

DUNGOG SHIRE COUNCIL



ROADSIDE ENVIRONMENT MANAGEMENT PLAN

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ROADSIDE ENVIRONMENT MANGEMENT PLAN

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ROADSIDE ENVIRONMENTAL MANAGEMENT PLAN

PART 1 INTRODUCTION & BACKGROUND

INTRODUCTION

Council has responsibility to operate and maintain roads in order to provide safe and efficient routes for vehicular transport. Council also has responsibilities under numerous statutes to consider the environmental effects of its actions. In some circumstances the conservation of vegetation, the construction, maintenance and safe operation of roads may conflict.

Further conflict can arise where road reserves are used to locate services such as power lines, phone cables, water and sewer pipes and lay-by areas for vehicles to safely pull off the road.

The management of competing uses and responsibilities is of particular relevance in the Dungog Shire. The rural nature of this area with tree lined corridors leading to the forests and reserves in the north, contributes greatly to the lifestyle of local residents and the growing number of visitors to the Shire.

The Roadside Environment Management Plan has been developed to address these issues and give direction to Council staff and other users of the road reserves. It provides advice on appropriate and effective operating procedures to meet the responsibilities of maintaining the road network and services while preserving the conservation values of these areas.

This plan provides “Best Practice” guidelines for Council Staff to be referred to when planning or carrying out roadwork in the Dungog Shire. It also outlines a number of strategies for, the implementation of these guidelines, staff training, improved construction and maintenance planning and raising public awareness and involvement in preservation and enhancement of the local roadside environment.

GOAL

The Goal of this Plan is to provide a best practice framework for the management of roadside corridors and adjoining lands in a manner that maintains and enhances their existing ecological values, while considering the social, economical and functional nature of these areas.

SCOPE

The Roadside Environmental Management Plan (REMP) will apply to all public rural road reserves in the Dungog Shire. This includes traffic and local roads and does not include the urban road network

BACKGROUND

DUNGOG SHIRE COUNCIL AREA

Dungog Shire is located in the lower Hunter Valley region of NSW, and is bounded by the Shires of Great Lakes, Singleton, Scone, Gloucester and Port Stephens and the Maitland City Local Government Area.

The Shire covers an area of 2248 square kilometers, extending from alluvial plains in the south to rugged mountainous areas in the north. Two primary river catchments traverse the

Shire in a generally north-west to south-east direction, these being the Williams River and its tributaries in the east, and the Paterson / Allyn River system in the west. The Shire is delineated to the east and west by the catchment limits of these two river systems, and is bordered at its northern extremity by the Barrington Tops Ranges and escarpment.

The Paterson/Allyn and Williams Rivers divide the Shire into relatively narrow valleys, the lower reaches of which are characterised by more undulating country, and wider expanses of river flats.

National Parks and State Forests are largely located in the northern end of the Shire and make up 22% of the total area. Native vegetation cover is greatest in the north where the terrain is steep and rugged, preventing many land activities that lead to significant vegetation removal/disturbance. Undulating lands to the south have been extensively cleared due mainly to their reduced slope which is more suited to agricultural use.

The Shire has approximately 50% of its area with greater or equal to 20% canopy cover.

VEGETATION IN THE SHIRE

In the Shire at the time of European settlement, the areas of alluvial soils were covered with brush and sometimes rainforest, in which many huge specimens of Sydney Blue Gum *Eucalypts saligna* towered above vegetation communities which ranged from wet sclerophyll to dry rainforests, vine forests and sub-tropical rainforests. These "wetter" vegetation types also occurred extensively in the higher rainfall upland areas, in sheltered gullies and along streams and rivers.

Typically, the drier stony ridges with their shallower and consequently poorer soils were characterised by associations of Ironbark species (*E. crebra*, *E. siderophloia*, *E. fibrosa*) and Spotted Gum (*Corymbia maculata*), with many and varied mixtures of other (sometimes dominant) Eucalypt species. These other species include Coastal Grey Box (*E. moluccana*), Forest Red Gum (*E. tereticornis*) Grey Gums (*E. propinqua*, *punctata* and *canaliculata*), with occurrence and populations varying according to soils, moisture availability, aspect and topography.

The Barrington Tops area also supports a range of higher altitude vegetation types including sub-alpine heathlands and cool temperate forests.

Today, the original range of vegetation types are still represented within the Shire, but have largely been reduced to scattered remnant stands. Much of the forest cover seen in the Shire today, particularly in the more southern portions is regrowth forest, most of which has lost a large part of its original diversity. Little undisturbed forest vegetation remains outside of the National Parks and associated reserves system; that which does remain on private land is generally found in the steeper and less accessible country in the mid and northern parts of the Shire.

With the modification (and in many instances, total removal) of the original forests for agricultural production, much of the land in the Shire now supports open grassland (with many introduced pasture species), open forests, woodlands and regrowth forests which are often dominated by single or a small number of Eucalypt species. Invasion of many of the more open forest areas by environmental weeds such as Lantana (*Lantana camara*) is now widespread.

With few exceptions, the range of original vegetation types is retained within the road reserve system in Dungog Shire. This provides both residents and visitors alike with a valuable opportunity to appreciate first hand the vegetation of the Shire.

PART 2. ROADSIDE ENVIRONMENT ASSESSMENT PROJECT

THE ROADSIDE ENVIRONMENT

The NSW Roads and Traffic Authority estimate that there are more than 181,000 kilometers of public road in the state making up approximately 5% of the total land area. This area combined with the Traveling Stock Routes and Reserves is equivalent in area to all NSW National Parks combined.

Roads are generally constructed in a road reserve confined by boundary fences defining where private ownership and different landuse practices commence. In the Dungog Shire both the road and road reserve vary in type of construction and width. Gravel and paved roads from three to six metres wide are typically located within 20.15 metre (1 chain) road reserves. The area within this reserve either side of the constructed road can contain valuable natural, cultural and economic features.

Valuable natural features include plants and animals, soil and water.

The relatively undisturbed natural areas on roadsides are valuable for a number of reasons, because:

- Native vegetation is easier to maintain than introduced vegetation;
- Soil erosion is less likely to occur;
- Wildlife depend on these areas for food and shelter;
- Wildlife corridors link other areas of native vegetation;
- Rare and endangered plants and animals often live or rely on these areas;
- They are a good source of local native seed which can be collected for revegetation projects;
- Established vegetation can help prevent rising water tables and salinity; and
- Native vegetation can provide effective windbreaks for adjoining properties.

Cultural features can include Aboriginal and historical sites such as scarred trees, heritage bridges, monuments and tree plantings. Some of these sites may not be obvious or currently identified, but they still need to be protected.

Roadside reserves also have important economic features and uses. They provide space for powerlines and telecommunication facilities and are an important recreational resource.

ROADSIDE ENVIRONMENT ASSESSMENT PROJECT

In 1997 Dungog Shire Council and Council's Environment Group applied and received National Heritage Funding to carry out a Roadside Assessment Project aimed at systematically assessing the roadside vegetation in the shire and developing management plans and guidelines to maintain and enhance existing significant areas of roadside vegetation.

Project Description from the NHT grant application.

- By conducting a pilot study of plant communities, develop a roadside vegetation assessment methodology suited to coastal flora of NSW
- For identified High Conservation Roadside Areas conduct a vegetation survey using developed methodology
- After refinement and evaluation of the methodology provide an assessment sheet and guidelines for other areas
- Using “Adopt a Road” format increase community awareness of the roadside environment and encourage landholders to be responsible for managing vegetation fronting their property
- From the vegetation survey develop a Roadside Management Plan and Guidelines and implement training for Council Staff in techniques to preserve remnant vegetation.

The assessment was completed in 1999 by Joe Thompson and has recently undergone a review. As part of this review process and to facilitate improved management of the road reserves, the data from this assessment has been updated and transferred to Council’s mapping system. (See Map Appendix 6)

Roadside assessment forms have been developed by Joe Thompson. An example of quadrat assessment form is provided in the appendices.

Through the assessment process all roadside reserves were divided into three categories, High, Medium and Low Conservation Areas.

1. High conservation value roadsides

Roadside reserves in this category are typified by one of, or a number of characteristics. The vegetation may be in good health and have good structure; there may be rare or threatened species of flora or fauna present or known to use the area, the area may have particular scenic or cultural heritage values or the roadside reserve may provide linkages with other areas of remnant vegetation. High Conservation Value road reserves within Dungog Shire will be signposted as “Significant Roadside Environment Areas”.

In general, high conservation value roadsides should be managed in accordance with the guidelines provided in this Management Plan. Some areas may have more specific recommendations, which are contained within the Roadside Environment Assessment table in this document, or can be accessed via Councils’ GIS.

2. Medium conservation value roadsides

Description

Medium Conservation Value Roadsides are characterised by vegetation which is relatively intact, retaining good diversity and structure. The impacts of grazing, fire, clearing and fragmentation are usually evident. These areas may not contain rare or threatened flora and fauna, and may not have good linkages to other remnant vegetation. Frequently, these areas have a dominant tree layer, grassy groundcover with a degraded or non-existent understorey layer. This classification is the most common throughout Dungog Shire.

In general, many of the medium Conservation value roadsides have a good chance of retaining their current characteristics, or indeed improving over time provided they are managed appropriately. As specified in the Roadside Environment Assessment table, a common management regime for these areas is to minimise disturbance, and maintain as is.

3. Low conservation value roadsides

Description

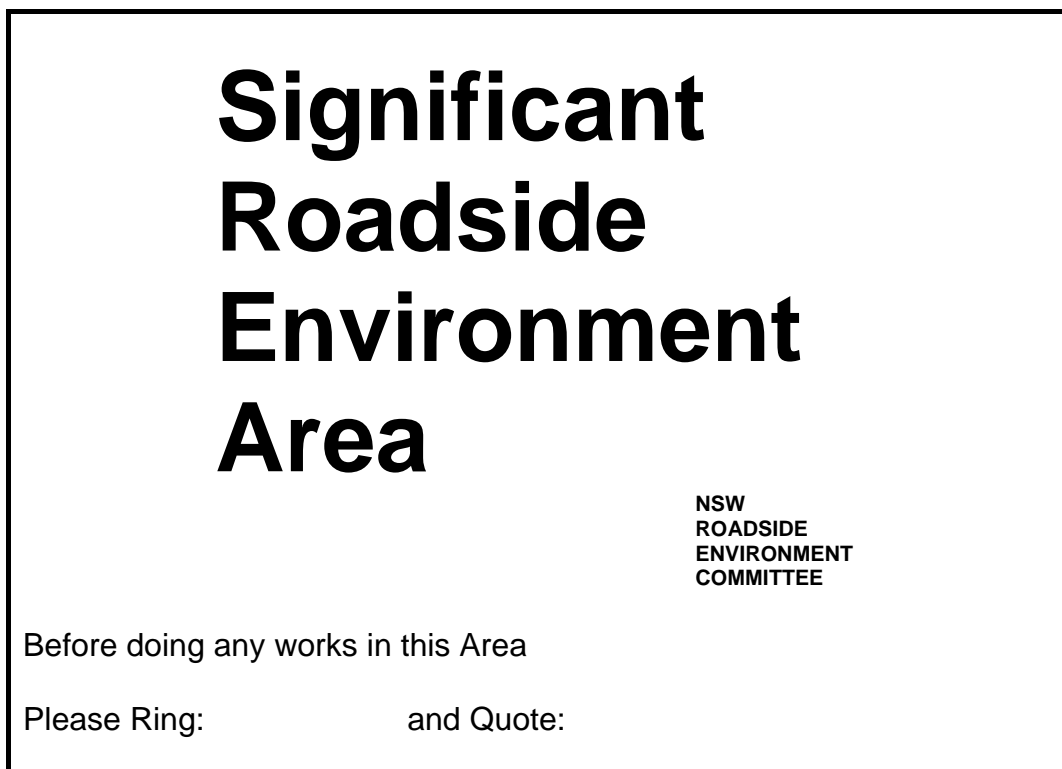
Roadside reserves in this category are characterised by their degraded nature, often having had most or all of the original vegetation removed. Grasses and introduced pasture and weed species dominate these areas. In many cases the effects of repeated grazing, stock movement, fire or roadside management techniques are highly evident; often in combination having reduced the roadside to its current state.

Generally, these areas occur in the southern parts of the shire, where clearing for agriculture has been more extensive, resulting in the roadside reserve having little or no linkage to remnant vegetation. However, roadside reserves in this category are also closely associated with current and historical dairy farming, and grazing areas where the road reserve has remained unfenced.

SIGNIFICANT ROADSIDE ENVIRONMENT

Significant Roadside Environment Areas signs will be used at the approaches of all identified High Value Conservation Areas.

This is a large general sign provided by the NSW Roadside Environment Committee which can be used by local councils, the Roads and Traffic Authority, Rural Lands Protection Boards and interested community groups. The sign alerts travellers, local people and roadside workers to the special value of the roadside area. Work should not start on these areas before approaching the local contact shown on the sign.



The sign will also identify each site by number. Information specific to the vegetation and in some areas management recommendations can be accessed through this management plan or by contacting Council.

Significant Roadside Environment Area signs will be placed at 50 sites in the Dungog Shire. Sign locations can be identified by referring to the table in the appendices or through reference to the Vegetation Conservation Value Map

PUBLIC PARTICIPATION

Adopt A Road was one of the original objectives of the Dungog Shire Roadside Environment Assessment Project. It is a voluntary program which was developed by Council as a means of encouraging the active participation of landholders and residents in the preservation and improvement of the roadside environment throughout the Shire. A pilot Adopt A Road project area was developed and launched in conjunction with the residents and landowners of Main Creek Road.

Further participation from the public will be encouraged as part of the Roadside Environment Management Plan. In particular where High Conservation Vegetation has been identified, Council will actively encourage adjacent landholders to extend the road corridor by planting similar species on their side of the property boundary. As part of this program Council will contact adjoining owners and source available funding for revegetation programs as they become available. (See Public Participation Strategy in Part 5)

PART 3. ROAD NETWORK/ ENVIRONMENTAL ASSESSMENT, CONSTRUCTION & MAINTENANCE

ROAD NETWORK IN THE SHIRE

Dungog Shire Council has an unusual road network that is defined by its lack of a State Highway. The Shire has four regional roads that link the township of Dungog to villages within the Shire and major towns within neighbouring shires. These regional roads are supported by a network of sealed and unsealed local roads that Council maintains.

Regional roads maintenance works are fully funded by the State Government, although typically this funding is found to be inadequate to maintain service standards. Rehabilitation works undertaken on regional roads is 50% funded by Council and State Government, with funding caps in place each year of approximately \$300,000. Local roads are funded by Council through rates income and Federal Assistance Grants (roads specific portion - FAGS). The FAGS are linked to the length of local road network.

The regional road network constitutes 123.9 kilometres of sealed road. The local road network is 541.33 kilometres long with 273.55 kilometres of sealed road and 267.78 kilometres of unsealed road.

The local roads length does not include town streets.

COUNCIL ROAD PROGRAMS

Historically Council has maintained roads in accordance with their levels of utilization through measured or estimated traffic volumes. Upgrades of roads are normally linked to the condition of the road or the lack of compliance with design standards.

Dungog Shire Council is currently developing a road management plan that provides direction on the level of service that roads within the Shire should provide. The level of service relates to safety of the road, drivability of the road, and asset condition. Details in the plan will include the establishment of a road hierarchy, recommended levels of service for different types of roads, operation of an inspection and maintenance program and design and construction standards that roads are to meet.

The road plan classifies roads as either traffic roads that act as conduits for moving vehicles between major centres or local roads that provide access to properties. In relation to the Shires traffic road network the classification of roads provides a ranking from A1 to A3. A preliminary plan identifying this hierarchy is provided as Appendix 7

As part of the proposed road management plan, roads that are required to provide a higher level of service (eg. A1) will be upgraded to higher standards. Due to the extensive nature of the road network however, this upgrading program will be implemented over many years.

As part of this upgrade Council will need to investigate and provide suitable Clear Zones to suit the conditions and relevant standards. The establishment of clear zones is an important aspect of road safety and will predominantly relate to traffic roads where speeds are at a level that would result in fatalities or significant injuries if clear zones are inadequate.

This requirement to provide suitable clear zones is the main point of conflict when endeavoring to maintain and enhance vegetation in the road reserve and broader roadside environment.

Strategies to reduce the impact of meeting relevant road safety standards on roadside vegetation are provided in Part 5 of this Management plan.

CLEAR ZONES

The NSW RTA Road Design Nomograph showing clear zones in relation to speed, embankment and cutting is attached in the Appendices.

General

“The clear Zone is the width of roadside, beginning at the edge of the travelled way, that is made available for the driver of an errant vehicle to take corrective action in an emergency. This zone will depend on the location of the vehicle at any point along the road and is determined for both sides of the vehicle. Accordingly the clear zone distance is related to predicted traffic volumes and speed (see figure 3.7.1 in appendices), and takes into account the widths of adjacent lanes, shoulders, medians, verges, footways and traversable batters. See Figure and Table 3.11.3 in RTA Design Guide

Guidelines

To be regarded as part of the clear zone:

- The area should be relatively flat, with a maximum side slope of 3:1 (cutting) and desirably 4:1 embankment or flatter, to be traversable, having slope changes that will keep all wheels of errant vehicle in contact with the ground (this assists the driver of an errant vehicle to regain control).
- the area should be kept clear of all large, fixed objects such as trees greater than 200mm in base diameter, structure support piers, culvert headwalls and large solid (ie not Frangible*) sign support structures, etc. which are of such a size that would cause unacceptable rapid deceleration rates to the occupants of an impacting vehicle.
- The desirable width of a clear zone is dependent on the predicted traffic volumes, traffic speed and road geometry.

