP Mulching and Composting Facility would need to meet the standards set out in AS4454-2003, providing consumers assurance of quality and facilitating the beneficial recycling and use of compostable organic materials with minimal adverse impact on environmental and public health.

Figure 3-3 Location of Threatened Species



Source: Hyder, 2007



3.5.2 Environmental Guidelines for Composting and Related Organics Processing Facilities (NSW DEC 2004)

These guidelines are relevant to any composting and related organics processing facilities that are required to hold an environmental protection licence. The Guideline is therefore relevant to the green waste processing component and the stabilisation facility within the proposed RRP.

The Guidelines:

- ▶ define the environmental issues that affect the management of composting and related organics processing facilities, namely:
 - air quality (odour, particulate matter, biogas, and greenhouse gases);
 - water pollution (leachate into the groundwater and surface water runoff);
 - fire and other potential hazards;
 - amenity impacts (including pests, litter, and noise); and
 - contamination of organics and subsequent off-site spread.
- ▶ specify objectives, design requirements, performance requirements and performance measurements for dealing with each issue;
- ▶ specify benchmarks used for measuring and monitoring performance
- ▶ outline the types of issues that should be considered when planning composting and related organics processing facilities;
- ▶ identify possible environment management techniques;
- ▶ list items to be included in an environmental management plan; and
- ▶ list items to be included in a water assessment plan.

The design and operation of the RRP would be undertaken with due consideration of the Guideline.

The EA would specify how the proposed development would be compliant with the relevant outcomes specified in the Guideline.

3.5.3 Technical Framework – Assessment and Management of Odour from Stationary Sources in NSW (NSW DEC 2006)

The Technical Framework is not a regulatory tool and does not introduce any new environmental requirements. Instead it provides a policy framework for assessing and managing activities that emit odour and offers guidance on dealing with odour issues.

The Technical Framework outlines:

- ▶ the legislation that applies to odour assessment and management in NSW; and
- ▶ a process for assessing odour impacts from new developments.

The Technical Framework is accompanied by the *Technical Notes: Assessment and Management of Odour from Stationary Sources in NSW* (NSW DEC2006b), which provides detailed odour assessment procedures.

Although the RRP is not expected to exacerbate odour from the existing Landfill site, the application of this Guideline should be considered during the design of the facility and the preparation of the EA.



4. Preliminary Environmental Assessment

This section discusses the extent of potential impacts that could be expected from the proposed development. Potential impacts have been identified through:

- ▶ a review of previous studies carried out on site;
- ▶ a review of DECCW guidelines and technical specifications;
- ▶ a review of State heritage databases;
- ▶ experience in the operation of waste recovery and composting facilities; and
- ▶ a site inspection.

4.1 Flora and Fauna

Hyder Consulting Pty Ltd were commissioned by SCC to undertake a flora and fauna assessment for the development of the entire 14.5 ha bushland property for the RRP and expansion of the landfill, to minimise potential environmental impacts. The assessment concluded that the development would be likely to have a significant impact upon a population of Powerful Owl, Glossy Black-cockatoo, Yellow-bellied Glider, Grey-headed Flying Fox, and the Nowra Heath Myrtle.

Hence, SCC commissioned Hyder Consulting Pty Ltd to identify an 'area of least impact' for the development of the RRP. Hyder "*rigorously assessed*" the one hectare portion in the northwest corner and an additional 3.5 ha portion along the western boundary for threatened species and habitat. In their assessment Hyder (2007) made the following "*general comments*" regarding the total 3.5 ha portion:

- ▶ The area's northern and western boundaries adjoin the existing landfill facility, favouring opportunities for development.
- ▶ The site itself is naturally covered and the eastern and southern boundaries adjoin naturally covered land known to support threatened species and their habitat.
- ▶ No threatened plants or animals were identified in the site during investigations.
- ▶ No grey gum or bloodwood trees with Yellow-bellied Glider feeding scars (incisions) were located during investigations.
- ▶ Scratches were commonly detected on the trunks of scribbly gums and grey gums however it is not known what animals/caused these scratches.
- ▶ Many large habitat trees with a girth of greater than one metre at breast height were detected and mapped. Hollows were detected in some of these trees.

As a result, SCC resolved to forgo the expansion of the landfill and sought to develop a 3.5 hectare portion of the bushland in the north-western corner of the lot. SCC propose to retain the remaining 11 ha and potentially rezone the site for environmental / ecological protection purposes.

Although threatened species were not detected on the 3.5 hectare site (Hyder 2007), there remains likelihood that the area is used by the range of threatened species known to occur in the remainder of the 14.5 ha property at some point in their lifecycle. There are also habitat features within the 3.5 hectare site that may support populations of threatened species (e.g. hollow-bearing and potential feed trees).



As a result, a flora and fauna assessment specific to the development of the 3.5 hectare site would be undertaken as part of the EA.

4.2 Indigenous Heritage

A preliminary assessment of potential impacts to Indigenous heritage was undertaken by Mills Archaeological and Heritage Services Pty Ltd (refer Appendix B). The assessment (2009) established the following:

- ▶ The RRP is within the Nowra Local Aboriginal Land Council (LALC) Area.
- ▶ There are currently no Land Claims over the RRP area.
- ▶ No known sites are present in the RRP site.
- ▶ Site types most likely to occur within the RRP area are scarred trees, small open campsites and isolated artefacts.
- ▶ The distance of the RRP from Sandy Creek and Cabbage Tree Creek make it unlikely that large sites may be present, however, smaller camp-sites and isolated artefacts may be present.

Although the Nowra LALC have yet to respond to the telephone, letter, and email requests for any preliminary comments, the potential presence of isolated artefacts and small open campsites warrant further investigation. As a consequence, a full Indigenous Heritage Assessment for the development of the 3.5 hectare site would be undertaken as part of the EA.

4.3 Non-indigenous Heritage

A preliminary assessment of potential impacts to non-indigenous heritage was undertaken by Mills Archaeological and Heritage Service Pty Ltd (refer Appendix B).

The development of the RRP would not affect any heritage items / objects listed on the State Heritage Register, the NSW National Trust Site Register, and Shoalhaven City Council LEP Schedules. As a result, non-indigenous heritage does not need further analysis in an EA.

4.4 Water Quality

Leachates from composting and related organic-processing facilities have the potential to pollute groundwater and surface water bodies. They can be high in nutrients, making them favourable host media for bacteria and other organisms and gives them a high biological oxygen demand (NSW DECC 2004). Surface water run-off from composting and related organics-processing facilities can cause sediment and suspended solids in receiving waters, while surface water run-on can lead to excessive generation of leachate.

The development would include the provision for the collection and treatment of leachate and sediment laden run-off. The EA would assess these measures against the requirements for the protection of waters outlined in the NSW DECC (2004) *Environmental Guidelines: Composting and related organics processing facilities*.



4.5 Contamination of Organics

Processed organics such as mulches and compost can become contaminated by the following (NSW DECC 2004):

- ▶ toxic organic chemicals and metal compounds;
- ▶ physical contaminants such as shredded plastic and broken glass; and
- ▶ pathogens, weed propagules, and other pests.

Contaminated organics used in the environment as compost or mulches can potentially lead to the off-site pollution of surface waters, soil and groundwater and the spreading of pathogens, pests, and diseases.

The EA would detail how these risks are to be managed, especially with reference to:

- ▶ Australian Standard *AS4454-2003 Composts, Soil Conditioners, and Mulches*.
- ▶ the *Environmental Guidelines for Composting and Related Organics Processing Facilities* (NSW DECC 2004).

4.6 Air Quality

By their very nature, landfill sites are odorous and dusty. Other than the green-waste processing and the stabilisation facilities, the proposal is consistent with the current operations of the existing landfill and is not expected to increase odours, dust, or other air pollutants

With regard to the green waste processing and stabilisation facilities, the EA would assess air quality impacts and how they are to be addressed with reference to:

- ▶ *Environmental Guidelines for Composting and Related Organics Processing Facilities* (NSW DECC 2004).
- ▶ *Technical Framework: Assessment and Management of Odour From Stationary Sources in NSW* (NSW DEC 2006).
- ▶ *Technical Notes – Assessment and Management of Odour From Stationary Sources in NSW* (NSW DEC 2006b).

4.7 Noise

By their very nature operational landfill sites are noisy. The proposal would only exacerbate noise levels during the 'campaign' shredding and screening process.

Existing and possible future sensitive receptors are located a considerable distance from the proposed RRP (refer Table 4-1 below) and noise is likely to be a minor issue. However, the impact on the closest sensitive receivers during the campaign shredding operations would be addressed in the EA.



Table 4-1 Current and possible future noise sensitive receptors

| Noise Sensitive Receptor | Approximate Distance | Status |
|---|-------------------------|--|
| Existing Sensitive Receptors | | |
| Shoalhaven Campus of the Wollongong University | 1.5 km | Existing and may expand |
| Cabbage Tree rural residential area | 2 km | Existing and infill development is possible |
| Rural-residential dwellings off Flatrock Road | Greater than (>) 0.5 km | Existing. Identified as “ <i>future long term living area</i> ” in the Nowra Bomaderry Structure Plan (SCC 2006) |
| Possible Future Sensitive Receptors | | |
| Mundamia Living Area | >1 km | Potential urban expansion area identified in the Nowra Bomaderry Structure Plan (SCC 2006) |
| Bamarang and Cabbage Tree Living Area | > 1 km | Potential urban expansion area identified in the Nowra Bomaderry Structure Plan (SCC 2006) |
| Unnamed “Future Long Term Living Area” on the intersection of Yalwal Road and Flatrock Road | > 0.5 km | Potential urban expansion area identified in the Nowra Bomaderry Structure Plan (SCC 2006) |

4.8 Geology and Soils

Nowra Sandstone, derived from the Shoalhaven Group, underlies the site. This Early Permian geology consists of quartz sandstone with minor siltstone and conglomerate beds. Soils derived from this geology are typically poorly drained with low nutrient levels. Low hills, ridges and valleys are typically associated with these soils (Hyder 2007).

No Acid Sulfate Soils (ASS) were identified at the site (SCC 2009). However, contaminated soils are likely to be present beneath the existing clay-capped landfill which may be used for some components of the RRP depending on operational and functional requirements. Development on the existing completed landfill is unlikely to have a significant impact upon geology and soils, as this land has already been heavily impacted by the operation of the waste facility.

Development of the 3.5 hectare bushland site is likely to involve extensive vegetation removal and earthworks. These actions would increase the potential for erosion at the site, and would likely have a significant impact on the local soil and geology. As a result, the impact on geology and soils for the 3.5 hectare development area would be assessed as part of the EA.

4.9 Transport and Traffic

Access to the site would be from Flatrock Road, off Yalwal Road, West Nowra (Figure 1-1).



Flatrock Road is essentially a rural road servicing a small number (3) of rural-residential properties, the Council animal pound, and DECCW's Nowra Area Office and Depot.

From Nowra, Yalwal Road passes through urban areas for approximately 1.5 km. The road then proceeds through undeveloped native forest belonging and/or occupied by the State (Triplarina Nature Reserve and Shoalhaven State Forest), Wollongong University, SCC, and the Nowra Aboriginal Land Council.

Yalwal Road also provides access to rural residential areas in the Cabbage Tree area, and the Bamarang Reservoir, Colymea State Conservation Area, and isolated rural / bush properties west of the Flatrock Road turn-off.

The proposed Resource Recovery Park is anticipated to result in increases in traffic due to exporting of recovered resources from the site (compared to the current situation, where most material that enters the site is landfilled there). Additional recyclables may also be processed by the MRF.

As a result, a traffic impact assessment would be prepared as part of the EA. The EA would also address the relevant matters of consideration for "*Traffic-generating Development*" as set out in cl.104(3) of SEPP (Infrastructure) 2007. To facilitate this process, this PEA should be forwarded to the NSW RTA for comment.

4.10 Visual Amenity

The potential for the proposal to impact on visual amenity is considered to be low, as the RRP would be both within and immediately adjacent to the existing West Nowra Landfill. The 3.5 hectare bushland site that would be cleared for the RRP would be screened by the remaining vegetation to nearby receptors, such as the DECCW Nowra Area Office and Depot.

4.11 Rehabilitation and Ongoing Use

The operation of the RRP would continue for the life of the West Nowra Landfill.

Upon decommissioning, the site may be used for other Council operations or be rehabilitated. Rehabilitation would be conducted consistent with SEPP 55 *Remediation of Land*, the environmental protection licence, or any relevant approval or legislative requirements current at the time.



5. Alternatives considered

5.1 Do Nothing

If the development does not proceed, the 3.5 hectare bushland site in the north-western corner of Lot 1 DP 1104402 is likely to remain as bushland and potential habitat for the Grey-headed Flying Fox and the Yellow-bellied Glider. The species' persistence in the area could however be impacted by other factors out of SCC's control such as bushfire and predation and, as such, there is no certainty of their persistence in this area.

