LAND INVENSTORY
Of
SHIRE OF BENALLA
(Part of Shire of Delatite)

EROSION RISK ASSESSMENT – OTHER LAND USE CONSTRAINTS – LAND MANAGEMENT GUIDELINES

Part 1 – Text

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Introduction

A Report –"Land Capability Study in the Shire of Benalla" (Erosion Risk Assessment: Other Land Use Constraints: Land Management Guidelines) was released in July 1980. The report was prepared for the former Shire of Benalla by the then Soil Conservation Authority of Victoria at a scale of 1:100,000.

The data provided in the report is still relevant, however, the scale of mapping did not allow for sufficient detail to be shown and therefore reduced its usage. It was considered necessary that the study be re-produced at a more useable scale (1:25,000) which provides more useable detail, including the use of Land Units rather than just erosion risk.

Since commencing this report the following changes have occurred.

1. The Department of Conservation and Environment has had a name change and is now the Department of Conservation and Natural Resources.
2. The Shire of Benalla has been restructured and now forms part of the Shire of Delatite.

All of the former Benalla Shire has been mapped. Small areas between the former Benalla Shire and the former Conservation and Environment Regional boundary have been mapped. Areas outside the former Benalla Shire boundary and now part of the Shire of Delatite (Benalla section) have been mapped. In this Report, all of the above is referred to as **the Shire of Benalla**.

Preface

Three requirements for sound land use planning are:

- an understanding of the extent to which the use will be limited by the natural characteristics of the land,
- the effect the use will have on the land and the water derived from it,
- the need for special land management or structural design to overcome limitations or to restrict the impacts to acceptable levels.

Land capability assessment is a rational and systematic means of obtaining this information.

The Department of Conservation and Natural Resources is able to provide land capability information for a range of uses and at different scales to meet the various needs of planning. The information provides a relatively stable base on which to superimpose other planning considerations.

The Scope and Limitations of the Report

- This report is based on an assessment of the physical characteristics of the land. Social, economic and other factors which may influence planning have not been considered. Such factors may be the subject of further input by the Department of Conservation and Natural Resources.
- The scale of the assessment has necessitated some generalisation. Site-specific data will be required for detailed planning at the individual farm or allotment level, through individual inspection by the Department of Conservation and Natural Resources Staff or other qualified persons.
- The precision with which boundaries are mapped is affected by the scale of the map. Subsequent enlargement of the map does not improve the precision and may be misleading.
- The boundaries on the map usually represent readily seen changes in the land. However, where an important land characteristic changes gradually, the boundary indicates approximately where there is a significant change in the effect on land use.
- No material may be extracted from the report for publication without the written permission of the Department of Conservation and Natural Resources.

Part 1 – Summary and Conclusions

Outline of the Study

An update of this Study was undertaken at the request of the Shire of Benalla for use an aid to planning and development within the Shire. The report describes erosion risk and other characteristics of the land which may impose constraints on land development in the Shire.

Benalla Shire (see locality plan) has an area of approximately 2,322 square kilometres, ranging from flat plains around 140 metres elevation to steep mountainous country up to 1,000 metres elevation, with rainfall ranging from 500 mm in the north to 1,270 mm in the south.

Tenure within the Shire consists of 1,674 square kilometres freehold and 648 square kilometres of forested and public land. This study concentrates on the private land and is less detailed on the public land.

Areas of special interest to the Department of Conservation and Natural Resources are: Ryans Creek Water Supply Catchment, Boweya Lake Rowan Landcare Group (part), Chesney Vale Landcare Group, Dookie Land Management Group (part), Devenish Goorambat Landcare Group, Molyullah Tatong Tree and Land Protection Group, Swanpool Landcare Group, Warrenbayne Boho Landcare Group, Wetland areas and areas of known or suspected dryland salinity.

Conclusions

A. Erosion Risk Classes

Erosion risk classes in the Shire are shown on the enclosed maps. General management guidelines are presented in Table 2. The main conclusions and recommendations are summarised below.

(i) Land with severe erosion risk (Class 5). This land is considered highly hazardous and should have strong limitations placed upon its development.

* It is recommended that subdivision of land in Erosion Risk Class 5 should not be permitted unless the developer can demonstrate to the satisfaction of the Department of Conservation and Natural Resources that the development will not result in increased soil erosion from the area.

* Permanent clearing of Class 5 land should be prohibited and reafforestation should be actively encouraged. In general, such land should be considered as best used for forestry and passive recreation.

(ii) Land with a high erosion risk (Class 4).

* Intensive small-lot sub-division and clearing should be discouraged.

* It is recommended that all proposals for development of land in Erosion Risk Class 4 be referred to the Department of Conservation and Natural Resources for specific advice on soil conservation requirements at the earliest possible stage.

(iii) Land with a moderate erosion risk (Class 3). Development of most of the moderate risk land should be possible without causing increased erosion provided specialised techniques and careful management, which take account of the natural characteristics of the land, are adopted.

In particular, areas where water naturally concentrates should not be disturbed, and disposal of water which would be concentrated by development should be carefully planed.

* Advice on the need for specialised design and construction techniques and follow-up management should be sought from the Department of Conservation and Natural Resources prior to approval of any development.

(iv) Although land in Erosion Risk Class 2 and 1 is not generally regarded as presenting significant erosion problems there may be small areas of higher risk (within the areas shown in those Classes on the maps) which would require special management. Where such areas become apparent, the Department of Conservation and Natural Resources should be consulted for advice on appropriate management.

B. Dryland Salinity

Dryland salinity is referred to in the "constraints" section of "Appendix A" which identifies those units of land in which the discharge and recharge areas do or are likely to occur. The main conclusion, and recommendations are summarised below.

(i) Recharge Areas: This is land where water is readily absorbed into the ground adding most significantly to underground regional and/or local water table. Such ingression over time has caused water tables to rise resulting in the emergence of saline areas lower in the landscape (these are known as discharge areas).

Control of the amount of water being able to enter the underground system through the recharge area is the only practical means by which dryland salinity may be checked.

* It is recommended that clearing in areas of recharge be subject to permit and actively discouraged.

* It is recommended that tree planting in areas of recharge be actively encouraged.

In general, such land should be considered as best used for forestry and or passive recreation.

(ii) Discharge areas: This is land where the water table has risen to or to within close proximity of the surface. Salting of these areas occurs when salt is left behind at or near the surface following evaporation.

Salting causes the breakdown of soil structure and vegetation change. In severe cases vegetation will be lost altogether. These areas are highly erodible.

Superficial treatment of these areas is sometimes possible, but eventual control can only be achieved by water table management.

* It is recommended that discharge areas not be used for intensive development, especially not residential subdivision.