* Frangible- Breakable (in the case of road verges, objects including vegetation of a size or design that break on impact with an errant vehicle)

Figure 3.7.1 is a nomograph that allows for the appropriate clear zone distance to be determined. These distances represent a reasonable measure of the degree of safety appropriate for a particular road and must be balanced by comparing land use and costs. The widths given are approximate only and the nomograph should not be used to infer a degree of accuracy that does not exist.” (RTA Road Design Guidelines 1999 sec 3.7)

ROAD SAFETY

Safety of all roadusers is the primary consideration when planning and maintaining roads. At the same time, valuable vegetation cannot be removed simply to allow maximum speeds on all roads. Where valuable vegetation exists Dungog Shire Council will investigate options other than its removal to ensure public safety. These options may include the use of speed signage, protective barriers or where necessary through encouraging staged planting on adjacent property or the road reserve.

ENVIRONMENTAL IMPACT ASSESSMENT

Council has a responsibility to consider and assess the impacts of its activities and to minimise the damage its operations have on the environment. This responsibility is imposed by several acts. The act which is of most significance is the Environmental Planning and Assessment Act 1979 (EP&A Act) and includes regulations made under that Act called the Environmental Planning and Assessment Regulation 2000.

Unless prohibited by zoning, work carried out on roads falls into Part 4 or Part 5 of the EP&A Act. The level of assessment required before carrying out road works is defined under the act.

PART 4: Roadwork will be considered under Part 4 of the Act if it is designated development and requires approval from another authority. In this circumstance a development application should be lodged with Council and an Environmental Impact Statement (EIS) carried out. The matters to be considered in the EIS will be defined by the EP&A Act, Planning NSW and any authority whose approval is required.

PART 5: Most roadwork on regional and local roads is carried out by Council and is generally assessed under Part 5 of the EP&A Act. Where Part 5 of the EP&A Act applies to a proposed construction or maintenance activity, development approval is not required, however Council must

- Examine and take into account all matters affecting or likely to affect the environment by reason of that activity (Section 111 EP&A Act)
- Establish whether an Environmental Impact Statement EIS or a Species Impact Statement SIS or both are required for the activity (Section 112 EP&A Act)

REVIEW OF ENVIRONMENTAL FACTORS (REF)

To fulfil the requirement for environmental assessment under the Act, Council will generally

1. Prepare a Review of Environmental Factors (REF)
2. Assess this REF
3. Decide on the basis of assessment, whether an EIS or an SIS is required, whether the activity should proceed and if so under what conditions.

Under Part 5

- an EIS is required if the activity will significantly affect the environment.
- An SIS is required if the activity will significantly affect threatened species, populations or ecological communities or their habitats, or will affect critical habitat or flora or fauna.

REFs are generally prepared by the project manager at the concept or design stage. For ongoing low impact and standard activities such as maintenance, REFS may be prepared in generic form annually.

REFs should be reviewed by Project Management and Council's Environmental Services Section. Where "Significant Roadside Environment" is included in the proposed work area (or is identified in the REF process) it is proposed that an appropriately qualified contractor review the REF and if necessary conduct further assessment as outlined above.

PART 4. ROADSIDE ENVIRONMENT MANAGEMENT GUIDELINES

OBJECTIVE OF THESE GUIDELINES

The objective of these guidelines is to provide a best practice framework for the self sustainable and efficient management of roadside reserves within Dungog Shire.

The fundamental principles behind these guidelines are the preservation of native vegetation and maintaining soil stability in order to increase environmental health and reduce maintenance costs.

Further, the guidelines have been developed to provide a framework within which the current environmental status of roadside reserves can be maintained or improved, with a view to continuing utilisation of these roadside reserves for a wide range of environmental, economic and social uses.

HOW TO USE THESE GUIDELINES

These management guidelines should apply to all road reserves, regardless of their conservation status, location or priority of works. It is anticipated that these guidelines will provide a valuable reference and guide when planning and carrying out road maintenance and construction works, installation and maintenance of services (infrastructure), and that they will be used to guide decision making in the development of planning instruments.

Whilst the management guidelines should be considered to be “generic”, and applied to all situations where they are relevant, each category of roadside reserves (High, Medium and Low conservation value) may have more specific management strategies which should be used when implementing works. For example many vegetation management guidelines will not be relevant in low conservation value reserves. Soil and weed management guidelines, however will be particularly relevant in these areas.

The Roadside Environmental Management Guidelines are not meant as a definitive guide, however they should be used as a tool in achieving best practice. The guidelines should also be used in conjunction with the appropriate legislative requirements when conducting pre-works inspections such as Review of Environmental Factors.

In addition to the guidelines provided in this plan, Dungog Shire Council will also use the NSW Roadside Environment Committee Roadside handbook. This handbook will be provided to all staff and interested parties as an easy reference when working in road reserve areas. The index to this handbook is included with the REMP guidelines as a reference.

The extended guidelines as provided should be used as a best practice tool in training and at the planning and conceptual stage of road construction and maintenance.

INDEX BEST PRACTICE GUIDELINES

1. Roadside Reserve Soil Management Guidelines
2. Roadside Reserve Vegetation Management Guidelines
3. Roadside Reserve Weed Management Guidelines
4. Roadside Reserve Heritage guidelines
5. Roadside Reserve Service Guidelines
6. NSW Roadside Environment Committee “Roadside Handbook”

1. ROADSIDE RESERVE SOIL MANAGEMENT GUIDELINES

These are guidelines which relate to the preservation of soils and the control of erosion and sedimentation. They address issues such as disturbance, rehabilitation and sediment control.

The control of soil erosion and sedimentation is the key factor in roadside reserve management both environmentally and economically.

Much of the road works undertaken within Dungog Shire revolve around the renewal of soil or road materials after erosion and pavement failure, or the removal of sediment from road drainage systems.

Works involving soil movement generally require large machinery such as backhoes, graders and trucks, all of which are costly to operate and maintain. Reducing the amount of soil based works can have great economic benefits for road managers.

Soil erosion and sedimentation are primary causes of environmental degradation. The movement of soil from its source has impact on the ecology of both the erosion site and the sediment site.

Several pieces of legislation exist which enforce the correct management of soils. This creates a legal obligation for roadside reserve managers to control erosion and sedimentation emanating from roadside reserves. Roadside reserve managers may also face private litigation or compensation to landholders if sediment or erosion emanating from the roadside reserve damages private property.

The key factors in preserving soils on roadside reserve are:

- Inspection and monitoring of soils prior to, during and after works to determine changes in stability. This requires some basic knowledge of soil characteristics.
- Reducing the likelihood of erosion by causing minimal disturbance to topsoils, subsoils or vegetation coverage.
- Immediate rehabilitation of disturbed soils through treatments such as seeding, mulching, sediment control devices (SCD) or other stabilising methods.
- Regular inspection and maintenance of all SCD to ensure their effectiveness.

Soil stability should be considered by roadside reserve managers as the core to creating a self sustaining roadside environment which requires minimal maintenance or reactive works. In attempting to achieve soil stability, the management of native vegetation will become an obvious key factor.

OTHER REFERENCES

The preservation and stabilisation of soils is an important issue to many organisations. There exists many pieces of legislation, policies, guidelines and recommendations relating to soil preservation.

Dungog Shire Council has adopted the Hunter Council's Regional Erosion and Sediment Control Policy and Code of Practice. This document also contains an outline of "Best Practice" which should be used as a guide in developing appropriate road reserve work procedures.

The NSW Department of Land & Water Conservation (formally CALM) have produced many documents which act as guides for soil preservation. "Urban Erosion and Sediment Control Guidelines" CALM 1992 and "Urban Erosion and Sediment Control Field Guide" should act as Reference guides for those involved with roadside reserve soil management. Future

documents relating to roadside reserve soil management by Department of Land & Water Conservation should also be used as soil management tools.

MINIMAL DISTURBANCE

Soils are at the most stable where they are intact and have vegetation or organic matter coverage (such as leaf litter). An “intact” soil profile should be considered to be one where all soil horizons exist, ie: healthy topsoil is present above intact subsoil layers. Unfortunately many road maintenance activities, together with historical uses of the roadside reserve such as traffic of cattle have involved vegetation removal or the breaking up or altering of soils and their different levels.

Many parts of Dungog Shire have inherently unstable soils, which when made bare or significantly disturbed, become dispersible, and dissolve during periods of heavy rainfall.

Erosion and consequent sedimentation require a trigger. On roadside reserves disturbance of the soil by machinery or by continued intensive use such as the traffic of dairy cattle on a daily basis can act as this trigger.

The disturbance of soil has a compounding effect. The economic cost of soil disturbance is seen in the need for sediment and erosion control, sediment removal, soil renewal. If the soil were not disturbed these flow on effects and costs would be reduced, if not removed. The environmental costs of soil disturbance are often not immediately obvious, with the downstream effects of increased sediment loads in streams, farm dams and wetlands often taking years to manifest themselves.

During road works and road maintenance specific “work zones” should be identified and clearly marked. Machinery operators should be made aware of these zones and should not cause any soils disturbance outside these “work zones”. The work zones must be kept to the minimal size required for the work to be undertaken.

Disturbance of vegetation through removal, damage or simply driving over can also act as a trigger for soil movement. Vegetation stabilises soils and holds the surface intact. It reduces water velocity and assists in removing sediment.

During road works or maintenance, no vegetation should be removed or disturbed outside the specified “work zones”. Works crews should be discouraged from “tidying up”, and from utilising machinery such as graders to control vegetation.

MONITORING SOILS

The movement of soil through erosion and sedimentation is a major component of roadside reserve management and maintenance.

Soil movement can be gradual or rapid. Erosion and sedimentation can often occur through slow soil movement which may go unnoticed. Likewise, extreme erosion and sedimentation can occur dramatically if given the right circumstances.

The likelihood of large soil movements is usually evident beforehand. Signs such as cracking, bogging and smaller soil movements are often indicators of potentially greater problems.

In order to identify current and potential sites of erosion roadside reserves, particularly those with substantial areas of bare soils, steep batters with little or no vegetation, and those identified as being in areas of highly dispersible soils should be monitored regularly and assessed periodically.

During programmed or reactive road maintenance, the stability of soils on the roadside reserve should be evaluated and noted in order to take remedial action as soon as possible.

All soil movements should be actioned as soon as possible to prevent increased problems and impacts.

SEDIMENT CONTROL DEVICES (SCD)

SCD have two (2) major functions. Firstly to reduce the velocity of water travelling over worksites and secondly to extract the soils and debris suspended in the water.

By reducing the velocity of water, the sediment it contains is given the opportunity to “fall out” of suspension and therefore be retained on the worksite. If SCD are correctly installed and positioned, most suspended material would only travel as far as the next SCD, at which point it should be extracted.

The NSW Department of Land & Water Conservation “Urban Erosion and Sediment Control Field Guide” recommends various types of SCD and their appropriate uses. These recommendations should be followed where relevant.

The number, type and positioning of SCD depends on the sites, slopes, soils and other physical characteristics, therefore, each site must be assessed and SCD’s installed in a manner to suit that site.

Where water is channelled, one (1) SCD should be installed every 50m on level sites, increasing by one (1) unit for every 0.5m rise in each 50m.

Where water sheets across larger broad areas, the same rule should be followed using SCD running across the slope. This method should be used as a guide only, as sites can vary greatly.

All areas disturbed through road maintenance activities should have SCD installed as an integral part of the works undertaken. The cost of providing adequate and appropriate erosion and sediment control measures should be included in the programmed cost of all road maintenance and construction works.

Any disturbed sites or potentially erodible sites should have an SCD installed at the point of entry into gullies and watercourses and if possible, a second SCD within 15m of the first.

SCD’s become inoperative unless they are regularly maintained.

If incorrectly installed they may fail during their first heavy use or soon afterwards. Even if correctly installed, once full of sediment they do not operate correctly and in some cases may even cause further erosion.

Follow up inspections of SCD’s should be carried out within one (1) month after installation and then three (3) monthly, SCD’s should also be inspected immediately after heavy rainfall to ensure they are not damaged.

These regular inspections and maintenance also allows those SCD’s which are no longer required to be removed when appropriate.

SEEDING

After works in which soil is disturbed the stability of that soil is at its most vulnerable.

The soil is open to erosion unless a cover of some form is applied. One of the most economic forms of coverage is direct seeding.

Direct seed application immediately after works will provide a cover of vegetation as quickly as possible. The potential of soil erosion is reduced as the seed establishes itself.

A number of seed types may be used. These include native and exotic grasses and native trees, shrubs and herbaceous plants.

Native seed stock should be used whenever possible and should be considered as best practice.

Native seed stock may not always be available in commercial quantities and in some circumstances may not be the most appropriate seed for the site, eg some road shoulders and batters. A combination of seed types will provide greater plant diversity, helping to create plant communities quickly.

Where possible seeds should be selected and mixed to complement the site's natural vegetation.

Including fast germinating seeds into the mix will help to create vegetation cover quickly, giving slower seeds a more favourable environment in which to germinate.

Exotic species seed should not be used if the plants are considered invasive or have the potential of producing viable seed in large quantities. Exotic seed which produces sterile adult plants should be considered the preferred type of seed where exotic plants are used.

All seeding should be monitored to determine seed viability, review application methods, review seed selection and to ensure confinement of exotic species.

Often viable seed is already located on the roadside reserve within the topsoil. **Covering exposed soils with local topsoil (weed free) is a form of indirect seeding which is often successful.**

MULCHING

The mulching of native vegetation debris (after works) and the application of the mulch to exposed soil is another method of indirect seeding.

The native seed held by the plant material will germinate in the stable conditions created by the mulch. The plants which germinate will be adapted to the site's conditions as they originate from that site.

The mulch itself, acts as a soil coverage which reduces erosion and also helps to retain moisture within the soil to assist germination and growth.

Only native plant material should be mulched and applied to soils. Ideally the mulch should be derived from the roadside reserve involved in the works. Mulch should be created and stockpiled on site during road works and spread over exposed soils between 50 and 100mm thick as soon as works allow.

TURFING

Turfing is also an effective option for soil stabilisation, although generally only exotic grass species are available as turf.

Turf is the most effective and immediate natural soil stabilising method in some circumstances, specially at drainage points and batters. It establishes quickly, is easy to apply and reasonably cost effective.

Despite these advantages the use of turf should be considered in terms of its impact on the natural roadside reserve environment. Turf grasses through their growing habits, are generally invasive.

Turf should only be used in areas which have no natural value or where they are already existing on the roadside reserve.

Turf should not be used near natural waterways or adjoining natural areas unless the plant species is non evasive and sterile.

MESHING, MATTING AND BITUMEN SPRAYS

Occasionally road works budgets include provision for the application of artificial erosion control systems such as jute matting, meshing and bitumen spraying.

Although these methods are costly and are not aesthetically pleasing they do provide immediate coverage to exposed soils which greatly reduces the likelihood of erosion.

If seeding and revegetation is incorporated into these methods, an immediate coverage and vegetation growth can be achieved.

Provision for matting, meshing or bitumen spraying should be incorporated into all road work plans and specifications where there is a high risk of erosion.

Batters and drainage areas on all sites should have these applications considered in the planning process to ensure specific funding is available during the works if they are considered necessary.

A seeding process should also be incorporated into these applications to lessen the visual impact of these artificial methods.

NATURAL MATERIALS

Native vegetation debris created during road works is often removed long distances from its place of origin. This is both costly in terms of equipment and creates other issues associated with disposal and landfill.

All native vegetation debris need not be removed from roadside reserve work sites. **Harvesting of usable logs and mulching other material can often reduce vegetative waste greatly. Other debris such as twisted, bent or forked logs, root balls and rocks can also be used on site if appropriate.**

If debris is strategically placed it can often act as a form of natural stabiliser or sediment controller.

Placing logs or branches across erosion channels can sometimes slow water enough to reduce the potential for erosion. Root balls can be used as “plugs” in deeper erosion gullies to reduce water velocity and act as sediment traps.

Rocks can be used in a number of ways. As with root balls, large rocks can be used as “plugs” while smaller rocks may be used as water diffusers in drainage areas or as bank stabilisers.

All natural debris (weed free) created during road works should be considered for other purposes on site before removal or disposal.

2. ROADSIDE RESERVE NATIVE VEGETATION MANAGEMENT GUIDELINES

These vegetation management guidelines provide information on the preservation of existing vegetation and recommendations on how to manage roadside reserves to further enhance the vegetation values within these areas. Other issues dealt with include tree pruning, root damage, seed stock and natural revegetation.

Roadside reserve native vegetation is more than just trees and shrubs, although these are the main components. Grasses, herbs, ground covers and wetland plants are also very important in roadside reserve environments. Unseen soil flora such as fungi are also important components of a healthy vegetation structure, often forming symbiotic relationships with plants.

The more variety in native plants the more stable the environment. Each level or type of plants, from trees to grasses, has a role in the environmental stability of the roadside reserve.

Native vegetation on roadside reserves

- Stabilises soils and road materials in dish drains, road shoulders, batters and culverts.
- Filters road water of sediments and pollutants draining from roadside reserves.
- Smothers and out-competes weeds and other introduced plants.
- Has scenic and tourist values.
- Provides habitat for native fauna.
- Provides resources for the preservation and extension of plant biodiversity.
- Often contains remnant or rare native plants.

A total coverage of native vegetation consisting of a variety of plant types will provide a stable, environmentally sound roadside reserve, requiring the least amount of programmed or reactive maintenance

Through encouraging the preservation and growth of native vegetation on roadside reserves, many costs associated with the reserves' maintenance are reduced.

Soil stabilisation is the primary role of native vegetation in terms of road management. Clearing sediment, renewing shoulders and dish drains and repairing batters are costly aspects of road maintenance in terms of resources and finances. A healthy coverage of native vegetation can dramatically reduce erosion in roadside reserves and consequently, the associated costs of repairs.

Environmentally, roadside reserve vegetation is extremely important. Biodiversity corridors have developed along roadside reserves over the years, mainly due to non management rather than good management. This has created pockets of remnant vegetation and locations for rare plant species. Grasses, groundcovers, sedges and wetland plants act as the final filters of roadwater, which is often polluted before it enters our waterways. Native fauna especially birds, inhabit native vegetation on roadside reserves. In many areas the roadside reserve is the only habitat still existing for these animals.