On the other hand, Wright (2008) clearly explains the implications on landfill demands if the RRP and other waste reduction and resource recovery initiatives do not become operational:

"...the demand for landfill capacity within the Shoalhaven region would grow from around 70,000 tonnes per annum today to somewhere in the vicinity of 90,000 tonnes per annum under the carry on as much now scenario.

Whilst this growth in annual landfill demand of around 20,000 tonnes per annum over the twenty-year modelling period does not appear to be excessive, it is important to note that the cumulative (or total) demand for landfill space at West Nowra over the 20-years will be in the order of 1.6 million tonnes in total – well in excess of the 1.0 million tonnes capacity of the current approved site.

This disposal demand forecast indicates that under the carry on as now scenario, a new landfill site will be required to be operational by 2020/21 and the site acquisition and initial investigations for the new landfill must commence no later than 2014/15 – just six years away – if it is to be ready in time to meet that demand."

Not only will the "do nothing" approach result in an increased need to develop new areas for landfill, other values and benefits of the RRP would also not be achieved, such as (Wright 2008):

- ▶ the recovery of more resources which may in turn reduce greenhouse gas emissions both at the landfill and in the manufacture of replacement products;
- ▶ the promotion and leadership in non-metropolitan waste management initiatives;
- ▶ reduction of the impact on the environment through the extraction of material that could otherwise be recovered; and
- ▶ increased employment opportunities.

Waste reduction benchmarks as identified in the *NSW Waste Avoidance and Resource Recovery Strategy* (NSW DECC 2007) would also be difficult to achieve.

5.2 Alternative Locations

Depending on the successful contractor, the MRF component of the RRP may be located off-site as there are contractor owned or managed facilities currently in use in Bomaderry and South Nowra. However, this should not affect the EA as the development footprint would cater for an MRF regardless of whether it is to be built on-site or not.



The West Nowra Landfill is the only licensed solid waste landfill facility within the Shoalhaven LGA and is central to the main population and growth centre of Nowra as well as the Princes Highway. Placing the RRP at the other council waste facilities in the LGA would create major inefficiencies due to travelling distances required to access the landfill and for Shoalhaven residents to access and utilise the RRP. It is therefore considered essential that the RRP be located immediately adjoining or close to the existing West Nowra Landfill to access the landfill and stockpile sites and take advantage of its central location and proximity to major transport routes (Princes Highway).

The only other Council owned land next to the site is the animal pound (refer Figure 1-1). The development of the RRP on this site is considered unsuitable due to its insufficient size and the expected difficulties associated with establishing an animal pound elsewhere. The development footprint, shown in Figure 1-2, is therefore considered the most appropriate location for the RRP.



6. Stakeholder and Community Consultation

6.1 Statutory Consultation

The DGRs for the project are sought from the DoP, who may also refer the PEA to government agencies to obtain their input. Where necessary, SCC would also liaise with all relevant local and State Government agencies to outline the key components of the proposed RRP and to seek clarification of any issues that need to be addressed in the EA.

6.2 Stakeholder and Community Engagement

A community consultation plan would be implemented by SCC in parallel with the EA process. Community consultation is likely to include a media release, downloadable information about the development on SCC's website, and a process for comment.

Community consultation would be undertaken in accordance with DoP's *Guidelines for Major Project Community Consultation* (NSW DoP 2007) and any consultation requirements specified in the DGRs. In doing so, SCC would:

- ▶ commit adequate resources to the consultation process
- ▶ report to the DoP to:
 - clearly describe who has been consulted and what issues were raised; and
 - demonstrate how the issues raised during the consultation process have been addressed in the environmental assessment.

If there are community and agency submissions, SCC would respond to the issues raised and, where appropriate and feasible, amend the project to minimise impacts. Any changes and the response to issues would be documented for submission to DoP.



7. Conclusion and Justification for the Development

7.1 Justification

The project would result in a significant increase in the recovery of recyclable materials and a significant reduction in the quantity of waste disposed to the landfill. In the process, the project would:

- ▶ Improve existing landfill operations through improved compaction, reduced greenhouse gas production, litter, odour, and reduce the potential for toxic leachate;
- ▶ assist SCC to attain and potentially exceed the State waste diversion targets for municipal waste and contribute significantly to obtaining other State-wide targets set out in the *NSW Waste Avoidance and Resource Recovery Strategy 2007*;
- ▶ extend the life of the West Nowra Landfill;
- ▶ generate significant employment for the local area; and
- ▶ recover more resources and subsequently reducing greenhouse gas emissions both at the landfill site and in the manufacture of replacement products.

Successful operation of the RRP may also encourage the development and/or expansion of similar facilities in the surrounding local government areas, thereby further contributing to the achievement of State-wide waste reduction targets.

To minimise impacts to threatened species habitat, 3.5 hectares of the 14.5 ha bushland property would be developed for the purposes of the RRP. This area was chosen due both to its location (adjacent to the existing landfill) and after an environmental constraints analysis undertaken by Hyder (2007).

7.2 Conclusion

The proposed RRP is considered a “Major Development” under clause 6 of SEPP Major Development (*i.e. “development for the purpose of resource recovery or recycling facilities that handles more than 75,000 tonnes per year of waste or has a capital investment value of more than \$30 million”*). As a consequence, the project should be assessed under Part 3A of EP&A Act.

This PEA has been prepared to provide the DoP with information on the project so that the DGRs for the EA under Part 3A of the EP&A Act can be prepared. Specifically, the PEA has identified the key environmental issues relevant to the proposal. These are summarised in Table 7-1 below.

Table 7-1 Summary of Key Environmental Issues

| Issue | Relevance | Environmental Assessment Requirement |
|---|---|--|
| Planning and legislative requirements and State guidelines | | |
| Commonwealth EPBC Act | The development of the 3.5 hectare bushland site may impact Grey-headed Flying Fox habitat. | A flora and fauna study specific to the development of the site would be prepared to determine the significance of any impact. |



| Issue | Relevance | Environmental Assessment Requirement |
|--|---|---|
| SEPP 33 | The SEPP provides for consideration of measures to reduce the impact of the development and contains matters of consideration by consent authorities in determining an application to carry out hazardous and offensive industry including consideration of relevant circulars and guidelines published by the DoP. | The planning provisions within the SEPP would need to be considered during the preparation of the EA. |
| SLEP clause 28 <i>Danger of Bushfire</i> and <i>Planning for Bushfire Protection 2006</i> (NSW RFS 2006) | The proposed development is within bush fire prone land and therefore clause 28 of the SLEP applies. | The EA would address clause 28 of SLEP and the requirements set out in <i>Planning for Bush Fire Protection 2006</i> . |
| SEPP (Infrastructure) 2007 | The development is considered to be “ <i>Traffic-generating Development</i> ” pursuant to cl.104 of the SEPP. | The EA would undertake a traffic impact assessment to address cl.104 of the SEPP. This PEA should be forwarded to the RTA for comment. |
| <i>Protection of the Environment Operations Act 1997</i> | It is expected that the proposed RRP would require licensing under the provisions of the Act. | In order to ensure the proposed development is designed and approved in accordance with the Act, this PEA should be forwarded to DECCW for comment. |
| <i>National Parks and Wildlife Act 1974</i> | There is potential for scarred trees, isolated artefacts, and small open campsites to be within the 3.5 ha bushland site. | An Indigenous Heritage Assessment would be undertaken as part of the EA. |
| <i>Threatened Species Conservation Act 1995</i> | The development of the 3.5 ha site may impact species on the schedules of the Act, <i>i.e.</i> , Yellow-bellied Glider and the Grey-headed Flying Fox. | A flora and fauna assessment and an Assessment of Significance would be prepared as part of the EA. |
| <i>Environmental Guidelines for Composting and Related Organics Processing Facilities</i> (NSW DEC 2004) | The Guideline is relevant to the green waste processing and stabilisation facility. | The design and operation of the RRP would need to be taken with due consideration of the Guideline. The EA would specify how the proposed development would be compliant with the relevant outcomes. |



| Issue | Relevance | Environmental Assessment Requirement |
|--|--|---|
| <p><i>Technical Framework – Assessment and Management of Odour from Stationary Sources in NSW</i> (NSW DEC 2006)</p> | <p>The Framework is relevant to the green waste processing component and the stabilisation facility.</p> | <p>Although the RRP is not expected to exacerbate odour from the existing landfill site, the application of this Guideline would be considered during the design of the facility and the preparation of the EA.</p> |
| <p>Key Environmental Issues</p> | | |
| <p>Flora and Fauna</p> | <p>The development of the 3.5 ha bushland site may impact species on the schedules of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> and the <i>NSW Threatened Species Conservation Act 1995</i>, i.e., Yellow-bellied Glider and the Grey-headed Flying Fox.</p> | <p>A flora and fauna assessment and an Assessment of Significance would be prepared as part of the Environmental Assessment.</p> |
| <p>Indigenous Heritage</p> | <p>There is potential for scarred trees, isolated artefacts, and small open campsites to be within the 3.5 ha site.</p> | <p>An Indigenous Heritage Assessment would be prepared as part of the Environmental Assessment.</p> |
| <p>Water quality</p> | <p>Stormwater coming into contact with materials produced by composting and related organic-processing facilities has the potential to pollute groundwater and surface water bodies. Surface water run-off from composting and related organics-processing facilities can cause sediment and suspended solids in receiving waters. Surface water run-on can lead to excessive generation of affected stormwater.</p> | <p>The potential impact on water quality would be addressed in the Environmental Assessment, with particular reference to NSW DECC (2004) <i>Environmental Guidelines: Composting and related organics processing facilities</i>.</p> |
| <p>Contamination of organics and subsequent off-site impacts</p> | <p>Incomplete or inadequate processing of organics such as mulches and compost can lead to the spreading of pathogens, pests, and diseases.</p> | <p>The Environmental Assessment would detail how these risks are to be managed, especially with reference to <i>Australian Standard AS4454-2003 Composts, Soil Conditioners, and Mulches</i> and the <i>Environmental Guidelines for Composting and Related Organics Processing Facilities</i> (NSW DECC 2004).</p> |



| Issue | Relevance | Environmental Assessment Requirement |
|-----------------------|--|---|
| Air quality | The green-waste processing and stabilisation facilities may contribute to an increase in odours, thereby creating a cumulative impact when combined with odours from the existing landfill site. | <p>With regard to the green waste processing and stabilisation facilities, the Environmental Assessment would assess air quality impacts and how they are to be addressed with reference to:</p> <ul style="list-style-type: none"> ▶ <i>Environmental Guidelines for Composting and Related Organics Processing Facilities</i> (NSW DECC 2004) ▶ <i>Technical Framework: Assessment and Management of Odour From Stationary Sources in NSW</i> (NSW DEC 2006) ▶ <i>Technical Notes – Assessment and Management of Odour From Stationary Sources in NSW</i> (NSW DEC 2006b). |
| Noise | Shredding of green waste may result in high noise levels depending upon the type of shredder used, and whether it is located within a building or outdoors, and thereby contribute to a cumulative impact. | Although noise is likely to be only a minor issue due to the site location, impacts on the closest sensitive receivers during shredding operations would be addressed in the Environmental Assessment, especially in relation to cumulative impacts. |
| Geology and soils | Development on the 3.5 ha site would involve extensive vegetation removal and earthworks. These actions could increase the rate of erosion at the site, and would likely have an impact on the local soil and geology. | The impact on geology and soils would be assessed as part of the Environmental Assessment. |
| Transport and Traffic | The proposed Resource Recovery Park is anticipated to result in increases in traffic due to exporting of recovered resources from the site (compared to the current situation, where most material that enters the site is landfilled there). Additional recyclables may also be processed by the MRF. | A traffic impact assessment would be prepared as part of the Environmental Assessment. This is to have due consideration of current and future land uses in the vicinity of the Resource Recovery Park and Yalwal Road. |



8. References

Hyder (Hyder Consulting Pty Ltd) 2007 *Threatened Biodiversity Survey and Assessment – West Nowra*. Report prepared for Shoalhaven City Council.

NSW DEC (NSW Department of Environment and Conservation) 2004 Environmental Guidelines: Composting and Related Organics Processing Facilities. Department of Environment and Conservation NSW, Sydney ISBN 174137068X

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NSW DECC (NSW Department of Environment and Climate Change) 2007 NSW Waste Avoidance and Resource Recovery Strategy 2007. Department of Environment and Climate Change NSW, Sydney ISBN 978 1 74122 441 2

NSW DoP (NSW Department of Planning) 2007 Guidelines for Major Project Community Consultation. State of NSW through the Department of Planning ISBN 978-0-7347-5968-9.

SCC (Shoalhaven City Council) 2006 *Nowra Bomaderry Structure Plan*.

SCC (Shoalhaven City Council) 2009 *Two Bin Recycling Collection Trial March – July 2009*

SCC (Shoalhaven City Council) 2009b – SoE
































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Wright (Wright Corporate Strategy Pty Ltd) 2008 *Cost Benefit Analysis – Resource Recovery Park, West Nowra*. Report prepared for Shoalhaven City Council.