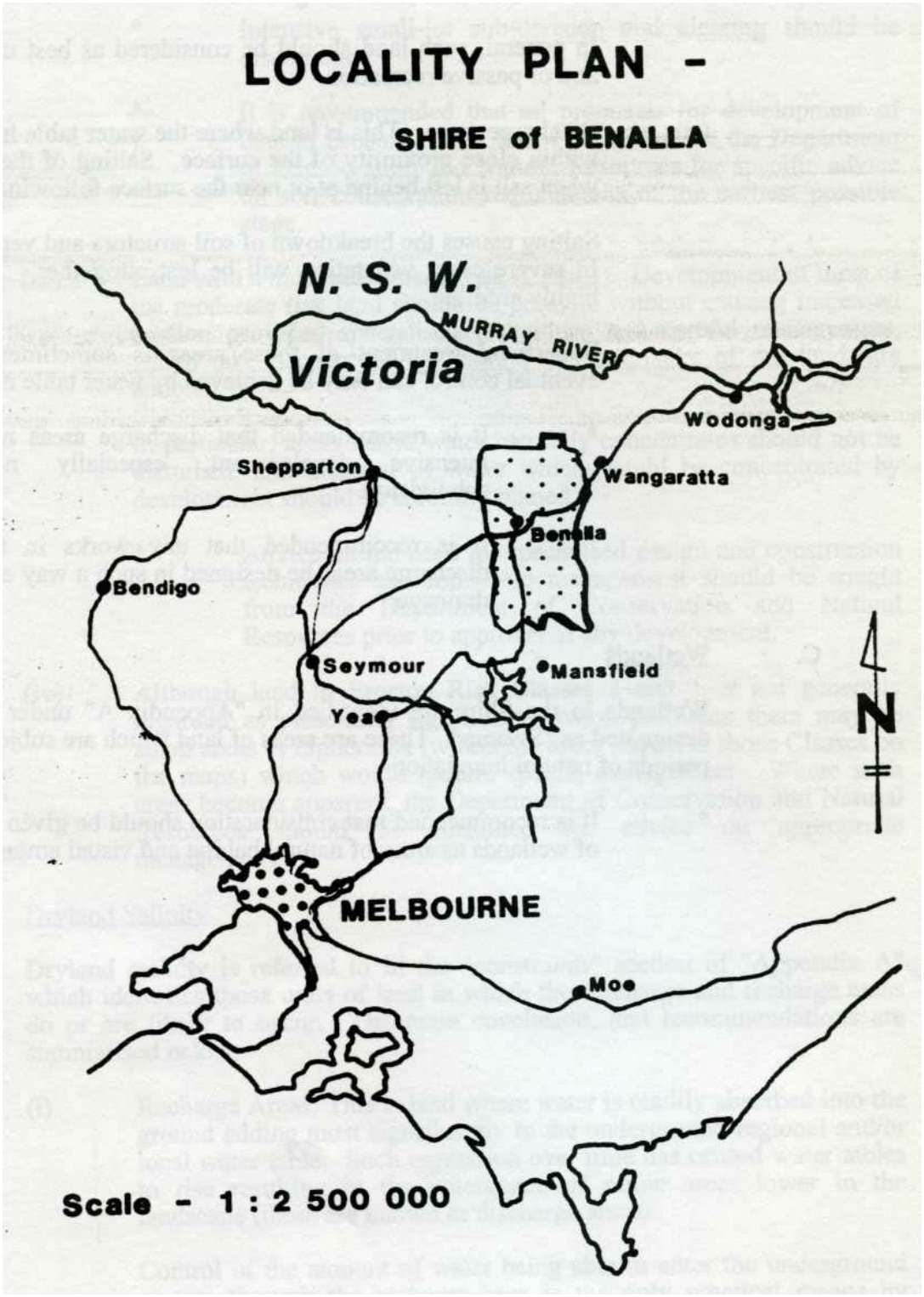
* It is recommended that any works in the vicinity of discharge areas be designed in such a way as to not impede drainage.

C. Wetlands

Wetlands in the Shire are identified in "Appendix A" under land form and designated as "Swamp". These are areas of land which are subject to prolonged periods of natural inundation.

* It is recommended that consideration should be given to the retention of wetlands as areas of natural habitat and visual amenity.

Shire of Benalla – Locality Plan



Part 2 – Technical Aspects of the Study

Outline of the Methods

In order to identify and map areas of land with differing land capability, a systematic study of the natural characteristics of the land has been made. Areas of land which have consistent slopes, soils and native vegetation on similar rock types and with a limited range of climate are identified. Such areas are referred to as land units.

Within the Shire, 125 land units have been identified, which are shown on the associated maps.

The land unit information has been used together with local knowledge of erosion risk of the various land types to categorise each of these units into erosion risk classes.

The land unit descriptions (Appendix A) provide a range of information which can be adapted for use by planners for purposes other than erosion control. In particular, areas subject to prolonged wetness or having poor effluent disposal or water holding characteristics can be identified. Where these constraints may exist they are referred to in the Constraints section of the table in Appendix A.

WARNING

The information provided in the Constraints Section of Appendix A has been compiled by field observation only and needs to be confirmed by appropriate field and/or laboratory tests.

Assessment of Erosion Risk

Erosion risk is best defined as a means of rating the potential of land to erode if subjected to poor management or soil disturbance. Factors considered in this rating for each land unit are: Steepness of the land, erodibility of the soil, soil depth, permeability and structure and soil/water balance.

The erosion risk is assessed in five classes – Class 5 being the highest. Definitions of the classes are presented in Table 1.

It should be realised that because of the broad scale of mapping (1:25,000) the map units can only represent a general level of erosion risk over relatively large areas. Obviously at a more detailed level, local variations will be found. It is important therefore, that where areas of land are nominated for intensive development, the need for further detailed mapping at a much larger scale be recognised.

TABLE 1 - EROSION RISK CLASSES

(Read in conjunction with map the associated maps)

CLASS	EROSION RISK	GENERAL LIMITATIONS ON DEVELOPMENT
1	**None to very slight.**	**Erosion risk does not occur or is very slight. Standard designs and installation techniques and normal sight preparation and management should be possible without risk of erosion.**
2	**Slight**	**Slight erosion risk exists. Careful planning, and use of standard specifications for site preparation, construction and follow up management should be satisfactory to minimise erosion.**
3	**Moderate**	**Moderate erosion risk exists which may lead to difficulties during and after construction, but which can be overcome. Specialised design, construction techniques and follow up management are necessary to minimise erosion.**
4	**High**	**High erosion risk. Avoidance of erosion during and after construction is difficult and long term problems may occur. Adverse effects may be inflicted upon adjoining land. Extensively modified design and installation techniques, exceptionally careful site preparation and management would be necessary.**
5	**Severe**	**Severe erosion risk and/or danger of large landslides is prevalent. Any development will cause instability which cannot be practically overcome.**

MANAGEMENT GUIDELINES

There are considerable variations in standards of land management which can substantially effect stability, particularly in areas with high erosion risk. Similarly, techniques of earthwork construction and follow-up treatment can vary considerably with possible significant or drastic effect upon stability where these are inadequate or inappropriate.

The guidelines in Table 2 outline the type and levels of management considered necessary to guard against unacceptable land deterioration within each erosion risk map unit.

TABLE 2 - LAND MANAGEMENT GUIDELINES

(Read in conjunction with Map enclosed)

CLASS	EROSION RISK	GENERAL LIMITATIONS ON DEVELOPMENT
1	**None to very slight**	**Generally no specific conservation management practices are required in this map unit, except along drainage lines where erosion may occur.** **To minimise the danger of erosion in drainage lines, avoid disturbance and maintain a protective vegetative cover.** **Roads which cross drainage lines where high flows are likely should be designed with adequate culvert capacity or alternatively low profile floodway fords. Crossings should be as near as practicable to right angles to the flow to minimise cost and erosion potential.** **To avoid problems with spillways when siting farm dams in drainage lines which carry large flows, off-stream storages are recommended.**
2	**Slight**	**Generally only limited special management inputs are required in this map unit to prevent soil erosion, except along drainage lines where erosion is likely to occur.** **To minimise the danger of erosion in drainage lines, avoid disturbance and maintain a protective vegetative cover.** **Roads which cross drainage lines where high flows are likely, should be designed as for Unit 1 above. In addition, roads should be aligned close to contour and have adequate surface and/or subsurface cross drainage or be aligned directly up and down the slope with drainage water dispersed laterally.** **Disturbed areas caused during construction works should be revegetated by topsoiling and sowing.** **To avoid problems with spillways when siting farm dams in drainage lines which carry large flows, off-stream storages are recommended.** **Planning for fence locations should take account of significant topographical features so that it is possible to conform to the criteria above.**