MONITORING NATIVE VEGETATION

Native plants react quickly to changes in their environment. A loss of vigour or a reduction in the number of native plant species can generally indicate underlying environmental problems. Monitoring these reactions can help to identify issues or environmental changes such as water flow and quality, soil movement and pollutants, weed competition, disease or other impacts.

Regular monitoring through formalised methods such as assessment or by observation during road maintenance activities will help to highlight environmental issues as they develop. If these issues are dealt with as they develop, they generally cause minimal impact and require less resources for remedial works.

Road maintenance staff should be instructed on how to identify changes in native vegetation through general observations and through the provision of basic “checklists”, to be completed during programmed works.

The combination of both assessments and observation monitoring will give both precise long term data as well as general short term data for roadside reserve managers to plan and react when required.

WALK THE ROUTE

Prior to roadworks commencing and preferably before the design stage, the stretch of roadway requiring works should be “walked”.

This should be done by machinery operators, their supervisors, design staff and environmentally qualified staff.

Areas of native vegetation which are particularly worthy of preservation should be identified noted and marked. These areas may include native vegetation which stabilise soils, contains rare or threatened species, significant trees or remnant bushland, where possible all native vegetation should be preserved.

NATURAL NATIVE PLANT REGENERATION

Native plants regenerate themselves naturally and quickly if given the right conditions and eventually outgrow weeds and help to stabilise soils.

Natural regeneration is preferred. If roadside reserves are not mowed, cleared or over sprayed with herbicides, they will over time, revert to their natural state, or a state which resembles the original vegetation in terms of the primary plant species present, and the structure of the vegetation. Restricting mowing, clearing and spraying to road shoulders and other specified areas allows the natural regeneration process to occur, consequently reducing the need for weed control or artificial soil controls.

Operators of weed control equipment and mowing equipment should be instructed about relevant regeneration areas. These areas should be marked for reference and spraying of herbicides avoided.

Appropriate maintenance practices should be implemented to protect these natural regeneration sites.

TOPSOILS

Many native plant seeds are held within natural topsoils, waiting for the right conditions to germinate. These may include seed from rare, endangered or vulnerable plant species which are lying dormant until exact conditions prevail before germination.

Micro organisms are also found within topsoils and are vital in some plant lifecycles, for example many seeds need a particular soil micro organism to be present if they are to germinate and grow. Many nutrients and leaf litter are also found within topsoils, removing these soils also removes those nutrients from roadside reserve ecosystems.

If topsoils are removed during road works they should be stockpiled nearby for redistribution over disturbed soil areas or any areas of exposed sub soils. This enables any seeds or organisms within the topsoil the chance to repopulate or germinate.

If topsoils are excess to requirements they should be stockpiled in a designated stockpile site and re-used in areas where topsoils are needed (preferably near the original source). Topsoil stockpiles can “stagnate” over time so it is recommended to use topsoils within one (1) year.

Appropriate erosion and sediment control methods should be utilised wherever topsoil redistribution occurs.

TREE ROOTS

Tree roots stabilise and strengthen trees, pump moisture from road shoulders and drains and stabilise soils.

Damaging tree roots during road works usually results in follow up maintenance. Trees with damaged roots can fall, shed limbs or die all of which require unplanned removal or maintenance of the tree.

If roadworks are likely to significantly damage tree roots, consider planning works to avoid tree roots completely or formally evaluate tree significance and consider complete removal of the tree if appropriate. Although this may be an extreme alternative initially, the benefits will be a saving in resources in the long term.

Tree removal is costly and should be avoided where possible. Planning around trees to avoid damage is the preferred option. If tree removal is unavoidable, compensatory planting either within the roadside reserve, or within adjacent landholdings should be considered and planned for.

CHANGING SOIL LEVELS OR DRAINAGE PATTERNS

Dramatically changing the soil levels (150mm higher or lower) or altering water flow patterns around trees and shrubs can eventually kill them.

Root systems are very sensitive to change. Exposing roots through soil removal causes the rootball to dry out and become unstable. Filling over roots cause them to suffocate and die.

Avoid changing soils levels around a tree dripline as this is where the majority of roots exist.

Trees on roadside reserves have adapted, grown and developed around the existing drainage systems. Changing water flow patterns or water pooling patterns can either drown roots or alternatively can cause roots to dry out. Native plants are extremely vulnerable to any change in water availability.

Maintaining natural or existing water patterns reduces any negative impacts on roadside reserve vegetation.

PRUNING LIMBS

Pruning limbs off trees is often necessary to ensure safety along roadways. Unfortunately if limbs are pruned incorrectly they can create an even greater risk or ultimately result in follow up maintenance work such as re-pruning or even complete tree removal should the tree become diseased, unstable or dies.

If pruning is necessary, evaluate the tree and limbs in question and compare the long term feasibility of pruning compared to the impact of complete tree removal. Pruning should be considered as the preferred option.

Should pruning be determined as the most feasible option, it should be carried out in a manner which does not cause any long term damage to the tree. Limb pruning should be completed by qualified or trained staff following recognised Australian Standards.

Under no circumstances should tree limbs be removed using machinery such as excavators or backhoes. This will ultimately lead to major tree damage, with a high probability of tree instability or death as a result.

Prunings should be chipped and reused on site to retain seed for natural revegetation.

VEGETATION WASTE

Occasionally native plants on roadside reserves need to be removed or pruned, although both of these practices should be avoided, if possible. Removal "off site" of waste vegetation is costly in terms of machinery and time. Seed sources and valuable organic matter is lost to the roadside reserve if prunings are removed from the site.

Mulching of waste native vegetation on site reduces the need for large machinery such as front end loaders and trucks having to be used for clean up work. Chipping also keeps seed on site and provides mulch for covering bare areas of soil. Native vegetation mulch although inhospitable for weeds aids the native revegetation process.

Mulch what materials are possible on site. Trunks and large limbs should be either cut for other uses, such as poles and log barriers or refencing the site. Bulky native vegetation material should be retained and spread on site. This material helps created habitats for wildlife.

Under no circumstances should vegetation material be allowed to be removed for firewood.

Strategic placing of logs and branches can also aid in soil stabilisation and sedimentation controls as well as acting as water diffusers where needed.

WILDLIFE IN ROAD RESERVES

Native fauna, including in some instances threatened species, use the road reserve as habitat or corridors to move from one area to another. Native vegetation in road reserves provides shelter, food and nesting sites for many species of native animals, particularly birds, small mammals and reptiles. When construction work is being carried out in road reserves, it is important that operational staff and planners consider the impact of roadwork on habitat in the reserve and adjacent corridors.

Issues relating to fauna in the road reserve should be considered in the REF process. Where known habitat is disturbed or animals are accidentally injured, suitable arrangements must be made to ensure the welfare of affected wildlife. The Native Animal Trust fund has a 24

contact number and provides a volunteer service to provide advice and to care for injured or displaced wildlife. (See Wildlife in Road Reserve Strategy Part 5).

BURNING

Burning of natural vegetation along roadside reserves as a maintenance practice can create or entrench other management problems. If native vegetation is burnt in the wrong manner or at the wrong time, it can be severely damaged or may never recover at all.

Many native plants have specific fire requirements. They require fire at different times in their life cycles, some before seeding, some after. Many plant species can be wiped out if burnt regularly prior to flowering or seeding or burnt immediately after seed germination. Even correctly timed burning can create environmental problems such as exposed soils, increased weed growth and reduced fauna habitats.

Not only weeds exploit the after effects of burning, but many native plants, which in some cases are undesirable, also exploit burnt areas. Acacia species (wattles) are notorious for creating road maintenance problems such as falling, limb shedding and have generally short lifespans. They are also one of the first species to colonise after burning native bush.

All burning should be avoided or conducted through liaison with the relevant Bushfire Authorities and have an appropriate environmental assessment of the fires potential impact completed. Burning of roadside reserves should not be regarded as a road maintenance activity. Likewise, Bushfire Authorities should notify and consult with roadside reserve managers before burning within roadside reserves.

Unauthorised burning of the roadside reserve by adjoining landholders should be actively discouraged.

CONTACT LIST

The following list has been compiled to give you an easy reference guide to assistance with some of the problems you may encounter, or queries you may have during the course of your roadside work.

NSW National Parks and Wildlife Service:

Information and assistance with rare, threatened and endangered flora and fauna, and items and site of Aboriginal significance.

Gloucester Sub District Office
34 King St
Gloucester
Ph: 65581478

Weeds identification and information:

Eric Pasenow
Noxious Weeds Officer
Dungog Shire Council
Ph: 4995 7788

Injured wildlife:

Native Animal Trust Fund
24 hour contact number.
You will be directed to local animal rescuers and carers.
Ph: 4960 2294

Native plant nurseries:

Noel Jupp
Riverdene Nurseries
Gresford
Ph: 4938 9280
Fax: 4938 9110

East Coast Revegetation
Salisbury Road
Dungog
Ph: 4995 9202
Fax 4995 9355

Country Elegance
Hooke Street Dungog
Ph: 4992 3555

Seed collection:

Greening Australia, Hunter Region conducts seed collection workshops and training, as well as operating a seed bank for locally collected seeds.
Ph: 4950 0055
Fax: 4955 0710

The Paterson Allyn Williams Landcare Office:

The following Landcare groups operate within Dungog Shire, and can be contacted through

Landcare Coordinator

Dungog
Ph / Fax: 4992 3621

Landcare groups:

- Bandon Grove Landcare Group
- Williams River Care Association
- Clarence Town Landcare Group
- Paterson Allyn Valley Landcare group
- Gresford District Landcare Group
- Myall Creek Landcare Group
- Dungog Enviro Youth Council

Useful plant books:

- * Field Guide to the Native Plants of Sydney
Les Robinson
Kangaroo Press
- * Rainforest Climbing Plants of NSW
- * Rainforest Trees and Shrubs of NSW
- * Eucalypts and Angophoras of South Eastern Australia
J B Williams & G J Harden
Department of Botany, University of New England
- * Native Grasses of the Hunter Valley
N Nelson & G Lodge
NSW Agriculture Agdex 133/10
- * Flora of the Wallaroo Mc Donald, K (2002)
- * Native Vegetation of the Seaham Area Mc Donald, K (2002)
- * Nature Watch Diary Mc Donald, K (2003)

3. ROADSIDE RESERVE WEED CONTROL GUIDELINES

These guidelines include factors such as spraying methods, weed controls, herbicide and waste disposal. They are aimed at providing efficient weed control through environmentally sound means, and are based on weeds management strategies and programs currently in place within the council system.

Weeds and other introduced plants are undesirable in roadside reserves. They require maintenance such as regular mowing, spraying or removal by machinery, and constitute a major cost associated with road management.

Some weeds, if left unchecked, smother native vegetation, for example "Mothvine", while others can poison the soil in which they grow, for example "Lantana". Some other species such as small leaved privet produce enormous quantities of seed, which may germinate en masse following disturbance, effectively outcompeting native species.

Weeds generally occur in areas which have been disturbed without follow up revegetation or in areas which are regularly mown, graded or driven over

Weeds flourish in roadside reserves because:

- roadside reserves are regularly disturbed or cleared without follow up revegetation.
- Roadside reserves are often left unchecked for weeds for long periods of time.
- Weed materials are often spread during road maintenance activities, such as grading and mowing.
- Cost associated with weed control restrict control targets and methods.
- Water pooling and drainage systems along roadways create favourable habitats for many weed species.
- Weeds generally colonise and grow faster than native plants.
- Weed species may continue to reinfest a roadside reserve when inadequate (or no) weed control is practiced on adjoining land.

Most weeds would be unable to compete with native vegetation without the benefits they receive from mowing, water pooling or soil disturbance.

Through reducing aspects of road maintenance such as mowing, boom spraying, grading and soil disturbance, the advantage weeds have over native vegetation is greatly reduced. A reduction of weed growth on roadside reserves through the correct maintenance practices has economic and environmental benefits. Weed control is an expensive exercise, therefore reducing the need for chemical or manual weed control has great economic advantages.

The environmental advantages of reduced weed control needs are found in the reduction of herbicide released into the environment, the limiting of weed seed sources and reduced impact on existing native vegetation.

Roadside reserves encompass two types of weeds, Noxious and Environmental. Road managers have an obligation to control Noxious weeds growing on roadside reserves, although there is no such obligation to control environmental weeds, (all other introduced plant species). This lack of obligation and consequent funding arrangements leaves environmental weeds relatively unchecked on roadside reserves. Unfortunately environmental weeds eventually, if left unchecked, may become noxious weeds.

There are currently 37 declared Noxious Weeds in the Dungog Shire. Five of these weeds are seen as Regionally Significant. Alligator Weed, Giant Parramatta Grass, Water Hyacinth, Green Cestrum and Blackberry. (See the Appendices for a complete list of Noxious weeds in the area).

Where possible all weed species should be identified and a strategic control plan should be developed. This plan should amalgamate control of both Noxious and Environmental weeds to reduce “doubling up” of resources and programs. Environmental weeds should be prioritised and control and monitoring should take place in a strategic, long term manner.

The control of Noxious weeds is generally achieved by spot spraying. This method is more precise and more economic, compared to boom spraying. If certain environmental weeds are targeted then spot spraying can be incorporated into noxious weed control programs along roadside reserves. Manual removal of environmental weeds is also a feasible method of control for certain situations where hardwood trees and shrubs are concerned or where soil stability may be an issue.

ENVIRONMENTAL WEEDS

Environmental weeds are introduced plants which grow wild in bushland and roadside reserves. They have not been declared noxious for any number of reasons, the main being that they do not pose an immediate agricultural or commercial problem. Unfortunately those weeds do adversely affect the environment, hence the term “Environmental Weed”.

Environmental weeds are usually herbaceous plants or grasses, but can be shrubs or trees, many were introduced as stockfeed although others are poisonous. They easily adapt to changing conditions, are advantageous and fast growing. Areas which have been disturbed, incorrectly burnt or have introduced soils, often are colonised by these weeds at the expense of native vegetation. Dumping of rubbish which includes garden or other vegetative wastes can also be a major source of environmental weeds in some areas.

Infestations of these weeds are not desirable for a number of reasons. They rapidly spread, require continuous costly control, can be fire hazards and are haven for noxious and feral animals. Often they are tall and pose problems in dish drains, culverts and road shoulders.

Control of environmental weeds should be considered as an integral part of roadside reserve management.

MONITORING WEEDS

Observing and monitoring of weeds on roadside reserves assists in identification of changes in weed populations. Information gathered through regular observation and monitoring will highlight issues such as new weed species, increase areas of infestation, and control results.

As most weeds in roadside reserves are environmental weeds, their control needs to be prioritised. Measuring weed growth or population changes provides important data to allocate control priorities and targets. If changes in weed growth are identified, reactive measures can be implemented to reduce weed impacts on roadside reserve environments.

Assessment of the roadside reserve weed population should be conducted every two (2) years, if possible, to identify long term changes in weed populations. Observations on a regular basis during road maintenance activities provides information on shorter term changes.

The combination of long and short term information gathering through Assessments and Observation provides a more complete view of roadside reserve weed growth.

BOOM SPRAYING

Boom spraying is sometimes used as a maintenance practice along road shoulders and dish drains to reduce weed growth and create cleared zones along the roadway.

Soil stabilisation is lost with the absence of vegetation, yet it is the shoulders and dish drains of roads (which require the most stability within the roadside reserve), which are most likely to be boom sprayed.

Unfortunately boom spraying kills all plants within its coverage (unless selective herbicides are used). This includes many beneficial native grasses, sedges and groundcovers.

Ideally road shoulders and dish drains should have a coverage of low native grasses, groundcovers and herbs to stabilise the soils and road materials.

Boom spraying does not allow these native plants to colonise as the bare soils are quickly overgrown by Environmental weeds.

Boom spraying is also costly and often wasteful. The sheet coverage of herbicide created by booms is often unnecessary as few road shoulders have full vegetation coverage. This, in effect, means that herbicide is being sprayed onto bare soils, grasses and other native vegetation unnecessarily.

Unless road shoulders or dish drains contain road pavement invasive plants such as Kikuyu, couch or carpet grass boom spraying should be avoided as a routine practice. Designated areas, such as pullover areas or where road safety is a factor may still require boom spraying as a method of vegetation control.

SPOT SPRAYING

Spot spraying is environmentally and economically the preferred method of herbicide application. This method is more specific in its coverage than boom spraying, more adaptable to different terrain and creates less overspray than boom methods. Certain weeds can be targeted at specific times and specific situations using spot spraying.

Environmental and noxious weed control, if amalgamated, can target a series of weeds (environmental and noxious), requiring similar control times and herbicide solutions thus reducing the need to treat areas more often than necessary.

Spray equipment should be adjusted to avoid any overspray and herbicides should be used only in the prescribed manner. Minimal recommended herbicide strengths should be used. Native vegetation should not be sprayed with herbicides, unless absolutely necessary.

RESIDUAL HERBICIDES

Residual herbicides are chemicals which do not breakdown within the soil. Since they remain active in the soil for months or years, they have a very severe impact on the environment. These chemicals can kill trees and shrubs without any contact other than through the soil, or may act to prevent germination of seeds within the soil. Leaching or flooding can spread these chemicals into areas which were not targeted including commercial pastures, native bushland and water courses. Once these chemicals have been released there is no method of controlling where they may end up or what they may kill.

Residual herbicides should not be used in roadside reserve maintenance. There are very few uses for these chemicals and they are expensive in terms of their effect on the environment, their cost and possible health effects on those using the chemicals.

Any use of residual herbicides should be reviewed and where possible, ceased and alternative non-residual chemicals used.

MANUAL WEED CONTROL

In many situations chemical weed control is regarded as inappropriate. This can be in areas which are environmentally sensitive such as near waterways, or in the control of weed trees and shrubs or where weeds are amongst native vegetation.

The physical removal of weed growth can be costly in terms of labour and equipment but in some circumstances is the preferred method.

The root systems associated with weeds can often be the only stabilising factor in some areas. The removal of the surface vegetation, leaving root systems intact has the effect of reducing impacts caused through soil disturbance or large scale herbicide application. Weed stumps should be poisoned to prevent regrowth.