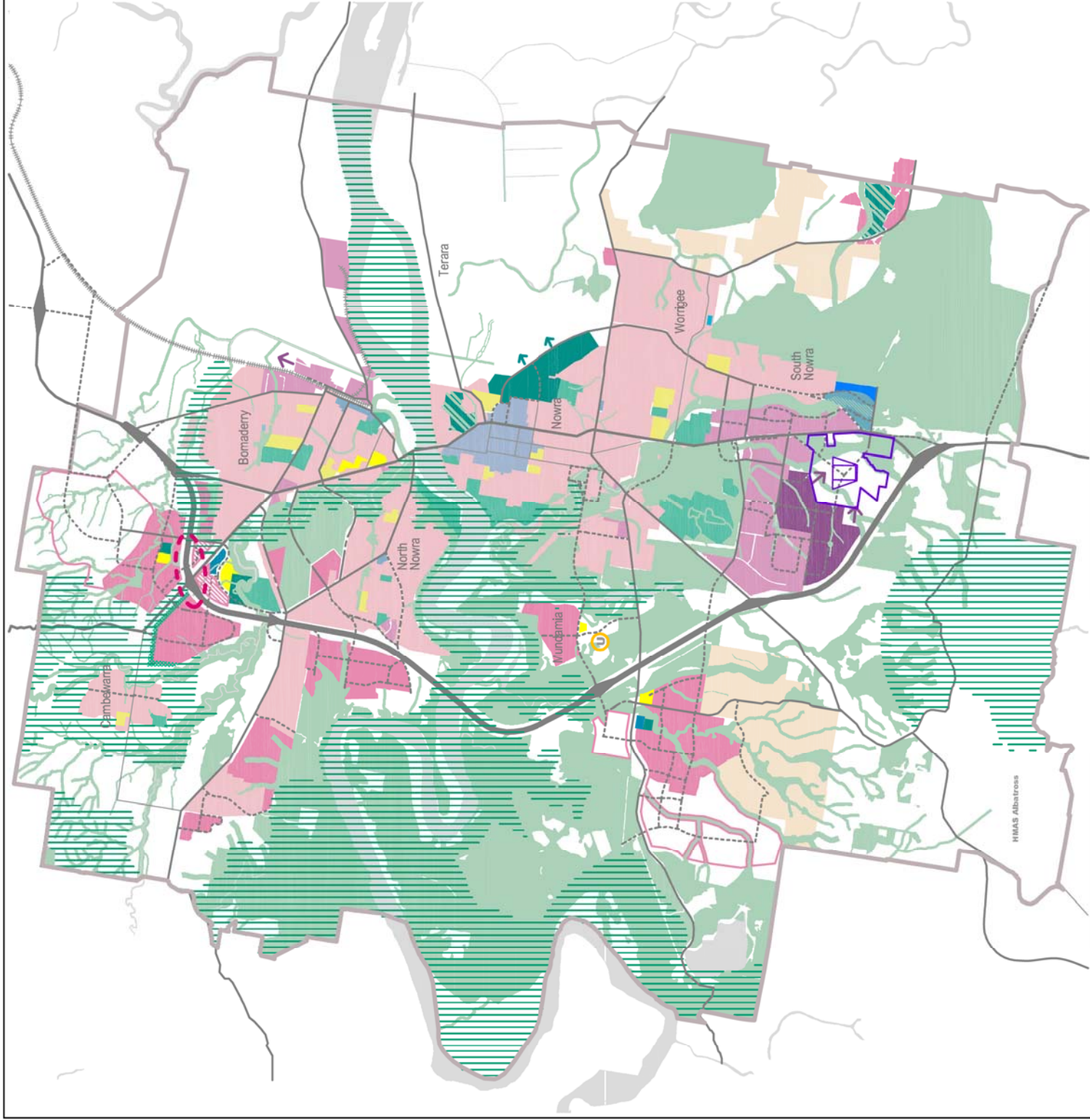
Appendix A
Nowra Bomaderry Structure Plan

Legend

-  Structure Plan Boundary
-  Existing Living Area
-  Future Living Area
-  Possible Future Living Area
-  Future Long Term Living Area
-  Existing Rural Residential
-  Existing CBD Area
-  Existing Neighbourhood Centre
-  Future Neighbourhood Centre
-  Existing Local Centre
-  Future Local Centre
-  Existing Other Commercial
-  Future Other Commercial
-  Existing Industrial Land
-  Future Industrial Land
-  Existing School/TAFE
-  Future School
-  Existing University & TAFE Campus
-  Existing Active Recreation
-  Future Active Recreation
-  Conservation & Riparian Area
-  Future Active/Passive Open Space or Conservation
-  Future Advanced Screening
-  Scenic Protection Areas
-  Rural Area
-  Future Western Bypass
-  Bypass alignment in this location subject to further detailed investigation as part of LEP
-  Main Roads
-  Local Road Network
-  North Nowra Link Road Options
-  South Coast Correctional Centre Site

Adopted by Council on 24th October 2006 and 25th September 2007.
 Endorsed by the Department of Planning 28th February 2008.

Structure Plan



February 2008

Not To Scale

Nowra Bomaderry Structure Plan



Appendix B

Preliminary Heritage Assessment

A preliminary assessment of potential impacts to indigenous and non-indigenous heritage from the proposed extension and upgrade of the Nowra Resource Recovery Park at West Nowra

**Commissioned by GHD Nowra
For Shoalhaven City Council**

December 2009

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Map 1: Location of the RRP

Map 2: RRP Project impact area

Map 3: Location of sites identified from the AHIMS Register

Map 4: Shoalhaven City Council Map of LEP heritage sites

Appendix 2 Correspondence with Nowra LALC

Appendix 3 Results of the AHIMS Register search and Native Title Tribunal Search

Appendix 4 Results of non-indigenous heritage searches

Executive Summary

Shoalhaven City Council has recently acquired land adjacent to the West Nowra Landfill and Waste Recycling Facility at Flackrock Road, Nowra (Map 1) on which it proposes to construct and operate a Resource Recovery Park (RRP). The proposed RRP is to be constructed on a 3.5ha plot within the acquired 14.5 ha plot (Map 2).

GHD commissioned Mills Archaeological and Heritage Services Pty Ltd to undertake a desktop assessment of the RRP area to determine potential impacts to known indigenous objects and sites and non-indigenous relics and places from the proposed RRP. The consultant was also commissioned to develop a predictive model to assess the potential for indigenous and non-indigenous sites to be present within the proposed RRP area.

Indigenous Heritage

The RRP area is within the Nowra LALC area. There are currently no Land Claims over the RRP area.

The location of known indigenous sites in the vicinity of the RRP was determined by:

- A search of Heritage Information Management System (AHIMS) Register maintained by the Department of Environment, Conservation, Climate Change and Water (DECCW);
- A search of the Native Title Tribunal Register of current Native Title Claims; and
- Preliminary discussions with Nowra LALC to ensure that the proposed RRP works did not impact areas of special significance to the LALC and its associated community.

No known Aboriginal heritage sites were identified within the RRP area. The data base search identified 55 registered Aboriginal sites within a 10 km radius of the proposed development. Of these, seven (7) sites were located within 600m of the RRP. This complex of sites is located to the north of the RRP between the development site and the Shoalhaven River. None of these sites will be affected by the proposed RRP works. However this site complex which includes a stone arrangement, 2 rockshelters with art, a rockshelter with deposit, a scarred tree and two axe grinding groove sites has been identified as having potentially high cultural and archaeological significance.

The predictive model developed for the RRP area concluded that:

- all sandstone outcrops within the proposed RRP have a high potential to contain Aboriginal sites including rock shelters and axe grinding grooves;
- all old growth trees have a potential to have scarring of Aboriginal origin; and
- the distance of the RRP from Sandy Creek and Cabbage Tree Creek makes it unlikely that large sites may be present however smaller camp sites and isolated artefacts may be present.

Conclusions:

- No known sites are present within the RRP site
- Site types most likely to occur within the RRP area are scarred trees, small open campsites and isolated artefacts.
- All sandstone outcrops have a potential to contain rock shelters with art and deposit and axe grinding grooves.
- Although outside the boundaries of the currently proposed RRP project, Shoalhaven City Council should be aware of the potential significance of the complex of sites to the north of the current landfill (Map 3) and ensure that an assessment of the cultural significance of this area is included in any discussions of future developments in this area..

Non-indigenous heritage

The RRP site is within the Shoalhaven City Council area.

The locations of known non-indigenous relics and places were identified from searches of the registers of:

- Australian Heritage Council;
- NSW State Heritage Council;
- Inventory of the Australian National Trust (NSW); and
- Shoalhaven City Council LEP Heritage Schedules and Heritage Maps

No registered sites are located within the RRP area (Map 4).

The only registered site in the vicinity of the RRP site is the former West Nowra water supply and filtration plant. This site is approximately 2km east of the RRP site and will not be impacted by the proposed development.

A predictive model was developed for the RRP from:

- The results of the heritage register searches; and
- An analysis of the historical development of the Nowra area.

The predictive model concluded that:

- It is unlikely that there will be any non-indigenous heritage relics present in the RRP area as the area was not within the historical boundaries of the old township of Nowra and was too distant from the main historical road arteries and the main Shoalhaven River shipping lanes and wharves.
- If sites are present they are most likely to be associated farming activities, unrecorded house/shack sites, timber felling activities and bottle dumps.

Conclusions:

- No known sites are present within the RRP site
- Site types most likely to occur within the RRP would be associated farming activities, unrecorded house/shack sites, timber felling activities and bottle dumps.
- At this stage no consultation has been undertaken with heritage groups.

1. Details of the Proposal and Consultancy Brief.

1.1 The Proposal

Shoalhaven City Council has recently acquired land adjacent to the West Nowra Recycling and Waste Facility at Flackrock Road, Nowra (Map 1) on which it proposes to construct and operate a Resource Recovery Park (RRP). The proposed RRP is to be constructed on a 3.5ha plot within the acquired 14.5 ha plot (Map 2).

1.2 Consultancy Brief

GHD commissioned Mills Archaeological and Heritage Services to undertake a desktop assessment of the RRP area to determine potential impacts to known indigenous objects and sites and non-indigenous relics and places from the proposed RRP. The consultant was also commissioned to develop a predictive model to assess the potential for indigenous and non-indigenous sites to be present within the proposed RRP area.

The consultant undertook the following tasks:

- Consultation with the Nowra Local Aboriginal Land Council (LALC) to determine whether or not the area has any particular significance for LALC and community members.
- Register searches were conducted to identify the location of known sites in the RRP area. The AHIMS site register for Indigenous Heritage sites and the registers of the Australian Heritage Council; NSW State Heritage Council; Inventory of the NSW National Trust and Shoalhaven City Council LEP Heritage Schedules for non-indigenous heritage sites.

1.3 Previous impacts to the RRP site.

The archaeological integrity of the areas immediately west and north of the RRP site have been totally destroyed by land fill and associated activities. However the RRP site (Map 2) is relatively undisturbed.

Part 1: Assessment of the potential impacts to Indigenous Heritage

2. Aboriginal Consultation

The study area is located within the areas administered by Nowra LALC. Preliminary consultation was undertaken with the LALC (Appendix 2). The consultant telephoned the LALC co-ordinator and outlined the project. An email was then sent with details of the project. The consultant informed LALC that this was a preliminary desktop assessment designed to identify any major impediments to the project.

3. Study Area.

3.1 Location

The RRP area is located approximately 5km west of Nowra and 1.5 km south of the Shoalhaven River (Map 1)

3.2 Environmental Observations relevant to past Aboriginal Occupation.

The RRP site is situated on the southern side of the Shoalhaven River. The RRP site is approximately 1.5km south of the Shoalhaven River, on elevated ground between two permanent creeks, Cabbage Tree Creek to the east Sandy Creek to the west. There appears to have been little impact from previous activities on the RRP site, however there has been extensive disturbance to the north and west of the RRP site from current land fill and recycling activities (Map 2).

The Shoalhaven River to the north of the RRP site is a mature river meandering through its floodplain. The river is bounded on both banks by rock overhangs which provided the Aboriginal inhabitants with

shelter and a surface on which to paint and flat exposed sandstone outcrops on which to sharpen their tools.

Geologically the study area forms the southern most part of the Sydney Basin. The underlying geology is Nowra Sandstone, which is derived from the parent Shoalhaven Group. The age of this unit is early Permian and is essentially composed of quartz sandstone with minor siltstone and conglomerate beds. The quartz and river pebbles in the conglomerate would have provided the Aboriginal inhabitants with raw material for stone tool manufacture.