CLASS	EROSION RISK	GENERAL LIMITATIONS ON DEVELOPMENT
3	**Moderate**	**Specialised land management techniques are required to minimise soil erosion. More-over, localised areas of higher risk occur in which intensive development of any kind should be avoided.** **To minimise the danger of erosion in drainage lines, avoid disturbance and maintain a protective vegetative cover.** **Employ contour cultivation or minimum tillage techniques for cropping and pasture establishment. Locate roads and fences on contour, along ridges or directly up and down the slope. Disperse water from roads at frequent intervals by surface or subsurface drainage. Design roads as recommended under Unit 1 above.** **Take care to minimise disturbed areas during construction and undertake adequate soil conservation measures.** **Conserve topsoil for respreading after construction. Revegetation of these areas may require special treatment as well as sowing and adequate maintenance.** **All dams constructed in this unit will require careful siting, design and construction techniques.** **Generally a vigorous vegetative ground cover should be maintained throughout this unit.** **Subdivision into areas of small lots could cause increased erosion unless due consideration is given to topographical features. Planning of fence locations should also take into account these features so that it is possible to conform to the above criteria.**

It is recommended that:

Advice on the need for specialised design and construction techniques and follow up management should be sought from the Department of Conservation and Natural Resources prior to approval of any development.

CLASS	EROSION RISK	GENERAL LIMITATIONS ON DEVELOPMENT
4	**High**	**High inputs of specialised land management techniques are required to minimise soil erosion and/or landslides. Localised areas of higher risk occur in which any development should be avoided.** **Employ contour cultivation or aerial seeding for pasture establishment. Specialised management techniques for grazing are required. Cropping is not advisable. Department of Conservation and Natural Resources advice should be sought.** **A vigorous vegetative ground cover should be maintained throughout this unit. Further forest clearing is undesirable and treeplanting should be encouraged.** **All clearing or earthworks, including dam construction, roading and other construction works, should employ conservation specifications suitable for each site and include topsoil saving, revegetation, and other soil stabilisation measures and maintenance.** **Limited subdivision may be possible with due consideration to topographical features. Department of Conservation and Natural Resources advice should be sought at the earliest planning stage.** **Planning of fence locations should take into account topographical features to avoid stock concentration in hazardous areas. Department of Conservation and Natural Resources advice should be sought.**

It is recommended that:

All proposals for development of land in Unit 4 be referred to the Department of Conservation and Natural Resources for specific advice on soil conservation requirements at the earliest possible stage.

Intensive small-lot sub-division and clearing should be discouraged, and tree planting should be encouraged.

CLASS	EROSION RISK	GENERAL LIMITATIONS ON DEVELOPMENT
5	**Severe**	**Any land disturbance will require extremely high levels of specialised management input to minimise soil erosion and/or landslides. Intensive development of any kind is undesirable and should be avoided.** **Cultivation is not recommended. Pastures should be sown by aerial seeding only and maintained as a vigorous ground cover.** **Grazing should be strictly controlled and consultation with the Department of Conservation and Natural Resources on grazing management is highly recommended.** **Clearing of timber should be prohibited unless for timber harvesting and them should be strictly controlled and the area reafforested immediately after. Reafforestation of existing cleared areas should be actively encouraged. Some areas in this unit should not be disturbed under any circumstances.** **Earthworks of any kind should be discouraged except for emergency or fire protection purposes. In these instances strict attention to design specifications according to Department of Conservation and Natural Resources requirements should be mandatory.** **Subdivision should be discouraged. However, isolated areas may be suitable for limited development. Such would require detailed terrain evaluation due to the severe risks involved.** **Planning of fence locations should take into account topographical features to minimise erosion by stock trafficking. Department of Conservation and Natural Resources advice should be sought.**

It is recommended that:

Subdivision of land in this map unit should not be permitted unless the developer can demonstrate to the satisfaction of the Department of Conservation and Natural resources that the development will not cause increased soil erosion or land deterioration.

Permanent clearing of land should be prohibited and reafforestation account topographical
In general, the area should be regarded as being best used for forestry, passive recreation and strictly controlled grazing.

Areas of Special Conservation Interest

I. Boweya Lake Rowan Landcare group (part)

The Boweya Lake Rowan project consists of 35 landholders covering an area of approximately 16.000 hectares of which 4,000 is in the study area. The group area is centred on granite rises which are subject to rapid erosion if misused.

The objectives of the group are to arrest tree decline, reduce and repair soil erosion, improve cropping practices, eradication of pest plants and animals and to improve the environment in which they live.

II Chesney Vale Landcare Group

The Chesney Vale project covers an area of 4,000 hectares with 13 landholders and is the upper reaches of the catchment to the Katamatite Creek. This area spans a range of soil types from the clay soils of the lower slopes to granite rock outcrops in the higher country.

The objectives of the group are to arrest tree decline, provide better stock shelter, erosion control, the establishment of deep rooted grasses for production and soil maintenance, and the creation and maintenance of wildlife habitat.

III Devenish Goorambat Landcare Group

The Devenish Goorambat Group consists of 30 landholders covering approximately 6,000 hectares of soils which are potentially unstable in their structure. These soils are prone to serious erosion as they are under pressure from over grazing, intensive cropping and lack of pasture improvement.

The objectives of the group are to use earthworks to reduce and control erosion, improve cropping practices, improve pasture, arrest tree decline, to revegetate salinity recharge areas with suitable tree and pasture species in an effort to help reduce the trend of rising water tables, to manage vermin and noxious weeds, and ensure gravel removal does not occur in the future.

IV Dookie Land Management Group (part)

The Dookie group covers an area of approximately 60,000 hectares of which 3,200 is in the study area. The major problems in this area are salinity and land degradation.

The objectives of the group are tree planting on low fertility areas, planting high water use pasture to reduce water tables and to increase awareness in the community by encouraging landholders to talk freely about their problems.

V Molyullah Tatong Tree and Land Protection Group

This group covers an area of approximately 60,000 hectares with some 150+ members. The area is classified as Siluro Devonian Volcanics, Metamorphics and Sediments and consists of a complex of several groundwater systems.

The objectives of the group are to (where possible) use trees to control land degradation whilst providing shade and shelter for stock and enhancing the local environment.

VI Swanpool Landcare Group

The Swanpool group covers an area of approximately 43,000 hectares with 90 landholders. The area is predominately granite and granite alluvium and consists of rolling hills of low relief, tributary valleys (generally with twin streams) and valley slopes of the Broken River.

The objectives of the group are to increase awareness and commitment of the landholders by exploring management options and demonstrating directions for future sustainable production.

VII Warrenbayne Boho LandCare Project (part)

The Warrenbayne Boho LandCare Project covers an area of 25,000 hectares involving 150 landholders, which has: 400 hectares of salinised land, 400 hectares of salt affected land, 25 kilometres of gully erosion, 3,500 hectares susceptible to sheet erosion and numerous land slips.
This project is managed by the Warrenbayne Boho LandCare Group Inc. The objectives of this group are, through mutual co-operation carry out salinity control works such as the revegetation of highly permeable rocky areas, with trees and high waters use pasture species. The revegetation of salt affected areas with salt tolerant species. The implementation of land management changes so that land degradation is prevented and controlled and to develop associated strategies to improve the profitability of present farm practices.