To prevent exposed soils from eroding, follow up revegetation or seeding of native species should immediately follow.

All debris from manual weed control should be removed from the site and disposed of in an appropriate manner. This will prevent reseeding from the waste. Burning of waste is also an option in certain circumstances.

ADJOINING LANDS

Effective weed control within roadside reserves is difficult to achieve if surrounding lands are infested. Most weeds have the capacity to produce large amounts of seed, often wind spread. Controlling weeds on the roadside reserve can be a waste of resources if the weeds on adjoining lands are free to continue seeding and repopulating weeded areas.

Cooperation and participation of landowners in weed control is extremely important. Residents should be advised and encouraged about weed targets and their role in effective roadside reserve weed control.

WASTE DISPOSAL

Weeds which have been removed are not destroyed or taken elsewhere may quickly repopulate the roadside reserve. Many weeds spread through stem layering or have wind borne seeds. If piles of weed waste is left on the roadside reserve, they can also act as havens for feral and noxious animals such as rabbits. Those animals are not only unwelcome in natural habitats because of their physical attributes but also because they can be distributors of weed seed.

Whenever weed waste is generated it should be either burnt on site or removed to an authorised waste disposal site. It should never be left on site. Adjoining land should not be considered to be an appropriate waste disposal site.

CONTACT LIST

The following list has been compiled to give you an easy reference guide to assistance with some of the problems you may encounter, or queries you may have during the course of your roadside work.

Dungog Shire Council:

Ph: 02 4995 7777

Weeds identification and information:

Eric Pasenow

Noxious Weeds Officer

Dungog Shire Council

Ph: 4995 7788

4. ROADSIDE RESERVE HERITAGE GUIDELINES

Heritage areas and items may be located within roadside reserves or impacted upon by roadworks in the immediate area. It is important when planning road construction and maintenance work to consider the heritage issues.

Heritage is generally defined as something of value that can be handed on through generations. It can relate to a number of different areas.

Natural heritage
European Heritage
Aboriginal Heritage

NATURAL HERITAGE

Natural Heritage includes landscapes or parts of landscapes that have special significance to individuals or communities. These natural features may include things of beauty or be associated with past history or events. They include

1. The topography in general
2. Particular landscape features
3. Plants and animals of the area
4. Any significant trees

Areas or objects of significant natural heritage should be considered in the planning stage of major work and identified in the Review of Environmental factors.

EUROPEAN HERITAGE

Many areas of the Dungog Shire have items of heritage significance contained within or adjacent to the roadside reserve. Wherever possible, these items should be preserved, bearing in mind other limitations such as sight lines across corners and clear zones from the edge of the carriageway.

These items of heritage or cultural significance vary widely and can include such things as bridges, buildings, roadside graves, milestones, signs, split post and rail fences and cream stands. Obviously, it may be difficult to justify the preservation of a particular item if it is beyond repair, but a sign describing the history of the site may be appropriate. In this way, many of these places which were significant to the early European settlement of the Shire may be able to be remembered.

Many items and structures on road reserves will be the property of the adjacent landholder, and further information should be gained from them before any work begins. For queries related to items of heritage significance that may be either on the Local, Regional or State Register contact Council's Planning Department.

ABORIGINAL HERITAGE

Aboriginal Sites and Relics in Reserves- Road reserves may contain areas significant to aboriginal people, since roadsides have often remained in a less disturbed state than surrounding land. Areas significant to Aboriginal people may have evidence of Aboriginal occupation such as scarred trees and stone artefacts, or they may be associated with events or stories.

Aboriginal stone artefacts and scarred trees can occur across all landscapes, however the potential for sites to occur will increase around major rivers and creeks.

All Aboriginal sites in NSW are protected by legislation!

It is an offence to damage, deface or destroy any site or item or to disturb such a site.

The following table indicates the number of known Aboriginal sites, structures and landscapes that have been identified and are recorded by National Parks and Wildlife Service for the Dungog LGA. New discoveries of aboriginal sites and relics must be reported to the NPWS for listing on the Register. Sites on this Register are afforded legal protection so as to ensure their conservation

Breakdown of Aboriginal Sites Within Dungog Shire Council

SITETYPE	Number of Sites
Axe Grinding Groove Count	3
Bora/Ceremonial Count	1
Burial/s Count	3
Carved Tree Count	1
Isolated Find Count	4
Midden Count	2
Open Camp Site Count	7
Rock Engraving Count	1
Scarred Tree Count	6
Stone Arrangement Count	1
Total	30

OPERATING PROCEDURE FOR CONSIDERATION OF ABORIGINAL HERITAGE

If known aboriginal sites are in a local area where major construction work is planned, the following procedure is recommended prior to the start of construction.

1. Lodge a request with the National parks and Wildlife Service to conduct a search of the Aboriginal Site Register Database
2. Consult with the local Aboriginal community, usually via the local Aboriginal Land Council
3. Have a cultural heritage assessment carried out by a member of the Aboriginal community or a qualified archeologist.

If you believe that the area of roadside reserve you are working in contains items or places of Aboriginal significance, you should stop all work and contact the Gloucester Sub District office of NSW National Parks and Wildlife Service. Ask to speak to the Aboriginal Sites Officer, who will be able to advise you on the most appropriate course of action. (see contacts below)

CONTACT LIST

The following list has been compiled to give you an easy reference guide to assistance with some of the problems you may encounter, or queries you may have during the course of your roadside work.

Dungog Shire Council:

Council's Heritage Adviser/Planning Department
Ph: 02 4995 7777

NSW National Parks and Wildlife Service:

Information and assistance with rare, threatened and endangered flora and fauna, and items and site of Aboriginal significance.
Gloucester Sub District Office
34 King Street
Gloucester
Ph: 6558 1478

5. ROADSIDE RESERVE SERVICES GUIDELINE

Roadside reserves also provide convenient corridors for Council and other authorities to run services such as water sewer, power and phone lines.

In the Dungog Shire there is currently no reticulated sewer outside the town of Dungog. Reticulated water supplies only are provided in all towns of the Shire and some private mains feed off the Chichester Dam to Newcastle Pipeline.

OVERHEAD POWERLINES

The problems associated with tall trees and overhead powerlines are obvious. Any planting undertaken in the road reserve must take into account the maintenance requirements for overhead powerlines. Country Energy has supplied the following guidelines:

- When planting tall growing trees, they should be planted the same distance as their mature height away from the powerline, ie: if your trees will grow to 20m, then you should plant the trees 20m (at least) from the powerline.
- When planting near powerlines, or beneath powerlines, plants selection should be restricted to those species which are less than 4m in height.

Further information and advice can be sought from Country Energy.

UNDERGROUND SERVICES

Some areas of the shire are serviced by town water, which is carried in underground mains. In many instances, the water main will be located in the road reserve. When operating in urban areas the location of the water main should be checked with relevant Council staff, prior to any work being undertaken.

Telephone cables are generally laid underground, and care should be taken to identify the location of these cables, and to avoid disturbance.

Check locations with Telstra cable location service.

CONTACT LIST

Overhead powerlines:

Country Energy
Ph: 132 356

Telephone cables:

Telstra Cable locations
Ph: 1100

Water main locations:

Hunter Water Corporation
Ph:

6. NSW ROADSIDE ENVIRONMENT COMMITTEE ROADSIDE HANDBOOK

This handbook is based on the VIC ROADS Roadside Handbook and Management guidelines I & II. It is designed to be used by road construction and maintenance staff and contractors in conjunction with other guidelines in this Management Plan.

The contents page only is provided in this section. Copies of the Handbook are available at Councils offices in Dowling Street Dungog

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PART 5. STRATEGIES

This section contains a brief outline of processes for the implementation of the principles and guidelines contained in the management plan. All strategies will be developed and implemented as resources become available with an emphasis on (but not limited to) significant roadside environment areas identified through the Roadside Assessment Program.

Changes may be made to these processes and additional strategies developed in consultation with all stakeholders.-

STRATEGY 1: ROAD SAFETY

Safety of drivers and pedestrians is the primary consideration when planning and maintaining roads. At the same time, valuable vegetation cannot be removed simply to allow maximum speeds on all roads. Where valuable vegetation exists Dungog Shire Council will investigate options other than its removal to ensure public safety. These options may include the use of speed signage, protective barriers or where necessary through encouraging staged planting on adjacent property or the road reserve.

STRATEGY 2: TRAINING

Provide suitable training for all Council staff involved in construction and maintenance work in Councils road reserves. Training will be provided in linear reserve management and erosion and sediment control to all outdoor staff early in 2003. A training package will also be developed and provided to new staff.

STRATEGY 3: SIGNIFICANT ROADSIDE ENVIRONMENT AREA

Erect Significant Roadside Environment Area Signs to identify High Value Vegetation Areas. Signs will be individually numbered and Councils contact details provided. Landholders, contractors, service providers and council staff should contact Council to determine significant features and refer to any management recommendations for the area before commencing work.

STRATEGY 4: ENVIRONMENTAL ASSESSMENT / CONSTRUCTION WORK

A Review of Environmental Factors must be carried out by Council Engineering Staff at the Conceptual stage of any significant construction work

Step 1

Refer to Councils Conservation Value Mapping and data base.

Step 2

High Value Conservation Area

If the project area is identified as High Value Conservation, then the REF may be conducted by Engineering Staff or a suitably qualified environmental specialist. Once completed the REF must be reviewed by a suitably qualified environmental specialist to determine if a Species Impact Statement or an Environmental Impact Statement is required or not.

Medium or Low Value Conservation Area.

If the project area is a Medium or Low Value Conservation Area, then a REF may be conducted by Council Staff and if significant environmental impact or threatened species are not identified through this process, then the REF will be reviewed by Council's Environmental Services Staff.

Step 3

Where practical and relevant, the best practice guidelines will be implemented into the project design. Impact mitigation measures such as erosion and sedimentation control will be factored into the project budget.

Step 4

Where practical and relevant the best practice guidelines will be implemented in both the construction and post construction phase of the project. All work should be carried out in accordance with: the construction guidelines on page 22 of the Roadside Handbook, and guidelines provided in part 4 of the REMP

STRATEGY 5: ENVIRONMENTAL ASSESSMENT / MAINTENANCE WORK

A generic or annual REF should be prepared for ongoing maintenance work carried out by Council outdoor staff. This work would include activities such grading gravel roads, table drain clearing, weed spraying and slashing.

Step1

Before carrying out work determine the status of the site by reference to the maps, data sheets or signs.

Step 2

High Value Conservation Area

Where work is in an area identified as a "significant environmental area" use the reference number on the sign to determine significant features and refer to any management recommendations. If the work will result in soil disturbance or vegetation removal a REF should be completed. If no significant soil disturbance or vegetation removal is planned proceed to step 4

Medium or Low Value Conservation Area

Where no significant environment status is recorded, visual assessment of the site should be made to confirm status

Step 4

Carry out work in accordance with: any specific management requirements, Maintenance Guidelines at page 21 of the Roadside Handbook and guidelines provided in part 4 of the REMP

STRATEGY 6: PUBLIC PARTICIPATION

Council will encourage public participation in the conservation of significant environmental areas. The following strategy will be developed and implemented as resources become available with an emphasis on (but not limited to) significant environmental areas identified through the Roadside Assessment Program.

This strategy encourages selected species planting on private land adjacent the roadside reserve. Extending the vegetation outside the road reserve will increase the ecological value of the area and ensure that a vegetation corridor is maintained if future upgrades to the road require some vegetation removal to meet Clear Zone Standards.

Step 1

Develop a program to identify owners of land adjacent to Councils main traffic roads. Properties adjacent to roads where future road works may result in significant vegetation clearing will be prioritised.

Step 2

Contact landholders adjacent to identified traffic roads and encourage extension of the roadside vegetation corridor onto private property.

Step 3

Provide advice on species selection from the roadside assessment database.
Provide advice to landholders on assistance programs available for tree planting and seek funding for tree planting programs as they become available.

STRATEGY 7: WILDLIFE IN ROAD RESERVES

Native fauna, including in some instances threatened species, use the road reserve as habitat or corridors to move from one area to another. Native vegetation in road reserves provides shelter, food and nesting sites for many species of native animals, particularly birds, small mammals and reptiles. When construction work is being carried out in road reserves, it is important that operational staff and planners consider the impact of roadwork on habitat in the reserve and adjacent corridors.

Step 1

Issues relating to fauna in the road reserve should be considered in the REF process.

Step 2

Where known habitat is disturbed or animals are accidentally injured, suitable arrangements must be made to ensure the welfare of affected wildlife.

Step 3

In consultation with landholders and the Native Animal Trust Fund identify areas within the road reserve that are known wildlife corridors.

Step 4

Investigate and implement appropriate action to reduce impacts on wildlife through the activities of road maintenance and construction and passing vehicular traffic.

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2. SIGNIFICANT ENVIRONMENTAL AREAS
3. ROADSIDE ASSESSMENT DATABASE
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5. ROADSIDE RESERVE ASSESSMENT SHEET
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8. RTA CLEAR ZONE NOMOGRAPH

1. NOXIOUS WEED LIST

NOXIOUS WEEDS IN DUNGOG SHIRE COUNCIL LOCAL GOVERNMENT AREA INCLUDING WHOLE OF STATE WEEDS

BOTANICAL NAME	COMMON NAME	CATEGORY
Acacia karoo	Karoo thorn	W1
Alternanthera philoxeroides	Alligator weed	W1
<i>Bryophyllum delagoense</i>	Mother-of-millions	W2
<i>Cabomba spp. except Cabomba furcata</i>	Cabomba (except pink Cabomba)	W4g
<i>Carduus nutans</i>	Nodding thistle	W2
<i>Cenchrus incertus</i>	Spiny burrgrass	W2
<i>Cenchrus longispinus</i>	Spiny burrgrass	W2
<i>Cestrum parqui</i>	Green cestrum	W3
<i>Chromolaena odorata</i>	Siam weed	W1
<i>Cortaderia spp.</i>	Pampas grass	W2
<i>Cuscuta campestris</i>	Dodder	W2
<i>Cytisus scoparius</i>	Scotch/English broom	W2
<i>Echium spp.</i>	Paterson's curse, Vipers/Italian bugloss	W3
<i>Eichhornia crassipes</i>	Water hyacinth	W3
<i>Emex australis</i>	Spiny emex	W3
<i>Equisetum spp.</i>	Horsetail	W1
<i>Gymnocoronis spilanthoides</i>	Senegal tea plant	W1
<i>Harrisia spp.</i>	Harrisia cactus	W4f
<i>Hieracium spp.</i>	Hawkweeds	W1
<i>Homeria spp.</i>	Capt tulips	W3
<i>Hypericum perforatum</i>	St. John's wort	W2
<i>Kochia scoparia except K.scoparia subsp. tricophylla</i>	Kochia	W1
<i>Lagarosiphon major</i>	Lagarosiphon	W1
<i>Lycium ferocissimum</i>	African boxthorn	W2
<i>Nassella trichotoma</i>	Serrated tussock	W2
<i>Opuntia spp. except O.ficus indica</i>	Prickly pears	W4f
<i>Parthenium hysterophorus</i>	Parthenium weed	W1
<i>Pistia stratiotes</i>	Water lettuce	W1
<i>Rubus fruticosus (agg. spp.)</i>	Blackberry	W3
<i>Salix spp. except S.babylonica S.richardtii and S.calodendron</i>	Willows	W4g
<i>Salvinia molesta</i>	Salvinia	W2
<i>Sorghum halepense</i>	Johnson grass	W2
<i>Sorghum x almunt</i>	Columbus grass	W2
<i>Sporobolus indicus var. major</i>	Giant Parramatta Grass	W2
<i>Toxicodendron succedaneum</i>	Rhus tree	W2
<i>Xanthium spp.</i>	Bathurst/Noogoora/California/ Cockle burrs	W3

Weeds when declared are categorised as W1, W2, W3, W4 and this categorisation sets the action to be taken in response to outbreaks of individual weeds.

- W1 weed must be reported to Council within 72 hours of detection. Weed must be fully and continuously suppressed and destroyed.

- *W2* weed must be fully and continuously suppressed and destroyed.
- *W3* weed numbers and distribution must be reduced and prevented from spreading.
- *W4* weed shall not be sold, propagated or knowingly distributed. Any biological control or weed control program in place by Council must be applied to weed.
- *W4g* weed shall not be sold, propagated or knowingly distributed.
- *W4f* weed must not be sold, propagated or knowingly distributed. Any biological control or other program directed by a local control authority must be implemented.

