SURF COAST SHIRE

RURAL LAND USE STRATEGY

prepared for

The Surf Coast Shire

by

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Enclosures:

Note on Presentation

Sections 1 to 6 discuss the issues. Paragraphs presented in italics indicate ongoing action is required. These actions are then summarised and expanded in Section 7 - the recommended strategy.

Acknowledgment

The authors would like to acknowledge the contributions made by the planning officers of the Surf Coast Shire to the sections on landscape assessment and land use controls.

1. INTRODUCTION

The rural land use strategy has been prepared for the Surf Coast Shire as part of a Rural Environmental Study. The study includes strategies for rural residential development and protection of environmentally sensitive areas, which are published separately. All three strategies are directed towards developing, protecting and encouraging productive and sustainable farming, and conserving environmentally sensitive areas.

This strategy has been developed after wide consultation with the community having an interest in rural land use policy. In particular the strategy has been developed as a result of:

- regular meetings with a Shire consultative committee which comprised a cross section of interest groups in the municipality;
- workshops conducted with farmers, which were directed towards identifying the strengths, weaknesses, opportunities and threats particular to this Shire;
- interviews with rural real estate agents to help identify the nature of demand for land, based on past and projected trends;
- reference to studies by the City of Greater Geelong and the Golden Plains Shire, in particular their rural land use strategies;
- a review of the State planning policy framework; and
- a review of Federal rural policy issues.

This strategy builds on two earlier studies "The Agricultural Resources and Characteristics of the Major Rural Industries of Surf Coast Shire" (R.G. Ashby and Co Pty Ltd, 7/11/1995) and "Analysis of the Nature of Demand for Rural Land (R.G. Ashby and Co Pty Ltd, 27/11/1995), as well as developing policy and appropriate strategies which flow from these reports.

1.1 Study Objectives

The objectives of the study are set out below. These objectives were formulated by the Shire as part of the original brief.

- To ensure the sound and orderly planning of rural, agricultural and environmentally sensitive areas.
- To apply a total catchment approach to land management planning to facilitate sustainable rural land use practices.
- To identify and protect prime agricultural land to ensure it is retained in productive use.
- To enhance the Shire's rural character and ensure rural land development occurs in a manner consistent with efficient and environmentally sustainable practices.
- To identify a package of techniques which can be employed by the Shire, in partnership with the community, to maintain and encourage sustainable rural land use and to protect, manage and enhance areas of environmental significance.

The major focus of these objectives as they relate to this study is directed towards protecting agricultural land whilst encouraging appropriate use of rural land.

This study was commissioned in tandem with a study on the environmental resources of the Shire, which has been undertaken by Ecology Australia. It is important that the recommendations of the Rural Strategy be considered in the context of the recommendations of the environment strategy.

1.2 State Land Policy

State planning policies in Victoria are set out in the Planning and Environment Act 1987, and the State Section of planning schemes[1].

The Act establishes the following objective relevant to this study, namely to provide for the fair, orderly, economic and sustainable use and development of land.

Other policy objectives on agricultural land as set out in the State Section of planning schemes and the Victorian Planning Provision are as follows:

- To ensure that the State agricultural base is protected from the unplanned loss of high quality productive agricultural land in to permanent changes of land use.

- To enable protection of productive farm land which is of high quality and strategic significance in the local or regional context.

It is clear from these objectives that an assessment of rural land capability will be an essential requirement in formulating a rural land use strategy and guiding the formulation of rural land use and development policies. To this end the intrinsic qualities of the land and its setting will be used as the basis for classifying land. These in turn will be used to develop appropriate minimum lot sizes.

1.3 National Agricultural Policy Issues

Federal agricultural policy in Australia in recent years has focussed on two major areas - Landcare and the Rural Adjustment Scheme.

The Landcare movement evolved over many years but was officially recognised by the Federal Government in 1989 when funds were made available for a program promoting a Decade of Landcare. This program has been extended and is perceived by many as a very successful movement. Approximately 3000 landcare groups have been set up all over Australia to encourage better land management. There are 23 landcare groups in the Shire. The members of these groups are from diverse backgrounds. The Landcare movement has recently been encouraged by the establishment of the National Heritage Trust Fund. The Trust is to be funded from the partial sale of Telstra. The aim of the Trust is to provide funds for regional landcare initiatives which are of public benefit. Local groups have applied for funds from the Trust.

[1] The policies contained in the state section of planning schemes have recently been incorporated in the Victoria Planning Provisions which in future will form the basis of all new planning schemes in Victoria.

The Rural Adjustment Scheme (RAS) has encouraged farmers to adjust their operations so they are viable in the long term. Commodity prices have been low in recent years and many small farmers have had to leave the land and many others have had to invest heavily to increase the productivity and profitability of their operations. The RAS Scheme has used various means to achieve its objectives, however it has probably only been marginally successful in achieving its aims. It is currently under review and is likely to be replaced with different policies before the end of the year.

The Department of Primary Industries and Environment (DPIE) recently published (in May 1997) a study entitled "Rural Adjustment Managing Change". This is a mid-term review of RAS and recommends the scrapping of 'RAS 92'. The former Federal government commissioned a Land Management Task Force which published its findings in October 1995 in "Managing for the Future". The taskforce focussed on how the agricultural sector might achieve a degree of financial strength whilst protecting the natural resource base. The findings of both of these studies recommends that the thrust of Federal government policy be directed towards producing a self sufficient financially robust rural sector.

The task force committee produced many recommendations however prominent throughout them was an aim to encourage farmers to adopt a whole farm system approach which has been called Property Management Planning (PMP). This approach encourages farmers to develop a comprehensive business plan which not only deals with their enterprises but also incorporates a land use plan, and excellent financial and marketing management practices, whilst developing sound policies to enable the farm business to deal with risk.

It is important that the Shire adopts policies that are consistent with the general direction of Federal government rural policy. This strategy will aim to achieve this consistency, even though it will be completed before the new RAS policy is announced. *It will be valuable therefore for the Shire to continually remain abreast of these issues and their possible effects on policy.*

2. AGRICULTURAL RESOURCES AND LAND CLASSIFICATION

2.1 Introduction and Methodology

The purpose of this section is to identify the agricultural resources in the Shire. It describes the physiography, geology, soils, climate and water resources. This description is then brought together so that land, with similar characteristics, is described in terms of land systems or broad classes of land suited to similar types of farm systems, eg. grazing or cropping.

The agricultural problems of the Shire are also described, as there are several significant issues which have an impact on management. The most significant problems are salting, flooding and waterlogging, soil nutrient and structural decline, and serrated tussock. Each of these problems only affect certain areas but must be taken into account in this study.

Finally the land systems are classified in terms of their agricultural quality. It is State planning policy (as defined in the State Section of Planning Schemes) that there must be no permanent removal of "*high quality productive agricultural land*" from the State's agricultural base without due consideration of the importance of that land as part of a '*valuable and finite resource, essential for the continued health of the agricultural production and processing sectors which in turn is critical to Victoria's future economic prosperity*'. Subdivision of high quality productive agricultural land should not detract from the long term productive capacity of the land. *High quality productive agricultural land* is defined as follows:

> "Land which is used for animal husbandry or crop raising and is capable of continuing to sustain agricultural production, and:
>
> - is of prime or very good agricultural quality having regard to soil type, growing season, availability of infrastructure, and is of sufficient extent to support agricultural activities on an economically viable scale; or
> - has been identified through a regional, sub-regional or local study as being of particularly good quality and strategic significance for agriculture in the regional or local context."

This section starts with a description of the Shire's physical characteristics ie. the physiography, and finishes with a classification of the land into areas based on their agricultural quality.

2.2 Description of the Area

2.2.1 Physiography and Geology

The Surf Coast Shire includes parts of two of the major physiographic divisions of Victoria recognised by Hills[2]. These are the Western District Plains and the Southern Uplands. The Southern Uplands has three distinct sub categories within the Shire, as outlined on Map 1. The physiography of the region is strongly influenced by geology.

The Western District Plains

These plains occur in the northern part of the Shire and extend from west to east. They arose from volcanic activity approximately 4 million years ago. The topography is generally flat to gently undulating except where the plain is incised by the Barwon River and at the sites of volcanic eruptions at Mt Moriac, 246m and Mt Pollock, 186m. Several lakes exist in this region. The two largest lakes are Lake Murdeduke in the north-west corner of the Shire and Lake Modewarre in the southern part of the plain.

The Southern Uplands and Associated Plains

The Southern Uplands largely comprise the Otway Ranges across the south of the Shire. The Otway Ranges rise to more than 183m and include the highest point in the region, Mt Cawley at over 670m. The ranges are dissected by numerous creeks either flowing to the Barwon River in the north of the region or Bass Strait in the south.

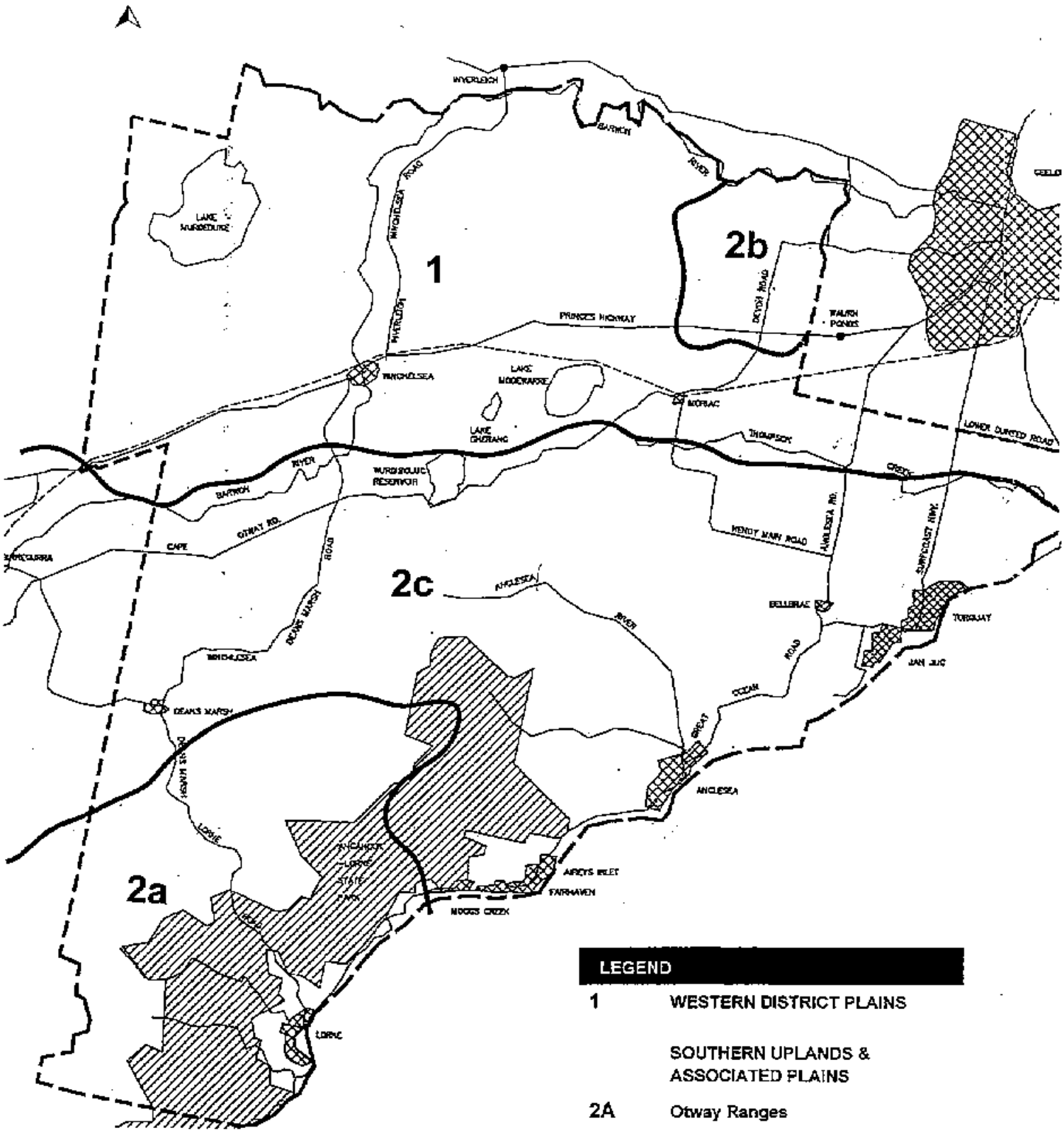
The Southern Uplands also include the Barrabool Hills in the north-east of the Shire. These hills arose from sands and muds which had been laid down about 125 million years ago and were later folded and uplifted. The Barrabool Hills are less rugged and physiographically more mature than the Otway Ranges. They mostly exceed 120m and occasionally above 180m, and are much more suited to agriculture than the Otway Ranges.

The Plains associated with the Southern Uplands include the dissected plateau near Anglesea and the Thompsons Creek coastal plain. These are largely made up of sands and gravels that were deposited about 65 million years ago. The Anglesea Plateau is triangular in shape and occupies an area between the Otway Ranges in the west, Bass Strait in the eas,t and a fault scarp just south of the Wurdiboluc Reservoir, in the north. The area rises slightly from about 7m near Torquay to 60m near Pinchgut Hill (near Wensleydale).

The Thompsons Creek coastal plain extends adjacent to and between the Barrabool Hills and the Bellarine Peninsula. The soils of the area are largely comprised of sediments and some volcanic plains. Most of the area does not exceed 60m. The area is bordered by extensive dunes between Torquay and Breamlea.

[2] Maher JM and Martin JJ. 'Soils and Landforms of S.W. Victoria', Department of Agriculture and Rural Affairs, 1952.

MAP 1 PHYSIOGRAPHIC DIVISIONS



2.2.2 Soils

The soils in the Shire reflect the interaction of the various soil forming factors such as climate, parent material, position in the landscape, age of formation and vegetation. There are a wide range of soils in the Shire.

The major soils of each physiographic division of the Shire are described below. A more detailed map of the soils of the Shire, with a general description of each soil type, is enclosed in Appendix 1.

The Western District Plains - (The Volcanic Plains)

The soils in this area range from mottled black duplex soils in the west of the Shire, to black self mulching clays on the areas around Mt Pollock and Mt Moriac, and mottled yellow duplex soils in the eastern part of the plain.

The soils are usually moderately acid and are clay loams of various colours overlying grey and yellowish-grey heavy clay subsoils at about 8 cms. Basalt boulders are frequently present on the surface. Where these boulders are very numerous the soil may be only a few centimetres deep over the parent rock.

In the immediate vicinity of Mt Pollock and Mt Moriac there are small pockets of volcanic ash soils. These soils are well structured, friable brown loams overlying slightly heavier-textured subsoils. These soils are usually very fertile and well drained making them suited to intensive cultivation. They are usually grazed or cropped as part of the farm systems of that area as there is insufficient area for intensive management.

Most of the soils of volcanic origin however, are naturally low in fertility and are not well drained. Some cropping occurs on these soils although waterlogging in spring is frequently a problem. Most of the area is sown to improved pasture though there are still some areas remaining in their native state. Sheep of all types and some beef cattle are the main livestock run on these areas.

The Southern Uplands - (Barrabool Hills)

The Barrabool Hills are essentially composed of Jurassic sandstone rock which outcrops at the surface in a few places. Over most of the area the soils are grey or brownish grey, being moderately to strongly acid. They are fine sandy clay loams of about 25 cms overlying dark grey and yellowish grey subsoils which are slightly acid. The subsoil clay frequently continues to 1m in depth becoming yellower with depth.

In a few small areas the soil profile consists of a few centimetres to about 30 cms of brownish grey sandy loam to fine sandy claim loam over sandstone rock.

The soils are inherently infertile but because they tend to be better structured and drained than the majority of the volcanic soils, tend to be better suited to cropping provided the slope is not too great.

Most of the area is sown down to improved pasture on which sheep and some beef cattle are run.

The Southern Uplands - (Otway Ranges)

The main soils of this region are mottled yellow duplex soils of sedimentary origin. They are friable, slightly to moderately acid and grey or grey brown loams which gradually become heavier in texture in the subsoils. Most of this area is State forest reserve, but cleared areas are used for dairying and a variety of other intensive agricultural pursuits such as vegetable production.

The Plains associated with the Southern Uplands

- The dissected plateau near Anglesea

  There are two main soil types in this area. The poorer soils are those in the area just north and east of Anglesea in the Bald Hills area. These are yellow gradational soils of weak structure and are moderately to strongly acidic. There are also grey sandy soils of uniform texture. They both very low in fertility and largely unsuited to agricultural activity. They suffer from all kinds of erosion, waterlogging and surface compaction.

  The soils in the Paraparap and Gherang Gherang district are yellow and red duplex and yellow and brown sodic duplex soils. They are fine sandy loams overlying clay subsoils and are frequently over 2 m in depth. These soils are inherently infertile and a high level of leaching of applied fertiliser occurs. They are weakly structured and not suited to extensive cropping unless the slope is low and care is taken with soil management.

- The Thompsons Creek coastal plain

  This plain has soils derived from basalt in the north, already described, and yellow brown sodic duplex soils of coarse texture in the south. The soils are similar to those in the Paraparap district, however they occur on much flatter terrain. They are moderately to strongly acidic and inherently infertile. The soils have low permeability, and high water tables lead to salting in areas.

Special Interest Soils

There are several soils present in the Shire which, because of their structure, fertility and drainage, possess excellent agricultural potential. These soils are not however, present in large areas. Nevertheless they are worth mentioning separately.

- Black self mulching clays on lunettes

  These soils are found on the east bank of Lake Murdeduke and arose from the action of the westerly wind depositing the soil (Aeolian) on the east bank of a depression (Lake Murdeduke). They are deep and well structured and usually quite high in fertility. Being similar to the volcanic ash soils already mentioned, they are slightly acidic and are excellent soils for cropping.

- Terra Rossa soils

  These soils are found in small areas in the Barrabool Hills. Terra rossa means red earth and these are grey brown to red brown loams and clay loams generally overlaying calcareous clay subsoils of similar colour, which in turn overlie the parent limestone which may be a few centimetres below the surface or approximately 1-2 metres below the surface. These soils are quite fertile but need superphosphate. They are slightly alkaline.

  They are well known for their ideal qualities for vine production, (most of the Coonawarra vine growing district of south east of South Australia is on terra rossa soils.) Vines ideally need irrigation water for optimum production.

Soil Fertility

The soils of the volcanic plain are usually acidic and have low calcium and organic matter levels. They are heavy textured and have low permeability. They have usually been sown to subclover with phosphatic fertiliser. The subclover usually increases nitrogen levels which are relatively low, in their native state.

The sedimentary soils of the Southern agricultural regions of the Shire have moderate levels of plant nutrients although they are usually very low in calcium and hence, high acidity decreases the availability of these nutrients for plant growth.

Most soils are deficient in phosphorous, potassium and nitrogen. Minor and trace elements such as copper molybdenum, zinc cobalt and selenium are also often needed for optimum plant and animal production.

Once the phosphorous (P) level of soil falls below 10 ppm (Olsen method)[3] then improved pasture species will die out from pastures and various weeds will invade. The P levels of soils in the district vary widely, and indeed vary widely on most farms. Several farms known to the author now have soil P levels below what they were 20 years ago. This is because farmers in many instances have not been able to afford to buy adequate fertiliser, because of the poor prices experienced for primary produce in recent years. Olsen P levels over 20 ppm mean that phosphorous is not a limiting factor to pasture production. Only small areas in the Shire have such P levels, and this is usually as a result of high residual phosphorous after heavy applications have been applied to crops.

2.2.3 Climate

The Otway Ranges in the south west of the Shire, located as they are in the path of the prevailing westerlies and adjoining Bass Strait, exert a major influence on the climate of the area. Rainfall tends to be greatest in the southwest and at the top of the ranges, and lowest in the north and east.

[3] The Olsen method is a technique used for measuring soil phosphorus levels. An alternative method is the Colwell method which produces different readings for similar soil P levels.

The district generally could be described as having a modified mediterrancan type of climate, in that it is largely warm to hot and dry in the summer, and cool and wet in the winter and spring. The district has too much summer rainfall to make it directly comparable to the climate of the mediterranean. The areas adjoining the coast receive little or no frost and the prevailing wind is from the north in the summer and south - southwest in the winter and spring.

Rainfall

There is large variation in rainfall across the Shire as demonstrated by the following data.

Table 1: Rainfall and Distribution

Location	No. of years of record	Mean rainfall (mm)	Distribution (mm) J	F	M	A	M	J	J	A	S	O	N	D
Coastal Towns														
Lorne	83	910	40	47	54	70	85	100	105	107	98	91	64	52
Anglesea	46	650	30	48	39	56	61	54	63	70	59	60	57	47
Torquay	27	582	31	43	39	45	60	48	57	63	60	52	47	42
North West														
Winchelsea	91	548	25	34	36	40	48	48	51	57	54	51	45	41
Murdeduke	40	507	29	28	41	41	48	55	45	45	58	48	39	34
North East														
Geelong	74	538	29	29	43	44	48	48	47	50	50	51	46	49
Moriac	33	544	27	38	41	41	46	54	49	57	58	48	48	43
Waurn Ponds	57	546	28	36	41	41	49	53	53	56	54	52	45	42

Source: "Barwon Region" Resource Survey (1971), Government of Victoria.

The distribution of rainfall has a winter and spring dominance. Effective rainfall is also greatest in the winter and spring as evaporation frequently exceeds rainfall in the summer and autumn months. The pattern of rainfall is shown by the rainfall map for Victoria (Map 2).

Effective rainfall can be defined as the amount of rain that is needed to start the germination of plants and maintain the plant above the wilting point. It is related to the evaporation, soil type and intensity of rainfall. Set out below is an analysis of the chance of receiving effective rainfall at four different locations.