Soils associated with the Nowra sandstone are poorly draining, low-nutrient soils which support mainly woodland and heath plant communities. Some of the mature trees within the RRP have a potential to retain scars of Aboriginal origin and the heath plants may have been valued by the Aboriginal population for their nutritional and medicinal properties. Mammals hunted by the local aboriginal population would have been abundant in the woodland environment.

Cabbage Tree Creek, approximately 600m east of the RRP site, flows through a relatively narrow and eroded sandstone gully to the river where it has formed a sandy flood plain in which a burial site is recorded (52-2-0258). Sandy Creek, approximately 600m west of the RRP site flows through a less steep and broader valley bound on both sides by exposed sandstone outcrops. Four shelters (3 with art and one with deposit) are located in this valley. A stone arrangement, a scarred tree and an open camp site are also recorded in this location.

4 Archival Searches

Known sites within a 10 km radius of the RRP site identified from the AHIMS Register search area are presented as Table 1. A search of the Native Title Register confirmed that there are no current Native Title Claims within the RRP area (Appendix 3)

4.1. AHIMS Database search results

A search of the AHIMS data base identified a total of 55 sites within 10km of the RRP development site. Of these 37 sites were within 5km of the RRP site (Map 3). Of these 37 sites, 8 were identified within 500m of the RRP site (Map 3, Table 2).

Table 1: Site types within the broader study area

| Site type | Numbers | Percentages |
|----------------------|---------|-------------|
| Stone arrangement | 1 | 1.81 |
| Axe Grinding grooves | 8 | 14.5 |
| Shelter with art | 10 | 18.1 |
| Shelter with deposit | 16 | 29 |
| Burial | 1 | 1.81 |
| Open camp sites | 14 | 25.5 |
| Isolated Finds | 4 | 7.3 |
| Scarred trees | 1 | 1.81 |
| Totals | 55 | 99.8 |

The major site types recorded are rockshelters (47%), open camp sites (25.5% and axe grinding groove sites (14.5%)

4.2 Interpretation of the AHIMS Results

From a preliminary analysis AHIMS search results, it appears that the site types identified are representative of established patterns of Aboriginal occupation of sandstone environments (Attenbrow 1976). However, further analysis of the site types and distribution patterns of a complex of sites to the

north of the current land fill area identifies the possibility of a more complex interpretation of this data. The 8 sites which make up this potential site complex are presented as Table 2.

Table 2: Sites between the current landfill area and the Shoal haven River

| Site type | Site Number |
|----------------------|------------------------|
| Stone arrangement | 52-2-0019 |
| Axe Grinding grooves | 52-2-0024 52-2-0023 |
| Shelter with art | 52-2-0456 52-2-0020 |
| Shelter with deposit | 52-2-0091 |
| Burial | 52-2-0258 |
| Scarred trees | 52-2-0018 |

- With the exception of the Burial, all sites are within 400m of the RRP area.
- It would appear that there is confusion between the AHIMS site card co-ordinates for Sites 52-2-0091 (shelter with deposit) and 52-2-0019 (Stone arrangement). The AHIMS co-ordinates for Site 52-2-0091 are 275975E 6138019N. This reference places the site at the junction of the Mundamia Creek and Sandy Creek. However the AHIMS co-ordinates for Site 52-2-0019 (the stone arrangement) are 275900E 6137600N. These co-ordinates place the stone arrangement on the western boundary of the current landfill area. However, the original description of the site by Towle (1942) describes the stone arrangement as an elongated enclosure of some 80 sandstone rocks near the confluence of Mundamia Creek and Sandy Creek (i.e. at the grid co-ordinates for site 52-2-91).

Despite this confusion of site details, this complex of sites has been assessed as having potentially high cultural and archaeological significance. Therefore there are implications for any future development at this location.

5 Ethno-historical Context

According to Tindale (1974), the study area is within the Wandandian Aboriginal tribal territory. Tindale concluded that the Shoalhaven River was a physical boundary between the Wodi Wodi people to the north and the Wandandian people to the south.

Contrary to Tindale's river boundary theory, ethnographers and other historical sources have described the "Shoalhaven Aborigines as a single cultural group (Capell (1963) in Navin Officer 2007). In all references the "Shoalhaven Aborigines" are treated collectively and the agreement is that the tribal boundary was further south, in the vicinity of Jervis Bay. Within this broad language group, were smaller social divisions or family groups which appear to have been associated with local areas (eg the "Shoalhaven group" appears to have referred to Nowra and the adjacent area south of the Shoalhaven River). The broader people of the Shoalhaven area banded together for specific activities and then split into groups on a family basis. Alexander Berry (1838: in Navin Officer 2007), described a band which was camping near his house as "natives who were all sitting in groups with their different families".

Aboriginal people were able to maintain this structure throughout the early period of European settlement. However later responses when they were excluded from their traditional hunting grounds included the seeking of refuge in fringe camps adjacent to European properties and partial integration into European maritime and pastoral activities.

Fringe camps were made up of members of a number of different clans and camps became more or less permanent. In the Shoalhaven district camps were established at Bilong, near Currumbene Creek, and at Mount Coolangatta on the Berry property. By the 1880s Aboriginal people were being pressed into Reserves or missions set up by the NSW Government. In 1881 a Protector of Aborigines was appointed. The Protector was replaced in 1883 by the Aborigines Protection Board which by the turn of the century had established 133 Reserves across the State. Aboriginal reserves were located supposedly to allow Aborigines to exploit natural resources at a distance from white rural centres. However the Protection Board was also responsible for the infamous policy which resulted in the removal of thousands of Aboriginal Children. Many of the Shoalhaven children were sent to the Bomaderry Aboriginal Children's Home which was established in 1908 when it received seven "native" children, six orphans and one baby (Bayley 1975)

The Bomaderry Aboriginal Children's Home was located at 59 Beinda Street, Bomaderry. The home continued to operate until 1988 when it was closed. Many Aboriginal people of the Shoalhaven can relate childhood experiences at the home, most following removal from their families. The Nowra LALC bought the property in 1993.

6. Archaeological Context

6.1 Academic Research Reports and site distribution models

The major academic debate on the archaeology of the south coast has focused on predictive models for settlement patterns and movement between the coastal plain and its hinterland. A summary of this debate is outlined below.

Sites older than 6000 years are rare in the south coast area as rising sea levels prior to this date resulted in the inundation of many older sites. Two coastal sites, Bass Point and Burrill Lake provide evidence of Pleistocene occupation with sites dating between 17,000 and 20,000 BP respectively. Prior to the rise in sea levels these sites would have been located some 14 km inland.

Some of the earliest recordings in Nowra-Ulladulla area were by Etheridge (Boot pers. Com). In 1890 Etheridge (Boot pers. Com) recorded stone hatchets in the region, followed in 1904 by the initial

recording of the Burrill Lake Rockshelter which was to provide valuable insights into the archaeology of the south coast region. In 1918 (Boot pers. Com) he recorded a carved tree associated with a bora ground (NPWS Site #58-1-0031) about 4 miles west north west of Ulladulla. According to Etheridge, the tree was carved in the 1850s and was incised by rings above one another and a spiral cut extending some 10 feet up the tree. The incisions were about 4 inches broad (Etheridge 1918). The tree no longer exists (Bell 1982).

In 1971 Lampert excavated a rock shelter at Burrill Lake which provided basal dates of approximately 20,000 years BP making it one of the oldest sites on the NSW south coast. The site provided evidence of “intensive seaboard exploitation of resources allowing optimal density of settlement (Mulvaney 1975). The earliest dated occurrence of unifacial pebble tools in eastern Australia is from the Burrill Lake excavation and the earliest backed blades in the Burrill Lake excavation were dated to around 5300 BP (Lampert 1971).

Attenbrow (1976) proposed a model from her research which concluded that coast and hinterland were occupied all year round and that movement between the two zones occurred at small group level rather than by large populations.

Vallance (1983) proposed that a range of subsistence strategies would have existed, that varied both within and between seasons and even from year to year. Following Vallance’s model, Boot (1994) suggested that if this were the case, larger archaeological sites could be expected in areas where larger quantities of food were available on a single occasion or on a regular basis and small sites may represent evidence for short term occupation during movement between the two locations.

Byrne (1983) concluded from his research in coastal hinterland forest areas that models of occupation focused on the coastline. He concluded that even though the highest site densities were identified near the coast, high densities were also identified in the hinterland, 13-18km from the coast. In the 5 Forests Study, Byrne (1983) found an absence of sites in the zone 3-10 km from the coastline.

More recently studies by Australian National (ANU) University Honours Students and PhD scholar Dr Philip Boot, have revealed a vastly different body of evidence which is outlined below.

Knight (1996) compiled a synthesis of the research reports of the areas investigated by ANU students. The research focused on locating, recording and analysing any visible areas of Aboriginal occupation within the surveyed areas. Survey transects were inspected along unsealed roads and tracks within State Forests, National Parks and private property. Knight reported that over 5000 person hours of field work was undertaken by ANU students, over 1000 kms of roads and tracks. The surveys resulted in recording of approximately 2207 sites, 1142 artefact scatters, 678 isolated artefacts, 349 shell middens, 24 rock shelters (including 10 with art), 11 grinding groove sites and 3 scarred trees. A total of 18,783 stone artefacts were recorded within the survey areas. Knight’s results dramatically changed the pattern of recorded site distribution. It became apparent that the intensity of utilisation of the coastal hinterland was far greater than previously believed.

Boot (2002) concluded from his research that occupation focused in areas of high biodiversity and along the boundaries or in close proximity to multiple resource zones.

6.2. Recent archaeological investigations in the Nowra area.

Recent investigations undertaken in the Nowra area associated with development projects include the following investigations.

Lampert (1971) excavated a rock shelter located on Bomaderry Creek less than a kilometre from the Shoalhaven River. His objective was to identify the types of resources that Aboriginal people were

utilising in this area. His preliminary analysis concluded that the people who used the shelter relied on terrestrial resources. The shallow deposit contained the remains of land mammals, with only a few estuarine shells and no fish. Stone artefacts were also uncovered.

Navin (1992) surveyed a 72 hectare area on the northern side of the Shoalhaven River adjacent to Pig Island for the proposed extensions to the APPM Shoalhaven Paper Mill. Two isolated artefacts were recorded. Navin concluded that the river banks were used as an access corridor rather than camping locations by Aboriginal people. It may be that these flood prone areas were not particularly attractive locations for campsites.

Donlan (1991) inspected the remains of an Aboriginal burial at the confluence of Cabbage Tree Creek and the Shoalhaven River. The site comprised the bones of a skull eroding from alluvial sediment in the river bank. It is not known what the results of these investigations were.

Other archaeological surveys on the floodplain downstream of Nowra have identified no or low density archaeological material. Corkhill (1986) surveyed the margin of Brundee Swamp and identified one isolated artefact and a small artefact scatter. Kuskie (1995) and Patton (1990) surveyed areas adjacent to Worrigea Swamp and did not locate any evidence of Aboriginal occupation. Kuskie (1995) concluded that the most likely places to contain archaeological material are “elevated, relatively level and well drained landscape units, adjacent to water courses and wetlands”.

Knight and Evans (2001) undertook a desktop assessment of the relationship between Aboriginal heritage sites and SEPP 14 listed wetlands (saline and fresh water) in the lower Shoalhaven River catchment area. The model of wetland site distribution suggested that:

- The density of Aboriginal sites increases in the proximity to wetlands (i.e. within 500m of hinterland areas) and generally consists of middens, artefact scatters and isolated finds
- Directly adjacent to wetlands, there is a high potential for middens and midden/artefact scatters to be located. “Slightly elevated, well drained features such as banks, crests and terraces; adjacent features such as flats and low gradient lower slopes also have a high potential for site to occur.
- Midden and artefact scatters tend to be located on lower slopes and ridge/spur tops at distances of over 150-200m from the wetland margins

Knight and Evans acknowledge that there were likely to be further and more complex influences on Aboriginal subsistence activities than simply the existence of resource rich wetlands.

Williams and Barber (1993) undertook a survey of the proposed route of the fibre optic cable from Wollongong to Melbourne which passes to the east of the survey area. An archaeologically sensitive area was identified on the terrace area adjacent to Tapitallee Creek (2.5km) north of the Shoalhaven river and test excavations were undertaken. Low density artefacts were located on a low rise adjacent to the creek.

Bindon (1976) suggested that a concentration of rock art in the Nowra district was related to the proximity of a stone arrangement (interpreted as a Bora ring) in the area immediately north from the proposed RRP site. The stone arrangement consisting of an elongated enclosure of some 80 sandstone rocks was reported by Towle (1942). This site was recorded near the confluence of Mundamia Creek and Sandy Creek. A scarred tree has also been recorded in this area. It is not known whether these sites are still in existence.

6.3 Predictive model for site type and distribution in the RRP area

Of most significance to the development of a predictive model for this site are the models presented by Attenbrow (1976), Boot (2002), Knight and Evans (2001) and Bindon (1976) .