2. SIGNIFICANT ROADSIDE ENVIRONMENT AREAS

This table contains a list of Significant Roadside Environmental Areas identified a High Conservation Value through the Roadside Environmental Assessment Program

ROAD NAME	No	LOCATION	NEAREST WAY POINT	COMMENTS
ALISON ROAD	1	345	140	NEAR SMALL LOG HEAP
ALISON ROAD	1	730	142	200m NORTH OF ALISON SIGN
PINE BRUSH RD	310	139	163	START OF TREES
PINE BRUSH RD	310	864	143	INTERSECTION WITH ALISON RD
GLEN MARTIN RD	170	980	159	EAST OF CONCRETE BRIDGE
GLEN MARTIN RD	170	1138	162	INTERSECTION WITH PINE BUSH RD
LIMEBURNERS CREEK RD	233	1090	178	INTERSECTION WITH GLEN MARTIN RD
LIMEBURNERS CREEK RD	233	372	176	AT SHIRE BOUNDARY
EAST SEAHAM RD	284	20	179	INTERSECTION WITH LIMEBURNERS CK RD
EAST SEAHAM RD	284	1071	180	AT SHIRE BOUNDARY
CLARENCE TOWN RD	MR 301	2620	175	OPPOSITE TERM. OF NAVIGATION
CLARENCE TOWN RD	MR301	2188	174	AT SHIRE BOUNDARY
CEMETERY RD	55	10	173	AT START OF RD
WOERDENS RD	405	10	186	AT START OF RD
WALLAROBBA/BROOKFIELD RD	384	10	171	INT. WITH CLARENCE TOWN RD
WALLAROBBA/BROOKFIELD RD	384	100	170	CHANGE IN VEGETATION
THALABA CHURCH RD	369	20	142	INT. WITH ALISON RD
THALABA CHURCH RD	369	156	149	INT. WITH MARSHDALE RD
FLAT TOPS RD	130	30	150	INT WITH MARSHDALE RD
FLAT TOPS RD	130	464	152	20m WEST OF 80KM/H SIGN
MARSHDALE RD	255	10	139	NEAR TELSTRA MARKER
STROUD HILL RD	MR101(e)	1868	117	40m EAST OF MAJORS CK RD
STROUD HILL RD	MR101(e)	1307	116	AT SHIRE BOUNDARY
MONKERAI RD	269	273	119	100m EAST OF SEALED RD
MONKERAI RD	269	1090	121	AT SHIRE BOUNDARY
MAIN CREEK RD	245	353	119	ON BANK OPP. 80KM/H SIGN
WANGAT TRIG RD	390	11	135	JUST PAST SAWDUST DUMP
CHICHESTER RD	70	10	96	INT. WITH SALISBURY RD
JAMES RD	205	173	202	CHANGE IN VEGETATION
BOONABILLA RD	45	887	202	100m SOUTH OF JAMES RD INT.
PATERSON RIVER RD	305	2735	78	CHANGE IN VEG. NEAR CATTLE GRID

PATERSON RIVER RD	305	3210	71	CHANGE IN VEG. NEAR CONCRETE BRIDGE
PATERSON RIVER RD	305	1734	84	CHANGE IN VEGETATION
PATERSON RIVER RD	305	1185	86	CHANGE IN VEG.- RD NEAR RIVER
ALLYN RIVER RD	5	790	206	JUST SOUTH OF ALLYNBROOK
ALLYN RIVER RD	5	271	29	INT. WITH BINGLBURRA RD
BINGLEBURRA RD	MR7764©	1040	112	BOTTOM OF HILL AT END OF PIGWIRE FENCE
BINGLEBURRA RD	MR7764©	617	20	ON BANK JUST WEST OF 80KM/H SIGN
PARISHS RD	290	10	49	INT WITH HILLDALE RD
GARDINERS RD	160	51	40	NEAR GATE
DUNGOG RD	MR101©	400	44	JUST SOUTH OF TIN BRIDGE
VOGELS RD	380	55	188	TIGHT R/H BEND ABOVE QUARRY
DUNGOG RD	MR101©	10	12	INT WITH MOWBRAY LANE
MOWBRAY LANE	27	10	12	INT WITH MOWBRAY LANE
LENNOXTON RD	225	10	58	INT. WITH GRESFORD RD
LENNOXTON RD	225	300	59	INT WITH COREYS CREEK RD
SUMMER HILL RD	365	10	66	INT WITH GRESFORD RD
SUMMER HILL RD	365	376	62	ON BANK JUST EAST OF LENNOXTON RD INT.
FISHERS HILL RD	120	10	67	INT WITH SUMMER HILL RD
FISHERS HILL RD	120	320	68	CHANGE IN VEGETATION

3. ROADSIDE ASSESSMENT DATABASE

road no	road name	sec/ length	date surv	start	finish	heading	herb	con value	veg type	dom species	weeds present	significant flora	significant fauna	info / com / recom
1	ALISON ROAD	1. 4.8km	9/04/1999	wpt115	wpt140	s	no	HIGH	woodland, scattered trees	C. maculata, E. punctata, E. fibrosa??	Bidens pilosa, Light infestation of Lantana	E. punctata,	Known Koala habitat: B. Dowling Pers. Comm	Retain all roadside vegetation, encourage extension of current remnants in adjoining private property. Control of dairy stock traffic.
1	ALISON ROAD (quadrat 7 between wpt 140 & wpt 141)	2. 1.8km	9/04/1999	wpt140	wpt142	s	no	HIGH	forest	Corymbia maculata, E. punctata, E. fibrosa, E. moluccana, E. tereticornis.	Bidens pilosa, Light infestation of Lantana	E. punctata, E. tereticornis	Koala seen at wpt 141.	Retain all roadside vegetation, encourage extension of current remnants in adjoining private property.
1	ALISON ROAD	3. 1.6km	9/04/1999	wpt144	wpt142	n	no	MEDIUM	woodland	C. maculata, E. fibrosa, Acacia falcata	Bidens pilosa, Light infestation of Lantana			Retain all roadside vegetation, encourage extension of current remnants in adjoining private property.
1	ALISON ROAD	4. 1.1km	9/04/1999	wpt143	wpt144	n	no	LOW	scattered trees	C. maculata, E. fibrosa, Acacia falcata	Pasture grasses and weeds	Vegetation on east side of road only		Active dairy farming area. Restrict traffic of dairy cattle in road reserve.
1	ALISON ROAD	5. 1.6km	9/04/1999	wpt145	wpt143	w	no	LOW	scattered trees	Corymbia maculata, Euc moluccana	Scattered lantana, fireweed, pasture weeds	Riverine forest complex at Thalaba Bridge	Brush Tailed Phascogale habitat at Thalaba Bridge: B Dowling Pers.Comm.	Restrict further vegetation removal from vicinity of Thalaba Bridge.
5 / MR7764 (D)	ALLYN RIVER ROAD	1. 4.0 km	28/04/1999	wpt029	wpt206	n	no	HIGH	woodland	Corymbia maculata, E. crebra, E. tereticornis, E. punctata, E.moluccana	Small amount Lantana			Many very old habitat trees with hollows, several direct links with adjoining bushland.
5 / MR7764 (D)	ALLYN RIVER ROAD	2	28/04/1999	wpt206	wpt207	n	no	HIGH	woodland, scattered trees	Corymbia maculata, E. crebra, E. tereticornis, E. punctata, E.moluccana	Scattered lantana, red salvia, bidens pilosa, Acacia podylarifolia on right @ 4.2km	E. Glaucina on left, 1.1km to 2.0km		Many very old habitat trees with hollows, several direct links with adjoining bushland. Scattered areas of trees interspersed with long stretches of pasture grasses and native grasses. Good riparian links where road adjoins/crosses river. Maintain as is. Some sight lines across curves need maintaining. Attention to erosion/sediment control works when undertaking bridge and associated works required. Remove existing Acacia podylarifolia and control seedlings.

5 / R7764 (D)	ALLYN RIVER ROAD	3	28/04/1999	wpt207	wpt208	n	no	MEDIUM	woodland, scattered trees	Corymbia maculata, E. crebra, E. tereticornis, E. acmenoides, E.moluccana, Angophora floribunda	Scattered lantana, red salvia, bidens pilosa		Scattered areas of trees interspersed with long stretches of pasture grasses and native grasses. Good riparian links where road adjoins/crosses river. Maintain as is. Some sight lines across curves need maintaining. Attention to erosion/sediment control works when undertaking bridge and associated works required.
5 / MR7764 (D)	ALLYN RIVER ROAD	4	28/04/1999	wpt208	wpt108	n	no	MEDIUM	woodland, scattered trees	Corymbia maculata, E. crebra, E. tereticornis, E. acmenoides, E.moluccana, Angophora floribunda	Scattered lantana, red salvia, bidens pilosa	Eucalyptus glaucina, scattered specimens	Scattered areas of trees interspersed with long stretches of pasture grasses and native grasses. Good riparian links where road adjoins/crosses river. Maintain as is. Some sight lines across curves need maintaining. Attention to erosion/sediment control works when undertaking bridge and associated works required. Dry rainforest/riverine vegetation in gullies and watercourses.
MR7764(C)	BINGLEBURRA ROAD	1. 9.2km	9/10/1998	wpt 029	wpt 112	ne	no	MEDIUM	scattered trees	E. fibrosa, C. maculata, E. tereticornis, Casuarina cunninghamia, E. glaucina	Scattered Lantana, pasture weeds.	Euc. glaucina, Acacia falcata, A. falciformis, H. violacea	
MR7764(C)	BINGLEBURRA ROAD	2. 5.9km	30/09/1998	wpt 018	wpt 020	sw	yes location 4	MEDIUM	scattered trees	C. maculata, E. moluccana	Scattered Lantana, pasture weeds.	E. glaucina.	Prevent removal of habitat trees, and E. glaucina
MR7764(C)	BINGLEBURRA ROAD	3	30/09/1998	wpt 112	wpt 020	w		HIGH	dense forest, wet sclerophyll and rainforest dominant on right, open forest and scattered trees common on left	C. maculata, E. moluccana and stringybark UID sp on upper slopes, Rainforest dominant on lower slopes; significant fig trees in roadside reserve.	Scattered Lantana, pasture weeds on left, dense lantana in some places on right		Area prone to significant slumping of soils and gravel following heavy rain. Very steep exposed rock cuttings and very steep downslopes below road. Attention to erosion and sediment control during maintenance works; maintain area as is. Rainforest area located within hairpin turn very attractive. Area above this has many specimens of Xanthorrea (Grass Trees) which remain post clearing. Work with adjacent landholders to preserve these two areas.

320	BLACK CAMP ROAD	1. 4.0km	14/04/1999	wpt154	wpt157	se	no	LOW	grassland	paspalum	rhodes grass, fireweed, thistles.	nil	nil		
320	BLACK CAMP ROAD	2. 2.4km	14/04/1999	wpt 157	wpt 158	se	no	MEDIUM	woodland	Euc tereticornis woodland, small number of melaleuca styphellioides	pasture weeds	nil	nil	Maintain as is. Attention to erosion and sediment control when maintenance grading, especially near creek crossings.	
320	BLACK CAMP ROAD	3. 2.2km	14/04/1999	wpt 158	wpt 159	s	no	MEDIUM	woodland, scattered trees, grassland	E. tereticornis	rhodes grass, fireweed, thistles.	nil	nil	Maintain as is. Attention to erosion and sediment control when maintenance grading, especially near creek crossings.	
30	BLACK CAMP CREEK ROAD	1	14/04/1999	156	end	ne	no	LOW	woodland, scattered trees, grassland	E. tereticornis	rhodes grass, fireweed, thistles.	nil	nil	shows effects of grazing and road maintenance, maintain as is.	
35	BLACK ROCK ROAD	1. 2.2km	27/04/1999	wpt188	wpt189	sw	no	MEDIUM	woodland	E. tereticornis/amplifolia, C. maculata, E. paniculata/crebra, Pittosporum undulatum	Scattered lantana, fireweed, pasture weeds	E. glaucina	nil	Adjacent forest block on left 1.5km to 1.9km is known koala habitat. B Dowling pers comm.	Maintain as is, introduce Adopt A Road program. Encourage adjoining landholders to maintain and conserve E glaucina in paddocks.
46	BREWERS ROAD	1. 1.9km	14/04/1999	wpt 152	wpt 153	s	no	LOW	grassland	C. maculata, ironbarks	pasture weeds and garses	nil	nil	Maintain current road formation.	
50	CABBAGE TREE ROAD	not surveyed													
55	CEMETERY ROAD - CLARENCE TOWN (quadrat 13)	1 1.7km	21/04/1999	wpt172	wpt173	se	no	HIGH	forest	C. maculata, Stringybarks.	Scattered Lantana, pasture weeds.	Riverine forest at Stoney Ck, adjacent to Cemetery. Eucalyptus grandis.	nil	Restrict grading of roadside, Council planning to replace bridge over Stony Creek. Care needs to be taken to minimise disturbance. Minimise effects of sediment loss from road during heavy rain.	
60	CHADS CREEK ROAD	1. 6.3km	27/04/1999	wpt198	wpt199	sw	no	MEDIUM	woodland	C. maculata, E. amplifolia, E. tereticornis, E. moluccana, E. acmenoides	Scattered Lantana, pasture weeds.	nil	nil	Maintain as is. Attention to erosion and sediment control when maintenance grading, especially near creek crossings.	

75 / MR7764 (A)	CHICHESTER DAM ROAD	1. 7.2km	4/12/1998	wpt 017	wpt 088	n	no	MEDIUM	woodland	C. maculata, , E. moluccana, E. tereticornis, Allocasuarina torulosa	Scattered lantana, fireweed, pasture weeds	E. glaucina	nil	Acacia falcata, Breynia oblongifolia. Vegetation on left side only. Opposite side has defunct telephone overhead cabling. Poles and cables should be removed and road reserve allowed to regenerate.
75 / MR7764 (A)	CHICHESTER DAM ROAD	2. 9.5km	8/04/1999	wpt 137	wpt 088	s	no	MEDIUM	woodland, scattered trees, grassland and riparian	C. maculata, , E. moluccana, E. tereticornis, Allocasuarina torulosa	Scattered lantana, fireweed, pasture weeds	E. glaucina	nil	Intermittent areas of reasonable quality vegetation, areas of introduced grasses and dairy farming activity between. Restrict further vegetation removal, particularly near streams.
70	CHICHESTER ROAD (quadrat 10)	1. 0.40km	4/12/1998	wpt097	culvert over stream @ 400m	se	Yes. Locatio n 14. AMG ref 675398 (map no: 9233- IV-S)	HIGH	Riverine forest complex	Casuarina cunninghamiana, Toona ciliata, Ficus coronata, Baloghia inophylla, Callicoma serratifolia, Lomandra longifolia	Thistles, fireweed, pasture grasses, mature Camphor laurel with some seedlings.	Toona ciliata, mature trees, some seedlings. Magnificent stand of Casuarina cunningham iana.	Koala and Spotted tailed Quoll present across Chichester River. B Dowling, Pers. Comm.	This area is periodically grazed by dairy cattle. Understorey depleted. Fencing would allow regeneration. Restrict further vegetation removal.
70	CHICHESTER ROAD (quadrat 11 & quadrat 12))	2. 15.3km	4/12/1998	Culvert @ 400m	wpt096	s	no	HIGH	combination of wet sclerophyll, dry sclerophyll, grassland (cleared dry sclerophyll) and open woodland.		Small amount Lantana, pasture weeds, fireweed, Blackberri es at wpt102	Known Koala habitat adjacent to Chichester village, and at Chichester Gap. B Dowling, Pers. Comm.	Whole road high conservation value. Very good examples of several vegetation types. See results from Quadrats 10,11,12.	
369	(THALABA) CHURCH ROAD	1. 0.8km	14/04/1999	wpt149	wpt142	se	no	HIGH	woodland, scattered trees	C. maculata, E. punctata, E. fibrosa, Casuarina cunninghamiana, Acacia irrorata	Small amount Lantana, Bidens pilosa, pasture grasses	E. punctata: Koala food	Known Koala habitat, B. Dowling Pers. Comm	Historic Thalaba Church and cemetery adjacent to road. Good linkages to riparian vegetation. Maintain as is.

MR301	CLARENCE TOWN ROAD (south of Clarence Town)	1.4.6km	21/04/1999	wpt174	wpt175	ne	no	HIGH	forest / woodland	Corymbia maculata, E. crebra	fireweed, Bidens pilosa	Koala habitat in forested areas B Dowling Pers. Comm.		Adjoins Uffington State Forest on left. Restrict tree removal.
MR101(D)	CLARENCE TOWN ROAD (north of Clarence Town)	2	21/04/1999	wpt 042	Dungog	n	no	MEDIUM	scattered trees, grassland	Corymbia maculata, E. crebra	Scattered lantana, fireweed, pasture weeds	nil	nil	Restrict further tree removal, attention to erosion and sediment control when doing major grading works or realignments. Significant plantings of local species exist along Chichester pipeline. Encourage further extensions of this planting.
MR 301	CLARENCE TOWN ROAD (north of Clarence Town)	3	21/04/1999	wpt 187	wpt 042	n	no	HIGH	forest / woodland	Corymbia maculata, E. crebra	Scattered lantana, fireweed, pasture weeds	Eucalyptus punctata (koala food) E. grandis adjacent to road at intersection with Woerdens Road	Brush Tailed Phascogale known from intersection with Wollarobba/ Brookfield Road. Known Koala habitat 0.5km - 1.0km south of Wirragulla rail bridge	Restrict further tree removal, attention to erosion and sediment control when doing major grading works or realignments. Signpost areas where Phascogale and Koala known to occur?
85	CLEMENTS ROAD	1.1.1km	27/04/1999	wpt194	wpt195	s	no	MEDIUM	scattered trees	C. maculata, E. crebra, Casuarina cunninghamiana at River crossing	Small amount of Lantana, pasture weeds	nil	nil	Maintain as is.
97	CORYS CREEK ROAD	1.0.7km	29/10/1999	wpt59	wpt60	s	no	LOW	grassland	pasture grasses	fireweed	Callistemon salignus on creekline, extending into large remnant	nil	promote Adopt A Road, discourage landowners from mowing roadside.
100	CROSS KEYS ROAD	1.4.5km	27/04/1999	wpt196	wpt197	ne	no	MEDIUM	woodland, scattered trees, grassland and riparian	C. maculata, E. tereticornis, E. moluccana, E. fibrosa, E. viminalis??	Scattered lantana, fireweed, pasture weeds	Euc viminalis	nil	Groundcover species dominated by Themeda and Echinopogon. Maintain as is. Pay attention to erosion and sediment control when maintenance grading, especially adjacent to streams.