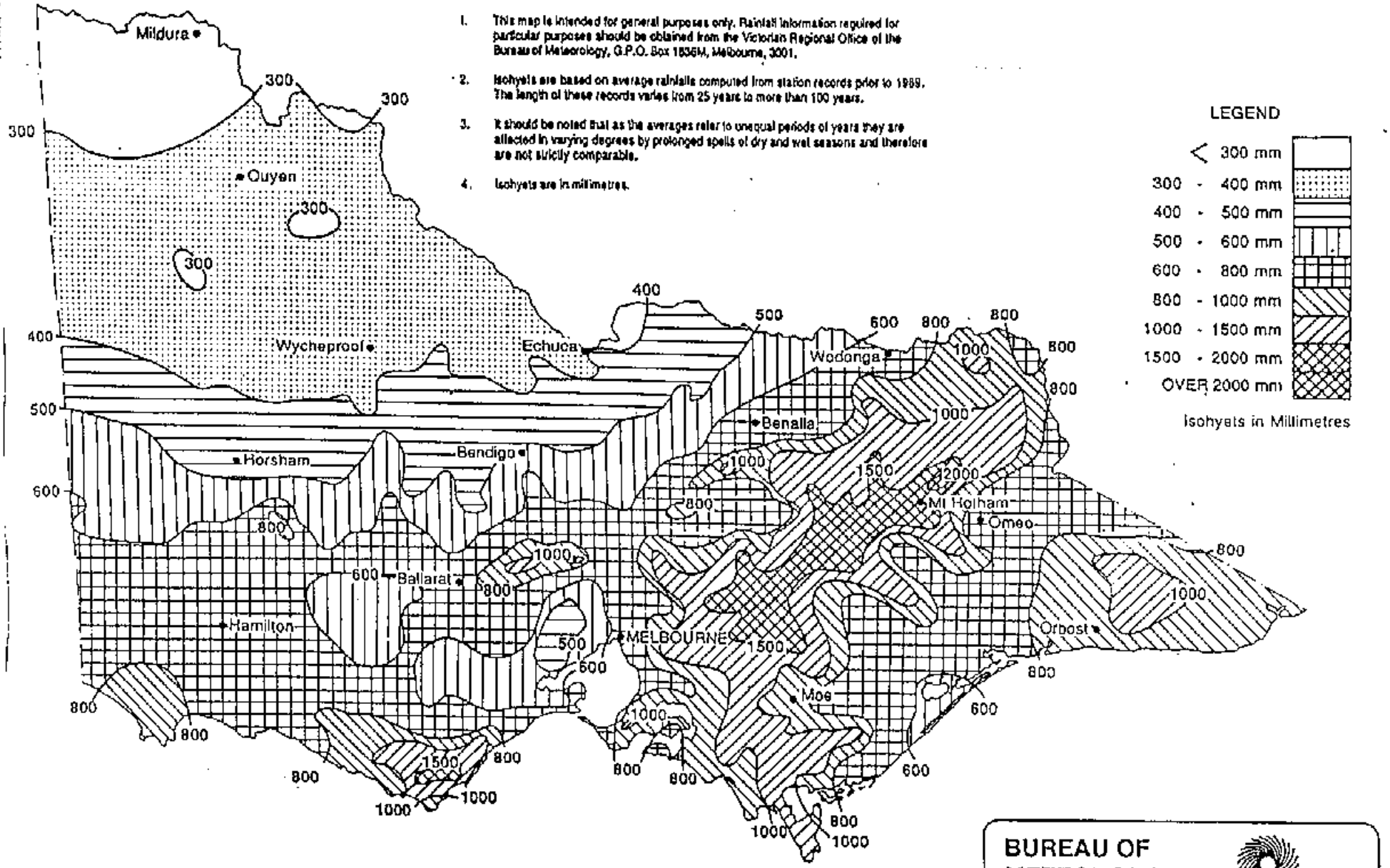
Table 2: Effective Rainfall Probability

Percentage chances of receiving monthly rainfall equal to or greater than the effective amount (at stations within or adjacent to Region)												
Rainfall Station	J	F	M	A	M	J	J	A	S	O	N	D
Winchelsea	17	31	50	61	85	95	97	96	94	69	56	34
Geelong	25	34	45	70	89	95	97	90	94	75	56	39
Barwon Heads	34	45	51	76	94	100	99	99	96	84	69	55
Lorne	42	42	64	86	97	100	100	99	100	96	82	62

Source: "Barwon Region" Resource Survey (1971), Government of Victoria.

MAP 2 AVERAGE ANNUAL RAINFALL

1. This map is intended for general purposes only. Rainfall information required for particular purposes should be obtained from the Victorian Regional Office of the Bureau of Meteorology, G.P.O. Box 1636M, Melbourne, 3001.
2. Isohyets are based on average rainfalls computed from station records prior to 1988. The length of these records varies from 25 years to more than 100 years.
3. It should be noted that as the averages refer to unequal periods of years they are affected in varying degrees by prolonged spells of dry and wet seasons and therefore are not strictly comparable.
4. Isohyets are in millimetres.



LEGEND

< 300 mm	
300 - 400 mm	
400 - 500 mm	
500 - 600 mm	
600 - 800 mm	
800 - 1000 mm	
1000 - 1500 mm	
1500 - 2000 mm	
OVER 2000 mm	

Isohyets in Millimetres

BUREAU OF METEOROLOGY

This table clearly indicates the winter/spring effective rainfall pattern, and that there is more chance of effective rainfall in the summer at coastal locations.

Temperature

Temperatures are greatest in February and lowest in July. They also tend to be slightly higher in the northern regions of the Shire in summer and lower in winter. The influence of the sea tends to make for more even temperatures on the coast.

Table 3: Average and Extreme Temperatures, and Average Saturation Deficit (monthly)

	Data (°C)	No. of years of record	J	F	M	A	M	J	J	A	S	O	N	D	Year ave
Geelong	Avg max temp	61	25.0	24.9	23.2	19.8	16.6	14.1	13.6	14.8	16.8	19.3	21.4	23.2	19.4
	Avg min temp	61	13.2	13.8	12.6	10.3	8.1	6.2	5.3	5.8	6.9	8.4	10.2	11.9	9.4
	Avg mean temp	61	19.1	19.3	17.9	15.1	12.3	10.1	9.5	10.3	11.9	13.9	15.8	17.5	14.4
	Highest temp on record	62	44.4	42.3	41.6	34.9	29.2	23.9	21.8	25.8	33.3	36.0	40.5	41.8	44.4
	Lowest temp on record	60	5.8	5.0	3.1	1.7	-1.1	-1.7	-2.8	-1.5	-1.1	-0.3	1.7	3.2	-2.8
Lorne	Avg max temp	50	22.9	22.6	21.6	18.9	16.2	13.6	13.1	14.2	16.2	18.2	19.8	21.4	18.2
	Avg min temp	50	12.2	12.6	11.9	10.2	8.7	6.8	6.2	6.3	6.9	8.1	9.4	10.8	9.2
	Avg mean temp	50	17.5	17.6	16.7	14.5	12.5	10.2	9.7	10.3	11.5	13.1	14.6	16.1	13.7
	Highest temp on record	45	43.6	41.7	40.9	36.1	26.1	19.4	20.0	25.1	30.8	38.3	37.8	40.7	43.6
	Lowest temp on record	45	4.4	5.0	2.8	2.8	0.0	-1.1	-1.1	-1.1	0.0	0.6	1.7	2.2	-1.1

Source: "Barwon Region" Resource Survey (1971), Government of Victoria.

2.2.4 Water Resources

The topography of the region has a significant influence on its water resources. The Otway Ranges in the south western part of the Shire receives the highest rainfall and there are many creeks and rivers running south to Bass Strait and north to the Barwon River. The rainfall in the north of the Shire is lower and the country much younger geologically. Hence the run off into streams is irregular and summer flows of the smaller streams are unreliable. However, the major tributaries of the Barwon - the Leigh and Moorabool Rivers - arise in the Central Highlands, to the north of the region. This area is wetter than the volcanic plains and hence these rivers receive valuable run off from these areas.

Streams in the region exhibit an inverse relationship between flow and salinity. When the flow is high the salinity tends to be low (often less than 500 EC[4]). When the flow is low the salinity level becomes high (often >3000 EC). After long periods of low flow the salinity level increases. Salinity in the region's streams is increasing over time. Table 4 indicates some important salinity levels in relation to water use and health.

[4] NOTE: "EC" is electrical conductivity. The more salt there is in water the higher is its EC reading. 1 EC unit = 0.67 part per million.

Table 4: Some Important Salinity Level EC Readings

Good quality irrigation water	300 EC
Desirable level for human consumption	800 EC
Upper level for satisfactory fish population	1300 EC
Upper limit for human consumption	2500 EC
Maximum level for irrigated lucerne and crops	3000 EC
Upper limit for most livestock	10000 EC
Sea water	33000 EC

Source: "Restoring the Balance", A strategy for managing salinity in the Corangamite Salinity Region (December 1992), Corangamite Salinity Forum.

Streams

The principal stream in the Shire is the Barwon River which arises in the Otway Ranges. It travels north-east to Winchelsea and then east, forming the northern boundary of the Shire, before travelling south-east from Geelong to discharge at Barwon Heads, via Lake Connewarre.

There are significant variations in flow in the river. For example, at Winchelsea between 1907 and 1965 the ratio of the maximum to the minimum flow of the Barwon River was 17 times.

The Corangamite Region Salinity Study published in December 1992 reported that salting in the river has increased by 12% from 1956-60 to 1981-86. The Rural Water Corporation monitors flows and salinity in the river.

The level of salting in the river has been increased by the Leigh Calvert drainage scheme, which drains salty water from Lake Colac, via the Birregurra Creek, to the Barwon River. The drain is managed by a committee which was set up by the Minister for Natural Resources, Mr G. Coleman. The Minister has set down rules which must be followed by the Committee in the operation of the drain. The Committee is supervised by the Otway Region Water Authority (now Barwon Water).

Salt is also added to the Barwon River by the Woady Yaloak diversion. This diversion was designed to divert water from the Woady Yaloak river via the Warrambine Creek to the Barwon River, and to reduce the water volume that flows to Lake Martin, which floods adjoining farm land after periods of high run off. The diversion is managed by the Woody Yaloak Management Committee and supervised by the Southern Rural Water Authority.

The Barwon River is used for stock, domestic, dairy, irrigation and industrial uses. There are 64 water licences issued (refer Table 5 below) for 1912.3 ML of water use. In addition, those properties which adjoin the river have a "riparian right" (right by virtue of owning land adjoining the river) to use it. Southern Rural Water is of the view that the resources of the river are currently fully committed and there is no scope for increased water use, although the use of the river is under review and this now may change. (Private communication with Southern Rural Water).

Table 5: Water Licences Issued for the Barwon River

	No. of licences	Volume (ML)	Areas irrigated
Barwon River upper and lower	32	458.7	76.9
Barwon River middle	32	1426.6	174.8
TOTAL	64	1912.3	251.7

Source: Southern Rural Water Report, May 1995.

The Thompsons Creek rises in the centre of the Shire. It flows east and discharges near Breamlea. It is being monitored by the Southern Rural Water for flow and salinity. Records are only available for just over five months of flow, but show that some patterns of flow and salinity are evident.

When large flows occur the salinity is reduced, although to levels which are still quite high (10000 EC to 5000 EC). With these levels of salinity in water flows the catchment is likely to be highly salinised, producing both a small base flow from the saline groundwater intrusions and run off from salinised land. The Rural Water Corporation states that "...the salinity and behaviour of this stream is particularly complex and difficult to understand." (Corangamite Salinity Forum Report, June 1995). The creek drains one of the "Hot Spot"[5] areas recognised in the Corangamite Salinity Study. This area is in the vicinity of Moriac.

Lakes

There are three main lakes in the Shire (Lakes Murdeduke, Modewarre and Gherang) and one main reservoir - the Wurdiboluc Reservoir south-east of Winchelsea.

The largest lake is Lake Murdeduke in the north west of the Shire. It was formed by a basalt barrier damming the flows of the Mia Mia and Mt Hesse creeks. The other two lakes occupy depressions. All of these lakes are brackish (between 1670 and 5000 EC).

Wetlands

Several wetlands other than open lakes exist in the Shire. The values of the wetlands are discussed in the Surf Coast Environmental Strategy.

Groundwater

The northern basalt areas of the Shire have readily available ground water which is frequently 10-30 metres deep. The bores have relatively low flow rates, are usually saline, making them suitable for stock water only in the majority of situations.

Artesian waters are found at greater depth in some southern areas of the Shire. The geology of the region is complex and the extent of these resources is not fully known. There are however two large bores, one at Anglesea used by Alcoa in generating electricity from brown coal, and one near Barwon Downs (just out of the Shire) used by Barwon Water to supplement town water supplies.

[5] A "hot spot" is defined as an area having high salinity and a priority for salinity control.

2.3 Problems

2.3.1 Salinity

Salinity is a major problem for the Shire. It has already been noted that salting in the Barwon River has increased significantly in recent years (12% in a 26 year period), and that salting is a serious problem in the Thompsons Creek, rendering it too salty for stock water at certain times of the year.

The Corangamite Salinity Study also identified that the salting of land has increased at the rate of 2.6% p.a. (over a 15 year period to 1992) in the eastern (Barrabool) area of the Shire, and 2.3% p.a. in the western (Winchelsea) area of the Shire.

Two "hot spots" were identified between Barwon Downs and Moriac. These areas cover approximately 24000 ha between the foothills of the Otway Ranges and the Barwon River Valley. Most of this area is in the Shire. These hot spots are shown on Map 3.

About 1100 ha. of salt affected land has been mapped and the area is growing at the rate of 3.4% per annum. The cause of the salinity is local groundwater in most cases. Altogether 380 ha have been identified in the Barrabool area of the Shire and 1396 ha. in the Winchelsea area. A detailed map of these areas identifies the levels of salting (Map 4).

Salting in the Thompsons Creek area has probably been caused by the removal of trees in the catchment areas of the creek causing increased water tables and hence outbreaks of salting. Salting in other areas is also probably caused by the removal of trees but also by other complex changes in land use.

2.3.2 Flooding and Waterlogging

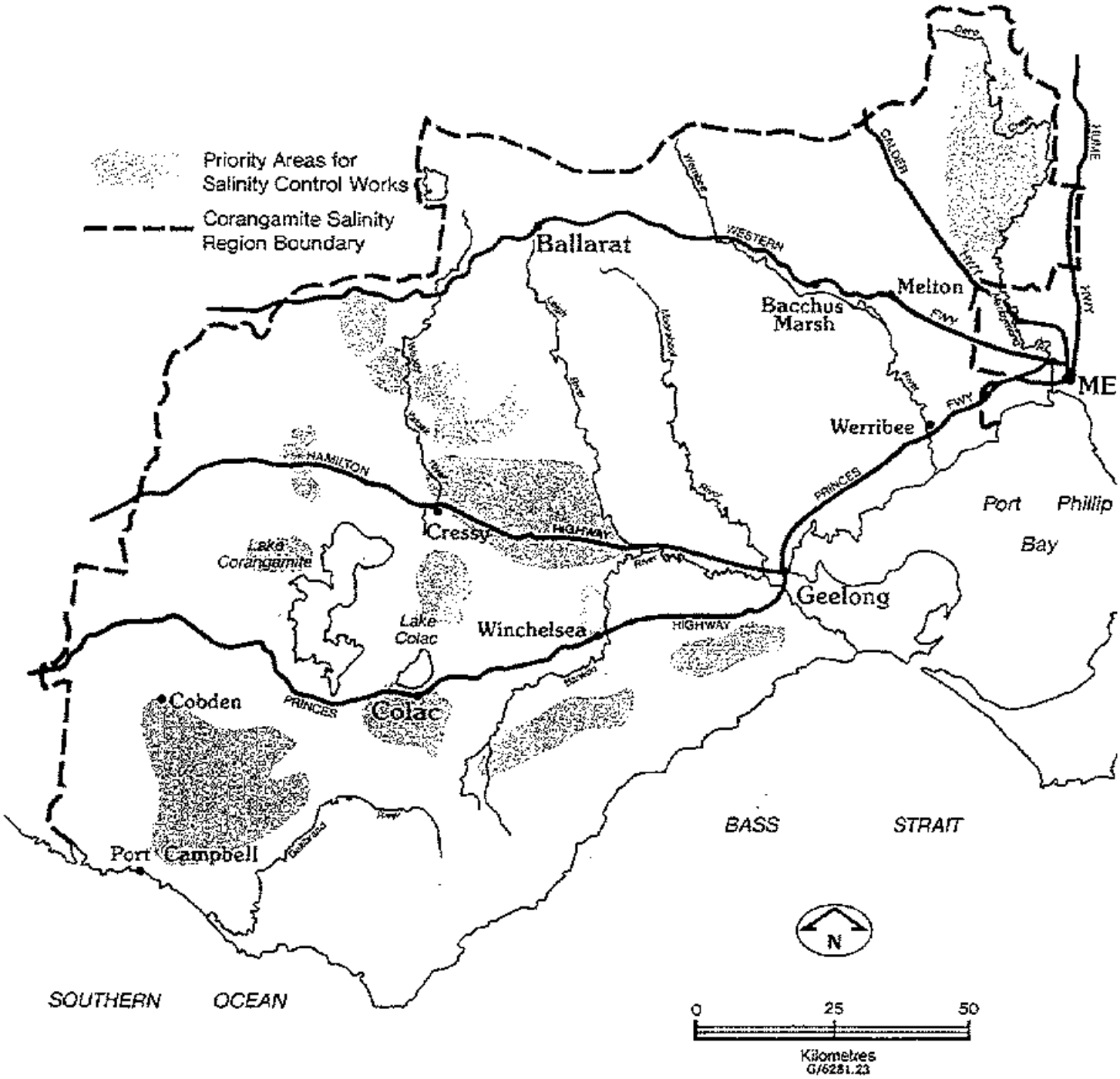
Most of the flooding and waterlogging problems occur in the northern volcanic plains. Prior to the quaternary (recent geological age) basalt flows of this region the Barwon River flowed to the sea south of the Barrabool Hills via a gap in the vicinity of Lake Modewarre. The subsequent lava flow blocked the river course in this locality and caused a large area of inundation west of Winchelsea and Inverleigh.

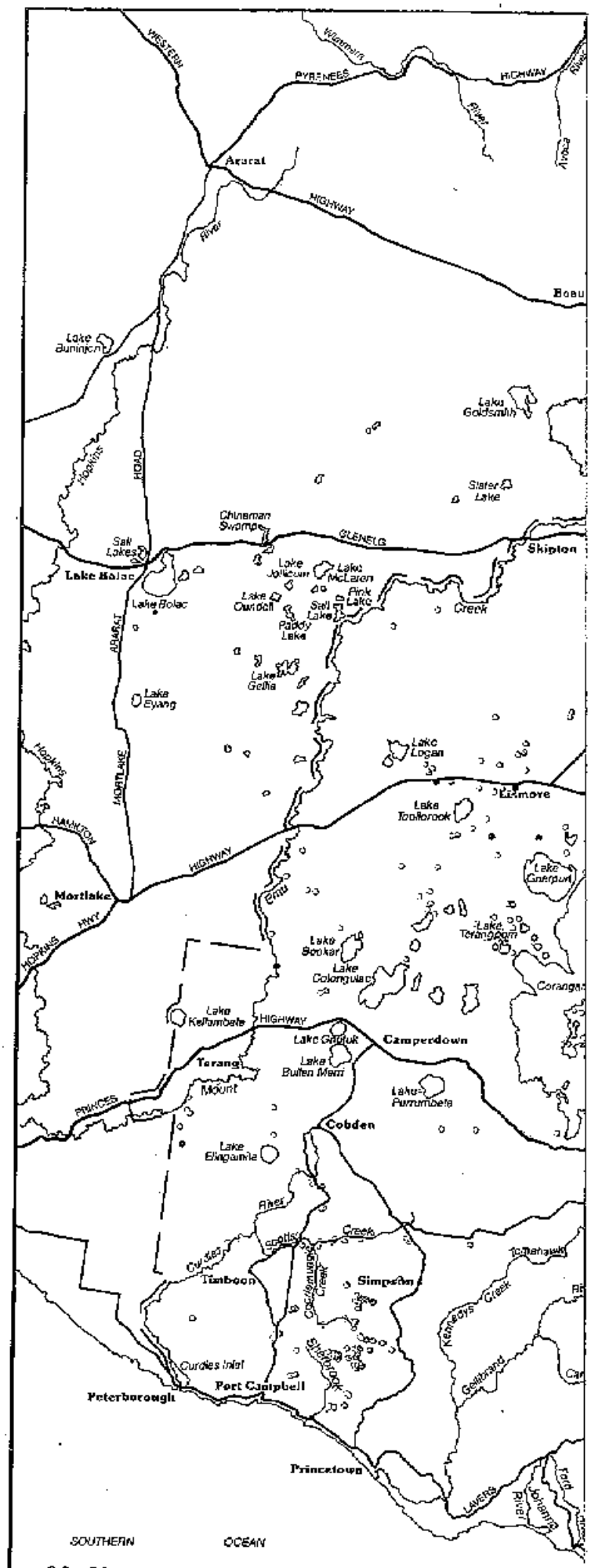
The former Lake Corangamite then occupied an area of about 1800 square kilometres. It overflowed to the east at Inverleigh and the lake drained over time and shrank leaving deposits which emerged as terraces and lunettes.

The drainage lines of these volcanic plains have not yet consolidated. The passage of water is impeded by depressions and basalt barriers, rendering many areas subject to flooding.

Waterlogging is also a problem after heavy rain in many areas of the Shire. Those soils which have heavy clay subsoils are all prone to water logging. The volcanic soils in the north and sandy sediments over clay in the south all suffer in this way.

MAP 3 CORANGAMITE SALINITY REGION "HOT SPOTS"





CONSERVATION AND NATURAL RESOURCES
Prepared by Drafting Services 1992
Source information compiled by regional staff of Department of Conservation and Natural Resources.

CORANGAMITE SALINITY REGION

SALINITY DISCHARGE SITES

AREA

- < 10 Ha.
- 10 - 100 Ha.
- > 100 Ha.
- Lakes

SURF COAST RURAL STRATEGY

MAP 4 SALINITY DISCHARGE SITES

2.3.3 Soil Erosion

Soil erosion by water is a problem in the southern agricultural areas of the Shire where slopes are steep and soils are of sedimentary origin. If the banks of streams are not protected by vegetation then soil loss can be high. These soils are often deposited in lower sections of the streams adding to degradation of the habitat. It has been estimated that 30% of the streams of the Barwon River are in poor condition in terms of habitat. (Corangamite Regional Landcare Plan, June 1993)

Two important types of soil erosion have been identified by the DNRE - mass movement (land slip), and water erosion (tunnel and gully). The landslip areas are located on the north west slopes of the Otway Ranges especially where trees have been removed from steep slopes. The susceptible water erosion areas are also located on the north west slopes of the Otway Ranges but extend over a much greater area, nearly to the Barwon River.

2.3.4 Soil structure and nutrient decline

A soil with good structure has the ability to develop appropriate sized "crumbs". The crumbs are held together by organic matter, and soils with good crumb structure facilitate the growth of healthy vigorous plants. Much of the organic matter holding the crumbs together comes from live and decaying root systems of plants. Hence a healthy and vigorous plant population helps to develop healthy and productive soils. Soils with poor plant cover are often low in organic matter and nutrients and are poorly structured. If, in addition, they are periodically waterlogged then soil structure further deteriorates. Any soil waterlogged for 24 hours or more loses its nitrate nitrogen which results in drastically reduced plant production.

In recent years many farmers have not had sufficient income to invest adequately into the sowing of pasture and trees, and the adequate fertilisation of pastures. Consequently plant production in the area has declined as has soil structure. This soil structure decline is particularly evident on areas which flood eg. along the Barwon River downstream from Winchelsea. This decline is often associated with increased salinity and poor management practices.

2.3.5 Pests

Animal and Insects

The major pests of the district are rabbits, foxes and crickets in the northern areas of the Shire, and feral pigs, goats and cats in the Otway Ranges. Where pastures adjoin native forest areas kangaroos and wallabies are often a problem for agriculture.