From Attenbrow's model it can be concluded that sites in the Nowra area reflect the site types generally associated with sandstone environments adjacent to major water courses (i.e. rockshelters with art and deposit, axe grinding grooves, art sites, middens, open camp sites and scarred trees). The distribution of these sites will be dependent upon the topography of the area.

Boot's research highlighted the fact that occupation was focused in areas of high biodiversity and along the boundaries or in close proximity to multiple resource zones. This is significant for the current study area which has ready access to a variety of resource zones (marine, riverine and open forest).

Knight and Evans' model of wetland site distribution suggested that the RRP area is outside the ideal 500m distance from wetlands. However there is still a potential for midden and open campsites to be present with the acknowledgement that there may be more complex influences on Aboriginal subsistence activities which in this case may be associated with ceremonial use of the study area.

Bindon's suggestion that the concentration of rock art in the Nowra district was related to the proximity of a stone arrangement (interpreted as a Bora ring) is a significant contribution factor in the assessment of potential site type and distribution patterns in the RRP area.

The predictive model developed for this area identifies the potential for the following sites to occur within the RRP area.

- all sandstone outcrops within the proposed RRP have a high potential to contain Aboriginal sites including rock shelters and axe grinding grooves;
- all old growth trees have a potential to have scarring of Aboriginal origin;
- the distance of the RRP from the major creek lines of Sandy Creek and Cabbage Tree Creek and the Shoalhaven River make it unlikely that there will be large campsites in the RRP area, however smaller camp sites and isolated artefacts may be present.

7. Indigenous Heritage Conclusions

- No known Aboriginal heritage sites were identified within the RRP area.
- The data base search identified 55 registered Aboriginal sites within a 10 km radius of the proposed development. Of these seven (7) sites were located within 600m from the RRP area.
- This complex of sites is located to the north of the RRP between the development site and the Shoalhaven River. None of these sites will be affected by the proposed RRP works.
- This complex of sites including a stone arrangement, 2 rockshelter with art and one rockshelter with deposit, one scarred tree and two axe grinding groove sites has been identified as having potentially high cultural and archaeological significance.
- Although outside the impact area of the current project, Council should be aware of the potential significance of this area and ensure that an assessment of the cultural significance of the area is included in the consideration of future developments in the area, including any further expansion of the current land fill area.

Part 2: Assessment of the potential impact to Non-indigenous Heritage

1. Archival Searches

The following heritage registers were reviewed.

1.1 Australian Heritage Council

The Australian Heritage Council is the principal adviser to the Australian Government on Heritage Matters. The Council assesses nominations for the National Heritage List and the Commonwealth Heritage List. The Council also maintains the Register of the National Estate.

There are no entries for the Nowra District registered on the Commonwealth Heritage List.

1.2 Heritage Council of NSW

The Heritage Council of NSW is established under the *NSW Heritage Act 1977* and is an advisory body that includes members of the community, the government, the conservation profession and representatives of organisations such as the National Trust of Australia (NSW). The role of the Heritage Council is to provide advice on heritage matters to the Minister of Planning, recommend items of State significance for listing on the State Heritage Register, recommend interim protection of potential heritage items so that an assessment of their significance can be made, determine proposed changes to items on the State Heritage Register to retain the items' heritage significance and advise the community on heritage.

There are no items in the Nowra area listed on the State Heritage Register.

1.3 National Trust of Australia (NSW)

The National Trust of Australia (NSW) is a non-government, community organisation which promotes the conservation of both built and natural heritage. The Trust maintains a register of landscapes, townscapes, buildings, industrial sites, cemeteries and other items or places which the Trust determines have heritage significance and are worthy of conservation. Items listed in the Trust's Register are said to be "classified". The listing of a place in the Trust's Register has no legal force, however the Trust does encourage owners of listed places to respect their heritage significance. The Trust often helps local councils in the preparation of Local Environmental Plans and encourages local councils to refer development applications affecting properties listed on the Register for advice and comment by the Trust's Architectural Advisory Committee.

There are a total of 18 items listed in Nowra area. Wogamia House to the west of the RRP area is listed. None of the listed items will be impacted by the proposed RRP works.

1.4 Shoalhaven City Council LEP Heritage Schedules

There are 42 entries for the Nowra area and 2 for the West Nowra area. None of these items are in the vicinity of the RRP area (Map 4).

2. Historical Development of the Nowra District

Timeline Matrix attached is taken directly from the Shoalhaven Heritage Study 1995-1998 (Freeman, P. 1999 pp.50-53)



4.0 Timeline Matrix

The timeline incorporates information from the thematic history and individual inventory entries in the database.

Exploration

- 1805 Shoalhaven River discovered by James Meehan and Lieut. Kent
- 1811 First getters on the Shoalhaven
- 1813 Burrier Ford discovered by J Meehan
- 1815 Charles Throsby establishes a cattle track/route to the Illawarra from Bong Bong (Moss Vale)
- 1819 Jervis Bay and Currumbene Creek explored by J Meehan and John Oxley, government surveyors

Land Grants and Purchases

- 1822 First land grant at Coolangatta to Alexander Berry and Edward Wollstonecraft
Excavation of a canal linking the Crookhaven and Shoalhaven Rivers the first canal in Australia
Convicts introduced by assignment to Coolangatta and other early grants
Agriculture, building construction and boat building begin in addition to land clearing and timber getting
- 1824 Mary Reiby at Burrier Ford on her land grant
- 1829 Narrawallee settled by the Reverend Thomas Kendall
Alexander Berry's first Greenwell Point wharf constructed
Coastal shipping begins
Sheep introduced to the Shoalhaven by A Berry
Construction of timber barns begins on the Berry Estate
- 1830s Settlement on Currumbene Creek
- 1837 Port of Ulladulla established by the government
- 1838 Dr Kenneth McKenzie buys Bundanon from R H Browne
- 1839 Henry Osborne's grant at Barrengarry, Kangaroo Valley, approved
- 1841 Wool Road from Braidwood to Huskisson constructed with convict assistance
Sub-division of Estates and Introduction of Tenant Farmers
- 1842 Shoalhaven River floods extensively
Tenant farming on Coolangatta Estate under Alexander Berry
- 1849 David Warden Snr buys Alexander McCleay's estate at Ulladulla; tenant farmers established
- 1849-1852 Silver and gold discovered at Yalwal
- 1852 Illawarra Steam Navigation Company established by the amalgamation of smaller companies. Shipping to Ulladulla, Greenwell Point and Broughton Creek.
- 1850s Terara established as a private town by the de Mestre family
Cambewarra, Tomerong and Wandandian settled by purchase at auction
- 1855 First land sales at Nowra, the government town
- 1856 Princes Highway (South Road) extended to Berry by A Berry
- 1858 Princes Highway (South Road) extended to Bomaderry

- 1860 Milton established as a private town by John Booth's purchase and sub-division of land
- 1860 Shoalhaven River floods extensively damaging Terara and Numbaa

1861 Free Selection

- 1860s on River steamers (droghers) trade to Burrier
Post Offices established in Shoalhaven
Export of butter to Sydney markets by sea
Sawmills established at Huskisson
- 1860s Construction of Mount Airlie, Bundanon, Barrengarry House and Boolgatta House
Architect John Horbury Hunt begins to design buildings for the Osborne family of Kangaroo Valley and Marshall Mount, Dapto
Barrengarry Estate sub-divided into tenant farms
James Poole, mason, begins to build in stone
- 1865 Ulladulla Harbour wall finished in stone
- 1868 Numbaa Council established in the private town of Numbaa on A Berry's Coolangatta Estate
- 1870 Shoalhaven flood extensively damaging Terara and Numbaa, leading to the ascendancy of Nowra

Ascendancy of Nowra Begins

- 1870s Extension of settlement, growth of population and schools
- 1870-1915 Goldfields at Yalwal exploited including Grassy Gully by the Barron family
- 1872 Architect John Horbury Hunt begins work in Kangaroo Valley and Nowra
- 1874 Ulladulla Municipality meets for the first time in Milton
- 1875 Architect G.A. Mansfield becomes involved in school and bank design and construction
- 1878 Yalwal goldfield declared
- 1879 Death of Alexander Berry; Coolangatta Estate inherited by David Berry
- 1880s Coal mining in Morton NP, Yadboro, by William Rixon
Goodlet & Smith sawmill at Bawley Point
- 1880 Architect W. Kemp designs public schools following the Public Instruction Act of 1880
- 1881 Shoalhaven River Road Bridge erected
- 1883 Private town of Berry established near the Berry Estate village of Broughton Creek under David Berry and John Hay
- 1884 Alfa Laval cream separator introduced to the Illawarra
- 1886 Architect William Wardell designs the ES&A Bank in Berry
- 1889 David Berry dies; John Hay takes over running of Coolangatta Estate with formerly swamp land drained and cleared for sale to dairy farmers

Industrialisation of the Shoalhaven Dairy Industry Begins in Conjunction with Increased Primary Production and Tourism

| | |
|-----------|---|
| 1890s | Break up of large estates, primarily Coolangatta and Barrengarry, and rise of independent dairy farmers in Kangaroo Valley and the coastal plains of Shoalhaven Investment in butter and cheese factories and the dominance of dairy cattle Discovery of gold at Bimberamala, Touga Creek and Tim's Gully Timber extraction in the Bawley Point -Kioloa-Termeil area |
| c.1890 | Architect Cyril Blacket practices in Nowra |
| 1891 | Walter Liberty Vernon, Government Architect, completes Berry Court House designed by Colonial Architect James Barnet. |
| 1893 | The railway arrives at Bomaderry from Kiama Architect Howard Joseland begins to design residences on David Berry's Coolangatta Estate |
| 1898 | Kangaroo River suspension bridge erected Beginnings of the growth of tourism at Sussex Inlet and Huskisson |
| 1900 | Dairy Farmers Co-operative established |
| 1900-1904 | Terara House erected by Hugh McKenzie of Bundanon |
| 1902 | Nowra Co-operative Dairy Co Ltd founded |
| 1904 | Nowra accessible by sea following clearing of the river bed at Bomaderry |
| 1907-1910 | Tolwong Copper Mines in production |
| 1910-1925 | Sale of Barrengarry Estate |

1914-1918 First World War

| | |
|------|--|
| 1915 | Yalwal goldmines close Impact of the ACT at Jervis Bay with establishment of the Royal Australian Naval College and planning of the town of Vincentia |
|------|--|

Inter-War Period

| | |
|-----------|---|
| 1920-1947 | Silica mining at Narrawallee, Bannister Head and Red Head Increasing use of the motor vehicle leads to better roads greater mobility and increased recreational and weekend activity First garage established in Nowra c.1926 |
| 1927 | Onset of the 1920s Depression |
| 1930s | Loss of coastal sawmills Cinemas start to impact on the community |
| 1930 | Architect Cyril Blacket wins competition for the design of a War Memorial for Nowra |
| 1931 | State Milk Board constituted by the State government |
| 1934-43 | Drought affects the dairy industry |
| 1939 | Morton Primitive Reserve declared |

1939-1945 Second World War

| | |
|-------|--|
| 1939 | RAF Base Nowra |
| 1940s | Burrill Lake cinema erected Marlin Hotel, Ulladulla, erected Growth of coastal communities in the old timber getting areas such as Kioloa State Forests established |
| 1940 | Metropolitan Milk [supply] Zone established |
| 1941 | More than 500 dairy farms close down on the South Coast |
| 1944 | HMAS Albatross Naval Air Base |

Post-War Period Starts

| | |
|-------|---|
| 1950s | Housing Commission construction begins Influx of weekend cabins and growth of leisure Minor commercial logging in addition to the state forests |
|-------|---|

Environment and Defence

| | |
|-------|---|
| 1960s | Military training use of the Tianjara area |
| 1964 | Danjera Dam constructed |
| 1967 | Morton National Park declared in NSW |
| 1974 | Arthur Boyd purchases Riversdale |
| 1979 | Arthur Boyd purchases Bundanon |
| 1994 | Bundanon donated to, and accepted by, the Commonwealth Jervis Bay National Park [Commonwealth] established |

3. Predictive Model for the identification of potential non-indigenous relics within the RRP area.

This predictive model is based on the results of the heritage register searches and the analysis of the historical development of the township of Nowra as evidenced in the Timeline Matrix presented above.

- No historical sites or relics were identified in the archival searches.
- The timeline matrix of historical events in the development of the township of Nowra (Freeman 1997) indicates that it is unlikely that there will be any non-indigenous heritage relics associated with the early history of the Nowra district present in the RRP area because the area was not within the historical boundaries of the old townships of Terara and Numbaa and the early settlement area of Nowra and is distant from the main historical road arteries and the Shoalhaven River shipping lanes and wharves.
- If sites are present they are most likely to be associated farming activities, unrecorded house/shack sites, timber felling activities and bottle dumps.