105	DOG TRAP CREEK ROAD	1. 1.9km	28/04/1999	wpt205	wpt204	sw	no	MEDIUM	Scattered trees	E. crebra, C. maculata, Casuarina cunninghamiana along streams.	rhodes grass, fireweed, thistles.			Groundcover species dominated by Themeda and Echinopogon. Maintain as is. Pay attention to erosion and sediment control when maintenance grading, especially adjacent to streams.
MR101 (C)	DUNGOG ROAD	1. 10.2km	21/10/1998	wpt 040	wpt041	n	yes location 10	MEDIUM	Woodland, open forest, grassland	Corymbia maculata, E. moluccana, E. crebra/fibrosa,	Many pasture grasses and weeds. Scattered Lantana. Mother of Millions at railway overpass (Tin Bridge)	E. glaucina from vicinity Gostwyck Bridge to Greenhills. E. punctata between Grace Ave and Tin Bridge	Brush Tailed Phascogale habitat vicinity of Greenhills. Roadkill specimen collected intersection with Gardeners Rd	Good stands Casuarina glauca at culvert near Grace Ave, and between 9.4km and 10.2km L & R. Many direct links to bushland. Maintain current road formation width. Landholder awareness of E. glaucina.
MR101 (C)	DUNGOG ROAD	2. 10.8km	21/10/1998	wpt041	wpt 042	n	no	MEDIUM	Woodland, open forest, grassland	Corymbia maculata, E. moluccana, E. crebra/fibrosa, E. tereticornis, E. grandis at Maxwells ck?, Acacia falcata	Many pasture grasses and weeds. Scattered Lantana. Privet between Wallaringa Rd and Wirragulla Station.	E. glaucina	nil	Vegetation change at 4.7km from grasses and weeds to woodland/open forest. Potential planting site at picnic reserve at maxwells Creek.
MR101 (C)	DUNGOG ROAD	3	27/10/1998	wpt 044	wpt 040	ne	no	MEDIUM	Woodland, open forest, grassland	Corymbia maculata, E. moluccana, E. crebra/fibrosa, E. tereticornis	Many pasture grasses and weeds. Scattered Lantana.	E. glaucina	nil	maintain as is. Attention to erosion and sediment control when maintenance grading, especially near creek crossings.
MR101 (C)	DUNGOG ROAD	4	21/10/1998	WPT 012	WPT 044	ne	no	HIGH	Woodland, open forest, grassland	Corymbia maculata, E. moluccana, E. crebra/fibrosa, E. tereticornis	Many pasture grasses and weeds. Scattered Lantana.	E. glaucina between Gostwyck Bridge and Merchants Road. Many mature specimens in road reserve, significant regrowth in adjoining paddocks	nil	Maintain as is. Attention to erosion and sediment control when maintenance grading, especially near creek crossings. Protect all E. glaucina in road reserve. Encourage adjoining landholders to conserve paddock populations.

284	EAST SEAHAM ROAD	1. 1.6km	21/04/1999	wpt180	wpt179	n	no	HIGH	Spotted Gum, Ironbark, Stringybark communities.	Corymbia maculata	small amount Lantana. Small amounts of Small leaf privet, Lantana, African Olive, Pasture weeds.			Leave road at present width when reconstructing. Speed limit has been reduced to 70kph, good scenic route to Seaham.
120	FISHERS HILL ROAD (quadrat 3)	1. 3.9km	29/10/1998	wpt067	wpt068	n	no	HIGH	forest	E. moluccana, E. tereticornis, E. glaucina, E. crebra, Corymbia maculata, Melia azederach	Eucalyptus glaucina.		Maintain current standard of maintenance, restrict further vegetation removal, encourage Adopt A Road.	
120	FISHERS HILL ROAD	2. 4.5km	29/10/1998	wpt068	wpt069	n	no	MEDIUM	Scattered trees	C. maculata, E. crebra, E.tereticornis/amplifolia, E. moluccana, some Acacia falcata	Scattered lantana, Acacia podylarifolia at "Illa Langi" gate	Eucalyptus glaucina??	Ironbarks showing signs of dieback/disease/insect attack, especially in stands of young regrowth. Erosion and sediment control works when doing major regrading, etc.	
130	FLAT TOPS ROAD	1. 3.2km	14/04/1999	wpt150	wpt152	e	Yes. Location 18.wpt151	HIGH	forest, dry/wet.	Corymbia maculata, Ironbarks, Stringybarks, Rainforest in gullies.	Scattered lantana, fireweed, pasture weeds		Good linkages with bushland in private property 1.8km - 3.2km	
130	FLAT TOPS ROAD	2. 8.9km	14/04/1999	wpt 152	wpt 155	e	no	MEDIUM	woodland, scattered trees, grassland	no native veg from wpt 155 0km - 1.1km; 1.1km - 1.8km Corymbia maculata and ironbarks, no understorey dairy cattle traffic; 1.8km - 2.6km scattered trees with paspalum understorey	Scattered lantana, fireweed, pasture weeds	nil	nil	maintain as is. Restrict further expansion of dairy cattle traffic.
140	FOSTERTON ROAD	1, 0.5km	8/04/1999	wpt123	wpt124	nw	no	LOW	grassland	Corymbia maculata, Euc crebra, pasture grasses	pasture grasses and pasture weeds	nil		

140	FOSTERTON ROAD	2.1.3km	8/04/1999	wpt 124	wpt 125	nw	no	MEDIUM	Open forest	Corymbia maculata, Euc crebra, pasture grasses	pasture grasses and pasture weeds pasture grasses and pasture weeds	nil		
140	FOSTERTON ROAD	3.3.3km	8/04/1999	wpt 126	wpt127	nw	no	MEDIUM	Open forest	Corymbia maculata, Euc crebra, pasture grasses	pasture grasses and pasture weeds	E. glaucina	Acacia falcata, Jacksonia scoparia, Exocarpu cupressiformis	
140	FOSTERTON ROAD	4.3.7km	8/04/1999	wpt 127	wpt130	nw	no	MEDIUM	woodland, scattered trees, grassland and riparian	Corymbia maculata, Euc crebra,	pasture grasses and pasture weeds	E. glaucina	Scattered trees, with better quality remnants of riparian vegetation at stream crossings. Waterhousia?? At river crossing	
140	FOSTERTON ROAD	5	8/04/1999	wpt 130	wpt 131	se	no	MEDIUM	Open forest	E. tereticornis, E. moluccana, E. punctata, E fibrosa/paniculata, Acacia falcata	pasture grasses and pasture weeds, some Lantana	E. glaucina	Scattered trees, with better quality remnants of riparian vegetation at stream crossings. Waterhousia?? At river crossing	
170	GLEN MARTIN ROAD	1.9.8km	21/04/1999	wpt178	wpt 159	n	no	MEDIUM	woodland / scattered trees	Corymbia maculata, E. tereticornis, E. crebra/fibrosa, E. punctata, E. amplifolia, E. grandis?	pasture weeds	E. tereticornis, E. punctata: koala food	Koala habitat at Glen Martin. B Dowling Pers. Comm.	Restrict any further vegetation removal from this area, especially in the vicinity of Glen Martin locality.
170	GLEN MARTIN ROAD	2.1.6km	21/04/1999	wpt 159	wpt 162	nw	no	HIGH	forest	Corymbia maculata, E. tereticornis, E. crebra/fibrosa, Melaleuca styphelloides	pasture weeds	E. tereticornis: koala food	Koala habitat in adjacent bushland. B Dowling Pers. Comm.	Restrict any further vegetation removal from this area, especially in the vicinity of Black Camp Creek.
175	GLEN WILLIAM ROAD	1.7.3km	15/04/1999	wpt 165	wpt 164	n	no	MEDIUM	woodland, scattered trees grassland	C. maculata, E. fibrosa/paniculata, Melaleuca styphelloides	pasture grasses and weeds, fireweed	nil	nil	vegetation alternates from left to right side. Many areas degraded due to traffic of dairy cattle, past and present. Encourage improved cattle movement practices. Maintain as is.
175	GLEN WILLIAM ROAD	2.5.3km	15/04/1999	wpt 164	intersection with Clarence Town Road	nw	no	MEDIUM	woodland, forest grassland	C. maculata, E. fibrosa/paniculata, Melaleuca styphelloides	pasture grasses and weeds, fireweed	nil	nil	many good linkages to adjacent bushland, especially at creek crossings. Encourage Adopt A Road, Maintain as is. Attention to some sight lines across corners.

MR128	GLENDONBROOK ROAD	1. 10.1km	29/10/1998	wpt064	wpt065	ne	no	MEDIUM	Scattered trees / woodland	C. maculata, E. crebra, E. moluccana, Melaleuca linarifolia at creekline 6.2km, Casuarina glauca at Kangaroo Creek, Acacia falcata, Oxylobium cordifolium	Scattered African Olive, Lantana, Fireweed, pasture weeds	E. glaucina?	nil	Trees in scattered clumps, with long stretches of Themeda based grassland between. Soils highly erodable where left bare. Erosion and slumping on cuttings at Pound Crossing Bridge. Install erosion and sediment controls when doing roadworks. Reseed with native grasses when works completed, leave leaf litter and fallen timber in place. Control erosion at Pound Crossing Bridge cuttings.
MR101 (B)	GRESFORD ROAD	1, 5.0km	30/09/1998	wpt011	wpt012	NE	NO	MEDIUM	SCATTERED TREES	Spotted gums, Ironbarks, Pasture grasses	Lantana, African olive	E. glaucina?	nil	Restrict further vegetation removal. Encourage regrowth of understorey.
MR101 (B)	GRESFORD ROAD	2, 3.4km	30/09/1998	wpt012	wpt013	NE	NO	MEDIUM	SCATTERED TREES	Spotted gums, Ironbarks, Pasture grasses	Fireweed	E. glaucina?	nil	Restrict further vegetation removal. Encourage regrowth of understorey.
MR101 (B)	GRESFORD ROAD	3,	30/09/1998	wpt 013	GRESFORD	NE	YES, Location One wpt014	MEDIUM	WOODLAND	Spotted gums, Ironbarks, Pasture grasses	Small amount Lantana, Pasture weeds, fireweed	E. glaucina?	nil	Restrict further vegetation removal. Encourage regrowth of understorey.
195	HENNEYS ROAD	1. 0.4km	8/04/1999	wpt132	wpt133	nw	n	MEDIUM	woodland	C. maculata, E. tereticornis, E. crebra, E. glaucina	understorey dominated by Rhodes grass. Fireweed, pasture weeds, Tortured willows in drainage line, 0.3km on right.	E. glaucina	nil	Restrict future grading to present road formation.
190	HILLDALE ROAD	1. 2.7km	23/10/1998	wpt041	wpt048	nw	no	MEDIUM	Woodland	E. moluccana, C. maculata, E. tereticornis, E. crebra		E. glaucina?		Restrict future grading to present road formation.
190	HILLDALE ROAD	2	23/10/1998	wpt048	end	n	no	LOW	grassland					Restrict future grading to present road formation. Good grasses / groundcovers first 400m only. Remainder mown.

205	JAMES ROAD	1. 2.2km	27/04/1999	wpt201	wpt202	w	no	LOW	scattered trees	E. crebra, E. propinqua, E. acmenoides, Allocasuarina torulosa.				Unfenced section of road, light grazing. Themeda triandra dominant groundcover.	
200	HORNS CROSSING ROAD	1			intersection with Gresford Rd	vegetation change	e	no	LOW	grassland	pasture grasses	pasture weeds, fireweed	nil	nil	maintain as is. Road previously unfenced, remaining reserve grazed out and narrow.
200	HORNS CROSSING ROAD	2			vegetation change	intersection with Dungog Road	e	no	MEDIUM	woodland	spotted gum, ironbarks, Melaleuca nodosa	pasture weeds, fireweed	nil	nil	Good linkages with several remnants. Maintain as is.
205	JAMES ROAD	2. 7.3km	27/04/1999	wpt202	wpt203	nw	no	HIGH	forest	E. saligna, Syncarpia glomulifera	Lantana, fireweed			Part of road traverses Masseys Creek State Forest.	
210	KEPPIES ROAD	1. 1.4km	27/04/1999	wpt192	wpt193	w	no	MEDIUM	woodland, scattered trees	C. maculata, E. crebra/paniculata	Small amount Lantana			good link with Melaleuca nodosa scrub on right, last 800m. Maintain as is.	
225	LENNOXTON ROAD	1. 3.0km	29/10/1998	wpt058	wpt059	w	no	HIGH	woodland	C. maculata, E. tereticornis, E. crebra/fibrosa, E. moluccana E. acmenoides/umbra, E. glaucina	Small amount of Lantana, Fireweed, pasture grasses and weeds	E. galucina	Squirrel Glider, Brush tailed Phascogale.	Restrict further vegetation removal. Good understorey of Bursaria spinosa and Pultenea sp., Oxylobium cordifolium, Acacia falcata.	
225	LENNOXTON ROAD	2. 1.4km	29/10/1998	wpt 059	wpt061	nw	no	MEDIUM	woodland	C. maculata, E. tereticornis, E. crebra/fibrosa, E. moluccana E. acmenoides/umbra, E. glaucina	Small amount of Lantana, Fireweed, pasture grasses and weeds. Scattered African Olive	E. galucina		Restrict further vegetation removal. Good understorey of Bursaria spinosa and Pultenea sp., Oxylobium cordifolium, Acacia falcata. Potential svere erosion site 700m - 900m on right. Bare embankment of grey clay, drainage to billabong opposite.	

225	LENNOXTON ROAD	3.2.8km	29/10/1998	wpt061	wpt062	nw	no	MEDIUM	Scattered trees, grassland	C. maculata, E. tereticornis, E. crebra/fibrosa, E. moluccana, Melaleuca decora at drainage line 1.4km. E. glaucina	Fireweed, pasture grasses and weeds. Dominance of paspalum and perennial ryegrass Small amount of Lantana, Salvia coccinea, Pasture weeds				Restrict further vegetation removal. Good stand of E. crebra regrowth at 1.7 - 1.9km. Discourage slashing, grazing. Encourage regeneration of trees and understorey.
230	LEWINSBROOK ROAD	1	16/12/1998	wpt113	wpt114	w	no	MEDIUM	woodland	C. maculata, E. fibrosa, E. tereticornis, Acacia falcata			E. glaucina at wpt113.	talked with property owners at wpt113. Explained that E. glaucina present at their front gate. Owners happy to protect from slashing and cattle. Maintain road formation as is.	
233	LIMEBURNERS CREEK ROAD (quadrat 2 @ wpt 177)	1.7.1km	21/04/1999	wpt 176	wpt178	nw	Yes. Location 20. Wpt177	HIGH	forest / woodland	E. punctata, Corymbia maculata,	fireweed	E. punctata, Angophora floribunda	2 x wallaroo roadkills	over zealous grading past table drain in some sections. Council has plans for widening / realignment.	
233	LIMEBURNERS CREEK ROAD	1.7.1km	21/04/1999	wpt 178	wpt 181	nw	no	MEDIUM	forest / woodland	C. maculata. E fibrosa/paniculata	fireweed and pasture weeds	nil	nil	maintain as is	
255	MARSHDALE ROAD	1.2.6km	9/04/1999	wpt139	wpt146	se	no	HIGH	Woodland , Forest, grassland	C.aculata, E. punctata	Lantana, Pavonia hastata	Eucalyptus punctata: Koala food	Known Koala habitat: B. Dowling Pers. Comm	Restrict further vegetation removal. Identify Koala food trees. Introduce Adopt A Road. Encourage tree planting in neighbouring properties.	
255	MARSHDALE ROAD	2	14/04/1999	wpt146	wpt150	s	no	HIGH	woodland	C. maculata, Ironbarks, Meleuca styphellioides, Pittosporum undulatum, E. punctata, acacia falcata	Lantana, Pavonia hastata	Eucalyptus punctata: Koala food	Known Koala habitat between wpt 146 and wpt150: B. Dowling Pers. Comm	Restrict further vegetation removal. Identify Koala food trees. Introduce Adopt A Road. Encourage tree planting in neighbouring properties.	

260	MARTINS CREEK ROAD	1. 3.5km	22/10/1998	Intersection with Paterson/Woodville Road	3.5km	n	no	MEDIUM	Scattered trees	C. maculata, E. crebra/paniculata, Melaleuca decora, M. nodosa, Acacia falcata	Small leaved privet, Lantana, African Olive, Pepper trees, Jacarandas, Silky Oaks, Fireweed, pasture grasses and pasture weeds	E. glaucina??	0 to 3.5km rural residential. Introduce Adopt A Road to concentrate on weed removal and shrub regeneration. Discourage planting of exotics on roadsides. Introduce Adopt A Road to concentrate on weed removal. 3.5km to 4.2km Vegetation on left side only. 4.2km to 5.6km good quality vegetation both sides. Good quality shrub layer and groundcovers should be retained.
260	MARTINS CREEK ROAD	2. 2.1km	22/10/1998	3.5km	wpt043. railway bridge at Martins Creek Tip	n	no	MEDIUM	woodland / forest	C. maculata, E. crebra/paniculata, Melaleuca decora, M. nodosa, Acacia falcata	Scattered lantana, fireweed, pasture weeds	E. glaucina??	
265	MASSEYS CREEK ROAD	1	27/04/1999	wpt200	wpt201	nw	yes. Sample of Acacia melanoxydon taken at 4.3km.	MEDIUM	woodland , scattered trees	E. acmenoides, E. amplifolia. E. grandis and Cas. cunninghamiana in riparian areas	Sattered lantana, fireweed, pasture weeds	Eucalyptus grandis in riparian areas	Maintain as is. Pay attention to erosion and sediment control when maintenance grading, especially in riparian areas. Several good links to riparian vegetation, wherever road adjoins creek.
270	MERCHANTS ROAD	1. 2.1km	23/10/1998	wpt044	wpt046	e	yes Location 11	MEDIUM	Scattered trees	E. fibrosa, E. tereticornis, C. maculata	pasture weeds, fireweed	Check for ground orchids	Maintain as is. Discourage mowing.
269	MONKERAI ROAD	1. 2.8km	8/04/1999	wpt 118	wpt119	n	no	MEDIUM	Scattered trees	Corymbia maculata, E. tereticornis, E. crebra, Acacia irrorata, E. saligna	Lantana	E. glaucina?	Good riparian veg at Phillips Creek. Erosion and sediment control when grading.
269	MONKERAI ROAD (quadrat 1)	2. 7.8km	8/04/1999	wpt119	wpt121	n	no	HIGH	forest	Corymbia maculata, E. tereticornis, E. crebra, Acacia irrorata	Lantana	Eucalyptus glaucina present in vicinity of wpt 120, wpt122	Road enters Dungog State Forest at wpt120
274	MORRIS LANE	not surveyed	not surveyed										

272	MOWBRAY LANE NORTH	not surveyed	not surveyed															
271	MOWBRAY LANE SOUTH (quadrat 9)	1.08km	21/10/1998	wpt038	wpt012	s	no	MEDIUM	Woodland	E. tereticornis, E. moluccana, E. punctata, E. fibrosa/paniculata, Small amount of C. maculata	African Olive, Lantana, pasture weeds, fireweed	E. glaucina?						maintain as is
273	MOYLANS ROAD	1.225km	8/04/1999	wpt 128	wpt129	n	no	MEDIUM	Scattered trees	Native / introduced pastures	Riparian remnants at creek crossings. Waterhousea floribunda							Road unfenced, subject to grazing. Protect riparian remnants
280	MYALL CREEK ROAD	1.74km	4/12/1998	wpt 089	wpt 090	w	no	MEDIUM	scattered trees	C. maculata, E. fibrosa, Brchychiton populneum		nil	nil					Road unfenced 1.6km to end some linkages to riparian zones at creek crossings.
290	PARISHS ROAD	1.20km	23/10/1998	wpt 051	wpt 048	s	no	HIGH	forest	E. crebra, C. maculata, E. punctata, E. umbra, Acacia decurrens or irrorata, Pittospoum undulatum, Allocasuarina torulosa	small amount of lantana	nil						Check on council plans for widening/realignment for development at top of Hilldale Rd, Maintain current vegetation, encourage Adopt A Road. Attention to erosion and sediment control during maintenance works.
300	PARKS CREEK ROAD	1.28km	16/12/1998	wpt 109	wpt 112	s	no	LOW	grassland	E. tereticornis, Casuarina glauca	lantana, scattered, pasture weeds	nil	nil					maintain as is
295	PARSONS ROAD	1.15km	22/04/1999	wpt 183	wpt 184	s	no	HIGH	forest	E. amplifolia, E. crebra, C. maculata	Scattered lantana, fireweed, pasture weeds	nil		known Koala habitat in vicinity of wpt 183 B Dowling, pers comm.				Restrict further vegetation removal, Good understorey of Bursaria spinosa and pultenea sp., good stands of Melaleuca nodosa
305	PATERSON RIVER ROAD	1	12/04/1998	wpt 070	wpt 071	s	no	LOW	scattered trees, grassland	pasture species	pasture weeds	nil	nil					unfenced. Attention to erosion and sediment control when grading, particularly in proximity to river.