Plants

Serrated tussock is a problem in two areas in the Shire, the northern volcanic area north of Modewarre, and an area north of Torquay. It has recently been the subject of a report by Inland Agricultural (April 1995) which identified that most of the northern and eastern areas of the Shire are at risk from its spread. Ragwort, blackberry and ox-eye daisy are problems in the areas adjoining the Otways.

2.3.6 Pasture Problems

As soil fertility declines (Olsen P levels less than 10 ppm) then many improved pasture species start to die out. The gaps left in pastures are invaded by annual weeds. Capeweed and erodium are the most common broad leafed weeds, whilst silver grass, brome and barley grasses are common annual weed grasses.

Creeping bent grass is a common perennial grass weed present throughout the area. It spreads in pastures which are declining in fertility and is very difficult and expensive to remove.

2.4 Land Classification

2.4.1 Land Systems

As previously noted, a *land system* is an area with similar rainfall, geology, topography, soils and indigenous vegetation. The combination of similar climate, soils and landform interact over time to influence the distribution of soils and vegetation.

Land systems are identified by observing aerial photographs of an area and making field observations of soils, vegetation and climate.

A land system is a complex mapping unit in that it contains a pattern of land components, each of which has little variation in climate, lithology (rock type), land form, soil and indigenous vegetation. It is viewed as a unit of management for broad-scale uses such as dryland farming and forestry.

The land systems have been mapped by the Centre for Land Protection Research, (Map 5) auspiced by the former Department of Conservation and Natural Resources 19/9/95. This level of detail is the minimum level needed for land classification.

The term 'land system' has been adopted by agricultural scientists, geographers and land use planners responsible for multi purpose land evaluation. The concept of land systems is well accepted by those involved with land management.

This description does not however, provided sufficient detail to enable adequate land classification to take place. A more detailed description and mapping of the land systems has been undertaken based on the work of Pitt, 1981 and is outlined in Appendix 2. It includes an assessment of agricultural quality in addition to being classified on land system. These systems are classified using the methodology set out below. Specific problem areas are also identified.

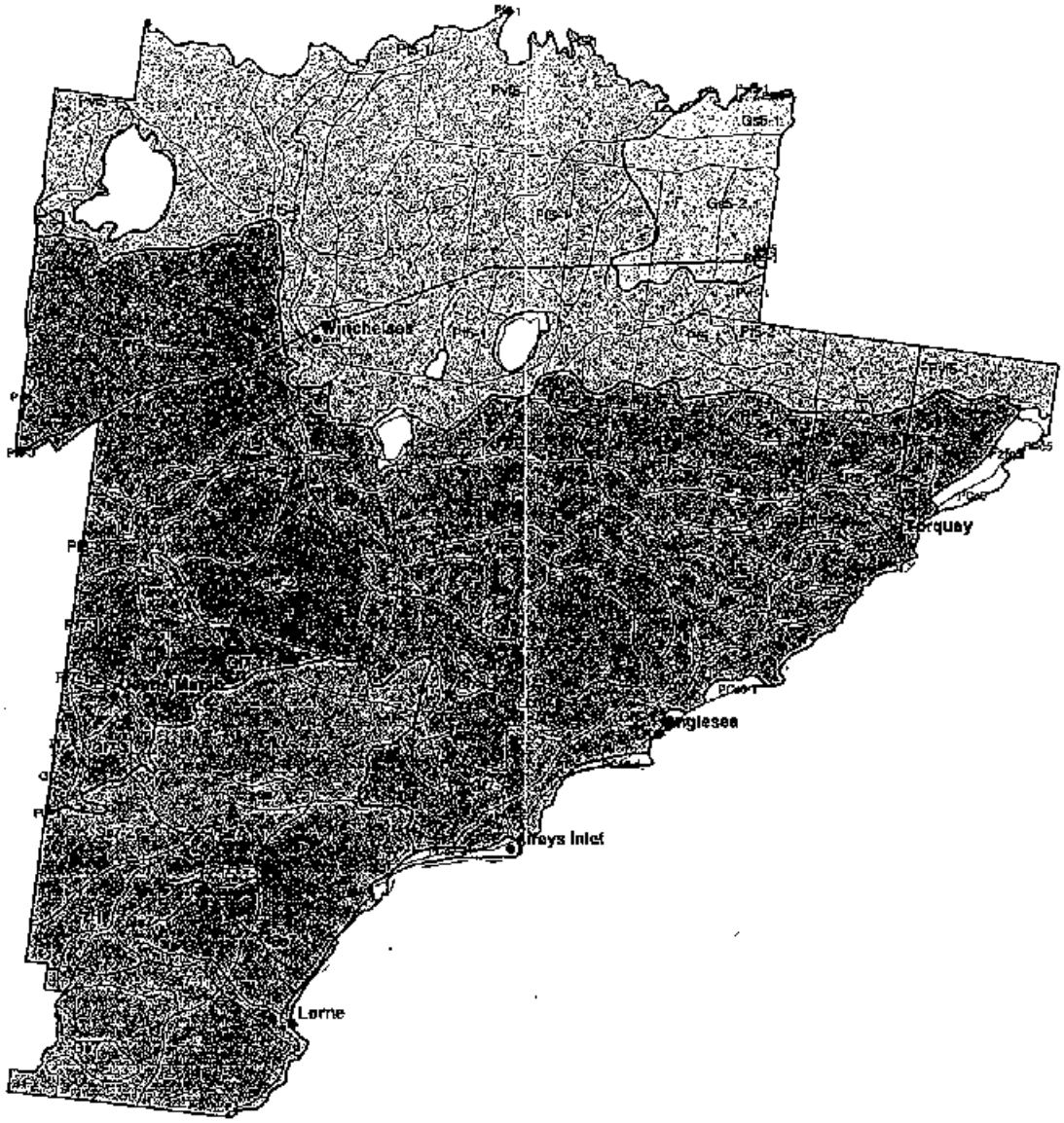
2.4.2 Methodology

In preparing the classification system used in this report the work of Phillips, Modra and Swan-Volum was reviewed. They prepared land management reports for the Geelong Regional Commission (Phillips, August 1978), Westernport Regional Planning Committee (Phillips, May 1993), the Shire of Winchelsea (Modra, November 1984), and the Department of Agriculture -

LANDSYSTEMS OF THE SURF COAST SHIRE

SURF COAST RURAL STRATEGY

MAP 5



This map shows the range of different landsystems within the Surf Coast Shire, and highlights the Geomorphic Units (GMU's) of the project area. The landsystems information has been extracted from the Statewide Landsystems database which is held on the Department of Conservation and Natural Resources (DCNR) GIS System. The landsystems data has been input to the GIS at 1:250000 scale.

The landsystems information was compiled from various sources, mainly DCNR Land Protection Division (LPD) and Soil Conservation Authority (SCA) publications. Additional landsystems mapping was carried out by J.N.Rowan in areas not covered by previous reports. Geomorphic Units (GMU's) were identified by J.J.Jenkin and J.N. Rowan.

Each landsystem is identified firstly by the GMU in which it lies. Within each GMU the landsystems are identified by symbols which reflect the landform, lithology and climate characteristics of that landsystem. Refer to the legend for the breakdown of these features.

Roads, hydrology, topographic features and the shire boundary have been extracted from the DCNR Corporate GIS 1:500000 Library area.

Map production has been performed by:
Mr. Keith Reynard
Information Management Unit
Centre For Land Protection Research
Osborne Street
BENDIGO

Phone: (054) 446 774
Fax: (054) 446 721

KEY TO LANDSYSTEMS

GEOMORPHIC UNITS LEGEND

- Dissected Fault Blocks of the South Victorian Uplands (Otway Ranges)
- Moderately Dissected Blocks of the South Victorian Ranges (Barrabool Hills)
- Western Victorian Undulating Volcanic Plains (Western District)
- Stony Undulating Volcanic Plains of Western Victoria (Western District)
- Dissected South Victorian Coastal Plains (Port Campbell)
- Sand and Clay Plains of the South Victorian Coastal Plains
- Barrier Complexes of the South Victorian Coastal Plains

LANDFORM DESCRIPTION

- C Coastal dune
- E East-west dune
- F Present floodplain
- G Gentle to moderate hill
- I Irregular dune
- L Lunette
- P Plain above flood level
- R Stranded beach ridge usually trending east-west
- S Steep mountain and hill
- W Weakly elongated dune
- Y Gypseous dune

LITHOLOGY DESCRIPTION

- c Coarsely-textured unconsolidated deposits
- f Finely-textured unconsolidated deposits
- g Granites and gneisses
- l Limestone
- s Sedimentary rocks
- v Volcanic rocks
- z Saline finely-textured deposits

CLIMATE DESCRIPTION

- 2 200-300mm
- 3 300-400mm
- 4 400-500mm
- 5 500-600mm
- 6 600-700mm
- 7 > 700mm temperate
- 8 > 700mm montane
- 9 > 700mm subalpine

Scale 1:250000

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Conservation and Natural Resources

September 12, 1996

Gippsland area (Swan-Volum, 1984). In preparing these reports they reviewed work of the Soil Conservation Authority in land classification.

All three authors classified land into 5 classes. Modra took into account existing land use, productivity, versatility and other criteria. The Swan-Volum method was based primarily on soils, slope and climate in an attempt to describe the land's inherent qualities. The authors were keen to classify land in a way that would not change with time and management. Phillips in his Westernport study pointed out the limitations of this classification. He states that the classifications are useful in identifying the best and worst land classes and their most suitable uses. The problem arises with the middle categories which need further analysis relating to existing uses.

It is important to emphasise that in this report land is classed in terms of its inherent qualities. It does not describe the current level of management. Class 1 land which has been poorly managed may be less productive than Class 3 land that has been well managed. Poor management can damage soil structure, encourage erosion, increase weed population and deplete soil fertility. Well managed class 3 land may have been drained, well sown to pasture, highly fertilised and as a consequence be capable of higher carrying capacity than inherently much better land.

The classification system used in this section is an adopted Swan-Volum model. It is first important to classify the land according to its inherent qualities because this will not change greatly with time. The five classes used by Swan-Volum are used but modified to suit Surf Coast Shire and are set out in Table 6.

2.4.3 Classification Criteria

Analysis of the criteria and classes used by Phillips in the Westernport study and adopted from the Swan-Volum study reveals that most of the land in the Surf Coast Shire would be classed as "very poor" because of the length of growing season. The 5 classes are appropriate to the higher rainfall temperature grassland areas of south-east of Australia but need adjusting for each district to reflect the length of the growing season of that district. Hence the classes are used relative to the district in question. Hence Class 1 or land with very high productivity is the best in the district but not directly comparable with Gippsland, parts of which have much higher rainfall and a longer growing season. The criteria on which the classes of agricultural quality are based in this study are set out in Table 7.

Table 6: Classes of Agricultural Quality

Class 1 or Very High	Agriculturally versatile land, with high inherent productive potential through possessing deep permeable and fertile soils, a flat to gently undulating land form, and a growing season of at least 7-8 months.
Class 2 or High	Agriculturally versatile, but requiring a higher level of inputs to achieve the same productivity as Class 1. Slope is greater, soils more variable, and the growing season is 7-8 months.
Class 3 or Average	Sound grazing land but limited in versatility. Generally unsuited to cropping either because of contour, lack of topsoil depth, or presence of rock. Fertility levels are moderate to low, growing season limited to 6-9 months depending on the rainfall. With high inputs, high productivity levels may be achieved.
Class 4 or Poor	Capable of growing under moderate to low stocking rates where clearing has occurred. Slopes are moderate to steep, with shallow infertile soils which need care in their management. Fertility levels generally low. Erosion hazard high. Forest is often the best and most stable form of land use.
Class 5 or Very Poor	Land unsuited to agriculture. Constraints may be steepness of slope, shallow, sandy or rock soils, high erosion susceptibility. Environmental stability may be best achieved through isolating areas and strictly controlling, or eliminating agricultural land uses.

Table 7: Criteria and Performance Values to Measure Agricultural Land Quality

	Land Quality Classes				
Feature	Very high	High	Average	Poor	Very poor
Length of growing season (months)	7 - 8	7 - 8	6 - 8	6 - 8	6 - 8
Availability of supplementary water	Yes	Yes	No	No	No
Slope %	0 - 5	3 - 6	6 - 12	12 - 20	20 - 30
Drainage	Good	Moderate - easily drained	Moderate - not easily drained	Poor	Very poor
Soil	Friable loams	Friable loams	Clay Loams	Sands & clay	Sands & clay
Profile permeability	High	Moderate	Mod/low	Low	Low
Depth of friable soil	50 cm	20 - 30 cm	10 - 25 cm	5 - 10 cm	< 5 cm
Soil fertility	High	Mod/high	Moderate	Low	Low
Depth to rock	1 m	1 - 0.5 m	0.5 m	0.5 - 0.1 m	< 0.1 m
Flooding frequency (years)	None	1 in 15	1 in 10	Annual or not at all	Annual or not at all
Arability	Excellent	Good	Moderate	Poor	Nil

2.4.4 Agricultural Land Quality

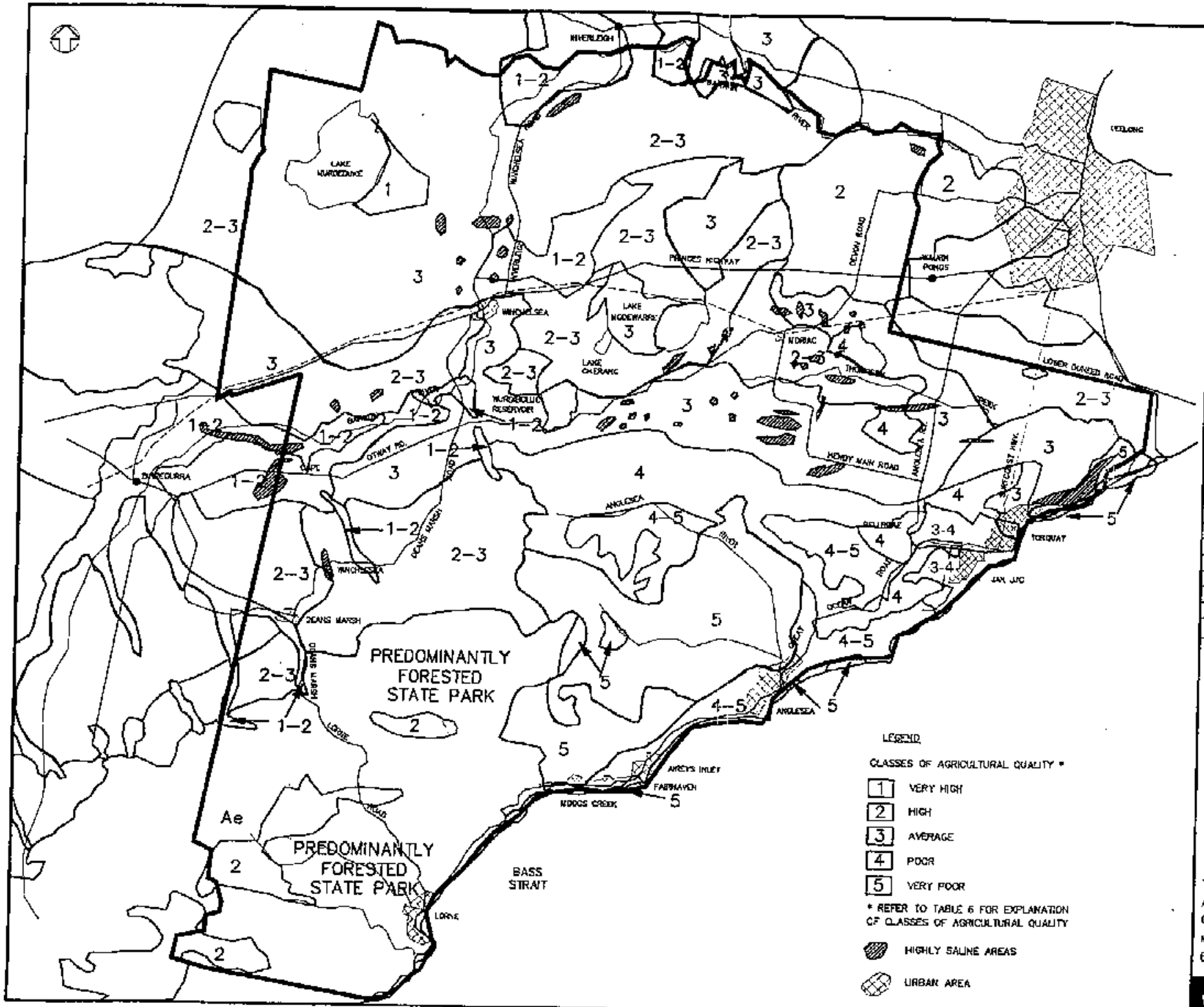
A classification of agricultural land quality for the Surf Coast Shire based on the five criteria shown in Tables 6 and 7 is provided on Map 6.

The main locations of each of these classes of land are set out in Table 8. Also included in this table is a description of the predominant farming use within each land system. Definitions of these farming uses are set out in Appendix 4.

The classification of land is only as accurate as the map on which the classification is based. Most land systems contain a range of soils and hence a range of classifications would be desirable for detailed land capability. This would involve mapping of at least 1:25000. Because some land systems contain a range of soils a range of classifications is provided.

Table 8: Agricultural Quality Rankings by Location (see Map 6)

	Land Systems		
	Broad description	Detailed	Major Farming System
Class 1 Very High	Lake and dune system Alluvial plains	Murdeduke, Lakebank, Barwon River alluvium	Mixed farming Mixed farming
Class 2 High	Southern Upland Hills (NE) Basalt Plains	Barrabool Hills, Birregurra, parts of Winchelsea, Mt Moriac, Mt Pollock, Freshwater Creek	Mixed farming Mixed farming
	Southern Upland Hills (SW)	Mount Sabine, Deepdene	Mixed farming Intensive grazing
Class 3 Average	Basalt Plains	Freshwater Creek, Winchelsea	Grazing
	Sandy clay rises	Bellbrae, Paraparap, Pennyroyal, Connewarre, Thompsons Creek	Grazing
Class 4 Poor	Sandy clay rises Southern Upland Hills Sandy clay plains	Gherang Gherang, Otway Ranges	Grazing/Forestry Grazing/Forestry Grazing/Forestry
Class 5 Very Poor	Sand Hills	Bald Hills, Moggs Creek, Anglesea	Forestry or Conservation



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CLIENT
SURF COAST SHIRE

PROJECT
RURAL LAND USE STUDY

TITLE
AGRICULTURAL LAND QUALITY

MAP
6

A3

Woodward Clyde

MELB/SJL/10-95

2.4.5 Minimum areas to sustain farming systems

Land systems can be analysed for the purpose of identifying recommended minimum lot sizes for the sustainable management of land. Minimum lot sizes are based on the technical viability of a land parcel in an area, rather than the economic viability of a farm holding. Technical viability refers to a land parcel being of a size that enables and facilitates the land owner to undertake sustainable land management practices. Land classed as being of high agricultural quality can generally be more intensively managed and hence managed in smaller parcels than can land of poorer agricultural quality.

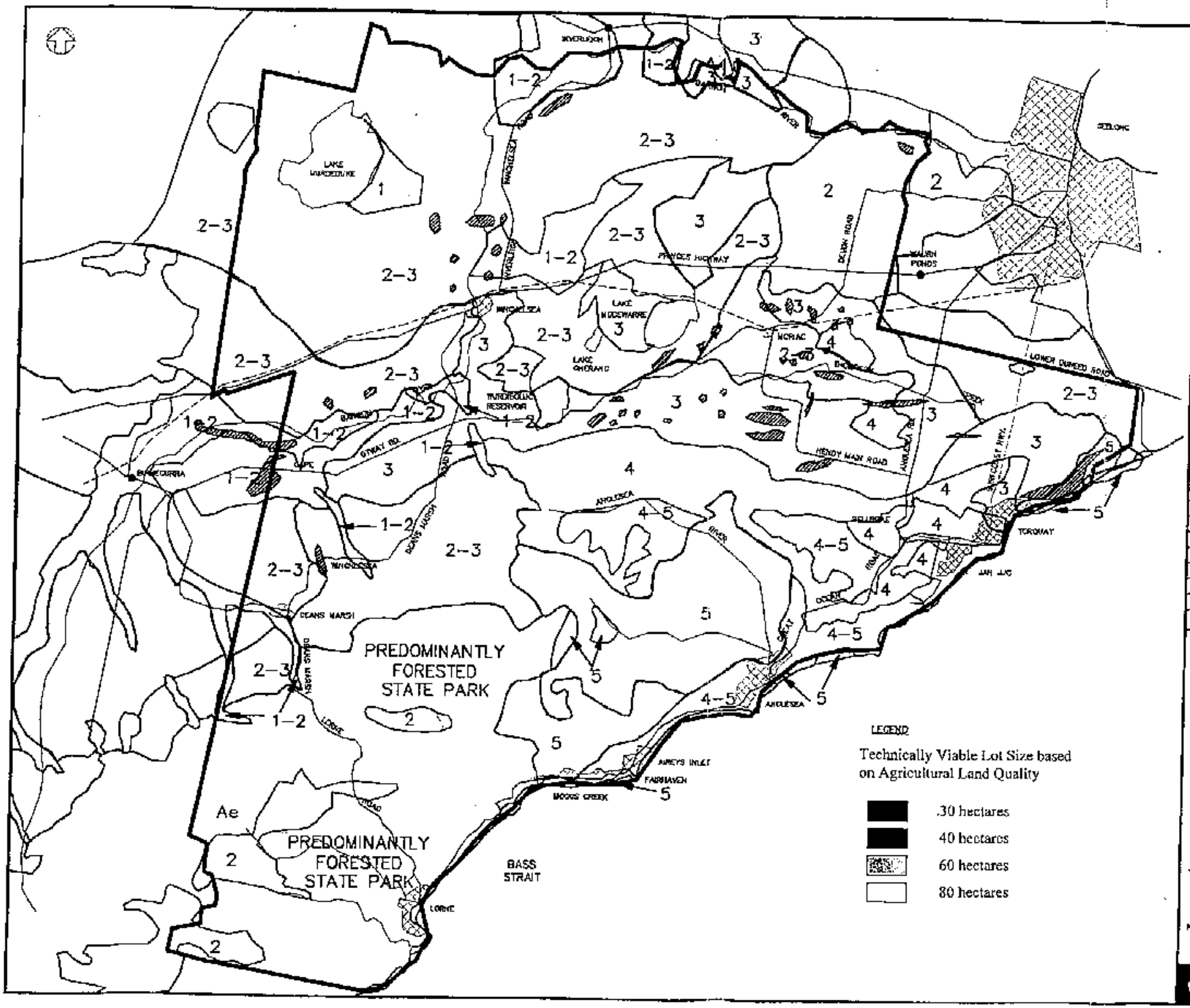
In the Surf Coast Shire there are only small areas of high quality agricultural land (class 1) - insufficient to justify identification of an individual allotment size. Nevertheless, land classified as 2 and 3 is also considered to be good quality agricultural land. Some land has been classified 2-3 because the soil type is quite variable, and there are pockets of better land interspersed with poorer land.