4. Non-indigenous Heritage Results and Conclusions

- It is concluded that the potential for non-indigenous heritage sites and relics to be present in the RRP area is low.
- No known sites are present within the RRP site
- Site types most likely to occur within the RRP would be associated farming activities, unrecorded house/shack sites, timber felling activities and bottle dumps.

NB. At this stage, no consultation has been undertaken with heritage groups.

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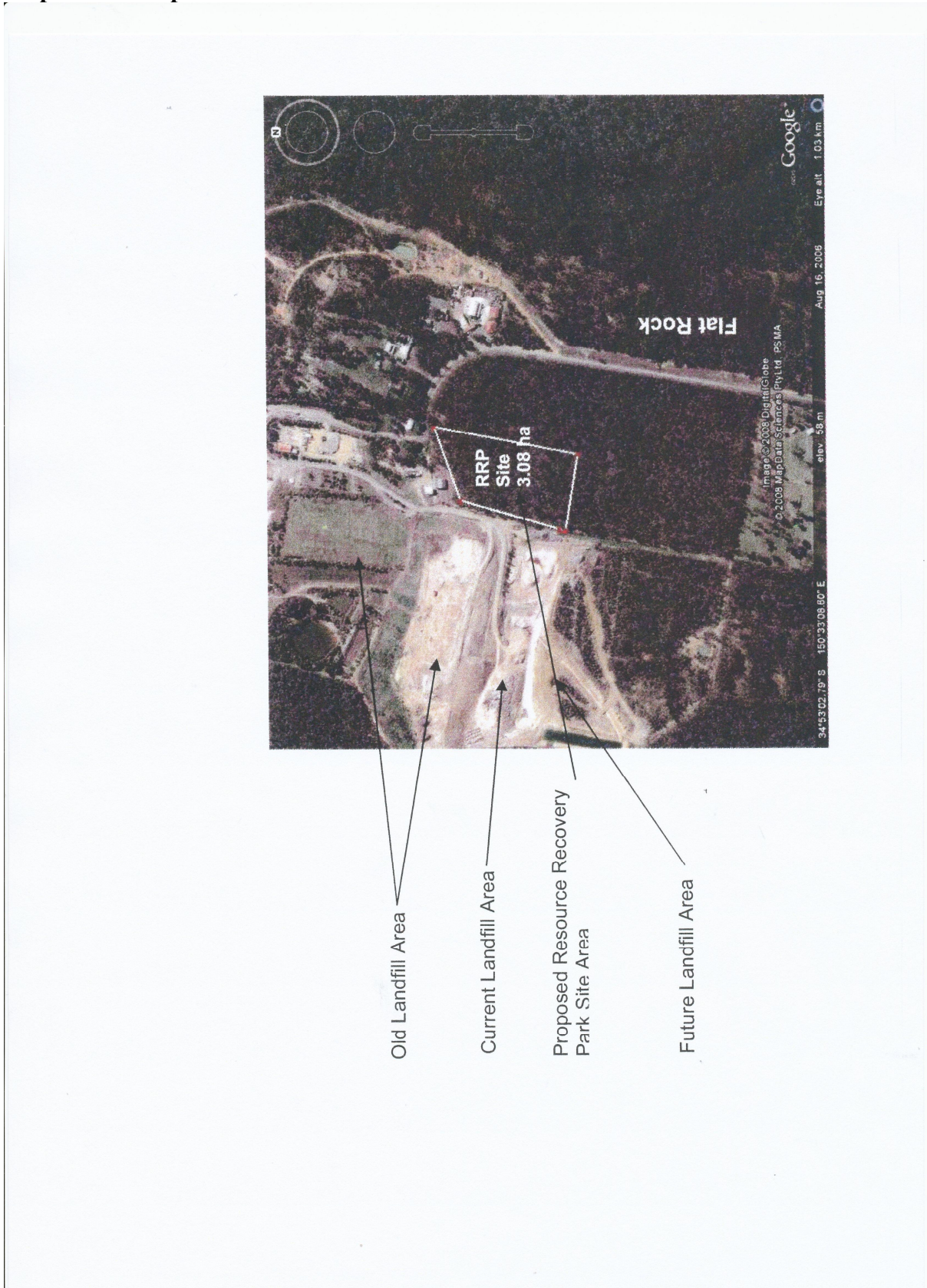
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Appendix 1: Maps

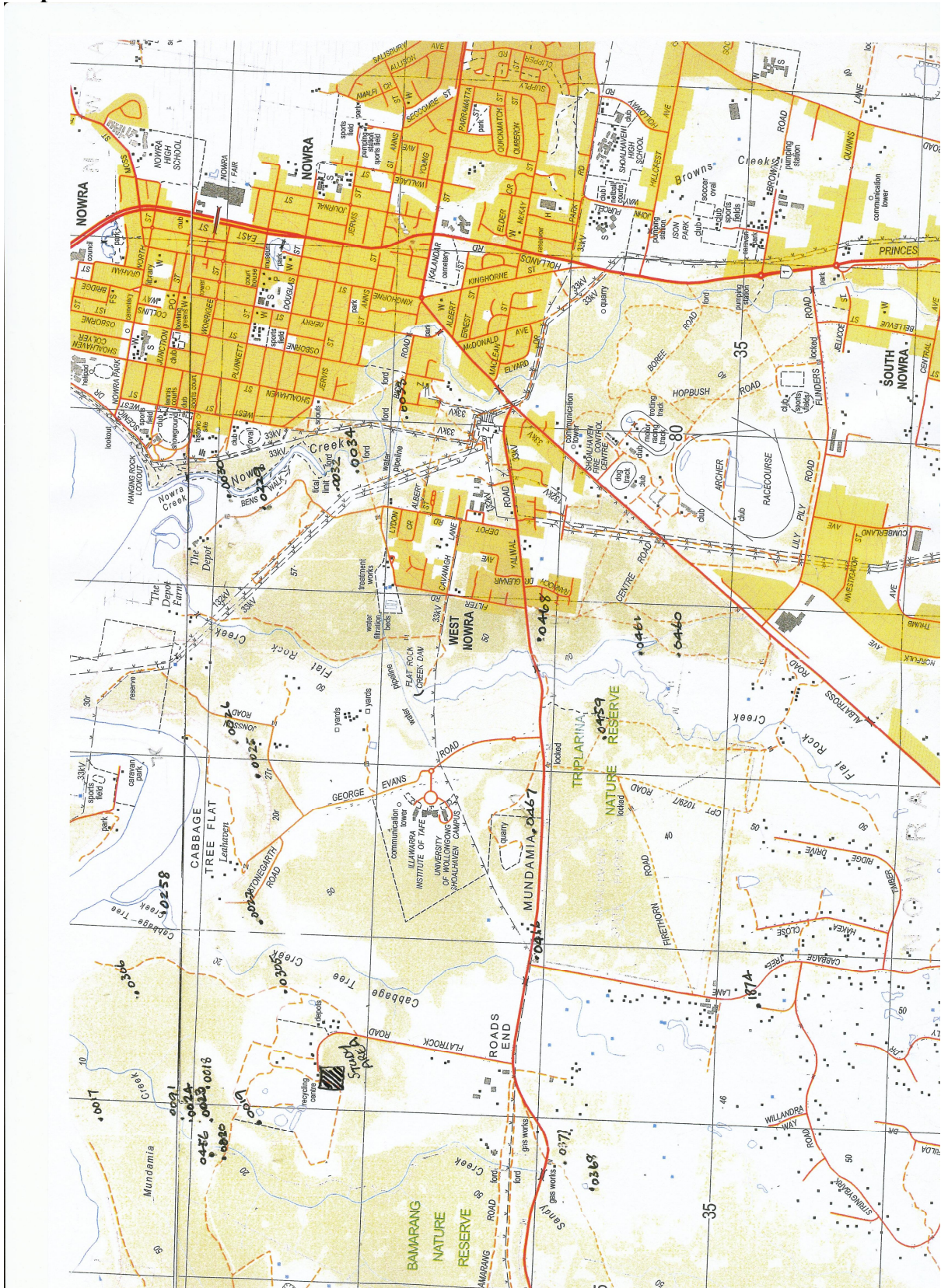
Map 1: Location of RRP



Map 2: RRP impact area



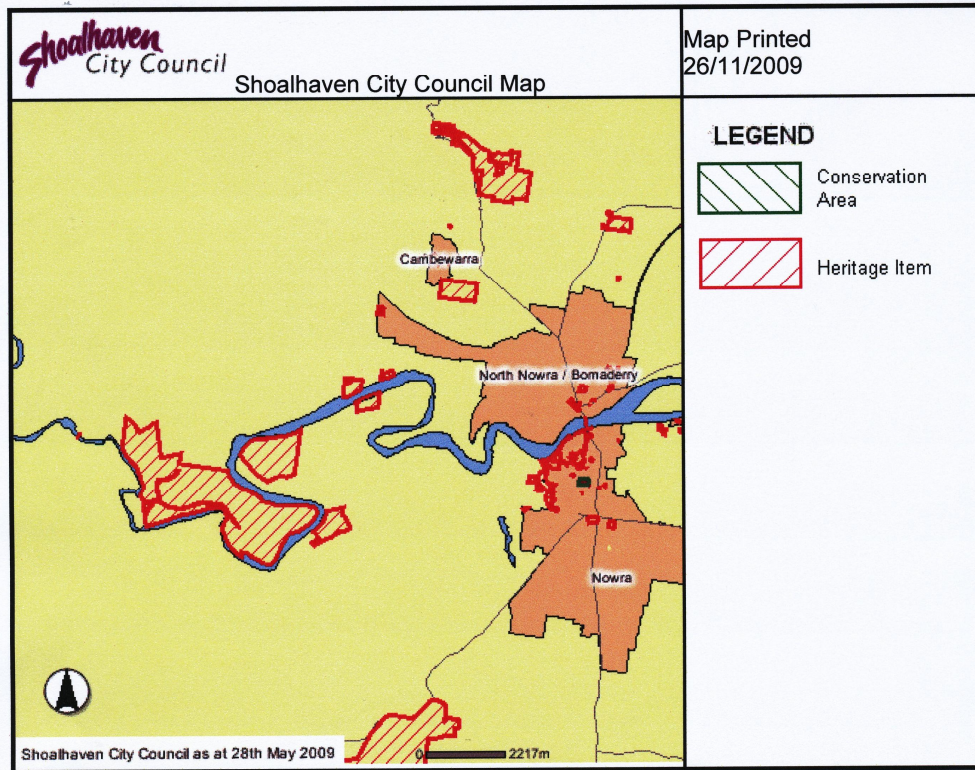
Map 3: Location of sites identified from AHIMS search



Map 4: Location of Heritage Sites on the Shoalhaven City Council LEP Heritage Schedules

Map Output

Page 1 of 1



Appendix 2: Correspondence with Nowra LALC

Mills Archaeological and Heritage Services Pty Ltd
4 Devonshire Street
Kiama
NSW 2533

Ph: (02) 42332133

Fax: (02) 42332033

Email: millsarch@bigpond.com

4th November 2009

To: Nowra LALC

Attention:

Date: 4th November 2009

Message: Shoalhaven City Council's proposed development of the Nowra Resource recovery Park

GHD, Nowra Office has commissioned Mills Archaeological and Heritage Services to carry out a preliminary desktop assessment of an area adjacent to the current recycling station on Flat Rock Road, Nowra (see attached Map) which is under consideration for expansion by Shoalhaven City Council for the processing of garden and vegetable waste.

The project is in its preliminary stages and GHD has commissioned me to undertake a preliminary desktop assessment of potential Indigenous heritage issues which may be associated with the project (i.e. identify any major issues of concern to the Aboriginal community).

My brief from GHD includes:

- A search of the AHIMS register for known sites
- Search of the Native Title data base to identify claimants
- Preliminary consultation with the Nowra LALC to determine if there are any major issues of concern associated with this area.

The second stage of the proposal will include the implementation of the DECCW Aboriginal Community Consultation guidelines and a full field assessment.

I would appreciate it, if the LALC could discuss the location of the proposed development with Aboriginal Elders and Community members to identify areas or places of special importance for the Community within the proposed development area. I would be happy to come to the LALC office to discuss the project.