305	PATERSON RIVER ROAD	2	12/04/1998	wpt 071	wpt 072	s	yes, location 13, wpt 072	HIGH	rainforest vegetation adjacent to river, open forest / woodland above	E. punctata, various rainforest species	lantana, pasture species, bidens pilosa, crofton weed	riverine rainforest complex	nil	unfenced. Attention to erosion and sediment control when grading, particularly in proximity to river. Areas protected by steepness of slope above and riverbank below
305	PATERSON RIVER ROAD	3	12/04/1998	wpt 072	wpt 073	s	no	LOW	Open forest, scattered trees, grassland	Ironbark spp.	pasture weeds, lantana	nil	nil	unfenced. Attention to erosion and sediment control when grading, particularly in proximity to river.
305	PATERSON RIVER ROAD	4	12/04/1998	wpt 073	wpt 074	s	no	HIGH	rainforest vegetation adjacent to river, open forest/ woodland above	E. tereticornis / amplifolia, various rainforest species	pasture weeds, lantana	nil	nil	unfenced. Attention to erosion and sediment control when grading, particularly in proximity to river.
305	PATERSON RIVER ROAD	5	12/04/1998	wpt 074	wpt 075	s	no	LOW	Open forest, scattered trees, grassland	E. tereticornis / amplifolia	pasture weeds, lantana	nil	nil	unfenced. Attention to erosion and sediment control when grading, particularly in proximity to river.
305	PATERSON RIVER ROAD (quadrat 14)	6	12/04/1998	wpt 075	wpt 076	s	no	HIGH	rainforest vegetation adjacent to river, open forest/ woodland above	E. tereticornis / amplifolia, various rainforest species	lantana, pasture species, bidens pilosa, crofton weed	nil	nil	unfenced. Attention to erosion and sediment control when grading, particularly in proximity to river. Location of Quadrat 14
305	PATERSON RIVER ROAD	7	12/04/1998	wpt 076	wpt 077	s	no	LOW	Open forest, scattered trees, grassland	E. tereticornis / amplifolia	pasture weeds, lantana	nil	nil	unfenced. Attention to erosion and sediment control when grading, particularly in proximity to river.
305	PATERSON RIVER ROAD	8	12/04/1998	wpt 077	wpt 078	s	no	HIGH	dry sclerophyll, rainforest complex on creekline	E. punctata, Angophora floribunda	pasture weeds, lantana	nil	nil	unfenced. Attention to erosion and sediment control when grading, particularly in proximity to river.
305	PATERSON RIVER ROAD	9	12/04/1998	wpt 078	wpt 079	s	no	LOW	Open forest, scattered trees, grassland	UID stringybarks, grassland	pasture weeds, lantana	nil	nil	Attention to erosion and sediment control when grading, particularly in proximity to river.

305	PATERSON RIVER ROAD	10	12/04/1998	wpt 079	wpt 080	s	no	HIGH	dry sclerophyll, rainforest complex on creekline	E. tereticornis / amplifolia, various rainforest species	lantana, pasture species, bidens pilosa, crofton weed	nil	nil	Attention to erosion and sediment control when grading, particularly in proximity to river.
305	PATERSON RIVER ROAD	11	12/04/1998	wpt 080	wpt 081	s	no	LOW	Open forest, scattered trees, grassland	E. tereticornis / amplifolia	pasture weeds, lantana	nil	nil	Attention to erosion and sediment control when grading, particularly in proximity to river.
305	PATERSON RIVER ROAD	12	12/04/1998	wpt 081	wpt 082	s	no	HIGH	dry sclerophyll, rainforest complex on creekline	E. tereticornis / amplifolia	lantana, pasture species, bidens pilosa, crofton weed	nil	nil	Attention to erosion and sediment control when grading, particularly in proximity to river. Road directly adjacent to river, and connects to riparian zone.
305	PATERSON RIVER ROAD	13	12/04/1998	wpt 082	wpt 084	s	no	MEDIUM	Open forest, scattered trees, grassland	E. tereticornis / amplifolia	pasture weeds, lantana	nil	nil	Attention to erosion and sediment control when grading, particularly in proximity to river.
305	PATERSON RIVER ROAD	14	12/04/1998	wpt 084	wpt 086	s	no	HIGH	forest	E. tereticornis / amplifolia, ironbarks, E. punctata	pasture weeds, lantana, red salvia	many large Xanthorrea sepcimens on high road cuttings at wpt 085 & wpt 086	nil	Attention to erosion and sediment control when grading, particularly in proximity to river.
305	PATERSON RIVER ROAD	15	12/04/1998	wpt 086	wpt 065	s	no	MEDIUM	open forest, scattered trees, grassland		pasture weeds, lantana, red salvia	nil	nil	Attention to erosion and sediment control when grading, particularly in proximity to river. Maintain as is. Restrict further vegetation removal. Restrict grading and slashing. Maintain sight lines on curves.
310	PINE BRUSH ROAD	1.3.7km	15/04/1999	wpt 143	wpt 160	se	no	HIGH	woodland, scattered trees, grassland	E. punctata, E. tereticornis, E. amplifolia, M. styphelloides, C. maculata	some pasture grasses	E. punctata, E. tereticornis, Koala food	known Koala habitat, B Dowling, pers. Comm.	Maintain in current condition. Restrict further removal of trees. Variety of vegetation types, good linkages to bushland at Thalaba Creek and at "Pine Brush"

310	PINE BRUSH ROAD	2.8km	15/04/1999	wpt 160	wpt 162	se	yes, location 19, wpt 161	HIGH	Scattered trees, shrubland	Corymbia maculata, E. paniculata	some pasture grasses	nil	nil	Maintain stands of shrubs, restrict roadside slashing and grading.
310	PINE BRUSH ROAD	3	15/04/1998	wpt 162	wpt 164	s	no	LOW	grassland	paspalum and other pasture species	thistles, fireweed	nil	nil	Dairy traffic area. Encourage improved cattle traffic practices.
335	SALISBURY GAP ROAD	1		wpt 105	wpt 107	sw	no	MEDIUM	open forest	C. maculata, ironbarks	scattered lantana	nil	nil	Maintain as is. Attention to erosion and sediment control, especially in steeper areas
335	SALISBURY GAP ROAD	2		wpt 107	wpt 108	sw	no	LOW	scattered trees, grassland	pasture	pasture weeds, fireweed	nil	nil	Maintain as is. Attention to erosion and sediment control, especially in steeper areas
330	SALISBURY ROAD	1	4/12/1998	WPT 088	Barrington House	nw	no	MEDIUM	woodland, scattered trees, grassland	C. maculata, E. moluccana, E. tereticornis, E. amplifolia?, Angophora floribunda	pasture weeds, scattered lantana in places, blackberries scattered from Underbank to end of road	nil	nil	Control blackberries, maintain as is. Minimise width of slashing,
340	SANDY CREEK ROAD	1.3km	23/10/1998	wpt 053	wpt 054	s	no	MEDIUM	forest	C. maculata, ironbarks, E. punctata, E. moluccana, Acacia decurrens/irrorata	scattered lantana, pasture weeds	nil	nil	Good understorey structure, maintain as is.
355	SKIMMINGS GAP ROAD	1		INTERSECTION WITH MAIN Creek Rd	state forest boundary	n	no	HIGH	forest	C. maculata, ironbarks, E. punctata, E. moluccana, Acacia decurrens/irrorata	scattered lantana, pasture weeds	nil	nil	continuous linkages with adjoining forest. Maintain as is. Restrict further vegetation removal during maintenance works.
MR101(E)	STROUD HILL ROAD	1.4.0km	8/04/1999	wpt 115	wpt 117	n	no	LOW	scattered trees, grassland	Corymbia maculata, E. fibrosa, Callistemon saligna at Phillips Creek	Rhodes grass, pasture weeds	nil	nil	Maintain as is

MR101(E)	STROUD HILL ROAD	2. 5.4km	8/04/1999	wpt 117	wpt 116	nw	no	HIGH	forest	Corymbia maculata, E. fibrosa, E. tereticornis, E. crebra, E. acmenoides, E. saligna, E. punctata.	lantana, crofton weed, bidens pilosa	nil	known habitat of Spotted Tailed Quoll B Dowling, pers. Comm.	Weeds control is necessary for lantana and crofton weed. Maintain current alignment. Attention to some sightlines.
360 / MR7764(B)	SUGARLOAF ROAD	1. 8.5km	30/09/1998	wpt 017	wpt 018	w	no	MEDIUM	scattered trees	E. moluccana, C. maculata,	wild tobacco, lantana	E. glaucina?	nil	introduced species dominant in understorey. Maintain as is. Restrict further vegetation removal. Check trees for ID as E glaucina.
360	SUGARLOAF ROAD	2. 3.1km	30/09/1998	wpt 018	wpt 019	nw	no	LOW	scattered trees, grassland	E. tereticornis, E. fibrosa, UID stringybark	pasture weeds	nil	nil	Mostly unfenced, cattle grazing. Maintain as is. Encourage fencing of larger groups of trees.
365	SUMMER HILL ROAD	1. 3.9km	29/10/1998	wpt 066	wpt 062	nw	no	HIGH	forest	E. crebra, E. moluccana, E. tereticornis. E. punctata. Corymbia maculata	Ryegrass, Paspalum, some pasture weeds, Fireweed.	E glaucina present	nil	weed control as necessary to control any privet which may occur. Restrict further tree removal, restrict roadside slashing.
365	SUMMER HILL ROAD	2. 11km	29/10/1998	wpt062	wpt063	n	no	MEDIUM	Scattered trees	E. moluccana, C. maculata, E. crebra	Ryegrass, Paspalum, some pasture weeds, Fireweed.	nil	nil	Restrict further vegetation removal. Good stands of Themeda and danthonia grasses. Discourage slashing/grazing
MR101 (A)	TOCAL ROAD	1, 3.5KM	30/09/1998	wpt 009	wpt 011	NW	NO	LOW	scattered trees	pasture grasses E. paniculata. Several mature specimens only. Dominated by Themeda grassland.	thistles, fireweed	2 X Toona ciliata, 2 x Synoum glandulosum	nil	Toona ciliata, Melia azederach, Synoum glandulosum all growing on road reserve. Familiarise staff with these trees.
370	TORRYBURN ROAD	1. 1.0km	9/10/1998	wpt022	wpt023	s	no	LOW	grassland	Pasture grasses and weeds dominant	Fireweed, pasture grasses and weeds.	nil	nil	Maintain as is.
370	TORRYBURN ROAD	3. 0.5km	9/10/1998	wpt024	wpt025	s	no	LOW	no native vegetation	Pasture grasses and weeds dominant	Fireweed, pasture grasses and weeds.	nil	nil	Encourage regeneration of native grasses and shrubs. Discourage grazing, slash/burn area in Spring to encourage native grasses.

370	TORRYBURN ROAD	4. 1.2km	9/10/1998	wpt025	wpt027	sw	Yes. Location 5 at wpt026	MEDIUM	woodland	C. maculata, E. moluccana	Scattered lantana, fireweed, pasture weeds	nil	nil	Maintain as is.
370	TORRYBURN ROAD	5. 2.8km	9/10/1998	wpt027	wpt028	sw	no	MEDIUM	grassland	E. paniculata, C. maculata, E. moluccana, Acacia falcata	Fireweed, pasture grasses and weeds.	nil	nil	Introduce Adopt A Road program. Mr R Thompson at no.56 requesting assistance with tree planting and roadside maintenance
385	WALLARINGA ROAD	1. 2.0km	23/10/1998	wpt 056	wpt 057	w	n	MEDIUM	woodland	C. maculata, E. tereticornis, E. crebra, E. acmenoides / umbra E. glaucina ?	Lantana, controlled (sprayed) 1.0 - 2.0km on right, fireweed.	Melaleuca styphellioides, Syzygium sp in drainage lines 1.0km	nil	Maintain at current width, avoid vegetation removal when grading
385	WALLARINGA ROAD	2. 3.9km	23/10/1998	wpt057	wpt056	s	Yes. Location12	MEDIUM	, forest, grassland	C. maculata, E. tereticornis, E. crebra, E. acmenoides / umbra E. glaucina ?	Lantana, controlled (sprayed) 1.0 - 2.0km on right, fireweed, small amount of small leaved privet	nil	nil	Maintain at current width, avoid vegetation removal when grading
384	WALLAROBBA / BROOKFIELD ROAD	1. 2.6km	21/04/1999	wpt 166	wpt 167	se	no	MEDIUM	scattered trees, grassland	Corymbia maculata, ironbarks, Acacia falcata	small leaved privet left and right first 1.0km. Rhodes grass and paspalum	nil	nil	Restrict width of slashing and grading to current levels. Remove/control privet in cooperation with landholder group currently working on privet control on Sandy Creek
384	WALLAROBBA / BROOKFIELD ROAD	2. 4.2km	21/04/1999	wpt 167	wpt170	se	no	MEDIUM	woodland, grassland, scattered trees	Corymbia maculata, ironbarks, Allocasuarina torulosa	pasture weeds, fireweed	E. glaucina, 1km north of intersection with Welshmans Ck Road	nil	Restrict width of slashing and grading to current levels.
384	WALLAROBBA / BROOKFIELD ROAD	3. 0.9km	21/04/1999	wpt170	wpt171	e	no	HIGH	forest (regrowth)	Corymbia maculata	pasture weeds, fireweed	Brush tailed phascogale known from intersection with Clarence Town Road (wpt171). B Dowling, Pers. Comm.	nil	Restrict width of slashing and grading to current levels.

390	WANGAT TRIG ROAD	1. 4.5km	8/04/1999	wpt135	wpt136	nw	no	HIGH	forest	Corymbia maculata, E. punctata, Stringybark, E. acmenoides	Lantana		Known Koala habitat, entire length of road. B Dowling, Pers. Comm.	Restrict vegetation removal and road widening. Encourage Adopt A Road activities with ecotourism operators. Remove specimens of Acacia baileyana and Acacia podylarifolia.
391	WATTLE TREE ROAD	1. 0.8km	9/04/1999	wpt 146	wpt 147	n	n	MEDIUM	scattered trees, grassland	C. maculata, E. fibrosa, E. punctata. Callistemon saligna, M. styphelloides	pasture weeds, fireweed	nil	nil	maintain as is
395	WEBBERS CREEK ROAD	1. 0.4km	15/10/1998	wpt033	wpt034	n	Yes. Location 9. Wpt 033	MEDIUM	woodland	E. fibrosa/crebra, C. maculata, E. punctata, E. moluccana. Acacia falcata, A. irrorata/decurrens	Fireweed, scattered Lantana.	E. glaucina?		Retain all roadside vegetation, encourage extension of current remnants in adjoining private property.
395	WEBBERS CREEK ROAD	2. 4.4km	15/10/1998	wpt034	wpt035	n	no	MEDIUM	Scattered trees, Riparian vegetation at 1.7km, creek crossing	E. fibrosa/crebra, C. maculata, E. moluccana. Acacia falcata, E. tereticornis	Fireweed, scattered Lantana. Lantana sprayed at creek crossing. Crofton weed at creek crossing	E. glaucina?		Retain all roadside vegetation, encourage extension of current remnants in adjoining private property. Better manage riparian vegetation at 1.7km 1.9km. No trees 3.0km - 3.8km
395	WEBBERS CREEK ROAD	3. 1.4km	15/10/1998	wpt035	wpt036	n	no	MEDIUM	woodland	E. fibrosa/crebra, C. maculata, E. moluccana. Acacia falcata, E. tereticornis/amplifolia	Pasture grasses and pasture weeds.	E. glaucina?		Retain all roadside vegetation, encourage extension of current remnants in adjoining private property. Large stand of casuarina glauca both sides at 1-1.3km

395	WEBBERS CREEK ROAD	4.6.3km	#####	wpt036	wpt037	n	no	MEDIUM	Scattered trees	E. fibrosa/crebra, C. maculata, E. moluccana. Acacia falcata, E. tereticornis/amplifolia	Pasture grasses and pasture weeds. Small amount Lantana	E. glaucina?		Retain all roadside vegetation, encourage extension of current remnants in adjoining private property. Good riparian remnant at 0.9km and 3.2km. Roadside planting 2.2-3.2km, Tocal, good mix. Recent road reconstruction 1.4km - 3.7km. No Erosion/sediment control. good opportunity for understorey replanting.
400	WELSHMANS CREEK ROAD	1.2.8km	#####	wpt168	wpt169	sw	no	LOW	scattered trees / grassland	paspalum	pasture weeds	nil	nil	Unfenced, cattle grazing, Dairy
405	WOERDENS ROAD	11.3km	#####	wpt184	wpt185	se	no	HIGH	forest	C. maculata, E. crebra	Small amount of fireweed.			Linkage between two Koala habitat areas. Left side of road has overhead powerline and underground Telstra cable, hence largely cleared. Encourage regrowth of understorey plants in this area.
405	WOERDENS ROAD	22.1km	#####	wpt185	wpt186	se	no	HIGH	forest	C. maculata, E. crebra	Small amount of fireweed.	Eucalyptus grandis present adjacent to intersection with Clarence Town Road.		Linkage between two Koala habitat areas. Left side of road has overhead powerline and underground Telstra cable, hence largely cleared. Over width grading and slashing apparent along whole length of this section. Restrict these activities and encourage regrowth of understorey plants in this area.
408	WOODGLEN CLOSE	1.1.0km	#####	wpt190	wpt191	w	no	MEDIUM	Scattered trees	C. maculata, E. crebra	Fireweed			Rural residential, educate new landholders about value of roadside vegetation; introduce Adopt A Road Program

4. CONTACT LIST

The following list has been compiled to give you an easy reference guide to assistance with some of the problems you may encounter, or queries you may have during the course of your roadside work.