Recommended technically viable lot sizes for the Surf Coast Shire, based on land quality alone, are set out in Table 9 and shown on Map 7.

Table 9: Technically Viable Lot Sizes

Land system	Farming system	Classification of Land Quality	Technically viable lot sizes ha
Anglesea	Grazing, forestry, conservation farming	4-5	80
Bald Hills	Conservation farming, forestry	5	80
Barrabool	Intensive cropping, intensive grazing, mixed farming	2	40
Barwon River	Intensive cropping, intensive grazing	1-2	40
Bellbrae	Grazing, forestry, conservation farming	3-4	60
Birregurra	Intensive cropping, intensive grazing	1-2	40
Deepdene	Intensive grazing, forestry	2-3	40
Freshwater Creek	Grazing	2-3	60
Gherang Gherang	Grazing, forestry, conservation farming	4	80
Moggs Creek	Forestry, conservation farming	5	-
Mooleric	Grazing	3	60
Mt Moriac	Intensive grazing, mixed farming	2-3	40
Mt Pollock	Grazing, mixed farming	2-3	60
Mount Sabine	Intensive grazing, intensive cropping, forestry	2	40
Murdeduke Lake bank	Intensive cropping, intensive grazing	1	30
Paraparap	Grazing, intensive grazing, conservation farming, forestry	3	60
Pennyroyal	Intensive grazing, conservation farming, forestry	2-3	60
Thompsons Creek	Grazing, forestry	3	60
Winchelsea	Grazing, mixed farming	2-3	60

Note: Lot sizes do not always correspond exactly with land quality. This is mainly because the area of land has a range of soils and hence quality. The lot sizes are broadly based on what is most desirable for the region, provided problems are not created.



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CLIENT
SURF COAST SHIRE

PROJECT
RURAL LAND USE STUDY

TITLE
TECHNICALLY VIABLE LOT SIZE

MAP
7

A3

Woodward Clyde

MELB/SJL/10-95

3. RURAL INDUSTRIES AND LAND USE

3.1 Agricultural Land Use

This section investigates changes in land use and production and employment over a 10 year period. The data used in this report is provided by the Australian Bureau of Statistics (ABS) from its annual agricultural census for the years 1983/4 and 1993/94.

Statistics are only available for the former Barrabool and Winchelsea Shires. Although the combined areas of these two Shires comprises most of the new Surf Coast Shire (SCS) it does not entirely coincide. An area in the south west of Winchelsea Shire was lost to SCS when it was formed. Also a portion of Barrabool Shire was lost to the City of Geelong, and a small area of South Barwon Shire was included in SCS but is not covered in the enclosed statistics. Map 8 shows the old and new Shire boundaries.

The statistics covered in the following tables and graphs are therefore only an indication of changes that have occurred rather than the exact changes. As the former Winchelsea & Barrabool Shires represent the vast majority of the SCS they provide a good guide.

The ABS used the following parameters to determine whether or not they should be included in the agricultural census.

For 1983/84 — Any properties which are estimated to have a gross income from rural production of less than $2,500 (average over a 3 year period) are not included in the census.

For 1993/94 — As above except $5000 limit

The area analysed by the ABS is described as follows:

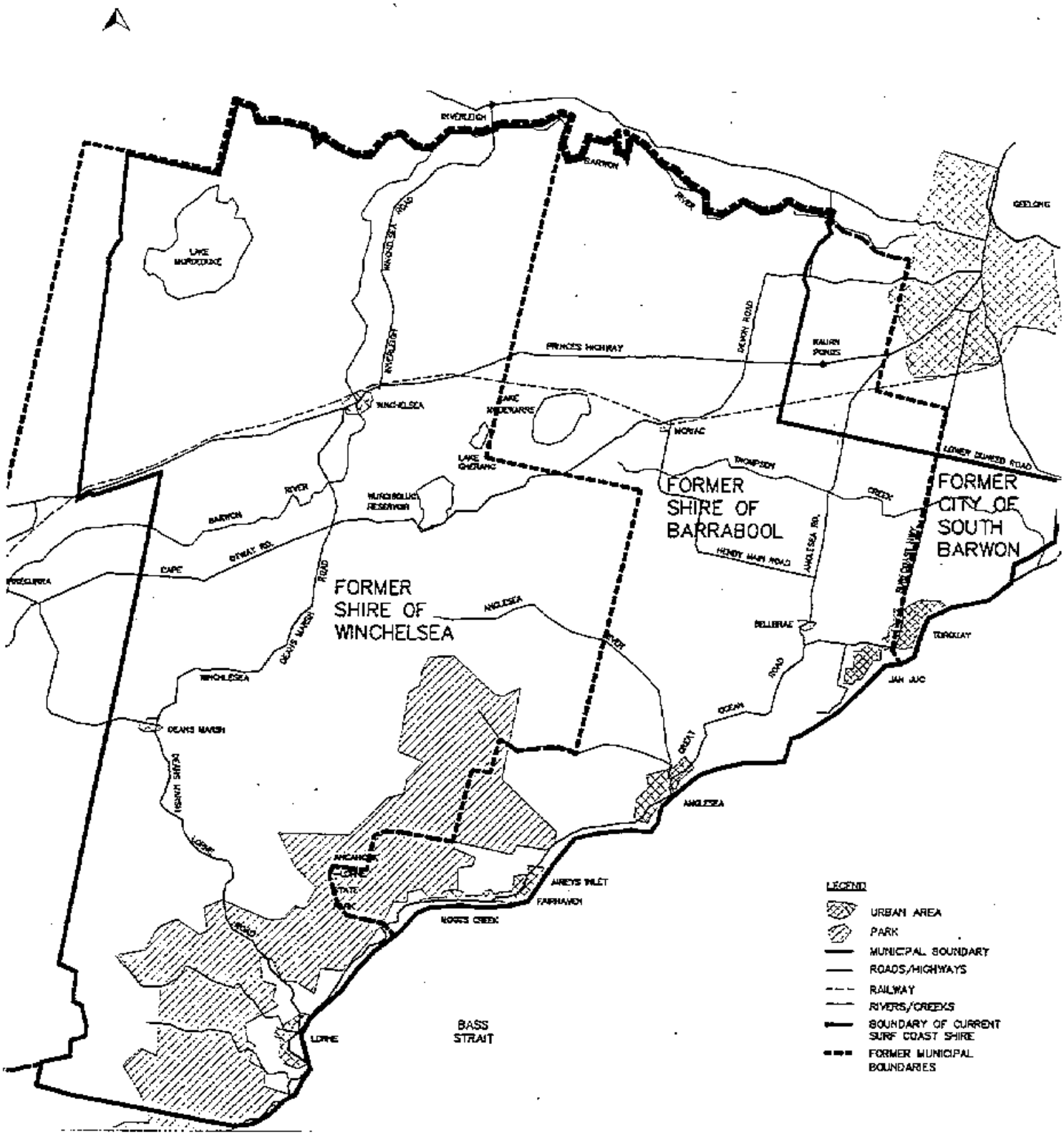
Table 10: Area in ABS Survey 1983/4 and 1993/4

	1983/84		1993/94		1993/94 as % of 83/84	No. of holdings lost
	ha	No. of respondents	ha	No. of respondents		
Barrabool (Part A & B)	34,952	258	27,239	176	78%	82
Winchelsea	76,476	319	62,803	247	82%	72
TOTAL	111,428	577	90,042	423		154

The fall in total land area analysed by the ABS was 21,386 ha. with a corresponding fall in the number of respondents by 154. Notwithstanding the change in criteria for analysis, this pattern is confirmed by the interpretation of data for the Shire which also shows that the number of agricultural holdings is generally falling.

SURF COAST RURAL STRATEGY

MAP 8 CURRENT AND FORMER MUNICIPAL BOUNDARIES



This general pattern of fall in area and number of respondents could arise because of one or all of the following reasons:

- a number of farms were taken out of rural production
- the value of production per farm fell
- there were a greater number of smaller farms
- amalgamation of farms.

The number of holdings analysed by the ABS contrasts with the total number of holdings in the Shire as shown in Table 11. (This table represents the whole Shire, not an amalgam of Barrabool and Winchelsea). For the 1993/94 year only 423 holdings were used in the survey out of 2008 rateable properties. This clearly illustrates the large number of part-time farms and rural residential properties that exist in the Shire (and which create gross farm incomes of less than $5,000 per annum).

Table 11: Number of Rural Rateable Properties

	10 hectares	11-250 hectares	251-500 hectares	501-1000 hectares	over 1000 hectares	Total
With Buildings	214	1048	35	7		
Without Buildings	80	603	14	3		
TOTALS	294	1651	53	10		2008

Source: Surf Coast Shire Rates Department

Appendix 4 presents the ABS statistics for the Shire which cover:
- areas of different types of land use;
- the stock numbers and production; and
- crop production and yields.

The major trends in agricultural land use between 1983/84 and 1993/94 can be summarised as follows:

- the number of rural holdings as analysed by the ABS decreased by 152 and the total land area analysed decreased by 21386 ha.
- the area cropped fell significantly, from 14,043 ha to 6,832 ha, while the yields per hectare increased significantly.
- total sheep and lamb numbers fell from 413,000 to 333,000 and as a consequence, so did wool production and lambs marked.
- the dairy herd remained about the same in size whilst the beef herd fell in size from 33,000 to 26,000.
- the number of chickens reared for meat rose significantly, from 1.17m to 2m.
- the use of artificial fertiliser fell slightly, from 33,000 tonnes to 30,000 tonnes.

3.2 Value of Rural Production

Important indicators of the value of agriculture to a region or community are the value of on farm production and the number of people that derive an income from agriculture within the area under consideration.

Gross Value of Agricultural Production

In assessing the value of agriculture to a region or community, typically reference is made to 'value at farm gate' and 'value beyond the farm gate'. The Gross Value of Agricultural Production is the best estimate of the farm gate value. An estimate of GVAP for each municipality within each state is made by the Australian Bureau of Statistics from information obtained in the Annual Agricultural Census. This value is defined as the value placed on recorded production at the wholesale prices realised in the market place. Appendix 6 displays the GVAP for Victoria on a commodity basis.

There are three important points which must be considered before interpreting gross value of agricultural production figures. Firstly, the 1992/93 census includes only those establishments undertaking agricultural activity which have an estimated value of agricultural operations of $22,500 or more. This excludes those establishments which make only a small individual contribution to overall agricultural production. Secondly, there is some duplication as the figures include certain agricultural commodities which are consumed as raw materials to produce other agricultural commodities (eg. hay consumed by livestock).

Finally, it is important to understand that the GVAP is based on the wholesale price for farm produce. Typically, the wholesale price is at the delivery point from the farm, for example, milk delivered to the dairy factory or livestock to the saleyards. In estimating that value, allowances have been made for transport and packaging to deliver produce to the wholesale selling point. Potential differences between the wholesale value and the 'farm gate' value can occur and ABS advice should be sought on an industry specific basis if detailed analysis of the data is to be made.

Seasonal and market conditions must also be considered when interpreting GVAP data. For example, drought conditions will reduce crop yields thereby decreasing the overall GVAP for crops. Similarly, the depressed wool prices of 1992/93 will be reflected in the GVAP for wool.

Tables 12 and 13 display GVAP for Barrabool and Winchelsea Shires for the years 1983/84 and 1992/93. Within each Shire the major commodity groups are separated and a gross value assigned. Commodity groups with a GVAP less than $100,000 are included under the heading of 'Other'.

The GVAP for the two Shires is then totalled in Table 14 to provide an indication of the GVAP for the Surf Coast Shire for which data is not yet available. Although these statistics are not for the exact area of the Surf Coast Shire they do provide a clear view of trends in agricultural production.

It can be noted that in 1992/93 the combined GVAP for Barrabool and Winchelsea Shires was $43m or 0.8% of Victoria's GVAP.

The Barwon statistical division, of which Surf Coast Shire is a portion, comprised 1,501 farms and generated $253m or 4.9% of the GVAP for the State.

Table 12: Barrabool Shire - GVAP

Commodity	1983/84 Amount ($)	% of total	1992/93 Amount ($)	% of total
Poultry slaughterings	251,070	2.9	3,942,501	32.3
Wool total	1,892,523	21.9	1,745,925	14.3
Cattle and Calves slaughterings	785,097	9.1	1,650,309	13.5
Milk Production	770,014	8.8	1,157,478	9.5
Total Pastures and Grasses	2,164,283	25.0	1,111,196	9.1
Sheep and Lamb slaughterings	938,391	10.8	1,020,777	8.4
Total Vegetables and Intensive Horticulture	26,318	0.3	644,990	5.3
Total Cereals for Grain and Oilseeds	1,180,570	13.6	259,091	2.1
Eggs Produced	553,208	6.4	211,682	1.7
Nurseries (exc Turf)	-		169,200	1.4
Cut Flowers	-		135,900	1.1
Other	103,046	1.2	145,115	1.2
TOTAL	8,664,520	100	12,194,164	100

Source: ABS Agricultural Census

Table 13: Winchelsea Shire - GVAP

Commodity	1983/84 Amount ($)	% of total	1992/93 Amount ($)	% of total
Milk Production	3,054,103	13.6	6,814,081	22.2
Poultry slaughterings	1,113,600	4.9	5,810,933	18.9
Cattle and Calves slaughterings	3,048,253	13.6	4,502,555	14.6
Wool Total	4,344,937	19.5	4,133,551	13.4
Total Pastures and Grasses	3,527,441	15.7	3,927,262	12.8
Sheep and Lamb slaughterings	1,955,764	8.9	1,929,984	6.3
Total Vegetables	2,071,608	9.3	963,015	3.1
Potatoes 1,123,383 838,746				
Pigs slaughterings	249,857	1.2	782,239	2.5
Total Cereals for Grain	1,548,229	6.9	742,277	2.4
Nurseries (exc Turf)	-		556,480	1.8
Total Other Crops NEI	909,636	4.0	246,748	0.8
Potato Seed 24,388 256,748				
Vegetable Seed 885,248				
Total Oilseeds	542,646	2.4	165,096	0.5
Other	7,802	0.1	213,188	0.7
TOTAL	22,373,876	100	30,787,409	100

Source: ABS Agricultural Census

Table 14: Total Values Barrabool and Winchelsea Shires Together

	1983/84		1993/94	
	$	%	$	%
Poultry slaughterings	1,364,670	4.4	9,753,434	22.6
Milk Production	3,824,117	12.3	7,971,559	18.6
Cattle & calve slaughterings	3,833,350	12.3	6,162,864	14.4
Wool total	6,237,460	20.2	5,879,476	13.8
Total Pastures & Grasses	5,691,724	18.4	5,038,458	11.8
Sheep & Lamb slaughterings	2,894,155	9.4	2,950,761	6.8
Total Veg & Int. Horticulture	2,097,926	6.8	1,608,005	3.8
Total Cereals for Grain and Oilseeds	3,271,445	10.5	1,166,464	2.8
Pig slaughterings	249,857	0.8	782,239	1.8
Nurseries (exc. Turf)	-		725,680	1.6
Eggs Produced	553,208	1.7	211,682	0.4
Cut flowers	-		135,900	0.3
Total Other Crops	909,636	2.9	246,748	0.5
Others	110,848	0.3	358,303	0.8
TOTAL	31,038,396	100	42,981,573	100

Source: ABS Agricultural Census

Trends in Agricultural Production

Table 14 reveals the following trends for the combined area of the former Barrabool and Winchelsea Shires:

- The most significant trend is the huge increase in the value of poultry produced in the Shire, from $1.36m to $9.75m or 7.17 times, and replacing wool as the most valuable produce.

- Milk production has also increased significantly from $3.8m to $7.9m Some of this production will probably have occurred in the SW area of the old Winchelsea Shire which is now not in Surf Coast Shire.

- The other major increase is in cattle and calf slaughterings which has increased from $3.8m to $6.1 or 1.6 times. It should be noted that cattle prices were quite strong in 1992/93 but have fallen since then. This trend is therefore likely to have reversed slightly.

- Wool, pastures and grasses, and horticultural crops suffered a small decline in value whilst cereals and oilseeds and other crops and egg production recorded a large fall in value, probably because of the very poor prices experienced in 1993/94.

- Nurseries, cut flowers and pigs all grew substantially, albeit from a very small base.

3.3 Agricultural Employment

The following table shows the significance of agriculture as an employer of people in the former Winchelsea & Barrabool Shires.

Table 15: Rural Employees as % of Total Employees 1992/93

Shire	Total persons employed. No.	Persons employed in agriculture No.	% of persons employed in agriculture %
Barrabool	3988	230	5.8
Winchelsea	1915	339	17.7
TOTAL	5892	569	9.7

Source: ABS Agricultural Census

The GVAP per person employed in agriculture for the same period was:

GVAP	Barrabool	$12.2m
	Winchelsea	$30.8m
Total GVAP		$43.0m ÷ 569 = $75,751 per person

4. RURAL LANDSCAPE ASSESSMENT

4.1 Introduction

This section covers a broadscale landscape assessment of the Shire. The purpose of this assessment is to look at the existing resources, qualities, heritage values and hazards in order to take these into account, in addition to the land capability assessment previously discussed, in deriving strategies for the use and development of the Shire's rural component. The strategy will seek to make the best uses of the Shire's resources but still protect and enhance the general landscape character.

Information contained in this chapter was derived from the Winchelsea Strategy Plan, Nov 1992, the Surf Coast Environment Study, 1996 as well as from aerial photography and ground surveys. It is acknowledged that this assessment is not a full visual landscape assessment and it is recommended that a comprehensive landscape assessment be undertaken in the future.

4.2 Resources

Agricultural

The agricultural resources have previously been described and assessed in Chapters 2 and 3, culminating in an agricultural quality map based on land capability criteria (Map 6)

Mineral

The two main mineral resources within the Shire are coal and gravel. Coal mining operations ceased in the Winchelsea area of the Shire some 20 years ago when deposits were no longer viable. Mining continues adjacent and inland of Anglesea for the purpose of generating power for Alcoa's Point Henry operation.

Known gravel deposits are generally confined to the Gherang area, with a cluster of operating pits existing between Nobles and Forest Roads. Potential gravel reserves exist beyond this cluster, though their extent and viability are not confirmed.

Timber

Timber resources comprise both native hardwoods and introduced pine. Whilst the hardwoods are mostly confined to Crown Land and managed by the Department of Natural Resources and Environment, an increasing number of farm woodlots, mostly comprising bluegum, are being planted on individual farms and managed by private timber companies. These are limited to locations with appropriate soils and rainfall of at least 600mm, (generally south of the Princes Highway and west of Anglesea Rd).

There are a number of pine plantations on both Crown Land and freehold land in the Otway foothills. The last major plantation established in the Shire was in 1985. From a landscape point of view, the establishment of further large pine plantations should not be encouraged due to their non-compatibility with the natural environment.

Further development of hardwood plantations on freehold land is encouraged, particularly where trees can function as windbreaks, wildlife corridors and help solve problems of salination and erosion.

Water Resources

Water resources within the Shire comprise both ground water and surface water. The general availability of both has been previously described in Chapter 2. As a town water resource the Shire contains the declared water catchment areas of Pennyroyal, Matthews, and Gosling Creeks (part); Lorne involving the Erskine River and St George River; and Painkalac Creek. (Map 9)

The major water supply catchment for Geelong , Torquay, Winchelsea and Anglesea is the Upper Barwon Dam, which is in the Colac-Otway Shire. The SurfCoast has a number of holding reservoirs as part of this system, the most significant being the Wurdiboluc Reservoir, south-east of Winchelsea, which was enlarged in 1992.

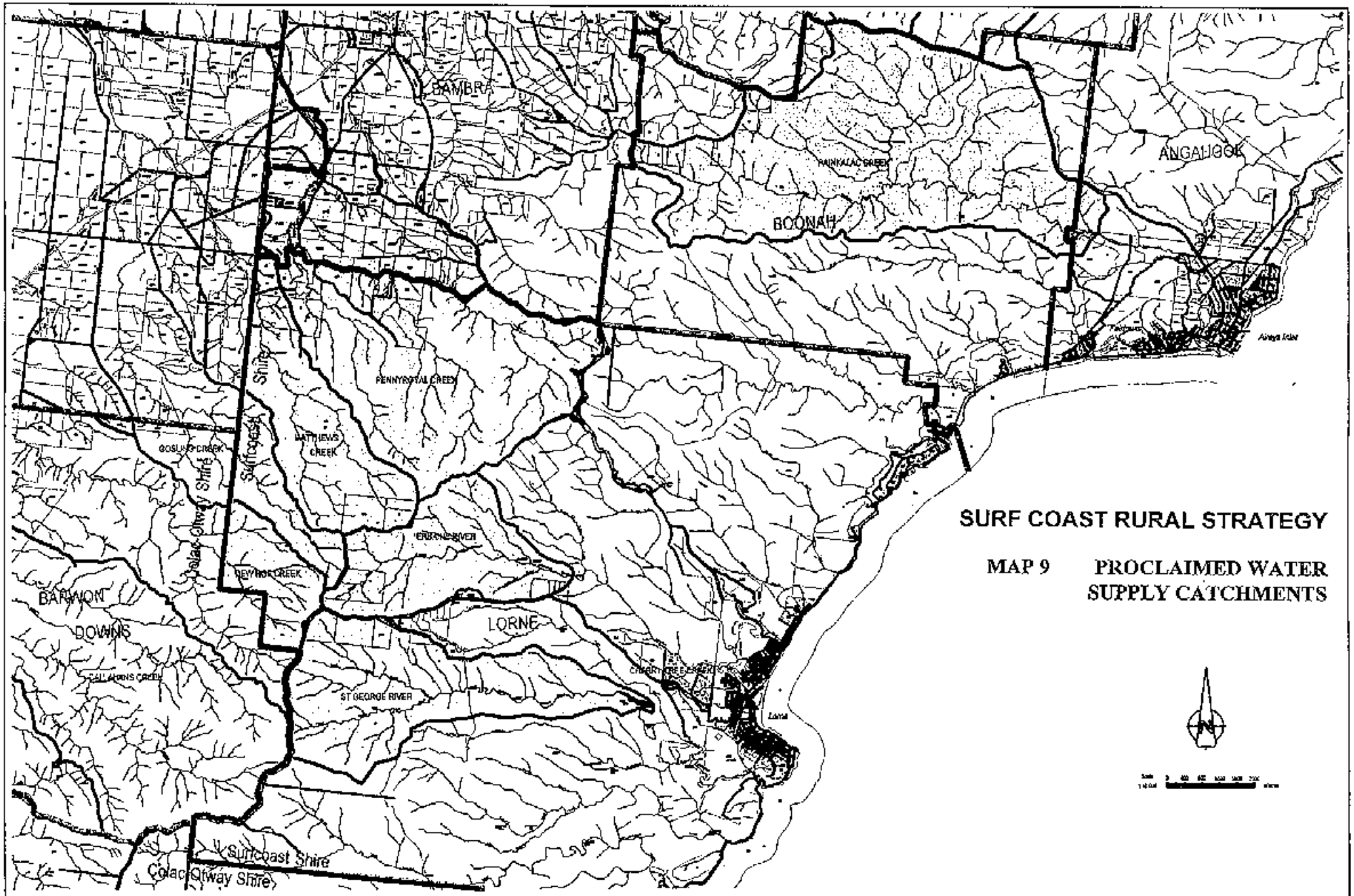
Potential water resources include the reuse of treated effluent. The recently upgraded Black Rock Sewerage Treatment Outfall Plant, located just outside the Shire's eastern boundary, offers the greatest resource, though potential exists also from the treatment plants at Winchelsea, Anglesea, Aireys Inlet and Lorne. Barwon Water is keen to sell this resource and investigations are occurring into potential agricultural and commercial uses.