VIII Ryans Creek Water Supply Catchment

This area has been proclaimed and Land Use Determined under provisions of the Soil Conservation and Land Utilization Act. A copy of the Land Use Determination appears as Appendix B of this report.

This area should be regarded primarily as a water supply area and provision made in any planning scheme to control development. Proposed land use changes should be compatible with the primary objective of water harvesting for domestic purposes. Proposals for development of areas within this catchment must be referred to the Department of Conservation and Natural Resources

IX Water Reserves

These areas are retained to maintain the local character and quality of the landscape and should be used for fire protection, stock water and Shire purposes.

X Wetlands

The floodplain within the Violet Tºwn Shire contains many areas subject to inundation. The most important of these wetlands are those which hold water for periods long enough to allow water birds to breed.

XI Other Known or Suspected Dryland Salinity

The occurrence of Dryland Salting within the Shire presents a significant constraint upon development in certain areas of the Shire. Where Dryland Salting is known or suspected it is referred to in the constraints section of the tables in Appendix A.

Soil salting is defined as the accumulation of salts in the top 600 millimetres of soil. Soil salting causes the death of plants, the breakdown of soil structure and extreme erosion hazard.

Soil salting can be recognised in its early stages by the disappearance of pasture grasses, and their replacement by salt tolerant species such as sea barley grass (Hordeum marinus) and the appearance of small patches of bare ground. In cases of severe salting, areas can become totally denuded of vegetation.

Dryland salting is usually caused by the presence of ground water at or close to the soil surface. Over time evaporation of water leaves behind salts which eventually build up into damaging proportions.

The high water tables associated with dryland salting may be attributed to the removal of vegetation, particularly trees having deep root systems, from higher lands. This results in an increase of unused underground water which eventually causes the rising of ground water on the lower slopes.

It is recommended that Department of Conservation and Natural Resources advice should be sought on proposed development in areas of suspected or observed salinisation.

REFERENCES

A Study of the Land in the Catchment of the Broken River.

Allen S. Rundle & R.K. Rowe (1974) Soil Conservation Authority, Victoria.

Report on the North Eastern Area (District 2), Land Conservation Council, March 1985. Land Systems Map of Victoria. Soil Conservation Authority (1975).

Report on the Murray Valley Area, Land Conservation Council, May 1985.

Appendix A – Land Unit Descriptions

(read in conjunction with map)

SHIRE OF BENALLA **A**

LAND UNIT NAME ARCHERTON

GEOLOGY	Lower Tertiary Basalt				**RAINFALL:**	1,000 – 1,250 mm
MAP SYMBOL	AG	AR	AM			
EROSION RISK RATING	2	2	3			
LAND FORM	Gentle Slopes	Gentle to Moderate Slopes	Moderate Slopes			
SLOPE %	2-7	4-10	7-15			
SOILS	Well drained Friable Red Gradational	Well drained Friable Red Gradational	Well drained Friable Red Gradational			
NATIVE VEGETATION	Narrow Leaf Peppermint, Messmate, Candlebark, Manna Gum, Blue Gum					
CONSTRAINTS	* The ability of soils to hold water is variable and unpredictable unless tested * Large areas of inundation over long periods may occur because of the prevalence of surface springs.					

SHIRE OF BENALLA **B**

LAND UNIT NAME BENALLA

GEOLOGY	Quaternary Hillwash and Riverine Alluvium				**RAINFALL:**	625 – 750 mm
MAP SYMBOL	BF	BFg	BFt	BU	Bug	BG
EROSION RISK RATING	1	1	1	1	1	2
LAND FORM	Flat Plain	Gilgaied Flat Plain	Terrace on Flat Plain	Flat to, Gentle Plain	Gilgaied Flat to Gentle Plain	Gentle Slopes
SLOPE %	0-2	0-2	0-2	1.4	1.4	2.7
SOILS	Grey Brown Uniform Loam	Grey Sodic Uniform Clays	Reddish Gradational	Red Brown Gradational	Yellow Uniform Clays	Yellow Duplex
NATIVE VEGETATION	Red Box, Grey Box, Apple Box, Yellow Box and some Apple Box.					
CONSTRAINTS	Seasonally inundated Gilgaied Seasonally wet Salinity discharge Gilgaied * Water storage is generally favourable, but deep sands leads may be found near streams. * These units are generally not erosion prone except in watercourses and depressions. * Salinity is present in some depressions which in itself is a restraint on development and may lead to acceleration of erosion. * Septic effluent disposal may be hazardous because of the permeability of some of the soils.					

SHIRE OF BENALLA **B**

LAND UNIT NAME BENALLA (cont)

GEOLOGY	Quaternary Hillwash and Riverine Alluvium				**RAINFALL:**	625 – 750 mm
MAP SYMBOL	BR	BM				
EROSION RISK RATING	2	3				
LAND FORM	Gentle to Moderate Slopes	Moderate Slopes				
SLOPE %	4-10	7-15				
SOILS	Brown Duplex	Red Brown Duplex				
NATIVE VEGETATION	Red Box, Grey Box, Apple Box, Yellow Box and some Apple Box.					
CONSTRAINTS	* Water storage is generally favourable, but deep sand leads may be found near streams. * These unit are generally not erosion prone except in watercourses and depressions. * Salinity is present in some depressions which in itself is a restraint on development and may lead to acceleration of erosion. * Septic effluent disposal may be hazardous because of the permeability of some of the soils.					

HIRE OF BENALLA **C**

LAND UNIT NAME DEVENISH

GEOLOGY	Quaternary Fluvial Sediments				**RAINFALL:**	500 – 625 mm
MAP SYMBOL	DF	DFg	DFt	DU	Dug	DG
EROSION RISK RATING	1	1	1	1	1	2
LAND FORM	Flat Plains	Gilgaied Flat Plains	Terrace of Flat Plain	Flat to Gentle Plains	Gilgaied Flat to Gentle Plains	Gentle Slopes
SLOPE %	0-2	0-2	0-2	1-4	1-4	2-7
SOILS	Yellow Sodic Duplex	Uniform Clay	Yellow Duplex	Yellow Duplex	Uniform Clay	Red Sodic Duplex
NATIVE VEGETATION	Grey Box, Yellow Box, Red Gum					
CONSTRAINTS	* Water can be stored throughout these units, be deep sand leads may be encountered. * These units are subject to flooding caused by stream outflow and flat areas are subject to prolonged periods of inundation. * These units are not erosion prone except in water courses and depressions. * Septic Effluent Disposal can be a problem in alluvial soils near streams.					

SHIRE OF BENALLA **D**

LAND UNIT NAME DEVENISH (cont)

GEOLOGY	Quaternary Fluvial Sediments				**RAINFALL:**	500 – 625 mm
MAP SYMBOL	DR					
EROSION RISK RATING	2					
LAND FORM	Gentle to Moderate Slopes					
SLOPE %	4-10					
SOILS	Red Duplex					
NATIVE VEGETATION	Grey Box, Yellow Box, Red Gum					
CONSTRAINTS	* Water can be stored throughout these units, but deep sand leads may be encountered. * These units are subject to flooding caused by stream outflow and flat areas are subject to prolonged periods of inundation. * These units are not erosion prone except in water courses and depressions. * Septic Effluent Disposal can be a problem in alluvial soils near streams.					