Dungog Shire Council:

Ph: 02 4995 7777

NSW National Parks and Wildlife Service:

Information and assistance with rare, threatened and endangered flora and fauna, and items and site of Aboriginal significance.

Gloucester Sub District Office
34 King Street
Gloucester
Ph: 6558 1478

Weeds identification and information:

Eric Pasenow
Noxious Weeds Officer
Dungog Shire Council
Ph: 4995 7788

Overhead powerlines:

Horticultural Liaison Officer
Country Energy
Ph: 132 356

Telephone cables:

Telstra
Cable locations
Ph: 1100

Water main locations:

Hunter Water Corporation

Injured wildlife:

Native Animal Trust Fund
24 hour contact number.
You will be directed to local animal rescuers and carers.
Ph: 4960 2294

Native plant nurseries:

Noel Jupp
Riverdene Nurseries
Gresford
Ph: 4938 9280
Fax: 4938 9110

East Coast Revegetation
Salisbury Road
Dungog
Ph: 4995 9202
Fax 4995 9355

Country Elegance
Hooke Street
Dungog
Ph: 4992 3555

Seed collection:

Greening Australia, Hunter Region conducts seed collection workshops and training, as well as operating a seed bank for locally collected seeds.

Ph: 4950 0055

Fax: 4955 0710

The Paterson Allyn Williams Landcare Office:

The following Landcare groups operate within Dungog Shire, and can be contacted through

Landcare Coordinator

Dungog

Ph / Fax: 4992 3621

Landcare groups:

- Bandon Grove Landcare Group
- Williams River Care Association
- Clarence Town Landcare Group
- Paterson Allyn Valley Landcare group
- Gresford District Landcare Group
- Myall Creek Landcare Group
- Dungog Enviro Youth Council

4. ROADSIDE RESERVE ASSESSMENT FORM

1. Quadrat assessments of high conservation value roadsides

DUNGOG SHIRE COUNCIL
ROADSIDE ENVIRONMENT ASSESSMENT PROJECT
High Conservation Value Site Assessment
Form



Date _____ Recorder(s) _____ Site No _____

General Veg. Type: _____

Ground photos: Film No. _____ Photo Nos. _____ Photopoint (if other than normal): _____

Road name: _____

Locality: _____

Other location details: _____

Quadrat Size (if not 20 x 20 m) _____ Adjacent land uses: _____

Map Name: _____ Map number: _____ Scale: _____

AMG ref. _____ E _____ N

Latitude: _____ S Longitude: _____ E

Physiography (circle): Crest / Upper Slope / Mid-slope / Lower Slope / Flat / Open Depression

Elevation _____ m Map geology _____

Slope _____ ° Lithology _____

Aspect _____ ° (magnetic) Soil type _____

Soil drainage (circle): Waterlogged / Damp / Well drained (moist) / Well drained (dry)

Soil moisture level: _____

Soil texture (circle): Sand /Sandy-Loam / Loam/ Loam-Clay / Clay / Peat Soil pH: _____

Soil colour: _____ wet _____ dry

Soil depth (circle): Deep (>1m) / Shallow (0.3-1m) / Skeletal (<0.3m)

Fire History: _____

_____ Last fire: _____

Other Disturbance (0 = none; 1 = low; 2 = medium; 3 = high) Clearing _____ Slashing / mowing _____

Grazing _____ Erosion _____ Weeds _____ Pollution _____ Dieback _____

Mistletoe Infestation _____ Exotic plants _____ Other/further details: _____

Overall condition of vegetation at site (circle): Excellent / Good / Average / Poor / Highly degraded

Vegetation Structure: Crown cover according to Walker & Hopkins (1990).

Stratum	Height (m)	% Cover	Dominant Species
Emergent			
Tree			
Mid-understorey			
Understorey			
Groundcover			
Vines/ scramblers			
Epiphytes/ lithophytes			

Vegetation type (= structural formation class + association): _____

Mature tree DBH (average of 4) _____ cm Immature tree DBH (average of 4): _____ cm

Non-vascular cover: _____ % rock; _____ % litter; _____ % non-vascular plants; _____ % fungi.

Regrowth (description): _____

Total no. of species: _____ No. exotics: _____ (_____ %)

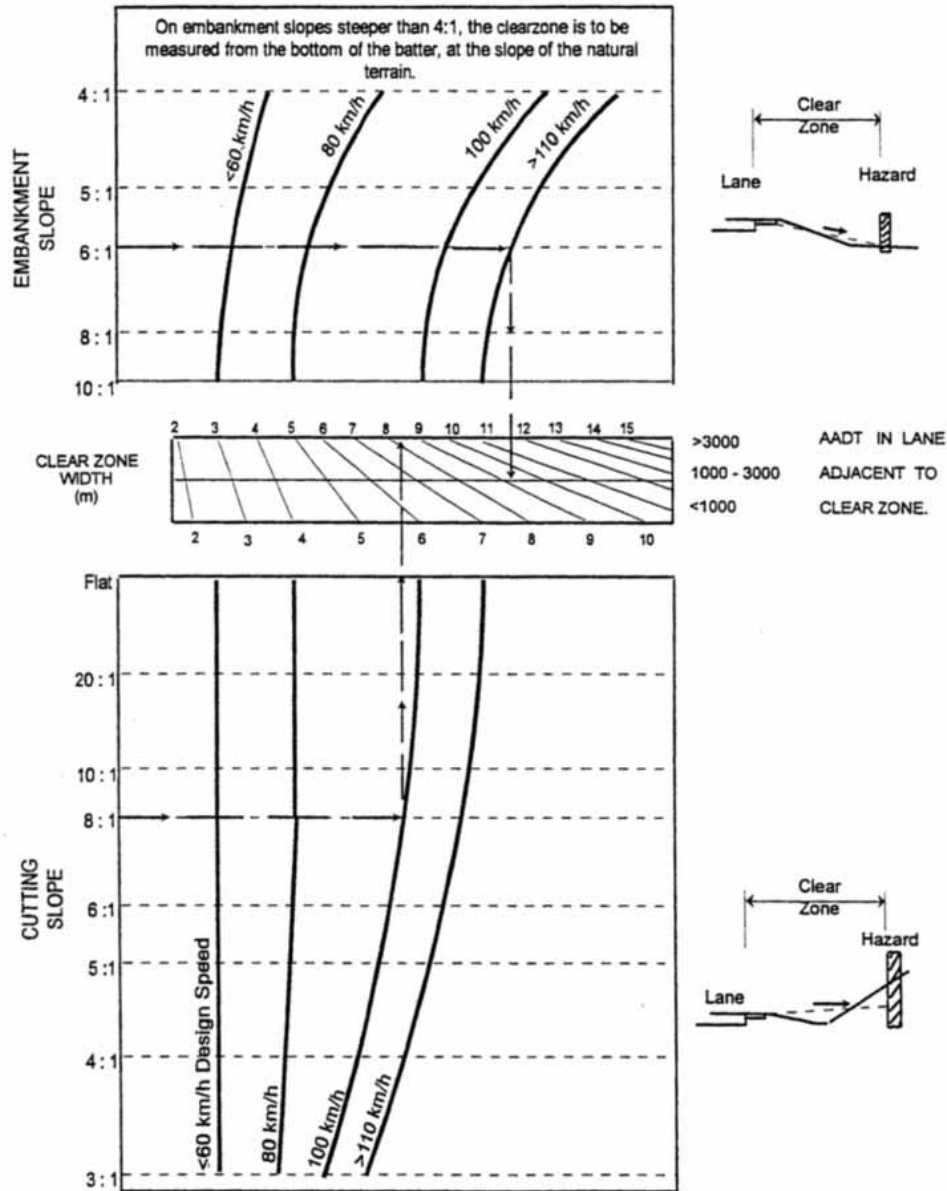
Significant species (locally, TSC act 1995, ROTAP, etc): _____

Significant Threats to remnant: _____

Location of permanent marker and other comments: _____

Note: permanent marker to be placed at northeast corner of quadrat, sprayed with highly visible colour and labelled with site details.

6. RTA CLEAR ZONE NOMOGRAPH



NOTE: 1. These distances (*) are the Weighted Average Distance when used on complex batter arrangements.
2. Design Speeds shown are the 85th percentile value, measured (or predicted) for the site being considered.

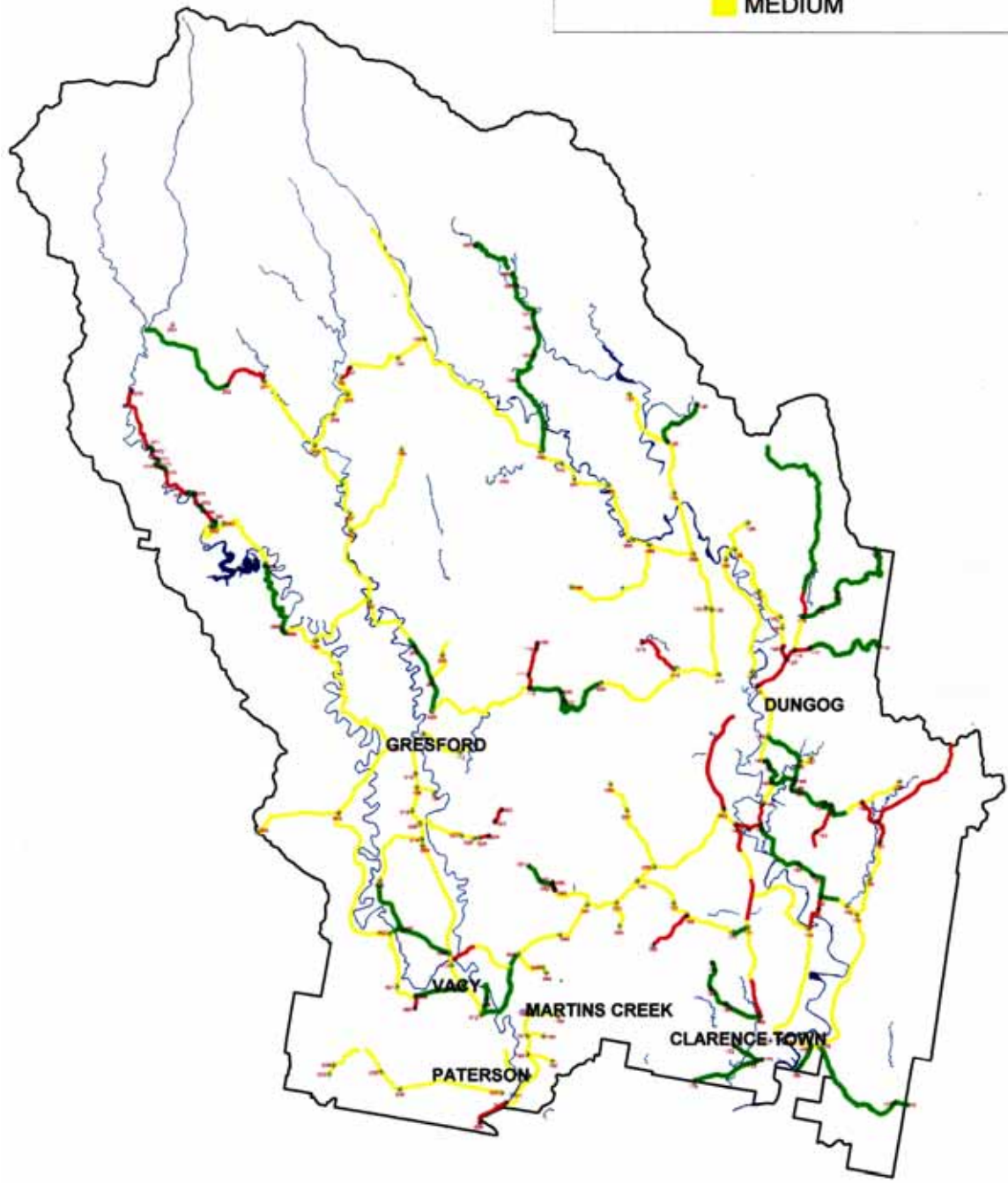
Figure 3.7-1 Clear Zone Nomograph

7. MAP CONSERVATION VALUE

DUNGOG SHIRE COUNCIL
Significant Roadside Vegetation

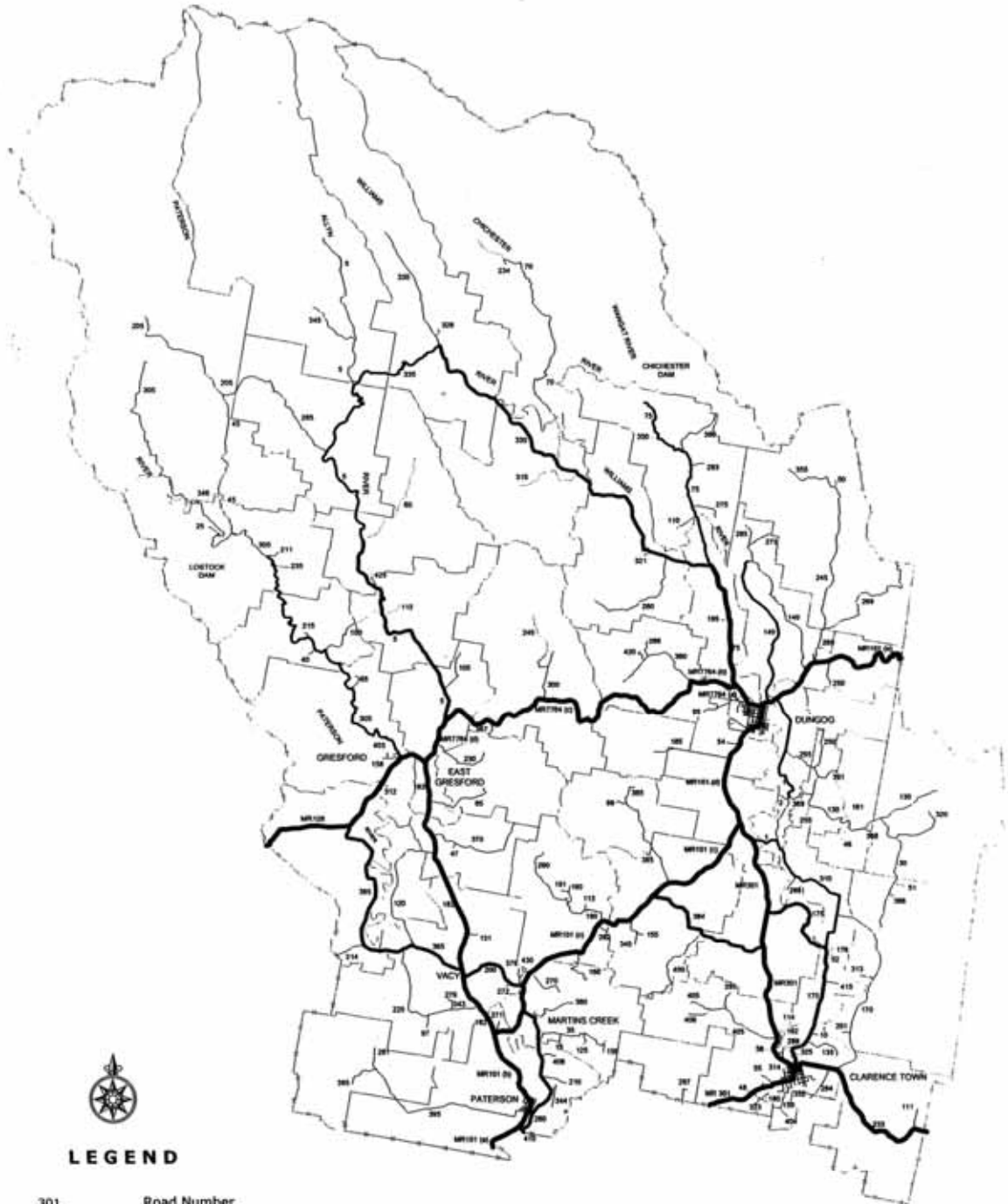
Conservation Value

- HIGH
- LOW
- MEDIUM







8. MAP ROAD HIERARCHY

Dungog Shire Council Road Hierarchy - Traffic Roads



LEGEND

- 301 Road Number
-  Traffic Roads A1
-  Traffic Roads A2
-  Traffic Roads A3
-  Other Council Maintained Roads