Catchment management is receiving increasingly greater priority in recognition of the adverse environmental and economic impacts of historically poor catchment (land) management. A Catchment Strategy for the Corangamite Region, which includes the Surf Coast Shire, has recently been prepared by the Corangamite Catchment and Management Board. This Strategy has identified, amongst the programs developed for implementation, six focus activities to be concentrated on over the next three years. These are:

- pest plant control
- municipal co-operation
- water quality enhancement
- grasslands conservation
- soil management
- pest animal control

Land use determinations for water supply catchment areas, which are traditionally prepared by the Department of Natural Resources and Environment, recommend suitable uses for catchment areas to preserve water quality. These determinations are recognised in the Catchment Strategies as special area plans.

Consultation with the Catchment Strategy, and the land use determinations in particular, are important in the preparation of land use strategies and the consideration of development applications.


BAMBRA
BOONAH
PAINKALAC CREEK
ANGAHOOK
PENNYROYAL CREEK
MATTHEWS CREEK
GOSLING CREEK
Surfcoast Shire
Colac Otway Shire
BARWON DOWNS
CALLAHANS CREEK
BEWSHOT CREEK
ERSKINE RIVER
LORNE
CHERTSEY CREEK
ST GEORGE RIVER
Surfcoast Shire
Colac Otway Shire
SURF COAST RURAL STRATEGY
MAP 9 PROCLAIMED WATER SUPPLY CATCHMENTS
N
Barwon Region Water Authority
Proclaimed Water Supply Catchments
Surfcoast Shire
A1

4.3 Conservation Value

The Surf Coast Shire Environment Study, 1996 by Ecology Aust provides an inventory on the environmental resources of the Shire and includes a preliminary assessment of the conservation significance of each. Recommendations on the conservation and management of these ecologically significant resources are being developed as part of that study.

4.4 Hazards

There exist a number of hazards and problem areas within the Shire. They are primarily problems of soil erosion, land slip, salting, nutrient decline, serrated tussock and fire hazard. These areas will need special attention in respect to land use and management. Most of these problems have been previously discussed in Section 2.3.

Soil Erosion and Landslip Potential

Areas of potential landslip in the Shire have been mapped by DNRE. The slip areas are located on the NW slopes of the Otway Range, and especially apply where trees have been removed from steep slopes. Areas susceptible to erosion by water (tunnel and gully) are also located on the NW slopes of the Otway Ranges but extend over a much greater area, nearly to the Barwon river.

Soil erosion is an issue that must be treated site specifically, and any developments proposed in potential land slip areas should be referred to the DNRE for comment.

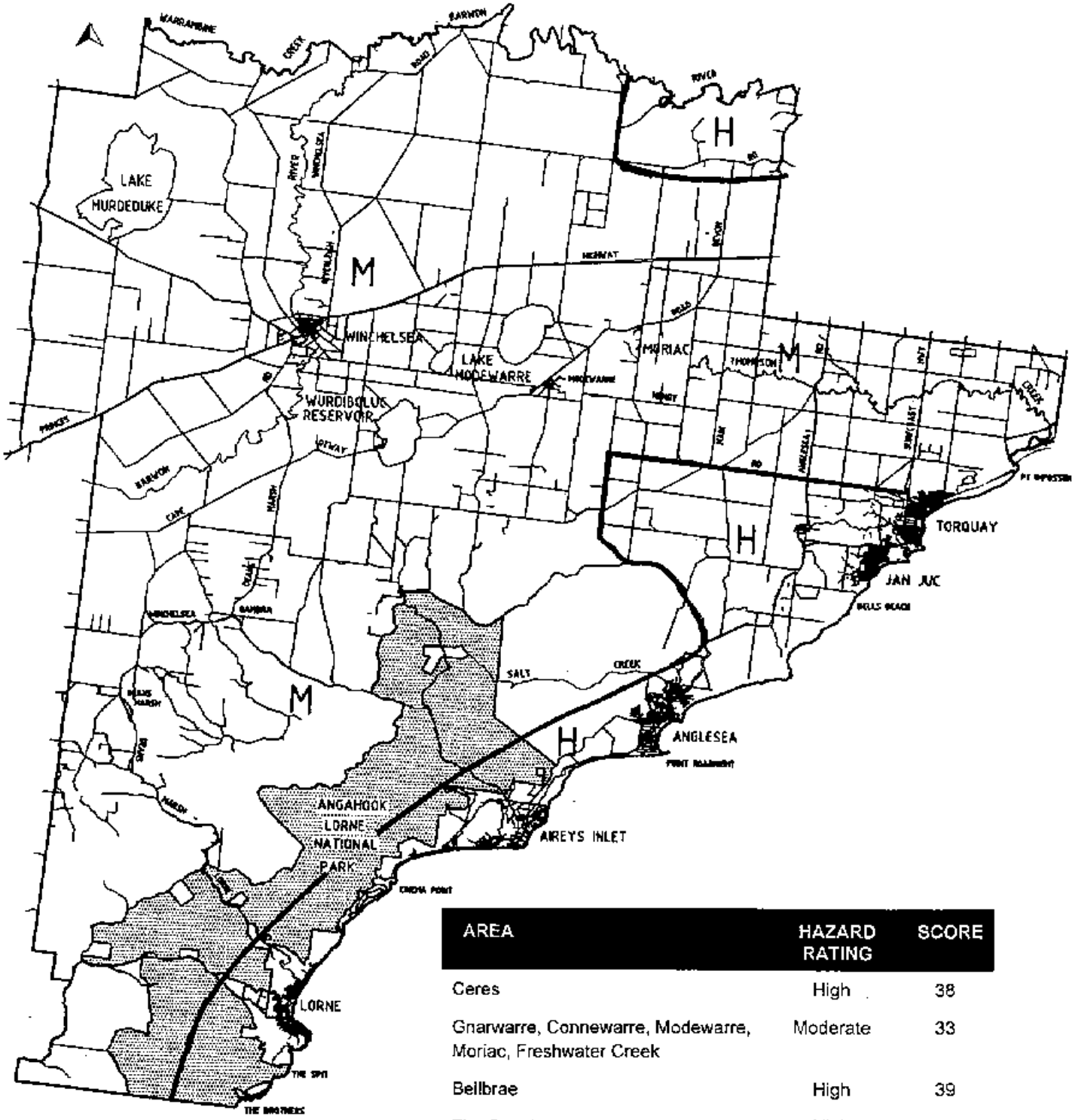
Fire

Fire ratings for the Shire were undertaken in 1994 by the Surf Coast Fire Prevention Committee. The ratings generally fall into the Moderate to High categories and are shown on Map 10.

Fire ratings were formulated considering slope, aspect, vegetation, rainfall including length of season, wind direction, density of development, accessibility and availability of fire fighting resources.

Measures that can be taken to alleviate fire risk are fairly site specific, nevertheless the CFA has prepared a number of publications which provide general guidelines for subdivision and development.

MAP 10 FIRE HAZARD MAPPING SURVEY



AREA	HAZARD RATING	SCORE
Ceres	High	38
Gnarwarre, Connewarre, Modewarre, Moriac, Freshwater Creek	Moderate	33
Bellbrae	High	39
The Coast	High	42
Winchelsea North	Moderate	33
Yan Yan Gurt	Moderate	28
Wensleydale / Gherang Gherang	Moderate	32
Bambra Foothills	Moderate	35
Benwerrin / Wymbooliel	Moderate	25

4.5 Visual Analysis

In assessing the general landscape values of the Shire nine largely homogenous landscape units have been identified (See Map 11) and recommendations for land use and development in each expressed in terms of strategic directions and recommended land use zoning. Hence each unit is looked at in terms of:

a) general description, existing use and relevant policy context;
b) identification of landscape and other relevant issues; and
c) recommended strategic directions.

The latter includes a recommended minimum lot size which takes into account matters including:

- the previous minimum lot size for the zone applicable to the area;
- the landscape character of the unit and the desirability or otherwise of retaining or encouraging the modification of that character which may comprise an open, undeveloped landscape appearance, a native bush character; or protection of an environmentally significant flora / fauna habitat;
- the existing tenement pattern of the area, and the possible implications of same;
- the land capability assessment and recommended technically viable lot sizes; and
- the existing and preferred rural land use.

The recommended zones and minimum lot sizes do not reflect the provision or identification of rural residential living areas. This is separately dealt with in the Surf Coast Shire Rural Residential Living Strategy, 1997.

A *Winchelsea Plains*

Context

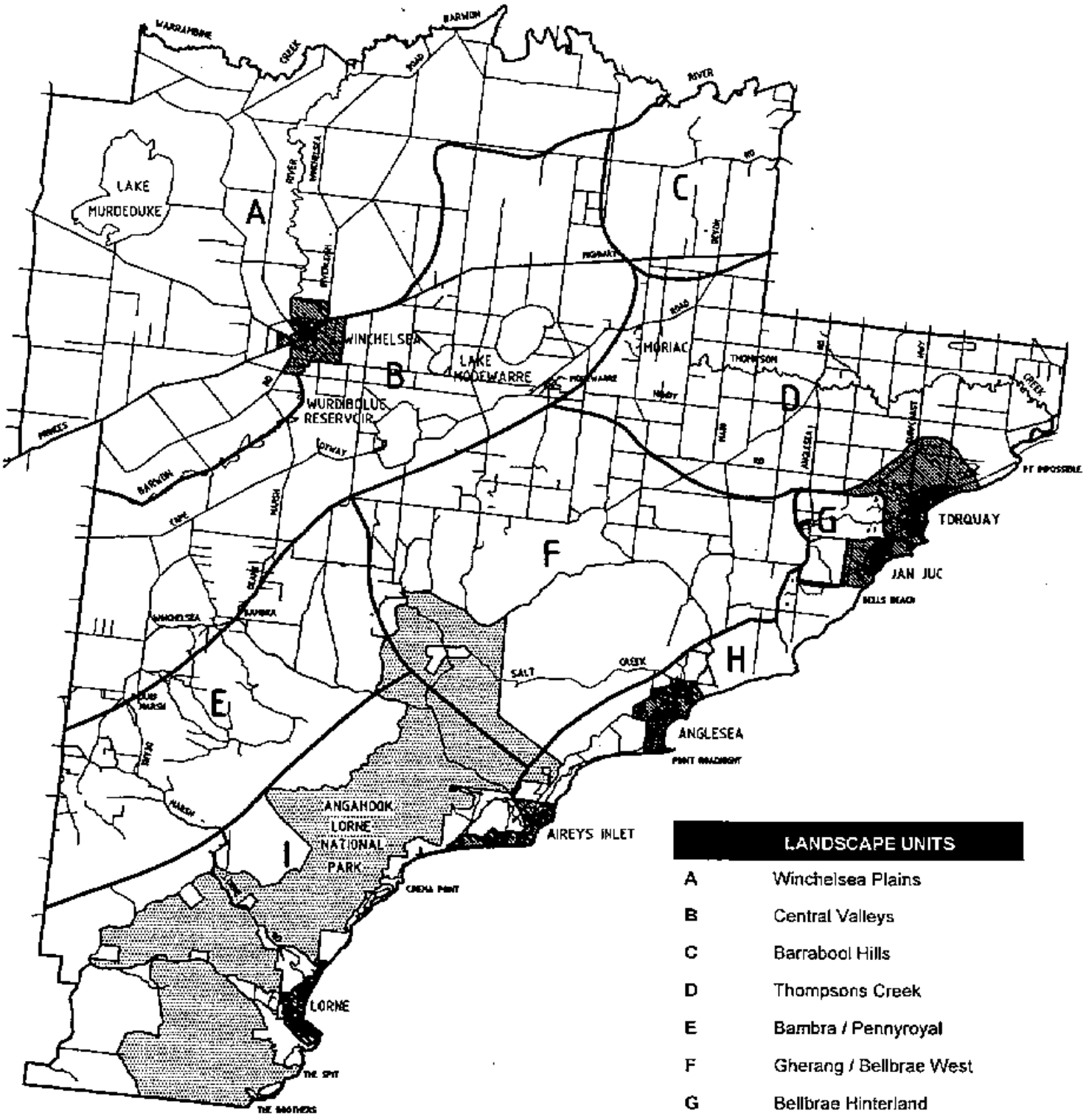
The Winchelsea Plains landscape is typical of the western volcanic plains, with flat to gently undulating topography, and the occasional modest rise, such as Mts Hesse and Gellibrand to the west of the Shire. The flat, open form is momentarily disrupted by the Barwon River valley which contains a little of the remaining remnant vegetation that was cleared long ago from the plains for farming. The area is also dotted with occasional lakes, the largest of which is Lake Murdeduke. Lake Murdeduke is of significance not only for its conservation value but also for the lunette that features on its eastern side which has created a pocket of very high quality productive agricultural land.

Land use activity is predominantly grazing but also includes mixed farming. Open range piggeries have more recently been established in rotation with cropping.
The majority of the farm holdings are contained in tenements greater than 100 hectares with probably less than 5% of the total area in holdings less than 60 hectares.

Issues

The agricultural quality of this area based on the land capability mapping ranges from good to average, with a suggested technically viable lot size of 60ha with pockets, such as the lunette where30 to 40ha could be managed.

SURF COAST RURAL STRATEGY
MAP 11 RURAL LANDSCAPE UNITS



The open plains with large windbreaks are the dominant visual component in this part of the Shire. This area would have always comprised mostly treeless grasslands and few pockets of remnant grasses survive today. Save for the recognition of the environmental values of the water bodies, this open landscape feature should be maintained.

The waterbodies have high conservation value and should be better managed to enhance their value. They are known to provide nesting sites for brolgas. Lake Murdeduke is listed under the Ramsar Convention for protection of wetlands of international significance to wading birds. The Barwon River is a major life source and habitat corridor that is in a serious state of degradation, and should be a high priority in any land catchment management review.

While the existing tenements are fairly large, they generally comprise multiple lots, many of which are greater than 60 ha, but equally there exist many smaller lots, in the range of 30 to 50ha. The relative distance of this area from Geelong and its flatter, less interesting landscape has meant little interest shown to date for hobby farm development in this landscape unit. Nevertheless, rural living/hobby farm use will develop given the right circumstances, and is already evident along the length of the Princes Highway between the highway and the railway line. A number of these properties are poor examples of this form of development and are visually at odds with the general landscape.

In respect of the holdings along the Highway, strategic roadside planting would help to screen these properties while retaining views of the open plains/grasslands. For the rest of the freehold land, a strategy is needed to avoid the breaking up of tenements before it begins to happen.

Salinity and serrated tussock are problems that exist in parts of this unit.

Strategic directions

The Winchelsea Plains is a prime farming area, with a distinctive open grasslands appearance, and is to be promoted for this purpose. In this regard:

- *any development and subdivision of land shall be directed to the fostering of soil based agricultural production.*
- *encouragement shall be given to the consolidation of property tenements to assist in maintaining the existing open rural landscape of the area.*
- *non agricultural or non primarily agricultural related uses shall be strongly discouraged.*
- *revegetation of existing wetlands and the Barwon River corridor is encouraged to aid in conservation and achieving more sustainable land use.*

Recommendation

It is recommended this area be zoned Rural. Having regard to the existing large tenement holdings and the landscape objectives for this area an 80ha minimum lot size is proposed. While this is larger than the technically viable lot size, it closer reflects the existing development pattern and will better achieve the maintenance of an open grassland landscape.

B *Central Valleys*

Context

The Central Valleys landscape unit comprises the flat plains and flood plains of the Birregurra and Barwon River land systems, the undulating plains of the Paraparap and Deepdene land systems, and the volcanic plains of the Mount Pollock and Mount Moriac systems. Visually it is a pleasant, open, undulating landscape, interwoven with farm windbreaks and wetlands.

Farming activities are essentially grazing with some secondary cropping. Tenement holdings vary greater than in the north with only a little more than 50% greater than 100 hectares, and 60% or so greater than 80 hectares. The smaller holdings appear to congregate around the wetlands and lakes, the Layard township (Modewarre) and the toe of the Otway foothills which includes the Deans Marsh township.

Issues

The agricultural quality of this unit is generally good to high in the higher rainfall area to the south-west which has better soils and higher carrying capacity, reducing to an average quality toward the eastern end. The technically viable lot size applicable to this area is 60ha with a 40ha size considered manageable towards the western end along the Barwon River and Deepdene land systems.

Compared with the northern plains, there is a greater demand for hobby farms in this unit. The breaking up of farm holdings has already occurred around the lakes and at the toe of the Otways and Barrabool Hills. Having regard to the agricultural capability of this area the retention of large holdings is to be encouraged to facilitate continuing productive farming and preservation of the open, undulating rural landscape.

Rural residential development may be appropriate centred on the Deans Marsh township, however demand for this has not been strong in the past.

Remnant vegetation is largely confined to the Barwon River, road reserves and the railway line. Revegetation should be encouraged as traditional windbreaks on the larger holdings, and for environmental and landscape values on the smaller holdings, particularly along the river and around the lakes.

Strategic Directions

The Central Hills has a high landscape value coupled with a good quality agricultural value, both of which are to be protected. Hence:

- *any development and subdivision of land shall be directed to the fostering of soil based agricultural production.*
- *encouragement shall be given to the consolidation of property tenements to assist in maintaining the open rural landscape of the area.*
- *non agricultural or non primarily agricultural related uses shall be strongly discouraged.*

- *revegetation of existing wetlands and the Barwon river corridor is encouraged to aid in conservation and achieving more sustainable land use.*

Recommendation

It is recommended that this area be zoned Rural, though with two minimum lot sizes. North-east of Winchelsea - Deans Marsh Road a 60ha minimum is proposed, generally reflecting the existing tenement pattern and a marginally better agricultural quality than the plains. South-west of the road a 40ha minimum acknowledges the higher agricultural quality of this area (particularly around the Barwon River) and reflects the historical minimum applied under the former Winchelsea Shire. In both cases the more undulating and vegetated nature of the unit offers the ability of the landscape to more readily accommodate a little more development while still retaining the generally open farmland appearance.

C *Barrabool Hills*

Context

The Barrabool Hills area is valued for its high scenic landscape value, comprising gentle but pronounced hills and defined valleys. As with most of the northern part of the Shire the area has been largely cleared of vegetation.

This landscape unit is much more fragmented with approximately only 50% of land holdings in tenements greater than 60ha. and less than 40% in tenements greater than 100ha. The smaller holdings are dispersed through the area and range in size from 1ha excised lots to small (10 to 30ha) rural living and hobby farm lots.

Farming activities are predominantly grazing and cropping, though the smaller holdings tend to introduce a variety of other, often more intensive, activities.

Issues

With its proximity to Geelong, and attractive landscape, pressures for small lot development in the Barrabool Hills is fairly high. Due to its high agricultural value, more intensive farming is possible and this is reflected in a recommended 40 hectare minimum to provide a technically viable farming parcel.

The land form and historic farm buildings of the Barrabool Hills is considered of heritage significance and new development needs to be sympathetic to these values. Appropriate siting and design of buildings and works will be an important consideration in this regard.

Strategic Directions

The attractive rolling landscape of the Barrabool Hills combine with a high agricultural productivity that lends the area to a more intensive land use. In this regard

- *a range of agricultural activities will be fostered subject to the use of sustainable farming and land management practices to underpin the productive capacity of the soils.*
- *the rural landscape and heritage values of the area will be preserved through the appropriate siting and design of buildings and works.*

Recommendation

It is recommended that this area be zoned Rural. The size of the Barrabool Land System warrants its individual zoning consideration which recognises the higher agricultural quality and land capability of this land system. In this regard a 40ha minimum is recommended, noting that with the appropriate siting controls, the topography will assist in protecting the landscape and heritage values of the area.

The development of design and siting guidelines for buildings and works is recommended to achieve the above landscape policy and should be reflected through a Significant Landscape Overlay.

D ***Thompsons Creek***

Context

This landscape unit comprises the undulating plains of the Freshwater Creek and Paraparap land systems and the estuarine lowlands and flat to undulating plains of the Connewarre and Thompsons Creek land systems. It encompasses the view corridors of the Surfcoast Highway and Anglesea Road, north of Torquay / Bellbrae, and west to Moriac.

The landscape is set in the valley of the Thompsons Creek, which bisects the area from east to west, and forms a rural greenbelt between Torquay and the creeping urban expansion of Geelong. The landscape is one of traditional open grazing land on undulating to flat topography, with intermittent tree rows, either along roads or fence boundaries, but also includes the extensive tidal marsh upstream of the mouth of the Thompsons Creek.

The original vegetation of the area has been fully cleared, with virtually the only remnant patches existing along road reserves, the banks of the Thompson Creek and the estuarine lowlands abutting Breamlea.

Land holdings in the area comprise a diverse range, with about 50 percent of the area being held in tenements greater than 60ha. The largest holding, situated in the lower catchment at Connewarre, is approx. 600ha., though generally the holdings are less than 200ha. Farming activities are predominantly grazing, but also includes cropping, including potatoes, cut flowers and grapes and intense animal husbandry such as poultry.

This unit contains the Moriac Township and the Lower Duneed and Connewarre rural residential nodes. In addition there are two fairly well defined areas of rural living style lots: located south-west of Anglesea and Mount Duneed Roads; and south-west of Blackgate and Loutitt Roads. These

two areas are quite diverse with the former on open farmland, while the latter is nestled in an area of remnant vegetation.

The existing predominant zoning in this area is Rural General Farming, with areas of Floodway and Rural Natural Features adjacent the Thompsons Creek. The Torquay Jan Juc Comprehensive Plan notes the value the open, rural landscape plays in moulding the character of Torquay, and to this end states:

- *The open rural landscape surrounding Torquay will be protected from inappropriate development to retain the beauty of the town's natural rural setting and its sense of separation from Geelong.*

In terms of the environment it recommends:

- *The preservation of the rural character of the rural areas surrounding Torquay Jan Juc, especially the areas of high landscape value such as the Thompson Creek Valley and the Bells Beach / Ironbark Basin hinterland.*
- *The conservation and enhancement of the areas of highest significance, such as the Breamlea Wetlands and coastal sand dunes.*

Issues

The agricultural quality of this area based on the land capability mapping is rated as being generally average with a recommended minimum technically viable lot size of 60 hectares.