SHIRE OF BENALLA **E**

LAND UNIT NAME DOOKIE

GEOLOGY	Cambrian Greenstone, Diabase, Tuff, Chet and Cherty Shale				**RAINFALL:**	500 -625 mm
MAP SYMBOL	EU	EG	ER	EM		
EROSION RISK RATING	1	2	2	3		
LAND FORM	Flat to Gentle Slopes	Gentle Slopes	Gentle to Moderate Slopes	Moderate Slopes		
SLOPE %	1-4	2-7	4-10	7-15		
SOILS	Yellow Sodic Duplex	Red Calcareous Gradational	Red fine structured Gradational	Stony Red Gradational		
NATIVE VEGETATION	Yellow Box, Murray Pine					
CONSTRAINTS	* Storage of surface water is generally difficult due to the high permeability of the subsoil and its high linear shrinkage. * Generally stable soils, but they are subject to land slips and erosion is mismanaged.					

SHIRE OF BENALLA **F**

LAND UNIT NAME STREAM ENVIRONS (above Caseys Weir)

GEOLOGY	Quaternary Alluvium				**RAINFALL:**	625 – 750 mm
MAP SYMBOL	FF	FFf	FFg	FFt	FU	
EROSION RISK RATING	1	1	1	1	1	
LAND FORM	Flat Plain	Flood Zone	Gilgaied Plain	Terrace within Flood Zone	Flat to Gentle Plain	
SLOPE %	0-2	0-2	0-2	0-2	1-4	
SOILS	Uniform Sands	Uniform Sands	Uniform Clays	Uniform Loams	Yellow Brown Gradational	
NATIVE VEGETATION	Red Gum					
CONSTRAINTS	* Water storage favourable, but deep sand leads may be encountered. * Some of the area is subject to flooding caused by stream outflow and flat areas are subject to prolonged periods of inundation. * These units are not erosion prone except in water courses and depressions. * Septic Effluent Disposal may be a problem because of the high percolation rate of some of the alluvial soils.					

SHIRE OF BENALLA **G**

LAND UNIT NAME GLENROWAN

GEOLOGY	Silurian Granite, Gneissic Granodiorite				**RAINFALL:**	625 – 750 mm
MAP SYMBOL	GG	GR	GRq	GM	GMq	GH
EROSION RISK RATING	3	3	3	4	4	4
LAND FORM	Gentle Slopes	Gentle to Moderate Slopes	Gentle to Moderately Sloping Plateau	Moderate Slopes	Moderately Sloping Plateau	Moderate to Steep Slopes
SLOPE %	2-7	4-10	4-10	7-15	7-15	10-20
SOILS	Coarse weakly bleached Gradational	Reddish Gradational	Red Duplex	Reddish Duplex	Red Duplex	Uniform coarse Sands
NATIVE VEGETATION	Red Box, Red Gum, Long Leaf Box, Red Stringybark, Austral Grass Tree					
CONSTRAINTS	* The ability of soils to hold water is variable and unpredictable unless tests. * Surface springs occur throughout these units and may cause large areas of inundation. * These units are susceptible to rapid erosion if disturbed or mismanaged. * Septic Effluent Disposal may be a problem in some of the soils because of the shallowness of permeable soils over rock or other impermeable material.					

SHIRE OF BENALLA **G**

LAND UNIT NAME GLENROWAN

GEOLOGY	Silurian Granite, Gneissic Granodiorite				**RAINFALL:**	625 – 750 mm
MAP SYMBOL	GS	GV				
EROSION RISK RATING	5	5				
LAND FORM	Steep Slopes	Very Steep Slopes				
SLOPE %	15-25	20+				
SOILS	Stony Brownish Gradational	Stony Gradational				
NATIVE VEGETATION	Red Box, Red Gum, Long Leaf Box, Red Stringybark, Austral Grass Tree					
CONSTRAINTS	* The ability of soils to hold water is variable and unpredictable unless tests. * Surface springs occur throughout these units and may cause large areas of inundation. * These units are susceptible to rapid erosion if disturbed or mismanaged. * Septic Effluent Disposal may be a problem in some of the soils because of the shallowness of permeable soils over rock or other impermeable material.					

SHIRE OF BENALLA **H**

LAND UNIT NAME HOLLANDS

GEOLOGY	Lower Carboniferous Rocks and material derived from them				**RAINFALL:**	1,020 – 1,270 mm
MAP SYMBOL	HG	HR	HM	HH	HS	HV
EROSION RISK RATING	1	2	2	3	4	5
LAND FORM	Gentle Slopes	Rolling Slopes	Moderate Slopes	Hilly	Steep Slopes	Very Steep Slopes
SLOPE %	2-7	4-10	8-15	10-20	15-25	20+
SOILS	Stony Loams and Weakly Bleached Gradational	Red and Yellow Duplex	Red and Yellow Duplex	Red and Yellow Duplex	Red Duplex and Weakly Bleached Gradational	Stony Loam and Rock
NATIVE VEGETATION	Broad Leaf Peppermint, Narrow Leaf Peppermint, Candlebark, Blackwood, Swamp Gum (in wetter areas)					
CONSTRAINTS	* Shallow Soils, Rock and Steepness * These Units are susceptible to rapid erosion if the soils are disturbed or mismanaged. * Septic Effluent Disposal may be a problem because of the low permeability of some of the clay subsoils.					

SHIRE OF BENALLA **J**

LAND UNIT NAME STREAM ENVIRONS (below Caseys Weir)

GEOLOGY	Recent alluvium				**RAINFALL:**	500 – 625 mm
MAP SYMBOL	JF	JFg	JFf	JU	JW	
EROSION RISK RATING	1	1	1	1		
LAND FORM	Flood Plain	Gilgaied Flood Plain	Terrace in Flood Plain	Flat to Gentle Sloping Plain	Swamp	
SLOPE %	0-2	0-2	0-2	1-4	0	
SOILS	Grey Brown Uniform Loams	Grey Brown Uniform Clay	Uniform Loams	Uniform Loams		
NATIVE VEGETATION	Red Gum					
CONSTRAINTS	* Water can be stored throughout most of these units, but deep sand leads may be encountered near the river and other streams. * Some of the area is subject to flooding caused by river and stream outflow. Flat areas are subject to prolonged periods of inundation. * Septic Effluent Disposal can be a problem in some areas because of the high percolation rate of soils near streams.					

SHIRE OF BENALLA **K**

LAND UNIT NAME KARRABUMET

GEOLOGY	Silurian Granite				**RAINFALL:**	500 – 625 mm
MAP SYMBOL	KG	KR	KM	KH		
EROSION RISK RATING	2	3	3	4		
LAND FORM	Gentle Slopes	Gentle to Moderate Slopes	Moderate Slopes	Moderate to Steep Slopes		
SLOPE %	2-7	4-10	7-15	10-20		
SOILS	Red Sodic Duplex	Red Sodic Duplex	Red Duplex	Red Duplex		
NATIVE VEGETATION	Grey Box, Murray Pine, Red Gum					
CONSTRAINTS	* The ability of soils to hold water is variable and unpredictable unless tested. * Surface springs occur throughout these units and may cause larges areas of inundation. * These units are susceptible to rapid erosion if the soil is disturbed or mismanaged. * Septic effluent may be a problem in some of the soils because of shallowness of permeable soil over rock or other impervious material.					