Regards,
Robynne Mills

Appendix 3: Results of AHIMS Search



List of Sites (List - Short)

Nowra

Grid Reference Type = AGD (Australian Geodetic Datum), Zone = 56, Easting From = 271000, Easting to = 284000, Northing From = 6132000, Northing to = 6140000, Requestor like 5317%, Service ID = 23183, Feature Search Type = AHIMS Features

| Site ID | Site Name | Datum | Zone | Easting | Northing | Context | Site Features | Site Types (recorded prior to June 2001) | Recording (Primary) | Reports (Catalogue Number) | State Arch. Box No (for office use only) | |
|-----------|--------------------------------------|-----------------|------|---------|----------|------------------|-----------------------|---|--------------------------------|-------------------------------|---|--|
| 45-6-2540 | <u>Cabbage Tree Lane 2</u> | AGD | 56 | 276950 | 6133650 | Open Site | AFT :- | Isolated Find | Kuskie | | | |
| | | Status Deleted | | | | | | | | | | |
| | | Primary Contact | | | | | | | | | | |
| 52-2-1874 | <u>Cabbage Tree Lane 1</u> | AGD | 56 | 276700 | 6134750 | Open Site | AFT :- | Isolated Find | Kuskie | | NRS/17798/1494 | |
| | | Status Valid | | | | | | | | | | |
| | | Primary Contact | | | | | | | | | | |
| 52-2-1875 | <u>Cabbage Tree Lane 2</u> | AGD | 56 | 276950 | 6133650 | Open Site | AFT :- | Isolated Find | Kuskie | | NRS/17798/1494 | |
| | | Status Valid | | | | | | | | | | |
| | | Primary Contact | | | | | | | | | | |
| 52-5-0005 | <u>Calymea Creek</u> | AGD | 56 | 272450 | 6134520 | Enclosed Shelter | ART :-, AFT :4, GDG : | Axe Grinding Groove, Shelter with Art, Shelter with Deposit | Permit(s) Bindon, Clarke | | NRS/17798/1535 | |
| | | Status Valid | | | | | | | | | | |
| | | Primary Contact | | | | | | | | | | |
| 52-5-0017 | <u>Woonamia</u> | AGD | 56 | 275900 | 6138530 | Enclosed Shelter | ART :- | Shelter with Art | Permit(s) Australian Museum | | NRS/17798/1535 | |
| | | Status Valid | | | | | | | | | | |
| | | Primary Contact | | | | | | | | | | |
| 52-5-0018 | <u>Woonamia, Mundamia Ck</u> | AGD | 56 | 276160 | 6137932 | Open Site | TRE :- | Scarred Tree | Permit(s) Towle | | NRS/17798/1535 | |
| | | Status Valid | | | | | | | | | | |
| | | Primary Contact | | | | | | | | | | |
| 52-5-0019 | <u>Woonamia</u> | AGD | 56 | 275900 | 6137600 | Open Site | STA :- | Stone Arrangement | Permit(s) Towle | | NRS/17798/1535 | |
| | | Status Valid | | | | | | | | | | |
| | | Primary Contact | | | | | | | | | | |
| 52-5-0020 | <u>Woonamia, Mundamia Creek, SR6</u> | AGD | 56 | 275700 | 6137300 | Enclosed Shelter | ART :3 | Shelter with Art | Permit(s) McCarthy, Clarke | | NRS/17798/1535 | |
| | | Status Valid | | | | | | | | | | |
| | | Primary Contact | | | | | | | | | | |
| | | Permit(s) | | | | | | | | | | |



List of Sites (List - Short)

Nowra

Grid Reference Type = AGD (Australian Geodetic Datum), Zone = 56, Easting From = 271000, Easting to = 284000, Northing From = 6132000, Northing to = 6140000, Requestor like 53177%, Service ID = 28183, Feature Search Type = AHIMS Features

| Site ID | Site Name | Datum | Zone | Easting | Northing | Context | Site Features | Site Types (recorded prior to June 2001) | Recording (Primary) | Reports (Catalogue Number) | State Arch. Box No (for office use only) |
|-----------|-----------|-----------------|------|---------|----------|------------------|---------------|---|------------------------|-------------------------------|---|
| 52-5-0022 | Nowra: | AGD | 56 | 277080 | 6137676 | Enclosed Shelter | ART :- | Shelter with Art | ASRSYS | | NRS/17798/1535 |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | Permit(\$) | | |
| 52-5-0023 | Nowra: | AGD | 56 | 276900 | 6137900 | Open Site | GDG :- | Axe Grinding Groove | Unknown Author | | NRS/17798/1535 |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | Permit(\$) | | |
| 52-5-0024 | Nowra: | AGD | 56 | 276930 | 6137930 | Open Site | GDG :- | Axe Grinding Groove | Bindon | | NRS/17798/1535 |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | Permit(\$) | | |
| 52-5-0025 | Nowra: | AGD | 56 | 277900 | 6137700 | Enclosed Shelter | ART :- AFT :- | Shelter with Art, Shelter with Deposit | ASRSYS | | NRS/17798/1535 |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | Permit(\$) | | |
| 52-5-0026 | Nowra: | AGD | 56 | 278100 | 6137800 | Enclosed Shelter | ART :- | Shelter with Art | ASRSYS | | NRS/17798/1535 |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | Permit(\$) | | |
| 52-5-0028 | Nowra: | AGD | 56 | 278900 | 6138900 | Enclosed Shelter | ART :- AFT :- | Shelter with Art, Shelter with Deposit | Bindon | | NRS/17798/1535 |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | Permit(\$) | | |
| 52-5-0029 | Nowra: | AGD | 56 | 279500 | 6137750 | Enclosed Shelter | AFT :- | Shelter with Deposit | Bindon | | NRS/17798/1535 |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | Permit(\$) | | |
| 52-5-0030 | Nowra: | AGD | 56 | 279550 | 6137950 | Open Site | GDG :- | Axe Grinding Groove | ASRSYS | | NRS/17798/1535 |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | Permit(\$) | | |



List of Sites (List - Short)

Nowra

Grid Reference Type = AGD (Australian Geodetic Datum), Zone = 56, Easting From = 271000, Easting To = 284000, Northing From = 6132000, Northing To = 6140000, Requestor like 6317%, Service ID = 28183, Feature Search Type = AHIMS Features

| Site ID | Site Name | Datum | Zone | Easting | Northing | Context | Site Features | Site Types (recorded prior to June 2001) | Recording (Primary) | Reports (Catalogue Number) | State Arch. Box No (for office use only) |
|------------------|------------------------------|-----------------|------|---------|----------|------------------|------------------------|---|------------------------|-------------------------------|---|
| <u>52-5-0032</u> | <u>Nowra:</u> | AGD | 56 | 279600 | 6137300 | Enclosed Shelter | ART :- | Shelter with Art | ASRSYS | 2082 | NRS/17798/1/535 |
| | | Status Valid | | | | | | | | | |
| | <u>Nowra:Bundanon Point:</u> | Primary Contact | | | | | | | Permit(s) | | |
| <u>52-5-0033</u> | <u>Nowra:Bundanon Point:</u> | AGD | 56 | 280022 | 6136911 | Enclosed Shelter | ART :-, AFT :-, GDG :- | Axe Grinding Groove, Shelter with Art, Shelter with Deposit | Towle | | NRS/17798/1/535 |
| | | Status Valid | | | | | | | | | |
| | <u>Nowra:Hidden Valley:</u> | Primary Contact | | | | | | | Permit(s) 879 | | |
| <u>52-5-0034</u> | <u>Nowra:Hidden Valley:</u> | AGD | 56 | 279700 | 6137200 | Enclosed Shelter | ART :- | Shelter with Art | Bindon | | NRS/17798/1/535 |
| | | Status Valid | | | | | | | | | |
| | <u>Nowra (Bomaderry):</u> | Primary Contact | | | | | | | Permit(s) | | |
| <u>52-5-0035</u> | <u>Nowra (Bomaderry):</u> | AGD | 56 | 280053 | 6139930 | Enclosed Shelter | AFT :- | Shelter with Deposit | Maynard | 531, 98511 | NRS/17798/1/535 |
| | | Status Valid | | | | | | | | | |
| | <u>Bomaderry:</u> | Primary Contact | | | | | | | Permit(s) | | |
| <u>52-5-0036</u> | <u>Bomaderry:</u> | AGD | 56 | 279800 | 6139900 | Enclosed Shelter | ART :-, AFT :- | Shelter with Art, Shelter with Deposit | Bindon | 98511 | NRS/17798/1/535 |
| | | Status Valid | | | | | | | | | |
| | <u>Nowra:</u> | Primary Contact | | | | | | | Permit(s) | | |
| <u>52-5-0084</u> | <u>Nowra:</u> | AGD | 56 | 279687 | 6139923 | Open Site | GDG :- | Axe Grinding Groove | Unknown Author | 2048, 98511 | NRS/17798/1/536 |
| | | Status Valid | | | | | | | | | |
| | <u>Nowra:</u> | Primary Contact | | | | | | | Permit(s) | | |
| <u>52-5-0086</u> | <u>Nowra:</u> | AGD | 56 | 280249 | 6139294 | Enclosed Shelter | AFT :- | Shelter with Deposit | Unknown Author | 2048 | NRS/17798/1/536 |
| | | Status Valid | | | | | | | | | |
| | <u>Nowra:</u> | Primary Contact | | | | | | | Permit(s) | | |
| <u>52-5-0087</u> | <u>Nowra:</u> | AGD | 56 | 280161 | 6139109 | Enclosed Shelter | AFT :- | Shelter with Deposit | Unknown Author | 2048 | NRS/17798/1/536 |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | Permit(s) | | |



List of Sites (List - Short)

Nowra

Grid Reference Type = AGD (Australian Geodetic Datum), Zone = 56, Easting From = 271000, Easting to = 284000, Northing From = 6132000, Northing to = 6140000, Requestor like 5317%, Service ID = 28183, Feature Search Type = AHIMS Features

| Site ID | Site Name | Datum | Zone | Easting | Northing | Context | Site Features | Site Types (recorded prior to June 2001) | Recording (Primary) | Reports (Catalogue Number) | State Arch. Box No (for office use only) |
|-----------|--|-----------------|------|---------|----------|------------------|---------------|---|------------------------|-------------------------------|---|
| 52-5-0088 | Nowra: | AGD | 56 | 276262 | 6138817 | Enclosed Shelter | AFT :- | Shelter with Deposit | Unknown Author | 2048 | NRS/17798/1536 |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | | | |
| 52-5-0089 | Nowra: | AGD | 56 | 276610 | 6138307 | Enclosed Shelter | AFT :- | Shelter with Deposit | Unknown Author | 2048 | NRS/17798/1536 |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | | | |
| 52-5-0090 | Nowra: | AGD | 56 | 280002 | 6137917 | Enclosed Shelter | AFT :- | Shelter with Deposit | Unknown Author | 2048 | NRS/17798/1536 |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | | | |
| 52-5-0091 | Woraminia: | AGD | 56 | 275975 | 6138019 | Enclosed Shelter | AFT :- | Shelter with Deposit | Unknown Author | 2048 | NRS/17798/1536 |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | | | |
| 52-5-0093 | Bamarong:Punt: | AGD | 56 | 272733 | 6135485 | Open Site | GDG :- | Axe Grinding Groove | Unknown Author | 2048 | NRS/17798/1536 |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | | | |
| 52-5-0094 | Bamarong: | AGD | 56 | 274104 | 6135512 | Open Site | GDG :- | Axe Grinding Groove | Unknown Author | 2048 | NRS/17798/1536 |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | | | |
| 52-5-0110 | Nowra: | AGD | 56 | 279837 | 6136999 | Enclosed Shelter | ART :- | Shelter with Art | Brass | 2048 | NRS/17798/1536 |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | | | |
| 52-5-0148 | Calymea Creek:Bamarong Dam:Bamarong Dam 2: | AGD | 56 | 272025 | 6134281 | Enclosed Shelter | AFT :- | Shelter with Deposit | Attenbrow | 2048 | NRS/17798/1537 |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | | | |



List of Sites (List - Short)