The Thompson Creek valley is a strategic green wedge, essential to maintaining the separation of Torquay from the long term expansion of Geelong. This separation is considered desirable for maintaining the individual character of Torquay. For this green wedge to be effective, further fragmentation of the valley must be curtailed. A tenement policy would be an important tool in this regard due to the existing number of multi-lot holdings in the valley.

Horseshoe Bend and Blackgate Roads provide a tourist route between Torquay and Barwon Heads / 13th Beach and the existing open rural landscape is a desirable feature. Land in this area is still held in large tenements and is being productively farmed, hence fragmentation of this area should be avoided.

The Thompsons Creek catchment is fairly degraded and any development in this landscape unit should be directed to restoring the environmental attributes of the creek.

The Breamlea wetlands is in the ownership of the Greater City of Geelong, though is likely to be sold to the owner of the proposed Golden Beach Resort in the near future. This wetland is covered by a Conservation covenant in recognition of its environmental significance. Development of Torquay and the Golden Beach resort must be designed to minimise any impact, particularly from stormwater drainage, on the wetlands.

The open, and fairly harsh, windswept landscape makes the establishment of landscaping fairly difficult, hence any development needs to be sensitively sited and should not be dependent on landscaping for screening purposes.

Identification of any sites for rural living development should only be considered, in the first instance, on the basis of a transferable development rights scheme, to maximise community benefit from any such development.

Strategic Directions

The attractive rural landscape of the Thompson Creek valley is a feature of the Surfcoast Highway and Anglesea Road corridors, and maintains a buffer between the coastal towns and the urban sprawl of Geelong. Land holdings are to be maintained in relatively large parcels, though a diverse range of agricultural uses will be permitted, reflecting the desirable rural lifestyle offered in proximity of coast and town.

Thompsons Creek forms the focal life line of the valley. Encouragement will be given to the re-establishment of wildlife corridors along the creek and its tributaries, and to the implementation of sustainable rural land use practices to help restore the creek's natural system.

The open rural vista of Connewarre forms an important rural landscape setting which maintains a distinct urban-rural boundary to Torquay and complements the environmentally significant Thompson Creek Swamps. Accordingly, it is recommended that:

- *the historical open rural character of the Connewarre area be maintained in a coastal estuarine landscape.*
- *the encroachment of tourist establishments and hobby farms into the area, particularly along Blackgate Road, be minimised in that they are likely to be foreign to the open landscape character.*
- *the highly delicate lowlands around the coastal mouth of Thompson Creek be protected, recognising the biodiversity and flora / fauna habitat of the estuarine swamps.*

Recommendation

It is recommended that this area be zoned Rural with a 60 hectare minimum lot size which matches both the technically viable lot size and the historic minimum under the General Farming Zone for this area. This continuity will ensure the maintenance of the rural landscape buffer between Geelong and Torquay, while providing for a range of agricultural uses.

An Environmental Rural Zone is recommended over the environmentally significant estuarine lowlands at Breamlea.

E *Bambra/Pennyroyal*

Context

The Bambra / Pennyroyal area comprises the steepening valleys and foothills of the north-western slopes of the Otway Ranges.. A high proportion of the area has been cleared of the woodland and open forest for agricultural use. The main farming activity is grazing (beef, fat lambs and dairy). Timber plantations are also an important land use on both freehold and Crown Land, where a

number of pine plantations are established. Agroforestry and Bluegum woodlots are gaining increasing favour as a supplement to farming activities.

Land tenements in the foothills are much more fragmented than further north, reflecting the less favourable farming conditions due to steeper gradients, and the attraction of this area for smaller holdings due in large part to the attractive landscape. The topography offers a wide range of views, including sweeping views of the northern hills and plains, occasional glimpses of Bass Straight over the timbered ranges of the Otways and localised views of enclosed valleys.

The land in this part of the shire is currently not zoned.

Issues

The agricultural quality rating of this area is generally good, though the topograhy plays an important role in land utilisation. The recommended minimum lot size in terms of technically viable farming units is predominantly 60ha.

The mixed terrain and fragmented land holdings has encouraged a range of land uses, though grazing is still the predominant use. This is intermixed with timber production (mainly softwoods, but increasingly agroforestry and bluegum woodlots) and tourist oriented establishments and accommodation.

Soil erosion and land slip are more of an issue in this landscape unit due to the steeper slopes.

The attraction of the Pennyroyal / Bambra area for rural retreats, hobby farms and tourist establishments is largely due to the scenic countryside and its relative location to the coast. On the other hand, it is generally too isolated from employment opportunities for the area to be seriously considered for more intensive rural residential style development. Future development in the area should build on the existing attractive landscape and, more particularly, underpin improved land management practices. Sustainable land management may be rewarded with opportunities for tourist related developments and / or subdivision.

Strategic Directions

To encourage rural and tourism based land uses that best utilise and manage the existing natural resources of the area, in particular the good agricultural quality and attractive landscape.

To encourage revegetation as a major land management tool which will build on the attractive rural landscape and assist in avoiding serious land degradation.

To provide for a range of wellbeing lifestyles, rural retreats and rural based tourism industries that complement the natural features of the area and support the rural farming base.

Recommendation

It is recommended that this area be zoned Rural. Three factors point to a 40 hectare minimum for this area. The historical minimum 40 ha. of the former Winchelsea Shire; which has largely led to

the fragmented tenement pattern scattered throughout the area; and the diverse land use, including numerous hobby farms, non-traditional farming enterprises and tourist establishments.

Further analysis should be given of the landscape values of this area with the view to applying the Significant Landscape Overlay where appropriate.

F *Gherang / Bellbrae West (Including Bald Hills)*

Context

The flat to gently dissected plateau remnants which comprise the Gherang Gherang and Anglesca land systems forms a border ridge to the north-east extremity of the Otways. Corridors of remnant vegetation creep northward from the adjoining Crown Land, intermingling with farming enterprises, hobby farms, bush blocks and gravel reserves. The adjoining hills comprising the open forest Crown Land Reserve to the south are more deeply dissected.

While the area contains a number of farm enterprises on holdings in excess of 80 hectares, involved mainly in grazing activities, probably most are subsidised by off farm income. A large proportion of the area has fallen to hobby farms and small rural retreats and bush blocks.

There are three established rural living nodes, with a predominant lot size of around 4 hectare. These are located in Wensleydale Road, Wensleydale, Gherang Road, Gherang and Gundrys Road, Bellbrae West.

The remnant bush and the location adjacent the Otway forest reserve provides the attraction for rural living and hobby farms, particularly for the eastern portion which is in relatively close proximity to Torquay, Geelong and the coast.

The known gravel reserves are predominantly between Nobles and Forest Roads. The existing pits comprise a single operation on freehold land south of the alignment of Thielemans road, while the operations north of the alignment, including the Shire's own operation, are on Crown Land leases.

The Crown Land forming the southern perimeter of this land unit is unreserved forest and is a major fire wood area managed by the Department of Natural Resources and Environment. A large freehold site within this reserve off Gum Flats Road was originally alienated from the Crown for the purpose of establishing a vehicle proving ground and up until the late 80's was operated by International Harvester. More recently it has been used for driver training with B-Double trucks and other related uses.

The existing zoning of the land east of Forest Road is Rural General Farming, with isolated patches of Area of Interest or Landscape Value overlay. West of Forest Road is not zoned.

Issues

While the greater portion of this area has been cleared for farming activities, mostly grazing, it has a poor agricultural quality rating and arguably much of it should never have been cleared. This

poor quality is reflected in the higher minimum lot size (80ha) considered necessary for a technically viable farming unit.

The major salinity problems that exist in the Thompsons Creek landscape unit also exists on the edges of this unit in the area of Flaxbournes Rd.

Much of the attraction for rural living in this landscape unit is due to the remnant vegetation, which is generally confined to the interface with the adjoining Crown Reserve, but also exists as patches on private land and along road reserves. Remnant road side vegetation includes lowland stands of Snow Gums, considered to be of high regional significance. The theme of enclosing pockets of cleared land by natural bush should be encouraged for the purpose of building on the existing attractive landscape and more particularly to improve land management practices. Sustainable land management may be rewarded with opportunities for tourist related developments and / or subdivision.

Consideration of the further subdivision of the area for rural living and hobby farm use must, in addition to land management and environmental features, have regard to the efficient use of infrastructure, particularly the road network in terms of the existing road standard and opportunities for upgrading.

The Crown Land gravel reserves off Forest Road have historically been poorly managed and operated, though this situation has been improving. Rehabilitation should be directed to reforestation. Impact on adjoining properties due to noise, dust and truck traffic is a major consideration in regard to any future expansion of rural living development opportunities. The refusal of an application to reopen a gravel reserve in Gherang Road due to its proximity to the existing rural living node reinforces the need for maintaining a buffer around existing operations.

Development opportunities for the proving grounds site are limited due to its isolation and its location within the Crown forest reserve. The large area comprising this site was provided to afford a substantial natural buffer between the activities on the site and the adjoining Crown forest. This buffer should be maintained in its natural state.

Strategic Directions

To encourage revegetation as a dominant sustainable farming and land management practice, particularly with the view of partially restoring the bush landscape.

To provide for a range of wellbeing lifestyles and rural based tourism industries that complement the natural features of the area.

To protect and encourage the economic exploitation of the gravel asset. Site restoration to be predominantly reforestation to enable sustainable management in the long term and to restore the original bush character.

To recognise the special use of the Gum Flats Road proving grounds site and discourage development that is not related to vehicle testing and driver training.

Recommendation

It is recommended that this area be zoned Rural. Notwithstanding the 80ha minimum recommended as a technically viable farm unit, much of this area has been fragmented, reflecting the 60ha minimum of the General Farming Zone and the popularity of the area for hobby farm and rural living use. A 60ha minimum is recommended on this basis. A smaller lot size (to provide for instance more intense hobby farming or rural living use) is not supported without investigation of the land capability of nominated areas to support higher densities.

Where appropriate the Significant Landscape Overlay should be used to replace the existing Area of Landscape Interest or Landscape Value Overlay, after further analysis of the relevant landscape feature of each area.

A Special Use Zone should be applied to the Gum Flats Road proving ground and the gravel reserve sites, to reflect their primary use.

G *Bellbrae Hinterland*

Context

The rolling hills of the Bellbrae land system includes the Spring Creek valley corridor between Bellbrae township and Torquay, and a mixed farming / bushland precinct south of Bellbrae to Bones Road. Both areas are partially enclosed, offering glimpses into the areas from the Great Ocean Road, Bells Road and Grossmans Road.

The Spring Creek valley corridor has been mostly cleared of original vegetation, save for remnant pockets along the creek and minor tributaries, and is used for grazing. The area bounded by Great Ocean Rd, Duffields Rd, Grossmans Rd and Anglesea Rd comprises approx. 285 ha in 13 holdings east of the alignment of Bells Boulevard, and a further 330ha in 5 holdings to west of this alignment. The lot sizes range from about 1.5ha to 123ha. The existing zoning of this corridor is Rural General Farming.

The Torquay Jan Juc Comprehensive Plan designates the Spring Creek valley corridor as a long term investigation area for urban expansion - subject to review of the overall strategy for Torquay Jan Juc at the time. The Plan recommends that in the interim, land is to be retained in rural use to preserve its potential for urban development and if urban development occurs in the future regard should be had to:

- preserving the Spring Creek environment
- aligning the ultimate western boundary generally with Bells Boulevard.
- ridge lines visible from Great Ocean Road should be low density development, landscaped to preserve "non-urban' appearance.
- land north of Spring Creek presents a particularly attractive landscape and could be considered for a special use development eg resort, golf course residential estate, tourist facility etc.

The precinct between Great Ocean Road and Bones Road contains larger pockets of remnant vegetation which has made the area attractive for bush retreats. A major pocket of bush has already been developed, comprising eight lots each of about 3ha in area. The balance is in three holdings

each of approx. 40ha and one large farm holding of 156ha. This precinct is also zoned Rural General Farming, but with an Area of Interest or Landscape Value overlay over part of the area adjoining Bones Road.

Issues

Both areas are currently under pressure for development (particularly for rural residential living and hobby farm type activities) and this will only increase in the future.

The Spring Creek valley corridor is earmarked as a long term growth corridor for Torquay. In the interim, this corridor could be developed for hobby farm scale subdivision (in the range of 8 to 15 ha.) provided it is done in such a way that it does not pre-empt its potential for long term urban development. Any development along these lines would need to be the subject of a special investigation and possible restructure of properties, involving the agreement of all affected landowners. It would necessitate preparation of an outline development plan which showed how the land would ultimately accommodate long term urban development.

Development of this area can be physically and visually contained, and allowing controlled development in this valley it would relieve the pressure for this type of development from other more exposed / vulnerable parts of the Shire.

The southern precinct offers similar opportunities, but not being constrained as a designated growth corridor, a higher density of rural living development could be a possibility. The pockets of remnant vegetation in this area have been identified as being of high local to regional significance which is likely to place some limitations on development in their vicinity. Again this area should be the subject of a special investigation to determine its future development potential.

Strategic Directions

To recognise the environmental value of the remnant vegetation and the Spring Creek and the importance of the Spring Creek valley as a recreation and landscape feature of the Torquay Jan Juc township.

To initiate a special investigation of the Spring Creek valley corridor to determine the potential for some form of hobby farming subdivision which will not prejudice the future long term urban expansion of Torquay. Any subdivision would be based on an outline development plan (ODP) showing the opportunity for superlots to be created in the range of 8 to 15ha. Superlots would need to have frontage to a proposed future collector road system and would need to be capable of being resubdivided at conventional residential densities. Any investigation and ODP will require the co-operation of all affected landowners who would be expected to contribute to the cost of its preparation. Such a scheme may also require a possible restructure of existing titles in order to achieve an efficient and effective subdivision design.

To initiate a special investigation of the Great Ocean Road / Bones Road precinct to determine its future potential for hobby farm/rural living subdivision and some form of tourist development such as that foreshadowed in the Torquay Jan Juc Strategy. Any subdivision or development would be based on an ODP which has regard to the physical and visual attributes and constraints of the site.

Any investigation and ODP to be prepared and adopted with the agreement of affected landowners who would be expected to contribute to the cost of its preparation.

Recommendation

It is recommended that this area be zoned Rural with overlay controls as appropriate in relation to vegetation protection and visual/landscape issues along the Great Ocean Road.. Pending further investigation of the suitability of these areas for hobby farm / rural living development, a 60ha minimum lot size is recommended in keeping with the surrounding areas.

H *Bells Beach*

Context

This area of rolling hills comprises the Bellbrae and Anglesea land system. It is partially bordered by the Great Ocean Rd traversing the gently dissected plateau remnants of the Gherang Gherang land system and is visually spectacular for its coastline and attractive landscape of open farm land framed by dense bushland.

This landscape unit contains a mix of land uses, including a large area of rural residential development in Jarosite Rd, semi-pastoral land on the coastal hills adjacent Bells Beach, Point Addis and Urquart Bluff, and Crown flora fauna reserves which include the Iron bark basin. Development is often concealed within substantial remnant bushland interlaced through the various uses, however where views to the coast are possible, vegetation has been cleared to maximise the view, resulting in the exposure of dwellings.

The larger freehold titles range generally in size from 30 to 150 hectares. Due to the small size of rural lots and the underlying poor agricultural quality of the land, the few existing farming properties are likely to be hobby farm or alternative farming holdings.

The existing zoning is Rural General Farming, partly with a Preservation Order Area overlay north of Anglesea, and Rural Natural Features to the south. The Torquay Jan Juc Comprehensive Plan acknowledges the special qualities of the Bells Beach area, including the Ironbark bushland and Bells Beach coast and emphasises the need to treat this area with considerable sensitivity. It does not support further rural residential or small lot rural subdivision.

Issues

The Bellbrae and Bells Beach area is probably the most favoured environment in the Shire from the point of view of rural lifestyle, and is under constant pressure for subdivision and tourist related development. The land is generally of poor agricultural quality, however it has extremely high landscape values. Pressure for rural living and tourist related development is highly likely to conflict with the preservation of the biological and scenic attributes of the areas natural environment.

This area, and that of the Bells Beach environs in particular, is highly regarded in terms of its tourist attraction, with the tourist and recreation activities associated with the Bells Beach surfing

contest attracting over 25,000 people during Easter. The scenic value of the Bells environs is largely due to the coming together of the pastoral landscape and seascape, and the relative absence of man-made structures. The high level of visual exposure of this landscape and the lack of cover or screening, affords little capacity to visually absorb further development without substantial change to the landscape.

The freehold land lying west of Point Addis Road is less publicly trafficked and, being bounded by extensive native bushland, is less visually exposed to the Great Ocean Road. It nevertheless is situated in a significant and fragile natural environment comprising the Eumeralla Flora Reserve and Ironbark Basin. Due to the incompatibility between increased development densities and preservation of indigenous flora and fauna, subdivision will not be supported in this area.

At Urquhart Bluff the hills are visually dominant from the Ocean Road and the vegetation is low growing heath which does not provide a good opportunity to screen inappropriate development. Development of land in this area is strictly controlled by site specific provisions in the Local Section of the Scheme and one property is subject of a conservation covenant, in recognition of the high environmental and scenic values of this fragile coastal heathland.

Strategic Directions

To protect and enhance the high landscape values of the Bells Beach hinterland by strongly discouraging subdivision and limiting further housing beyond existing entitlements. Tourist oriented accommodation will similarly not be encouraged.

Recommendation

It is recommended that this area be zoned Environmental Rural Zone. Within this area subdivision will not be supported.

Where appropriate the Significant Landscape Overlay should be used to replace the existing Area of Landscape Interest or Landscape Value Overlay, after further analysis of the relevant landscape features of each area.

I *Otway Coastal Hinterland*

Context

The Otway forest and coastline comprises deeply dissected hills of the Lorne and Aire land systems, with rolling hills along the ridgeline (Mount Sabine land system). Save for the cleared areas of privately owned land the area is heavily vegetated by open forest. A large portion of the area forms part of the Angahook - Lorne State Park.

A number of the larger freehold sites that have been cleared are used for grazing. Amongst these are a scattering of medium to small lots, generally vegetated, used as bush blocks. These range in size from about 0.4ha to around 40ha. Whilst many are fairly well screened and located off the inland roads, a number such as at Big Hill and Cathedral rock are visually prominent from the Great Ocean Road.

The area is currently zoned Rural Natural Features Zone with a Preservation Order Area overlay; Forest Zone; and in the case of the land inland from Lorne, unzoned.

The Lorne Strategy Plan, February 1991 included a policy of discouraging the proliferation of small holdings and fragmented development in the hinterland of Lorne, generally due to the potential to create a high fire risk by establishing small pockets of populated areas that are surrounded by forests, and which are isolated in terms of distance and accessibility from fire fighting resources. It also noted that it is apparent that the land capability of the outlying areas is generally poor for low density residential development.

Issues

The Otway coastline and ranges has high scenic and environmental values, forming the backbone to the Shires tourist industry. As such the protection of this natural landscape is paramount.

The Mt Sabine area is fairly remote from the Lorne township, is surrounded by State Forest / State Park and experiences heavy rainfall. Intensification of development, in the form of subdivision and / or tourist accommodation, is not recommended for these reasons. Low scale site related tourist establishments may be appropriate but would need to be designed to blend with the natural environment.

Large holdings along the coastline, including sites at the St George River, She-Oak River, North Lorne and Eastern View comprise a major section of the Great Ocean Road view corridor, hence are highly visible from the Great Ocean Road. Again these land holdings are surrounded by State Forest / State Park. Intensification of development, in the form of subdivision and / or tourist accommodation / establishments, is not supported due to the steep slopes, limited access and high visual exposure of these properties.

Existing tenement rights in the Cathedral Rock and Big Hill estates will continue to be recognised. Nevertheless, development of these sites must be of a scale and design that minimises their visual impact.

The hinterland immediately inland of the Lorne township, is similarly surrounded by State Forest / State Park. A degree of subdivision and development has already occurred in sections of this area. Notwithstanding the recommendation of the Lorne Strategy Plan in respect of development in the Lorne hinterland, it is considered that the proximity of the area to the Lorne township provides some limited opportunity for residential development in the form of bush blocks or tourist accommodation, subject to the individual land capability of each site, the standard of access and the visual impact of any such development on the surrounding State Park and tourist roads. Zoning of these sites would be subject to compliance with Ministerial Statement No. 6. To provide sufficient scope for fire protection, while maintaining screening of development, a minimum lot size of 4 to 8 hectares is recommended. Site related tourist establishments and accommodation may be appropriate at higher densities.

Strategic Directions

The Otway ranges and coastline is a significant environmental and tourist asset and its natural beauty and tourism potential are to be maintained for all to appreciate. In this regard:

- *the values of the State Forest and Lorne-Angahook State Park will be protected. Opportunities will be provided for recreation and education associated with the enjoyment and understanding of, and which is compatible with the protection of, the natural environment.*

- *some limited opportunities for rural bush retreats may be available inland from the Lorne and Aireys Inlet townships, offering natural environment and quality of life experiences provided by the Lorne-Otway environs. Any development will need to be sited and designed to minimise any adverse impacts on the public lands and maintain the attractiveness and uniqueness of the region.*

- *encouragement will be given to reforestation of freehold land, with opportunities for hardwood timber production, in the Mt Sabine area. Development will generally be discouraged, save for limited low key tourist oriented uses that relate to the environment.*

Recommendation

It is recommended that the freehold properties in this area be zoned Environmental Rural. Within this area subdivision will not be encouraged.

5. TENEMENT HOLDINGS AND THE DEMAND FOR RURAL LAND

This section will examine the importance of tenements, and also trends in rural rateable holdings from 1984 to 1994. It also explores the demand for rural land.

5.1 Separate Tenements

A tenement is a land holding which is in the one ownership. It may comprise one or more lots and / or crown allotments.

The use of rural tenements as a basis for controlling the proliferation of dwellings in rural areas has been an accepted planning tool of planning authorities for many years. The separate tenement provision was developed in response to the existence of rural holdings comprising numerous old crown titles which were frequently too small or inappropriate for individual farming purposes.

Separate tenement provisions were designed to minimise the loss of agricultural land by discouraging the breaking up of farms comprising multiple crown allotments and discouraging the individual sale of each lot for rural living or hobby farming purposes. The control is achieved by restricting the number of houses which can be built on a tenement (land holding) as it existed at a particular date. This date is normally the date of exhibition of a planning scheme or amendment proposing the introduction of a tenement provision.

While primarily designed to discourage fragmentation, the separate tenement provision also recognises the legitimate expectations of rural land owners of being able to construct at least one dwelling on their rural holding. Hence the provisions are designed to allow the construction of at least one house on a rural holding comprising a separate tenement on the nominated date, notwithstanding whether the holding is less than the minimum lot size prescribed in the provisions for the as of right use of the land for a dwelling.

A separate tenement provision existed in the former Geelong Regional Planning Scheme, and continues to apply in the former Barrabool area of the Surf Coast Shire under the Surf Coast Planning Scheme. The provision restricts the use of rural land for a dwelling to one dwelling per 60 hectares or to one tenement less than 60 hectares provided it existed as a separate tenement as at December 1975. This provision has been generally effective in limiting the number of dwellings which have been built in the rural area and has encouraged the retention of rural holdings as single ownership tenements and their continued use for traditional farming production.