SHIRE OF BENALLA

L

LAND UNIT NAME LOOMBAH

GEOLOGY	Devonian Rhyolite & Rhyodacite				**RAINFALL:**	750 – 1,000 mm
MAP SYMBOL	LU	LG	LGp	LR	LRp	LM
EROSION RISK RATING	2	2	2	3	3	3
LAND FORM	Flat to Gentle Slopes	Gentle Slopes	Gentle Slopes on Plateau	Rolling Slopes	Gentle to Moderate Slopes on Plateau	Moderate Slopes
SLOPE %	1-4	2-7	2-7	4-10	4-10	8-15
SOILS	Yellow Duplex	Pale Gradational & Yellow Duplex	Red Duplex	Stony Gradational & Yellow Duplex	Brown Gradational	Stony Loam, Yellow Duplex & Stony Gradational
NATIVE VEGETATION	Narrow Leaf Peppermint, Broad Leaf Peppermint, Red Box, Red Gum, Long Leaf Box, Yellow Box, Stringybark, Candlebark and Blue Gum.					
CONSTRAINTS	* Water Storage is not assured due to the porus nature of most of the sub-surface material. * This unit is susceptible to rapid erosion if the soil is disturbed or mismanaged. * Springs may cause larger areas of inundation. * Septic Effluent Disposal may be hazardous in some of the soils due to shallowness of permeable soil over rock or other impervious material.					

SHIRE OF BENALLA **L**

LAND UNIT NAME LOOMBAH (continued)

GEOLOGY	Devonian Rhyolite & Rhyodacite				**RAINFALL:**	750 – 1,000 mm
MAP SYMBOL	LH	LS	LV			
EROSION RISK RATING	4	5	5			
LAND FORM	Moderate to Steep Slopes	Steep Slopes	Very Steep Slopes			
SLOPE %	10-20	15-25	20+			
SOILS	Red Duplex & Uniform Stony Loam	Uniform Stony Loam & occasional Red Duplex	Uniform Stony Loam			
NATIVE VEGETATION	Narrow Leaf Peppermint, Broad Leaf Peppermint, Red Box, Red Gum, Long Leaf Box, Yellow Box, Stringybark, Candlebark and Blue Gum.					
CONSTRAINTS	Land Slips Land Slips * Water Storage is not assured due to the porus nature of most of the sub-surface material. * This unit is susceptible to rapid erosion if the soil is disturbed or mismanaged. * Springs may cause larger areas of inundation. * Septic Effluent Disposal may be hazardous in some of the soils due to shallowness of permeable soil over rock or other impervious material.					

SHIRE OF BENALLA **M**

LAND UNIT NAME MOONEE MOONEE

GEOLOGY	Devonian Granite				**RAINFALL:**	750 – 1,000 mm
MAP SYMBOL	MR	MM	MH	MS	MV	
EROSION RISK RATING	3	4	4	5	5	
LAND FORM	Gentle to moderate Crests	Moderate Crests	Moderate to Steep side Slopes	Steep Slopes	Very Steep Slopes	
SLOPE %	4-10	7-15	10-20	15-25	20+	
SOILS	Reddish Gradational	Reddish Duplex	Stony Brownish Gradational	Stony Red Gradational	Stony Uniform Stony Loams	
NATIVE VEGETATION	Narrow Leaf Peppermint, Broad Leaf Peppermint, Candlebark, Messmate, Red Box, Red Stringybark, Red Box, Long Leaf Box, Blue Gum.					
CONSTRAINTS	* Soils and slope generally preclude the storage of surface water in earthen dams. * These units are susceptible to severe sheet and gully erosion. * Mass movement is prevalent in these units.					

SHIRE OF BENALLA **N**

LAND UNIT NAME NILLAHCOOTIE

GEOLOGY	Devonian Granite and Granite Alluvium				**RAINFALL:**	750 – 1,000 mm
MAP SYMBOL	NU	NUf	NG	NR	NM	NH
EROSION RISK RATING	2	2	2	2	3	4
LAND FORM	Flat to Gentle Slopes	Flat to Gentle Slopes subject to flooding	Gentle Lower Slopes	Gentle to Moderate Slopes	Moderate Slopes	Moderate to Steep Slopes
SLOPE %	1-4	1-4	2-5	4-10	8-15	10-20
SOILS	Uniform coarse Sands with some Yellow Duplex and Pale Gradational.					
NATIVE VEGETATION	Red Stringybark, Red Box, Broad Leaf Peppermint with Apple Box, Candlebark and Swamp Gum in drier areas.					
CONSTRAINTS	* Surface springs occur throughout these units and may cause large areas of inundation over prolonged periods. * The ability of soils to hold water is variable and unpredictable because of the prevalence of Uniform Sands. * Septic Effluent Disposal may be hazardous in some of the soils due to the shallowness of permeable soils over rock or other impervious material. * Susceptible to rapid erosion if disturbed or mismanaged.					

SHIRE OF BENALLA **O**

LAND UNIT NAME MOORNGAG

GEOLOGY	Ordovician or Silurian Sedimentary Sandstone, Mudstone & Shale				**RAINFALL:**	750 – 1,000 mm
MAP SYMBOL	OR	OM	OH	OS		
EROSION RISK RATING	3	3	4	4		
LAND FORM	Gentle to Moderate Lower Slopes	Moderate Slopes	Moderate to Steep Slopes	Steep Slopes		
SLOPE %	4-10	7-15	10-20	15-25		
SOILS	Weakly Bleached Gradational	Brownish Gradational	Reddish Gradational	Stony Weakly Bleached Gradational		
NATIVE VEGETATION	Narrow Leaf Peppermint, Broad Leaf Peppermint, Red Stringybark, Candlebark, Blue Gum, Red Box, Long Leaf Box.					
CONSTRAINTS	* Slope, gravel seams and rockiness limit the availability of sites for water storage in earthen dams. * These units are susceptible to rapid erosion if the soil is disturbed or mismanaged.					

SHIRE OF BENALLA **P**

LAND UNIT NAME THOONA

GEOLOGY	Quaternary Alluvial Fan				**RAINFALL:**	625 – 750 mm
MAP SYMBOL	PF	PU	PG	PR		
EROSION RISK RATING	1	1	2	2		
LAND FORM	Flat Plain	Flat to Gentle Plain	Gentle Slopes	Gentle to moderate Slopes		
SLOPE %	0-2	1-4	2-7	4-10		
SOILS	Yellow Sodic Duplex	Yellow Duplex	Massive Gradational	Massive Gradational		
NATIVE VEGETATION	Grey Box, Red Gum, Yellow Box					
CONSTRAINTS	* Water storage is generally favourable in these units, but sand leads may be found near streams. * Some of the area is subject to flooding caused by stream outflow and some areas are subject to prolonged periods of inundation, * These units are not erosion prone except in water courses and depressions. * Septic effluent disposal may be a problem in soils near streams which may have high percolation rate.					

SHIRE OF BENALLA **Q**

LAND UNIT NAME OVENS

GEOLOGY	Recent Alluvium				**RAINFALL:**	750 – 1,250 mm
MAP SYMBOL	QF	QU	QG			
EROSION RISK RATING	1	1	2			
LAND FORM	Flat Plain	Flat to Gentle Slopes	Gentle Slopes			
SLOPE %	0-2	1-4	2-7			
SOILS	Brown and Grey Loams	Yellowish Brown Gradational	Reddish Brown Gradational			
NATIVE VEGETATION	Red Gum, Apple box, Yellow Box					
CONSTRAINTS	* Some areas are subject to flooding caused by stream outflow. * Susceptible to sheet erosion if surface runoff occurs when soils are cultivated. * Septic Effluent Disposal may be a problem because of the high percolation rates of some of the alluvial soils. * Water storage is not assured unless tested because of the variability of soils.					