Nowra

Grid Reference Type = AGD (Australian Geodetic Datum), Zone = 56, Easting From = 271000, Easting to = 284000, Northing From = 6132000, Northing to = 6140000, Requestor like 5317%, Service ID = 28183, Feature Search Type = AHIMS Features

| Site ID | Site Name | Datum | Zone | Easting | Northing | Context | Site Features | Site Types (recorded prior to June 2001) | Recording (Primary) | Reports (Catalogue Number) | State Arch. Box No (for office use only) |
|-----------|--|--------------|------|---------|----------|------------------|---------------|---|---|-------------------------------|---|
| 52-5-0158 | <u>Calymea Creek;Bamarano Dam 1;</u> | AGD | 56 | 272440 | 6134620 | Enclosed Shelter | AFT :- | Shelter with Deposit | Attenbrow | | NRS/17798/1537 |
| | | Status Valid | | | | | | | | | |
| | Primary Contact | | | | | | | | | | |
| 52-5-0258 | <u>Cabbage Trees Flat;</u> | AGD | 56 | 271100 | 6138200 | Open Site | BUR :- | Burrell's | Permit(\$) Donlon | 1961 | NRS/17798/1538 |
| | | Status Valid | | | | | | | | | |
| | Primary Contact | | | | | | | | | | |
| 52-5-0305 | <u>EGP 3-26;Cabbage Trees Creek;Eastern Gas Pipeline;</u> | AGD | 56 | 276620 | 6137510 | Enclosed Shelter | AFT :- | Shelter with Deposit | Permit(\$) Navin, Officer | | NRS/17798/1539 |
| | | Status Valid | | | | | | | | | |
| | Primary Contact | | | | | | | | | | |
| 52-5-0306 | <u>EGP 3-27;Humbung Reach shoalhaven;Eastern Gas Pipeline;</u> | AGD | 56 | 276620 | 6138360 | Open Site | AFT :- | Open Camp Site | Permit(\$) Navin, Officer | | NRS/17798/1539 |
| | | Status Valid | | | | | | | | | |
| | Primary Contact | | | | | | | | | | |
| 52-5-0368 | <u>Duke 2</u> | AGD | 56 | 275640 | 6135700 | Enclosed Shelter | AFT : 1 | Shelter with Deposit | Permit(\$) Cultural Heritage Management Australia - (Australian Archaeological Survey Consultants) | | NRS/17798/1540 |
| | | Status Valid | | | | | | | | | |
| | Primary Contact | | | | | | | | | | |
| 52-5-0369 | <u>Duke Four (duplcat refer to 52-5-0375)</u> | AGD | 56 | 274590 | 6133420 | Enclosed Shelter | AFT : 7 | Shelter with PAD | Permit(\$) Cultural Heritage Management Australia - (Australian Archaeological Survey Consultants) | | NRS/17798/1540 |
| | | Status Valid | | | | | | | | | |
| | Primary Contact | | | | | | | | | | |
| 52-5-0371 | <u>Duke 1</u> | AGD | 56 | 275760 | 6135860 | Open Site | AFT : 1 | Isolated Find | Permit(\$) Cultural Heritage Management Australia - (Australian Archaeological Survey Consultants) | | NRS/17798/1540 |
| | | Status Valid | | | | | | | | | |
| | Primary Contact | | | | | | | | | | |
| 52-5-0373 | <u>Duke 6</u> | AGD | 56 | 274430 | 6133270 | Open Site | AFT : 1 | Isolated Find | Permit(\$) Cultural Heritage Management Australia - (Australian Archaeological Survey Consultants) | | NRS/17798/1540 |
| | | Status Valid | | | | | | | | | |
| | Primary Contact | | | | | | | | | | |



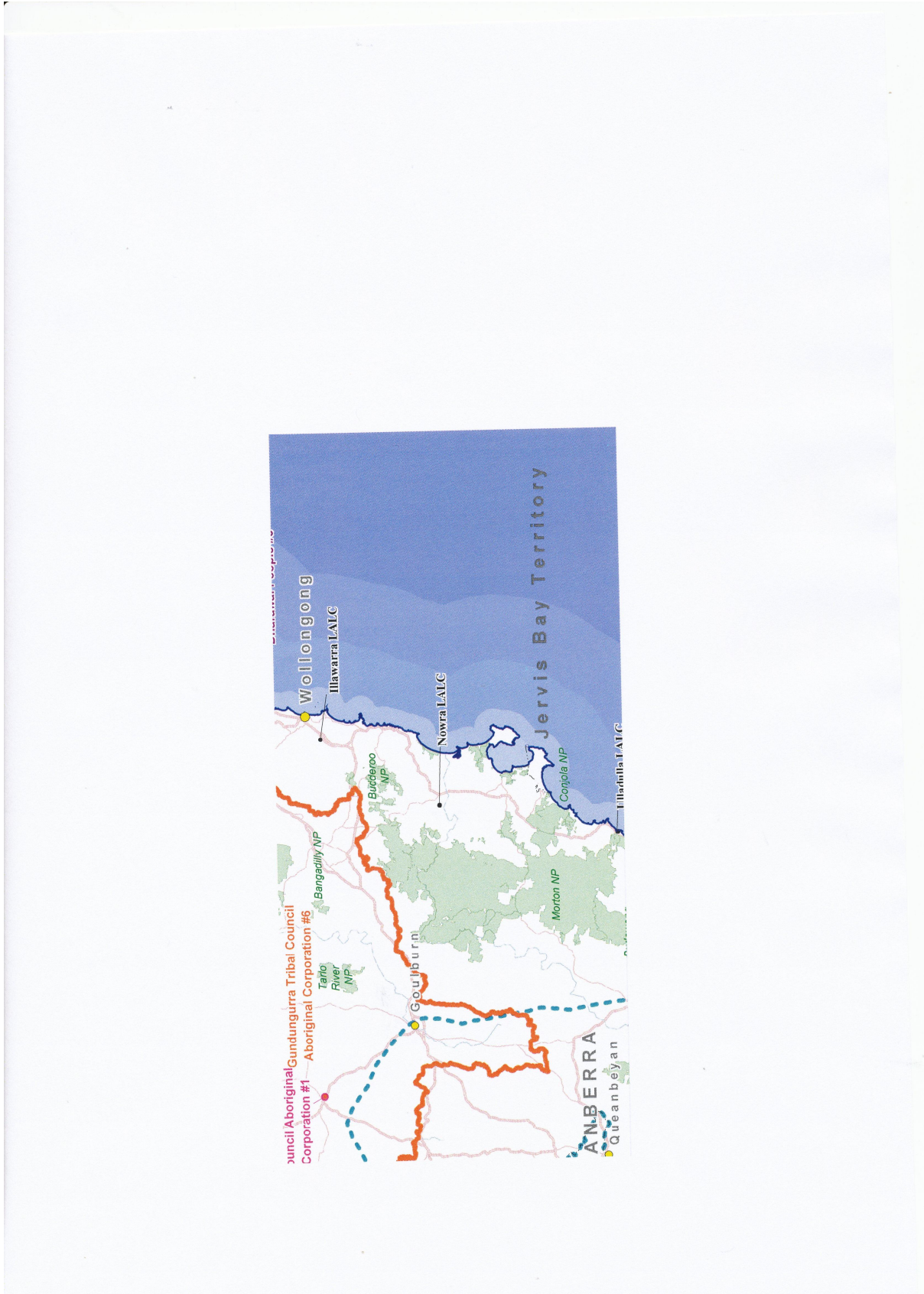
List of Sites (List - Short)

→Nowra

Grid Reference Type = AGD (Australian Geodetic Datum), Zone = 56, Easting From = 271000, Easting to = 284000, Northing From = 6132000, Northing to = 6140000, Requestor like 5317%, Service ID = 28183, Feature Search Type = AHIMS Features

| Site ID | Site Name | Datum | Zone | Easting | Northing | Context | Site Features | Site Types (recorded prior to June 2001) | Recording (Primary) | Reports (Catalogue Number) | State Arch. Box No (for office use only) |
|-----------|------------|-----------------|------|---------|----------|------------------|---------------|---|---|-------------------------------|---|
| 52-5-0374 | Duke 3 | AGD | 56 | 274680 | 6133620 | Enclosed Shelter | AFT : 4 | Shelter with Deposit | Cultural Heritage Management Australia - (Australian Archaeological Survey Consultants) | | NRS/17798/1540 |
| | | Status Valid | | | | | | | Permit(\$) | | |
| | | Primary Contact | | | | | | | | | |
| 52-5-0375 | Duke 4 | AGD | 56 | 274590 | 6133420 | Enclosed Shelter | AFT : - | Shelter with Deposit | Cultural Heritage Management Australia - (Australian Archaeological Survey Consultants) | | NRS/17798/1540 |
| | | Status Valid | | | | | | | Permit(\$) | | |
| | | Primary Contact | | | | | | | | | |
| 52-5-0387 | Big Bend 2 | AGD | 56 | 280100 | 6139950 | Open Site | HAB : - | None | Barratt | 98511 | NRS/17798/1540 |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | | | |
| 52-5-0388 | Big Bend 3 | AGD | 56 | 280100 | 6139850 | Open Site | HAB : - | None | Permit(\$) Barratt | 98511 | NRS/17798/1540 |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | | | |
| 52-5-0456 | BA5/B | AGD | 56 | 275700 | 6137890 | Enclosed Shelter | AFT : 2 | None | Permit(\$) Clarke | | |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | | | |
| 52-5-0457 | BA2/A | AGD | 56 | 272410 | 6134480 | Open Site | AFT : 2 | None | Permit(\$) Clarke | | |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | | | |
| 52-5-0459 | IR3/A | AGD | 56 | 278200 | 6135710 | Open Site | AFT : 1 | None | Permit(\$) Clarke | | |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | | | |
| 52-5-0460 | IR2/A | AGD | 56 | 278750 | 6135290 | Open Site | AFT : 1 | None | Permit(\$) Clarke | | |
| | | Status Valid | | | | | | | | | |
| | | Primary Contact | | | | | | | | | |

Native Title Claims Search results

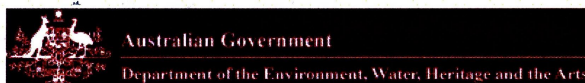


Appendix 4: Results of non-indigenous heritage searches

Commonwealth Heritage Register

Commonwealth Heritage List

Page 1 of 1



Heritage

Heritage places

You are here: [Environment home](#) » [Heritage](#) » [Heritage places](#) » [Commonwealth heritage places](#)

The Commonwealth Heritage List

The Commonwealth Heritage List is a list of natural, Indigenous and historic heritage places owned or controlled by the Australian Government.

These include places connected to defence, communications, customs and other government activities that also reflect Australia's development as a nation.

Review Commonwealth Heritage-listed places by state:

- [New South Wales](#)
- [Victoria](#)
- [Queensland](#)
- [South Australia](#)
- [Western Australia](#)
- [Tasmania](#)
- [Northern Territory](#)
- [Australian Capital Territory](#)
- [External territories](#)

Other search options:

- [Show all Commonwealth Heritage listed places](#)
- More advanced search options for the Commonwealth Heritage List via the [Australian Heritage Database](#)

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Last updated: Wednesday, 19-Nov-2008 15:18:55 EST

Department of the Environment, Water, Heritage and the Arts
GPO Box 787
Canberra ACT 2601 Australia
+61 2 6274 1111 ABN

| [Australian Government](#) | [Australian Heritage Council](#) | [Culture and Recreation Portal](#) | [Sydney Harbour Federation Trust](#) |

Search Results

1 result found.

| | | |
|---|------------------------------|---|
| Beecroft Peninsula Currarong Rd | Currarong, NSW, Australia | (Listed place) Commonwealth Heritage List |
|---|------------------------------|---|

Report Produced: Tue Nov 24 09:46:56 2009

State Heritage Register

Heritage Branch Website - Online Database

Page 1 of 3



About Us
Heritage Council
About Heritage

Working with the community to know, value and care for our heritage

► Listings
Publications & Forms
Research

Development
Conservation
Funding

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Click on the BACK button of your browser to return to the search.

Statutory Listed Items

Information and items listed in the State Heritage Inventory come from a number of sources. This means that there may be several entries for the same heritage item in the database. For clarity, the search results have been divided into two sections.

- Section 1. contains items listed by the **Heritage Council** under the NSW Heritage Act. This includes listing on the State Heritage Register, an Interim Heritage Order or protected under section 136 of the NSW Heritage Act. This information is provided by the Heritage Branch.
- Section 2. contains items listed by **Local Councils & Shires and State Government Agencies**. This section may also contain additional information on some of the items listed in the first section.

Section 1. Items listed under the NSW Heritage Act.

Click on an item name to view the full details.

The search results can be re-sorted by clicking on the **(sort)** option at the top of each column.

| Item Name (sort) | Address (sort) | Suburb (sort) | LGA (sort) | Listed Under Heritage Act |
|-------------------------|-----------------------|----------------------|-------------------|----------------------------------|
|-------------------------|-----------------------|----------------------|-------------------|----------------------------------|

There were no records in this section matching your search criteria.

Section 2. Items listed by Local Government and State agencies.

| Item Name (sort) | Address (sort) | Suburb (sort) | LGA (sort) | Information Source (sort) |
|--|-----------------------|----------------------|-------------------|----------------------------------|
| Victorian Scottish Baronial style Bank | 135 Queen Street | Berry | Shoalhaven | LGOV |
| Two Storey Victorian Free Classical style Bank | 122 Queen Street | Berry | Shoalhaven | LGOV |
| Victorian Free Classical style Post Office | 137 Queen Street | Berry | Shoalhaven | LGOV |
| Pulman Street Conservation Area | Pulman Street | Berry | Shoalhaven | LGOV |
| Victorian Georgian style Weatherboard Cottage | A15 Princes Highway | Berry | Shoalhaven | LGOV |
| Victorian Classical Academic style Court Building | 58 Victoria Street | Berry | Shoalhaven | LGOV |
| Victorian Georgian style Police Residence & Lock up | 56 Victoria Street | Berry | Shoalhaven | LGOV |
| Berry Showground | Alexandra Street | Berry | Shoalhaven | LGOV |

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Document Status

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| 02 | Geoff Young | Lucy Moore | <i>L. Moore</i> | David Gamble | <i>David Gamble</i> | 16/12/2009 |
| 03 | Geoff Young | Lucy Moore | <i>L. Moore</i> | David Gamble | <i>David Gamble</i> | 22/12/2009 |
| | | | | | | |