That part of the Shire comprising the former part of the Winchelsea Shire does not have a tenement provision, although this was considered in the preparation of a strategy plan and planning scheme for the former Shire in the early 1990's. An analysis of tenements for the former Shire was undertaken at the time and the results presented as part of a Rural Planning Review (September 1994) prepared by Trevor Budge and Associates and the Department of Conservation and Natural Resources - Office of the Environment. Statistically, the study revealed that without a tenement control opportunity existed for a substantial number of additional houses to be built in the rural area of the Shire than could occur with a tenement control. This was more particularly the case in the northern part of the Shire, where based on a 60 hectare tenement provision, potential would exist for more than an additional 330 houses if a tenement provision was not in place.

A similar situation exists in the former Barrabool part of the Shire. The existing tenement provisions will have had some influence in deflecting farm land values and retaining holdings for agricultural use. This part of the Shire is affected by substantial pressure for hobby farming and rural living use due to its close proximity to Geelong and its attractive landscape. Removal of tenement provisions would threaten to succumb this area to this development pressure and could substantially remove the land from traditional rural production.

5.2 Rural Rateable Holdings

The total number of rural rateable holdings in the Shire at 30/6/95 was 2008 (see Table 11 in Section 3). The number of rural holdings for the Barrabool and Winchelsea Shires for 1984 and 1994 are set out overleaf in Tables 16 and 17. (The parameters which are used in preparing the agricultural census have also been discussed Section 3).

Even taking into account the differences between the SCS and Barrabool and Winchelsea Shire boundaries the following trends and aspects are evident from the statistics:

- In 1994 there were 294 holdings between 1-10ha in the SCS but only four of them (1.4%) were recorded in the agricultural census.
- In 1994 there were 1714 holdings greater than 11ha in the SCS but only 419 (or 24%) recorded in the census.
- The number of holdings recorded by the census fell by 154 (27%).
- In 1984 63% of the holdings with agricultural activity were 81ha or larger, this rose to 70% in 1994.
- In 1984 17% of holdings with agricultural activity were smaller than 40ha. This number fell to 11% in 1994. This is probably because the value of production fell below the $5000 ABS parameter.
- The number of holdings in agricultural activity in the Shire fell from 1.2% to 1.13% of holdings in the State. The number of holdings in the State fell from 46,508 to 37,330 or 20% in 10 years. The number of state holdings >121ha fell from 23,991 to 21,143 or by 12%.

5.3 Analysis of the Nature of Demand for Rural Land

This report was prepared to provide information on actual land sales over the last five years and to assess the nature of the demand for land. This demand was evaluated by interviewing seven real estate agents who work throughout the Shire and who have wide experience in the sale of rural land.

Table 16: Number of Establishments with Agricultural Activity Classified According to Area of Holding (Selected Areas) at 31 March 1984

Area of holding (ha)	Barrabool (no.)	Winchelsea (no.)	Barrabool & Winchelsea Total	%	Total Victoria (no.)
0-10	10	2	12	2	2,864
11-20	12	8	20	4	2,777
21-40	43	23	66	11	4,273
41-60	32	26	58	10	3,918
61-80	23	34	57	10	3,612
81-120	32	57	89	15	5,073
121 and over	106	169	275	48	23,991
TOTAL	258	319	577	100	46,508

Note: Barrabool and Winchelsea as a % of Victoria = 1.24%

Table 17: Number of Establishments with Agricultural Activity Classified According to Area of Holding (Selected Areas) at 31 March 1994

Area of Holding (ha)	Barrabool (no.)	Winchelsea (no.)	Barrabool and Winchelsea Total	%	Total Victoria (no.)
0-10	4	-	4	1	2,353
11-20	6	3	9	2	1,837
21-40	21	15	36	8	2,772
41-60	21	21	42	10	2,687
61-80	18	22	40	9	2,608
81-120	27	39	66	16	3,930
121 +	79	147	226	54	21,143
TOTAL	176	247	423	100	37,330

Note: Barrabool and Winchelsea as % of Victoria = 1.13%

Source: ABS Agricultural Census

Sales

- The sales analysed for the period 1/1/90 - 1/9/95, were provided by the Office of the Valuer General. They were divided into sales of land between 0.5 and 2ha in area, of which there were 97 sales, and land sales >2 ha in area of which there were 306 sales. The sales were identified by each Parish.

- For land area between 0.5 and 2ha in area, Connewarre, Lake Lake Wollard, and Duneed, were the Parishes recording the most sales. For land >2ha in area, Duneed, Lake Lake Wollard, Bambra, Tutegong, Jan Juc and Puebla recorded the most sales.

- No sales were recorded in Wormbete, Wensleydale, Murdeduke, Kaingun and Gnarwarre for land 0.5-2ha in area, whereas for land >2ha fewest sales occurred in the Parishes of Angahook, Lorne, Murdeduke and Wensleydale.

- The median sized land area sold was 39.56ha.

- The highest median prices for Parishes with more than ten sales were in Puebla ($217,000), Barrabool ($205,650) and Jan Juc ($186,000). The lowest median prices paid were in the Parishes of Lake Lake Wollard ($40,000) and Kaingun ($52,500).

- For land >2ha in area and on which there were no buildings, the highest priced land per ha were in the Parishes of Jan Juc ($32,156/ha), Connewarre ($30,769/ha), Puebla ($11,643/ha) and Barrabool ($10,883/ha). The cheapest land was in Mirnee ($1,544/ha), Murdeduke ($2,207/ha) and Modewarre ($4,361/ha).

- For land sales >2ha in area 133 or 44% were for areas >20ha in size, 13 or 37% were 4-20ha in size and 19% were 2-4ha in size.

Market Conditions

- For land sales 0.5 to 2ha, 1995 sales are projected to be 8 in number or 40% of 1994 sales (20) and 32% of 1992 sales (25) (the peak sale year).

- For land sales >2ha in size 1995 sales are projected to be 28 in number, or 49% of 1994 sales (57), or 38% of 1992 sales (73).

- Agents believe that the depressed number of land sales in 1995 are partly because of increased interest rates over those in 1994, and partly because of the uncertainty in the period leading up to the next Federal election.

- There has been a scarcity of small blocks of land and prices for such land have remained buoyant despite prices for land being depressed generally.

Buyers

- The buyers for rural land contain four main lifestyle related segments which could be described as "commuters", "retirees", "locals" and "holiday buyers". The commuters are easily the most dominant buyer group.

- Many land buyers who are doing so for the first time are not familiar with land areas, and could not distinguish between 10 and 20ha areas. Most of them are seeking a rural environment on which they can create their "vision splendid". They are willing to pay a premium to do this even though fully developed blocks can be purchased more cheaply than it costs to buy land and build.

- Many buyers of small allotments become disenchanted with their situation after a few years, either because of the high cost of maintaining the land as a large garden, or because of high commuting costs or both. These small allotment owners frequently either return to the suburbs or buy a large block of land on which to conduct agricultural pursuits.

Current Demand

- Demand for small (0.5 - 4 ha) and medium sized blocks (4 - 30ha) is strong in areas within 30-35 minutes drive of Geelong particularly in the areas north of Torquay and south of Mt Duneed, near Freshwater Creek and Bellbrae, and areas in easy access of the Princes Highway.

- Buyers do not want to buy land which is surrounded by other land of similar lot sizes. They seek diversity in lot sizes and wish to maintain being part of a rural environment.

Issues

The value of land throughout the Shire is higher than for most other agricultural areas of similar productivity. Where the land is held in smaller lots and has pleasant aesthetic qualities then land values bear little or no relationship to agricultural production. As values rise so do rates and the pressure to subdivide. If free market forces determined allotment sizes many small subdivisions would occur and the rural nature of the land would be lost, destroying the reason for people wanting in live there in the first instance.

Conclusions

For the long term benefit of all those living in the Shire, it is desirable that the subdivision of land be restricted so that the Shire retains its essential rural character.

The demand for small rural allotments can be met by expanding existing rural residential areas. In this way it would allow for development without adversely impacting on the rural landscape.

6. RURAL ISSUES

This section identifies the perceptions of the community and discusses the major problems that it faces.

6.1 Community Perceptions

This section summarises the findings of three workshops held during October 1995 with representatives of various rural organisations in the Shire. The main participants in these workshops were members of the following organisations:

- Department of Agriculture, Energy and Minerals
- Department of Conservation and Natural Resources
- Consultative Committee of the Surf Coast Shire
- Victorian Farmers Federation
- Barwon Valley Trees Group
- East Otway Land Protection Group
- Landcare groups - Torquay, Thompsons Creek, Barrabool Hills
- Barwon River Care Group
- Southern Farming Systems Group

Workshops were conducted for the following areas:

- The northern basaltic plains and the Barrabool Hills areas
- The south west area of the Shire around Deans Marsh
- The south east area of the Shire

These areas were selected because they comprise different land systems, problems and pressures.

Strategic Analysis

The participants in each workshop were asked to identify what they considered to be the **strengths, weaknesses, opportunities and threats** which affect agricultural activity in the Shire. The findings of these workshops are summarised below -

6.1.1 Common Issues for all three areas

Strengths

- The Shire has a rich diversity of soils, landscapes, enterprises and people. It has relatively reliable rainfall, especially in the South West.

- It is relatively close to Geelong and Melbourne which both have excellent services and markets. There are also many services available throughout the Shire.

- There are many skilled people from diverse backgrounds who are keen to see better land management.

- Land values are relatively high throughout and demand for land is quite strong.

Weaknesses

- The high value of land means that rates are high which in turn puts pressure on landowners to subdivide into smaller lots. These smaller lots are usually not viable farms in their own right.

- Many farming systems have been unprofitable in recent years and as a result landowners have often not had sufficient capital to manage their land in the manner that they would prefer.

- The management of land - both small and large lots - is an issue. There is inadequate control of noxious weeds, pests and weed plants generally.

- Significant areas of good agricultural land have been lost to efficient agricultural production, when subdivision occurs.

Opportunities

- All landowners were keen to see a well designed long term plan for the zoning of land and better land management. They would like the plan to maintain the landscapes of the region and have the following features -
  - allow for subdivision in selected, suitable and restricted areas
  - encourage better land management
  - police poor land management - especially in relation to noxious weeds

- All landowners emphasised that the process of implementing the plan is critical to its success, with particular emphasis on the following aspects -
  - unsuitable subdivisions should not be permitted to progress in the interim period before the plan is approved and comes into operation
  - the planners should consult widely with the community before identifying which areas may be further subdivided. The planning process should deal fairly and consistently with all applicants. Concern was expressed at the ability of developers with "smart lawyers" to do better than others.

- The strength of the tourism industry and the way it is heavily promoted should enable land owners to develop complimentary industries.

- The district has the capacity to develop new enterprises and encourage fledgling ones. The suitability of different enterprises varied from area to area.

- Several existing townships could be enhanced to make them more desirable places and hence they could attract people to them. The townships of Winchelsea, Moriac and Deans Marsh were especially mentioned.

Threats and Constraints

- If noxious weeds are not controlled, especially serrated tussock, then agricultural production will fall and severe restrictions will have to be introduced on stock and vehicle movement to stop further spread.

- It is undesirable to have small blocks interspersed with larger holdings as the owners of small blocks often do not have the equipment necessary for good management.

- Dispersed small lot subdivision also tends to increase land values and hence rates. This can discourage agriculture.

6.1.2 Issues for each area

The Northern Volcanic plains area.

This area has more large holdings than the other areas and it contains many viable farm businesses.

The group were keen to see this broadacre aspect maintained but were concerned that increasing land values and rates will put pressure on the area to be further subdivided. A differential rating system would assist by enabling a lower rate for agricultural operations.

This group was particularly concerned about serrated tussock.

The South Western area - South of Winchelsea and near Deans Marsh.

This area has many smaller blocks and only a few landholders are dependant for their living on agriculture alone.

This group were very strongly critical of the ad hoc subdivisions that have occurred in recent years.

They see good opportunities for enhancing the vegetable and forestry industries in the area.

They were also particularly keen to preserve and enhance the attractive undulating timbered nature of most of the area.

The South East area

This area, like the south west area, has few farmers entirely dependant on agriculture for a living.

The lack of good rainfall and poor quality of the Thompsons Creek were factors which restrict the intensification of the agriculture in this area. In addition, wind erosion of soils in summer was a problem, especially because of its adverse affect on tourism.

The group would like to explore the possibility of using sewage for irrigation in the district.

Noxious weeds, especially serrated tussock, are a problem.

6.2 Problem Areas

Analysis of the issues raised in the workshops show there were three major problems identified: **salting, serrated tussock** and **low agricultural profitability**. Problems of salting and serrated tussock have already been discussed in Section 2.

In relation to low agricultural profitability, many farmers saw this as a major problem. The Federal Minister for Agriculture Mr John Anderson recognised this when he addressed the Rural Finance Summit (held in Canberra from 3-5 July 1996) -

> *"... the fundamental role for this summit is to determine what can be done to achieve better results for the two thirds of producers whose long term prospects are poor by any measure."*

Poor farm profitability is caused by many factors, however poor commodity prices and small farm size producing low economies of scale, are two important ones. Given the small average farm size in the Shire and particularly in the Central and Southern areas, it is inevitable that many farms in the Shire will not be viable in their own right.

Many landowners choose to own small areas and maintain viability by non-farm work. They choose the area for its proximity to urban areas and the very attractive coastline.

The traditional grazing enterprises have been particularly unprofitable in recent years. There has been an increase in non-traditional activities such as the outdoor raising of pigs and cut flowers. The areas planted to blue gums has also increased.

These changes are inevitable in a world where market conditions are constantly changing. It is desirable for the Shire to accommodate these changes provided they do not impact adversely on the rural landscape and good land management practices are used.

7. RECOMMENDED STRATEGY

This chapter recommends objectives and policies which should form the basis of the Shire's strategy for the use of rural land. The recommendations are based on the particular agricultural resources, industries and land management issues described in this study. The characteristics of a dynamic strategy are initially described.

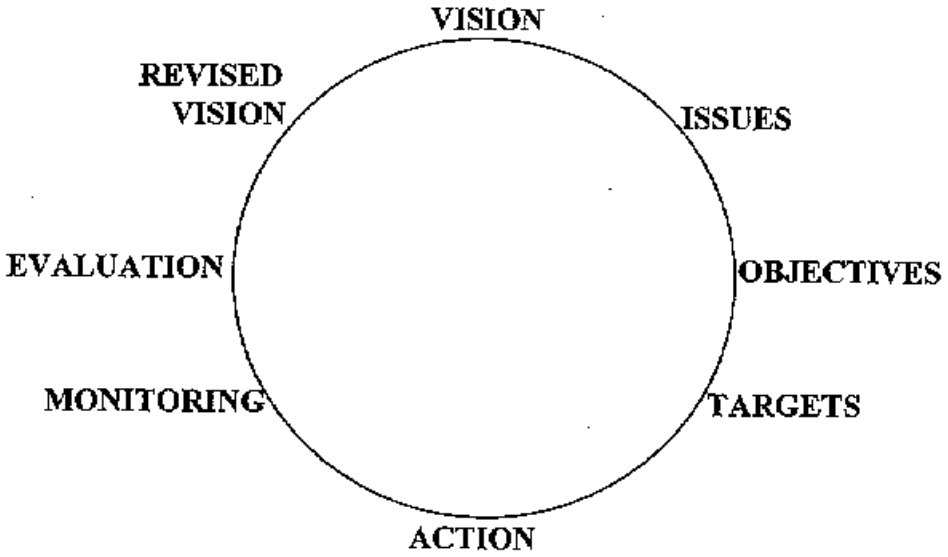
7.1 The Characteristics of a Dynamic Strategy

An ideal strategy will contain three major areas:

- a management strategy
- a means of monitoring and evaluation and
- an action plan.

An illustration of the strategic process is set out below. This is taken from "Regional Environmental Strategies" published by the Australian Local Government Association, March 1997.

The strategic process



This report is primarily a management strategy with recommendations on monitoring and evaluation. It is desirable that a clear action plan is developed as a result of this study so that the momentum for change and improvement is developed and maintained.

7.2 Objectives

The agricultural and environmental/rural resources of the Surf Coast Shire are fundamental to the continuing prosperity of the Shire. The central strategy of the 2020 Vision includes recognition that the natural environment and qualify of life are the chief attributes and assets of the Shire. In this regard it acknowledges the need to establish a viable economic base which does not put at risk or compromise the natural environment.

A viable agricultural base is seen to be paramount to achieving this aim, but it needs to be one based on environmentally sustainable land management. The following objectives are directed towards protecting agricultural land whilst encouraging appropriate use of land.

Ensure agriculture and associated rural industries can continue to provide a significant economic base for the municipality by -

- promoting agricultural activities which are productive and economically viable
- encouraging investment into agricultural activities which have the potential to be sustainable in the longer term
- promoting rural industries which value add at the product source
- enhancing infrastructure and resources which support primary industry
- providing a planning framework which protects the long term viability of agricultural land and minimises speculative increases in rural values

Protect the natural and physical resources on which agricultural activities rely by -

- encouraging agricultural activities which are ecologically sustainable
- taking into account land capability and land suitability when assessing land use, subdivision and development proposals
- encouraging the use of best farm management practices

Ensure that good agricultural land remains available for soil based activities by -

- discouraging the development of land for rural uses which are not reliant on the soil
- protecting good agricultural land from small lot subdivision and encroachment by urban uses
- providing clear definitions and distinctions in boundaries between rural and rural living residential zones
- refusing inappropriate subdivisions or land uses which take rural land out of agricultural production
- discouraging non productive uses and additional houses unrelated to the rural use of the land

Retain agricultural land in productive units by -

- ensuring that current and future agricultural practices do not prejudice the ability of future generations to productively farm the land
- strongly discouraging fragmentation of rural land holdings through subdivision for rural residential or rural living purposes
- discouraging the creation of small lots which are unsuitable for farming
- providing opportunities to consolidate or increase the size of land holdings to create more viable farming systems
- encouraging farm management practices which maintain or increase the productive capacity of the land

Implement policies to minimise the spread of noxious weeds and pest animals

Conserve and permanently maintain the existing rural character of the area by encouraging suitable broadacre agricultural pursuits and development which is in harmony with the rural landscape.

Ensure development in rural zones is compatible with surrounding land uses.

Implement innovative approaches to dealing with rural land use problems.

7.3 Strategies for Encouraging and Protecting Agricultural Activities

7.3.1 Introduction

The traditional role of local government has been as a provider of services, and to regulate the use and development of land. With expansion of the Landcare movement and the decline in funds available to the Department of Natural Resources and Environment, the community is increasingly looking to local government to play an expanding role in land management issues.

The Shire's evolving role in land management can be broadly described as falling into two areas:
- a pro-active role in encouraging good land management practice; and
- a statutory role by which land use and development is controlled.

In order for the Shire to take a pro-active role it is valuable to identify the characteristics of excellent land management. Following is a set of principles on which excellent land management can be based and practices should be encouraged.

7.3.2 Best land management principles and practices

Principles

Broadly speaking the principles of excellent land management can be summarised as below:

- Ensure that good quality land is retained for agricultural production.
  To this end all land classed 1, 2 or 3 should be considered worth retaining.

- Protect environmentally significant or sensitive land areas.
  These policies will be included in the Environmental Study.

- Encourage landowners and government agencies to rehabilitate problem land.
  Examples include land which is salted, showing signs of erosion or infested with serrated tussock.

Practices - Land Plans

In the long term it is desirable that there is a land plan for the whole of the Shire with particular emphasis on the water courses and problem areas. It is also desirable that each landowner develop a land plan for their particular property which is empathetic to the master plan. To this end the Shire should:

- Require all landowners making applicants for town planning permits to submit a land plan (sometimes referred to as a whole farm plan), to show how their plans integrate with good land management practice

  The land plan could be prepared under the same guidelines as those used to enable tax deductions under S.75D[6] of the Income Tax Assessment Act. It is important that a mechanism is established to ensure that land plan works are implemented within a reasonable time of any use or development being approved.

- Develop alliances with government agencies and businesses to help protect and develop the natural resources of the Shire

  Federal and State government assistance is available under the Natural Resource Management (Financial Assistance) Act 1992 for "... any activity relating to the management of the use, development or conservation of one or more of the following natural resources - (i) salt; (ii) water; (iii) vegetation or any other activity relating to the management.....of any natural resource."

  The objectives of the Act are amongst other things to provide funding
  "...to facilitate the development and implementation of integrated approaches to natural resources management in Australia..."

It is desirable that any initiatives and developments in natural resource management are consistent with excellent agricultural land management.

It is also desirable for the Shire to show leadership in promoting best land management practice and in encouraging a prosperous agricultural sector. The following initiatives will help in this process.

Proposed Initiatives to Encourage Best Practice

- Provide certainty over future subdivision policy and consistency in the way in which the policy is administered.

- Set up an **agribusiness advisory committee** (AAC) with diverse expertise that consults widely with the community with an aim of developing agricultural industries in the Shire.

[6] S.75D of the Tax Act permits taxpayers to claim capital expenses incurred to combat land degradation, as an outright deduction, provided they meet certain criteria.

The AAC could especially focus on the marketing of agricultural produce, identifying appropriate infrastructure needed to develop agricultural industries, and promoting new viable agricultural activities.

- Set up a **land management advisory committee** (LAC) with responsibilities for providing advice on town planning applications for use and development and to encourage land planning, especially in salted areas and areas infested with serrated tussock. Because problems are many and diverse it would be desirable for the committee to develop plans and strategies for one problem at a time to ensure that practical results are achieved. A serrated tussock committee has already been established by the Shire and this could be the first of ongoing committees. It is important that the committee identifies ways in which it can work with the DNRE in joint policies that best utilise the DNRE powers under the Catchment and Land Protection Act, and the Shire planning controls. The methods so developed can then be extended to all areas of land management.

  The LAC could also identify ways in which to encourage landholders to plant trees such as blue gum plantations in areas south of the Mt Duneed and Cape Otway Roads. This policy would be especially useful in recharge areas such as Thompsons Creek.

- Develop a more detailed data base of agricultural resources. Best land management practice relies on detailed mapping. Many areas of the Shire are only mapped at 1:100,000. The salted areas have been mapped at 1:25,000 by the DNRE, and the serrated tussock committee is in the process of developing a map identifying the serrated tussock infested areas. It is desirable to draw all of these mapping processes together to help the Shire in its administration.

- Provide sponsorship and support to landcare groups which develop their individual areas in sympathy with an overall land plan based on a catchment plan

- Sponsor seminars on the management of small land holdings and provide a list to landowners of suitably qualified contractors and advisers that can assist landholders in improving their management.

- Conduct open days on model farms which are examples of best land management practice.

- Consider providing rate relief for a limited time to farmers who are actively developing farm plans and controlling noxious weeds. The method of the relief could be recommended by the land management advisory committee.

- Consider providing rate relief or a direct subsidy scheme for a limited time, to developers willing to invest in agribusiness infrastructure. The AAC could identify worthy projects.