SHIRE OF BENALLA **R**

LAND UNIT NAME RYANS CREEK

GEOLOGY	Upper Devonian Rhyolite and Rhyodacite				**RAINFALL:**	1,000 – 1,250 mm
MAP SYMBOL	RG	RR	RM	RH		
EROSION RISK RATING	2	3	3	4		
LAND FORM	Gentle Plateau	Gentle to Moderate Plateau	Moderate Slopes	Moderate to Steep Slopes		
SLOPE %	2-7	4-10	7-15	10-20		
SOILS	Friable Brown Gradational	Friable Brown Gradational	Friable Brown Gradational	Friable Red Gradational		
NATIVE VEGETATION	Narrow Leaf Peppermint, Candlebark, Messmate, Mountain Swamp Gum.					
CONSTRAINTS	* The ability of soils to hold water is variable and unpredictable unless tested. * Surface springs occur throughout these units and may cause large areas of inundation. * These units are susceptible to rapid erosion if disturbed or mismanaged.					

SHIRE OF BENALLA **S**

LAND UNIT NAME STRATHBOGIE

GEOLOGY	Devonian Granite & material derived from it				**RAINFALL:**	900 – 1,100 mm
MAP SYMBOL	SG	SR	SM	SH		
EROSION RISK RATING	2	3	3	3		
LAND FORM	Gentle Slopes	Rolling Slopes	Moderate Slopes	Moderate to Steep Side Slopes		
SLOPE %	2-7	4-10	8-15	10-20		
SOILS	Yellow Duplex	Yellow Duplex and some Red Duplex	Red Duplex and some Yellow Duplex	Red Duplex and some Yellow Duplex		
NATIVE VEGETATION	Broad Leaf Peppermint, Narrow Leaf Peppermint, Candlebark, with occasional Red Gum and Blue Gum, and Swamp Gum in Wetter Areas.					
CONSTRAINTS	Prone to Land slip Rock Outcrops Rock Outcrops * Surface Water Storage is not assured due to the porous nature of the Sub-surface material. * Particularly prone to Sheet and Gully Erosion if disturbed or mismanaged.					

SHIRE OF BENALLA **T**

LAND UNIT NAME TARNOOK

GEOLOGY	Palaeozoic Sediments				**RAINFALL:**	500 – 625 mm
MAP SYMBOL	TU	TG	TR	TM		
EROSION RISK RATING	2	3	3	4		
LAND FORM	Slightly Sloping	Gentle Slopes	Gentle to Moderate Slopes	Moderate Slopes		
SLOPE %	1-4	3-7	5-10	7-15		
SOILS	Yellow Duplex	Red Duplex	Red Duplex and some shallow Gradational	Shallow Stony Gradational		
NATIVE VEGETATION	Grey Box, Red Box, Long Leaf Box, Red Stringybark, Yellow Gum					
CONSTRAINTS	Saline Discharge Seasonally Wet * Storage of surface water can be difficult due to rockiness. * Some of the area is subject to tunnel erosion because of a highly dispersible A2 horizon. * High runoff causes a hazard to land immediately down slope. * Septic Effluent Disposal may be hazardous in some of the soils due to the highly dispersible clay subsoil.	Saline Discharge	Salinity Recharge	Salinity Recharge	Salinity Recharge	Salinity Recharge

SHIRE OF BENALLA **U**

LAND UNIT NAME UPPER LURG

GEOLOGY	Lower Palaeozoic Sandstones, Siltstones, Mudstones				**RAINFALL:**	625 – 700 mm
MAP SYMBOL	UU	UG	UR	UM	UH	US
EROSION RISK RATING	1	2	2	3	3	4
LAND FORM	Flat to Gentle Slopes	Gentle Slopes	Gentle to Moderate Slopes	Moderate Slopes	Moderate to Steep Slopes	Steep Slopes
SLOPE %	1-4	3-7	4-10	7-15	10-20	20+
SOILS	Yellow Gradational	Yellow Gradational	Yellow Duplex	Stony Red Duplex	Stony Red Duplex	Stony Gradational
NATIVE VEGETATION	Broad Leaf Peppermint, Red Ironbark, Red Stringybark, Red Box, Long Leaf Box, White Box, Grey Box, Blakely's Red Gum, Apple Box, Blue Gum					
CONSTRAINTS	* Storage of surface water can be difficult because of steepness and rockiness. * Susceptible to tunnel erosion due to a highly dispersible A2 horizon. * High runoff poses a hazard to land immediately down slope. * Septic Effluent Disposal may be hazardous in some of the soils due high dispersible clays.					

SHIRE OF BENALLA **U**

LAND UNIT NAME **UPPER LURG (Continued)**

GEOLOGY	Lower Palaeozoic Sandstones, Siltstones, Mudstones				**RAINFALL:**	625 – 700 mm
MAP SYMBOL	UV					
EROSION RISK RATING	5					
LAND FORM	Very Steep Slopes					
SLOPE %	20+					
SOILS	Stony Gradational					
NATIVE VEGETATION	Broad Leaf Peppermint, Red Ironbark, Red Stringybark, Red Box, Long Leaf Box, White Box, Grey Box, Blakely's Red Gum, Apple Box, Blue Gum					
CONSTRAINTS	* Storage of surface water can be difficult because of steepness and rockiness. * Susceptible to tunnel erosion due to a highly dispersible A2 horizon. * High runoff poses a hazard to land immediately down slope. * Septic Effluent Disposal may be hazardous in some of the soils due high dispersible clays.					

SHIRE OF BENALLA **V**

LAND UNIT NAME GOORAMBAT

GEOLOGY	Lower Palaeozoic hard Sandstone and interbedded Shales				**RAINFALL:**	500- 625 mm
MAP SYMBOL	VU	VG	VR	VM	VH	
EROSION RISK RATING	2	2	3	3	4	
LAND FORM	Flat to gentle Slopes	Gentle Slopes	Gentle to Moderate Slopes	Moderate Slopes	Moderate to Steep Slopes	
SLOPE %	1-4	2-7	4-10	7-15	10-20	
SOILS	Pale Gradational	Weakly Bleached Gradational	Yellow Duplex	Reddish Duplex	Stony Reddish Duplex and some Stony Loam	
NATIVE VEGETATION	Red Box, Red Stringybark, Red Ironbark, Long Leaf Box.					
CONSTRAINTS	* Water storage is difficult on upper slopes because of steepness and rockiness. * These units are susceptible to tunnel erosion because of highly dispersible A2 horizon. * High runoff poses a problem to land immediately down slope. * Septic Effluent Disposal is a problem because of highly dispersible clays.					

SHIRE OF BENALLA **W**

LAND UNIT NAME WRIGHTLEY

GEOLOGY	Metamorphosed Cambrian Greenstone, Diabase, Chert and Cherty Shale				**RAINFALL:**	750 – 1,000 mm
MAP SYMBOL	WG	WR	WM	WH	WS	
EROSION RISK RATING	3	3	4	4	5	
LAND FORM	Gentle Slopes	Gentle to Moderate Slopes	Moderate Slopes	Moderate to Steep Slopes		
SLOPE %	2-7	4-10	7-15	10-20	15-25	
SOILS	Friable Reddish Gradational	Friable Reddish Gradational	Friable Reddish Gradational	Weakly Bleached Gradational	Stony Weakly Bleached Gradational	
NATIVE VEGETATION	Red Stringybark, Long Leaf Box, Yellow Box, Manna Gum					
CONSTRAINTS	* The storage of surface water in earthen tanks and dams is generally difficult because of the low dispersibility of most of the soils. * Surface springs occur throughout these units and may lead to large areas of inundation. * These units are susceptible to mass soil movement caused by clearing and subsequent land use.					

SHIRE OF BENALLA **X**

LAND UNIT NAME **WARRENBAYNE PLATEAU**

GEOLOGY	Upper Devonian Rhyolite and Rhyodacite				**RAINFALL:**	1,000 – 1,200 mm
MAP SYMBOL	XG	XR	XM			
EROSION RISK RATING	2	3	3			
LAND FORM	Gently Sloping Plateau	Gentle to Moderately Sloping Plateau	Moderate Slopes			
SLOPE %	4-1-	8-15	10-20			
SOILS	Massive Gradational	Massive Gradational	Friable Brown Gradational			
NATIVE VEGETATION	Narrow Leaf Peppermint, Messmate, Candlebark, Swamp Gum					
CONSTRAINTS	* The variability of soils makes water storage unpredictable unless tested. * Surface springs occur throughout these units and can cause large areas of inundation. * The soils in these units are susceptible to rapid erosion if disturbed or mismanaged.					

SHIRE OF BENALLA **Y**

LAND UNIT NAME YIN BARUN

GEOLOGY	Quaternary Alluvial Fans				**RAINFALL:**	625 – 700 mm
MAP SYMBOL	YF	YU	YG	YR	YM	
EROSION RISK RATING	1	1	2	2	3	
LAND FORM	Flat Plain	Slightly Sloping Plain	Gentle Slopes	Gentle to Moderate Slopes	Moderate Slopes	
SLOPE %	0-2	1-4	3-7	4-10	7-15	
SOILS	Yellow Duplex	Brownish Gradational	Friable Brown Gradational	Reddish Gradational	Friable Red Gradational	
NATIVE VEGETATION	Narrow Leaf Peppermint, Broad Leaf Peppermint, Candlebark, Red Stringybark and Red gum with some Manna Gum and Swamp Gum.					
CONSTRAINTS	Seasonally Wet Saline Discharge Gilgaied Saline Discharge * Sand and Gravel seams make water storage variable and unpredictable unless tested. * Some severe salting is present, which in itself may lead to acceleration of erosion. * Septic Effluent Disposal may be hazardous in some of the soils due to shallowness of permeable soils over rock and other impervious materials.					

SHIRE OF BENALLA **Z**

LAND UNIT NAME MOUNT SAMARIA

GEOLOGY	Devonian Granite				**RAINFALL:**	1,000 – 1,250 mm
MAP SYMBOL	ZG	ZR	ZM			
EROSION RISK RATING	2	2	3			
LAND FORM	Gentle Plateau	Gentle to Moderate Plateau	Moderate Slopes			
SLOPE %	2-7	4-10	7-15			
SOILS	Uniform Loams	Uniform Sands	Red Duplex			
NATIVE VEGETATION	Broad Leaf Peppermint, Narrow Leaf Peppermint, Candlebark, Blue Gum, Mountain Swamp Gum, Blackwood.					
CONSTRAINTS	* Surface Water Storage is not assured due to the porous nature of the Sub-surface material. * Particularly prone to Sheet and Gully Erosion if disturbed or mismanaged.					

Appendix B

[Extract from the *Victoria Government Gazette*, No. 104, dated 30th October, 1974.]

Soil Conservation and Land Utilization Act 1958.

RYANS CREEK WATER SUPPLY CATCHMENT.

NOTICE OF DETERMINATION OF LAND USE.

Plan No. S–085.

Proclaimed 3rd March, 1970, *Victoria Government Gazette*, No. 19, dated 11th March, 1970, pursuant to section 22 (1) of the *Soil Conservation and Land Utilization Act* 1958.

In pursuance of the provisions of section 23, sub-section (1) of the *Soil Conservation and Land Utilization Act* 1958, the Soil Conservation Authority, after consultation with the Land Conservation Council, has determined the land use for all that land in the Parishes of Myrrhee, Toombullup and Toombullup North within the boundaries of the Ryans Creek Water Supply Catchment delineated and marked on Plan No. 2339, the original of which is lodged at the Head Office of the Soil Conservation Authority. All land within this area shall be used in accordance with the particular category of land use to which the area has been assigned. The boundaries of land use categories shown on Plan No. S–085 are intended as a guide to persons and departments involved in the area, who should consult with the Soil Conservation Authority before making any changes in land use.

General provisions of each of the land use categories are set out hereunder:—

Category 1.

Land to be used primarily for the protection of streams and watercourses, where forest operations are to be minimal and where no earthworks or soil disturbance may be carried out without the specific approval of the Soil Conservation Authority. This category covers:—

(*a*) land within 100 metres of full supply level of either storage, or within 100 metres of each bank of Ryans Creek up to its Junction with Cherry Tree Creek;

(*b*) land within 40 metres of other streams and watercourses shown on plan No. S–085; and

(*c*) land within 20 metres, or such greater distance as the authority may specify, of other streams and watercourses within the catchment.

Category 2.

Protection forest. Forested land where no clear felling operations will be permitted and where timber utilization operations may be permitted only where slopes are generally less than 12° or 20%.

Category 3.

Utilization forest. Land generally suitable for timber utilization operations and other low intensity forest purposes.

Category 4.

Land suitable for intensive forest and plantation purposes and parts of which may be suitable for other intensive uses, subject to conditions.

Specific Requirements.

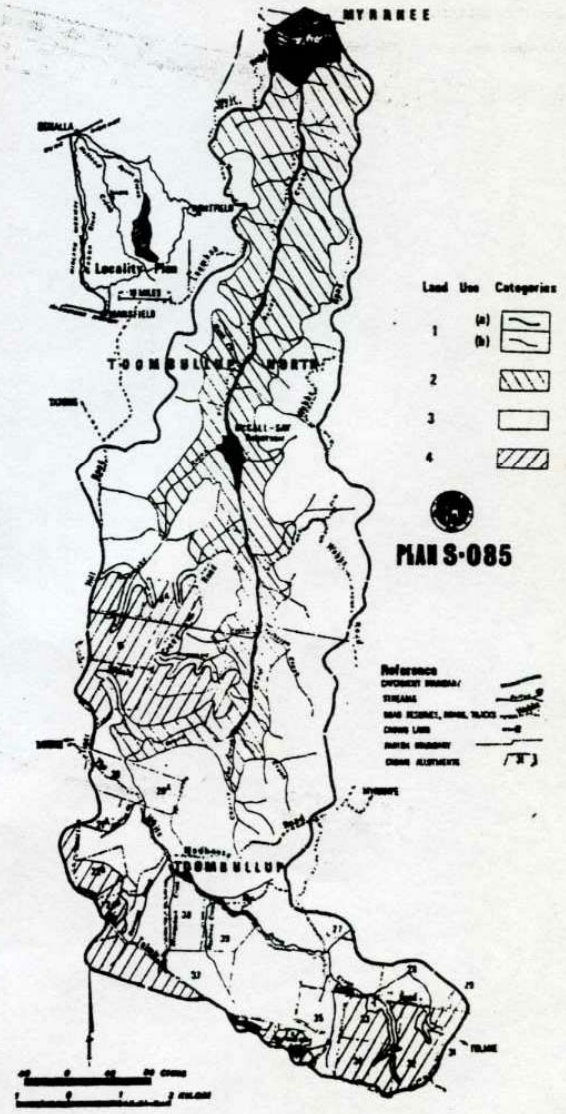
While the categories listed above are given as a guide to the forms of land use which may be permitted without hazard to the water supply, the Soil Conservation Authority may have specific requirements in relation to any land use. In particular:—

(*a*) all forest operations are to be carried out in accordance with management prescriptions drawn up or approved by the authority;

(*b*) prior approval is necessary before any roadworks or earthworks are carried out within the catchment;

(*c*) prior approval is necessary before any developments associated with recreational facilities or residential use are carried out in the catchment;

(*d*) public access to the catchment will be the subject of conditions specified by the authority from time to time.



R. A. FITT, Secretary,
Soil Conservation Authority.