7.3.3 Statutory Land Use, Subdivision and Development Controls

Minimum Lot Sizes

The land systems of the Shire are many and complex, and in a perfect world it would be desirable to have no minimum lot sizes and replace these with broad policies and detailed plans for each land system. Each proposal for development could then be viewed on its merits and on how it integrates with the broad policy. To implement such a system would require considerable expertise and expense, beyond what ratepayers would want to pay. It would also be open to political influence and would no doubt develop to become a contentious issue and be difficult to manage.

Ratepayers have clearly indicated that they desire certainty in relation to the subdivision of land. It is therefore desirable that minimum lot sizes be identified for each land system. It has already been argued that the Shire should not become involved in what is an economic size of land for the purpose of agricultural production and economic return. What is desirable is that the lots are technically viable. That is, they are sufficiently large to maintain the integrity of the landscape and large enough to enable the landowners to own such equipment and skills as is necessary to maintain the land using best practice as described earlier.

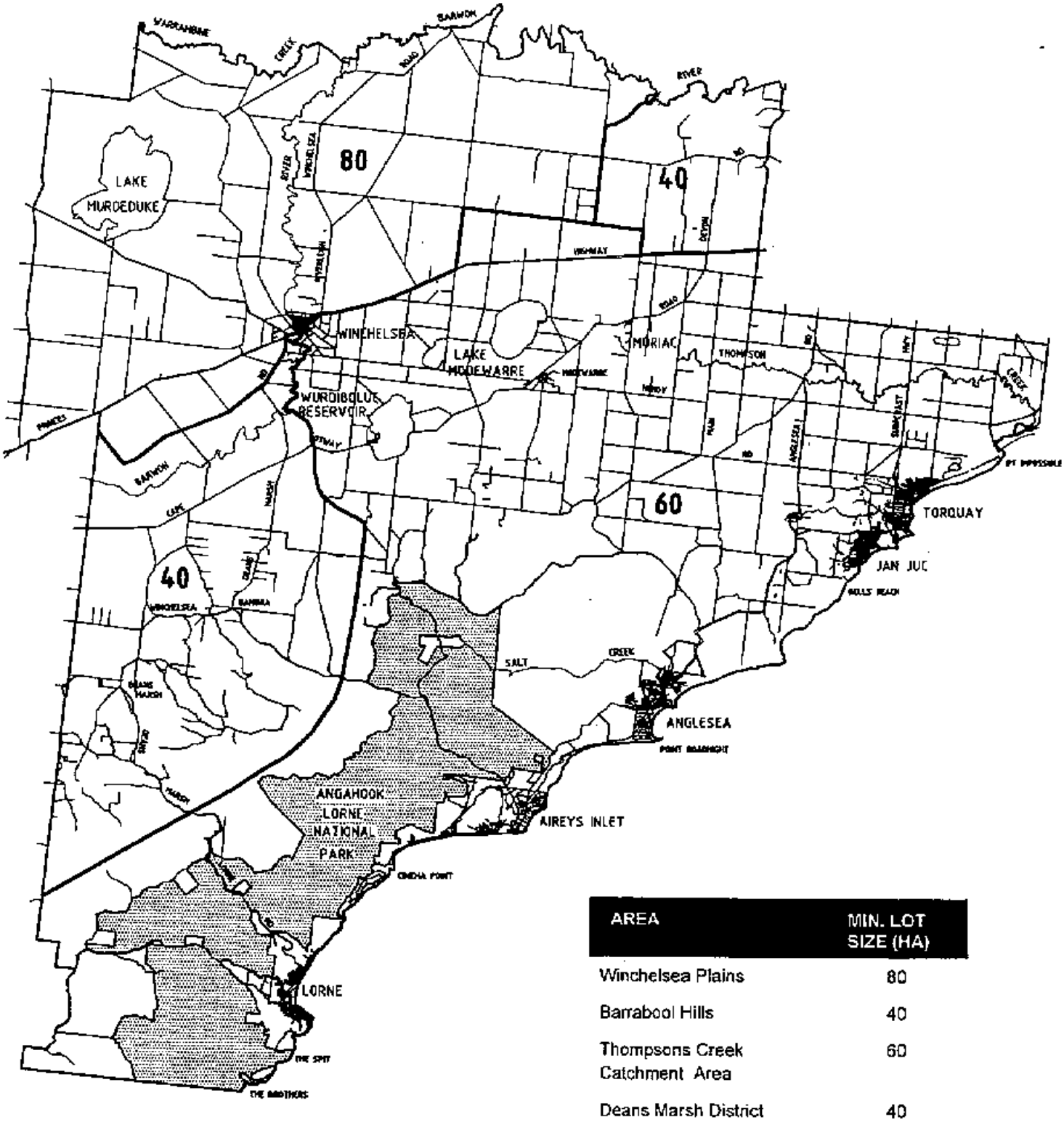
The rural zone in the Victoria Planning Provisions (VPPs) bases the subdivision and development of rural land on minimum lot sizes. Unless the responsible authority (local council) specifies a minimum lot size in a schedule to the rural zone, the minimum defaults to 40 hectares. Hence, despite the inadequacies of prescribing minimum lot sizes, the existing political environment requires that this be done. Minimum lot sizes should be established and based on the land capability of the land systems previously described, with modifications taking into consideration factors such as existing tenement patterns, landscape values and environmental significance.

In the case of the latter two factors, larger minimum lot sizes will generally be recommended to assist in the maintenance of the particular landscape or ecological values.

Land which is rated as being of poorer agricultural quality will attract a larger technically viable lot size not only due to the need for a larger land parcel to extract a reasonable return, but also because the land is likely to be more fragile and susceptible to poor land management such as in the form of overstocking, leading to erosion and degradation problems. Frequently, these areas will also be ecologically important as they are likely to be uncleared or only partially cleared of the original native vegetation. In these circumstances, a larger minimum lot size will generally be necessary to maintain the integrity of the ecological and landscape values of the sites.

Section 4 of this report analysed the landscape values of the Shires rural areas and recommended minimum lot sizes having regard to the technical viable lot sizes based on the land classification outlined in Section 2, existing land tenement and development patterns, protection of landscape and ecological values, and the existing and preferred rural land use. The recommended minimum lot sizes are set out in Table 18 and illustrated on Map 12.

RURAL LAND USE STRATEGY
MAP 12 RECOMMENDED MINIMUM LOT SIZES



AREA	MIN. LOT SIZE (HA)
Winchelsea Plains	80
Barrabool Hills	40
Thompsons Creek Catchment Area	60
Deans Marsh District	40

Table 18: Recommended Minimum Lot Sizes

Area	Brief Description	Minimum lot size ha
Winchelsea plains	The area principally comprising volcanic plains in the north east of the Shire, in lower rainfall areas.	80
Barrabool Hills	The area of the Barrabool Hills comprising high quality agricultural soils.	40
The Thompsons Creek catchment area	The area mainly comprising the Gherang soils at the margin of the Otway forest area, and areas along the catchment of the Thompsons Creek.	60
The Deans Marsh district	The area along the northern slopes of the Otway ranges largely with high quality soils and with higher rainfall.	40

It needs to be emphasised at this point, that the capacity to meet a minimum lot size in the planning scheme should not be taken as the sole criteria under which future applications to subdivide are assessed. Minimum lot sizes are recommended for the Rural Zone, however, these are intended to facilitate the future productive use of the land, and applications to subdivided should demonstrate that the proposal will also meet the objectives recommended in section 7.2. To enable the Shire to properly assess proposals to subdivide, it is therefore recommended that any application be accompanied by a land plan as described in section 7.3.2.

Dwellings

To ensure that rural land is not fragmented, and that agricultural land in the region is valued and maintained for future agricultural production, there is a need to change the expectation that there is a right to erect a house on every crown allotments irrespective of the pattern of land holdings. The challenge is to achieve a cultural change which acknowledges that the primary purpose for justifying a house on a rural lot is to complement and improve the agricultural use of land while preserving the existing rural character of the area.

The Rural Zone in the VPPs allows land to be used for the purpose of a dwelling provided it is at least the minimum size specified in the schedule (or 40 hectares if no area is specified). If this condition is not met, applications may be made for a permit. In considering whether to grant a permit, the responsible authority must consider, as appropriate (and among other things):

- the State and Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies, and
- whether the dwelling is reasonably required for the operation of the rural activity conducted on the land.

The latter provision allows for a wide interpretation of what is "reasonably" required for a rural activity, and indeed what is considered to be a bonefide rural activity. Without clear guidelines it will be very difficult for the council to make effective and consistent decisions, particularly if an

applicant uses personal hardship or family reasons to reinforce the planning grounds. Given that the purpose of the provision is to limit the proliferation of dwellings in a rural zone, it will also create a real dilemma if Council wishes to approve a dwelling on an existing single small lot, but refuse a dwelling on a similar sized lot which is part of a multiple land holding. In the first instance there is an historical expectation that a person can build a dwelling on a lot if it exists as a single tenement holding before the introduction of planning scheme controls. In the second case, if permits were to be issued for dwellings on all existing undersized allotments throughout the Shire, this would result in substantial fragmentation and loss of existing rural land.

One means of overcoming this dilemma is by the use of separate tenement provisions. These provisions normally allow only one house per land holding (tenement) which is less than the minimum size for the zone. The provisions existed in the former Shire of Barrabool and since council amalgamations, has applied as a policy with respect to the former Shire of Winchelsea. By maintaining this policy, owners can build on existing single holdings without prejudicing the decision guideline requiring, in all other cases, that a application for a house on an undersized allotment must be justified on the basis of being required for the operation of the rural activity. This is considered to be fair and equitable, and reflects the realistic past expectations of rural property owners without totally compromising the purpose of the rural zone.

In such a case an application for a house would generally be dealt with in one of two ways:

- either a dwelling would be justified on the basis of being required for the operation of a 'bona fide' rural activity conducted on the land; or
- it would be permitted on the basis that the land comprises a separate tenement at a nominated date in the planning scheme (which is usually the date of exhibition).

These arguments are also put for the Environmental Rural Zone in the VPPs, where the same principles apply, but where the objective is to maintain land in larger holdings to protect the landscape character or environmental values of the area.

If this issue is not appropriately addressed it can be anticipated that the respective provisions in each zone will be used to permit a dwelling on any existing crown allotment. The implications for the Surf Coast Shire would be a proliferation of houses throughout the rural area, including the Rural General Farming and Rural Natural Features Zones in the Barrabool area of the Shire where demand for small rural holdings is greatest.

Accordingly, it is recommended that tenement controls are put in place for the whole Shire, and that these controls apply as soon as is legally possible. The controls could be implemented as an overlay control. It is also recommended that where an applicant is required to justify that a dwelling is required for the operation of a rural activity on the land, applications be accompanied by a plan prepared along similar lines to that proposed in section 7.3.2.

Subdivision Excisions

The existing planning scheme allows applications to be made for the excision of a small lot from a large rural holding which is intended to provide a dwelling for a person working on the farm (who may be a family member or an employee) and to assist with maintaining the efficiency of the rural enterprise. These provisions normally intended that there be only one excision from a property.

Over the years the provision has been exploited, with many excised lots being sold to buyers totally unrelated to the farm operation rather than being retained and occupied by an employee or member of the owner's family. There have also been examples of land owners attempting to take advantage of this provision on two, three and more occasions, either because they still require a second house associated with the agricultural land (and the previous one has been sold), or simply as a means of creating rural residential allotments. Research by the City of Greater Geelong into its excision applications revealed that the number of lots which have been sold to persons unrelated to the parent farm is between 42% and 53%. While comparative figures have not been researched for the Surf Coast Shire, former Geelong Regional Commission staff have advised that the number of excisions in the former Barrabool Shire exceeded these figures.

The Rural Zone in the VPPs allows applications to be made to excise an existing dwelling, or excise a lot for a dwelling. In this case however, there is a condition that an agreement under Section 173 of the Act must be entered into, to ensure that the land is not further subdivided ie only one excision will be permitted notwithstanding the size of the parent title. Despite this requirement, the provision is still open to interpretation in that:

- it does not specify a maximum size for the excised lot and therefore would allow the creation of a lot far greater in size than that necessary to contain a dwelling. (eg. 30ha from a 60ha lot),
- it does not specify a minimum size for the parent lot. (eg. a lot could be excised from a land holding as small as one hectare); and
- it does not prevent application for an excision from every lot or crown allotment forming part of a tenement, (eg. four allotments could be excised from a rural property comprising four crown titles of various sizes, creating a total of eight new titles.)

In most circumstances rural small lot excisions are inappropriate as they encourage adhoc rural residential subdivision and rarely contribute to increasing the sustainability of rural operations. Under such circumstances it is difficult to reconcile the retention of an excision provision, other than to provide for the excision of a second dwelling which existed prior to the scheme.

If a case can be made that a dwelling is required to improve the operations of a bonefide rural activity, it would be preferable for the Shire to support an application for a second dwelling accompanied by an agreement that a further application will not be made to excise the dwelling. Again it would be recommended that an application to excise an allotment or construct a second dwelling be based on a land plan which explains how the excision would enhance the rural operation on the land.

Transfer of Development Rights

Transferable Development Rights (TDR) is a legal means by which a landowner with the potential to develop land can sell these rights to another landowner. The transferrer of these rights foregoes the opportunity to develop a parcel of land for the payment of a fee by the owner of the transferee land, who acquires these rights.

This mechanism is used in rural areas in the USA, and more recently in NZ. It could have applicability in the Surf Coast Shire especially if rights were transferred from the northern areas of

the Shire, (which have retained their broadacre agricultural character and value), to southern areas which have been more fragmented. If the landowners in the northern areas developed their land under current regulations then significant areas of agriculturally value land could be lost).

The Shire should consider developing a transfer of development rights policy with the aim of trying to maintain the broadacre value of agricultural land. This could be accompanied by the implementation of a pilot scheme to establish whether it can achieve the objectives stated for it.

In designing the trial the Shire should pay particular attention to:

- ensuring that the land from which the rights are transferred (transferor land) is agriculturally valuable or capable of being improved to operate at a higher level of production.
- ensuring that the land to which the rights are transferred (transferee land) is, among other considerations, of lower agricultural value (say class 4-5 land), and is in an area where fragmentation has already occurred and in which further subdivision would have little additional impact on the landscape, eg. Gherang or Gnarwarre areas.
- ensuring that the transferee land has appropriate land management plans.

7.4 Other Policy Issues

The major agricultural problems already identified in the Shire are salting, serrated tussock and the low profitability of agriculture. Other problems have been discussed earlier in this study. This section will only discuss the major problems with a view to identifying possible policies.

Salting

The solutions to solve salinity problems are not always simple and are nearly always long term. The DNRE has developed a strategy to monitor and manage the problems. This strategy is part of the Corangamite Regional Catchment Strategy (June 1997) published by the Corangamite Catchment Land Protection Board.

Salting is also a problem in Bendigo Shire. Over the last three years it has offered a rate rebate scheme to land owners, whereby areas that are taken out of production and treated for salting are subject to 100% rate rebate. The scheme has been supervised by the DNRE and has been applied to both salting and recharge areas. To date very few ratepayers are taking advantage of the scheme and it is being revised, to try and develop a strategy that will encourage more use of the scheme.

It is important that management plans developed by DNRE are taken into account when the Shire is issuing permits of any type. To this end it would be desirable to develop overlays from the DNRE maps so that Shire officers are aware of the location of these problems. It is also desirable the Shire maintains close contact with the developments in the Bendigo Shire on salting policy.

Serrated Tussock

A serrated tussock strategy was developed in 1995 by Inland Agricultural Pty Ltd. Part of this strategy requires State and Federal government funding, some of which has been forthcoming. The

Golden Plains Shire which has significant areas of serrated tussock has identified it as a major problem and has instigated a campaign to develop community awareness of the problem and to control it. All shires should be encouraged to implement steps to control and eliminate serrated tussock.

Surf Coast Shire has recently received a $39,000 grant under the Local Government Weed Initiatives Program to assist in the control of serrated tussock, and a committee has been established to develop recommendations on how this might be done. It is understood the funds will be used to identify serrated tussock infested areas, to develop detailed overlays which will alert potential land buyers to the problems and costs associated with serrated tussock eradication, and to work with the DNRE to control and eradicate the weed.

The Shire has little legislative authority to deal with noxious weed problems such as serrated tussock and this initiative will show the community that the it is prepared to show leadership in the management of the problem

The Profitability of Agriculture

Although farmers expect the Shire to contribute to the process of producing a profitable agricultural sector, in reality there is very little it can do. The profitability of agriculture is largely determined by world commodity prices, the value of the Australian dollar, the scale and efficiency of the farm business and the marketing and business skills of the proprietors. The Shire has little influence in any of these areas.

Shire rates, which are a reflection of land values, have a small influence on profits, and the Shire could view sympathetically, any policies where farmers are making adjustments to respond to these macro-economic forces. Areas where changes are ongoing include changing enterprises, increasing economies of scale and improved marketing.

The Shire should however, resist pressure to subdivide land for new emerging industries. The history of agriculture is characterised by booms and busts in rural commodities and it would be undesirable for land management to reflect these booms and busts. The use of a transfer of development rights policy may be helpful as an alternative to providing opportunities for farmers to raise capital.

It is **not** desirable for the Shire to be making judgements about the likely prospects of different enterprises. It is desirable however that encouragement be given to ensure excellent land management practices are followed, and provided changes are accompanied by guarantees to manage the land responsibly, then these can be viewed sympathetically.

Land problems

Salting and serrated tussock have already been targeted as the two most important land management problems. There are also many other problems in the Shire such as rabbits, erosion, ragwort and blackberries. It is desirable that the land management advisory committee develop policies for the accelerated reduction of these problems. Until these policies are developed in detail

it is desirable that where any permits are being granted or any involvement with the Shire requires these problems to be identified, a management program be put in place.

Intensive agriculture

Intensive agriculture often uses different management techniques from broad acre agriculture. There is a trend to more intensive agricultural activities in the Shire which is inevitable and desirable. As this trend develops the land management advisory committee may be called upon to solve problems and develop appropriate codes of practice that are for the benefit of the community in general. It is anticipated that this role will be an ongoing and important one for the land management advisory committee.

Spraying

Certain intensive enterprises, especially vines, are particularly sensitive to many types of spray drift. The land management advisory committee could develop a policy on spraying codes of practice. The DNRE and chemical companies would be of great benefit in assisting in this matter.

Sewage water

The agribusiness committee could explore the possibility of developing ways of utilising waste water from the sewerage plant at Black Rock. There are several excellent scientific papers available on how such water can be best utilised.

Natural Resources Management (Financial Assistance) Act 1982

Both the agribusiness advisory and land management advisory committees could examine this little known act and explore ways in which the Shire and the local community could benefit from it.

The Murray Darling Basin Commission are also undertaking interesting work in this area. The Commission has recently published an article entitled "Cost sharing for on-ground works" which describes how two pilot projects are being undertaken to solve environmental problems. The methodology being used involves an assessment of the technical nature of the problem, potential solutions, costs and an analysis of how the work can fairly be funded. This is a complex methodology developed to deal with complex issues.

It would be desirable for the Shire to undertake a major project possibly funded via the Natural Resource Management Act and using the Murray Darling Basin methodology. A major project of value to the community would be the fencing off of Barwon River, the killing of noxious weeds and exotic species on its bank and a revegetation program. This could also be accompanied by the provision of a bike/walk track for public use. This project could apply to the whole length of the river.

A project such as this would have many problems in its implementation but would represent a major initiative and positive step forward for environmental management in the Shire. The recently published Corangamite Regional Catchment Strategy deals with these issues in a broad context but does not provide adequate emphasis on a number of key projects.

7.5 Evaluation - Review

If this report is to be used effectively it is desirable that policies which are adopted are evaluated and reviewed from time to time. Some policy initiatives such as the one relating to the transfer of development rights would require ongoing evaluation and analysis. Such work could either be the subject of a further study or students from the RMIT and Melbourne University's planning courses could be invited to conduct post-graduate studies designed at evaluating policies.

It is recommended that the whole strategy be reviewed every five years to ensure that the stated policy objectives are being achieved.

APPENDIX 1: Soil Maps of the Queenscliff and Colac Soil Region

Source: Maher, J.M. and Martin J.J., (April 1987), Soils and Landforms of SW Victoria, Part 1, Department of Agriculture and Rural Affairs.

Queenscliff

Map Unit Symbol	General Description	Classification Code (refer Source)
2	Black and grey self-mulching cracking clays in swamps and depressions	EaK, EcK - SWP - ALP
6	Hard pedal mottled-yellow duplex soils on gently undulating plains (sedimentary)	BaA, BaN - S - PLA
7	Hard pedal mottled-yellow duplex soils on gently undulating rises (sedimentary)	BaA, BaN - HSL - RIS
8	Hard pedal mottled-yellow duplex soils on undulating rises (sedimentary)	BaA, BaN - HSL - RIS
20	Black self-mulching cracking clays on alluvial plains	EaK - PLA - ALP
46	Black self-mulching cracking clays in alluvial plains	EaK - PLA - ALP
65	Friable red duplex soils and red smooth-ped earths on moderately inclined low cones (basalt)	AiNt, DaN - CON
79	Hard pedal mottled-black duplex soils in gently undulating plains (basalt)	AgK, AgKs - S - LAV
86	Black self-mulching cracking clays on undulating rises	EaNf, EaKf - HSL - LAV
143	Hard pedal mottled-yellow duplex soils on gently undulating plains (basalt)	AaN1, AaK1, AbK1 - S - LAV
150	Hard pedal mottled-yellow duplex soils on gently undulating rises (basalt)	AaN, AaK, AbK- HSL - LAV
159	Hard pedal mottled-yellow duplex soils on steep hills (sedimentary)	BcAhs - HSL - HIL
210	Hard pedal mottled-yellow duplex soils on undulating rises (sedimentary)	BaK - HSL - LOW

APPENDIX 1 (cont.)

Map Unit Symbol	General Description	Classification Code (refer Source)
212	Hard pedal mottled-yellow and mottled-brown duplex soils on rolling low hills (sedimentary)	BaA, BcA - HSL - LOW
214	Sandy pedal mottled-yellow duplex soils on a gently undulating plateau (sedimentary)	BbA - PLA - PLT
215	Sandy pedal mottled-yellow duplex soils on steep low hills (sedimentary)	BbA - HSL - LOW
216	Sandy apedal mottled-yellow duplex soils on an escarpment (sedimentary)	BbAm - HSL - ESC
217	Sandy apedal mottled-yellow duplex soils on an escarpment (sedimentary)	BbAm - HSL - ESC
219	Hard pedal mottled-yellow and black duplex soils on rolling hills (sedimentary)	BcKh, BiKs - HSL - HIL
225	Black self-mulching cracking clays on moderately inclined low cones	EaNf - CON
226	Black self-mulching cracking clays on undulating ridges	EaK, EaKf - S - LAV
227	Hard pedal mottled-yellow duplex soils on undulating rises (basalt)	AaN, AaK - HSL - LAV

SOIL - LANDFORM MAP
QUEENSCLIFF

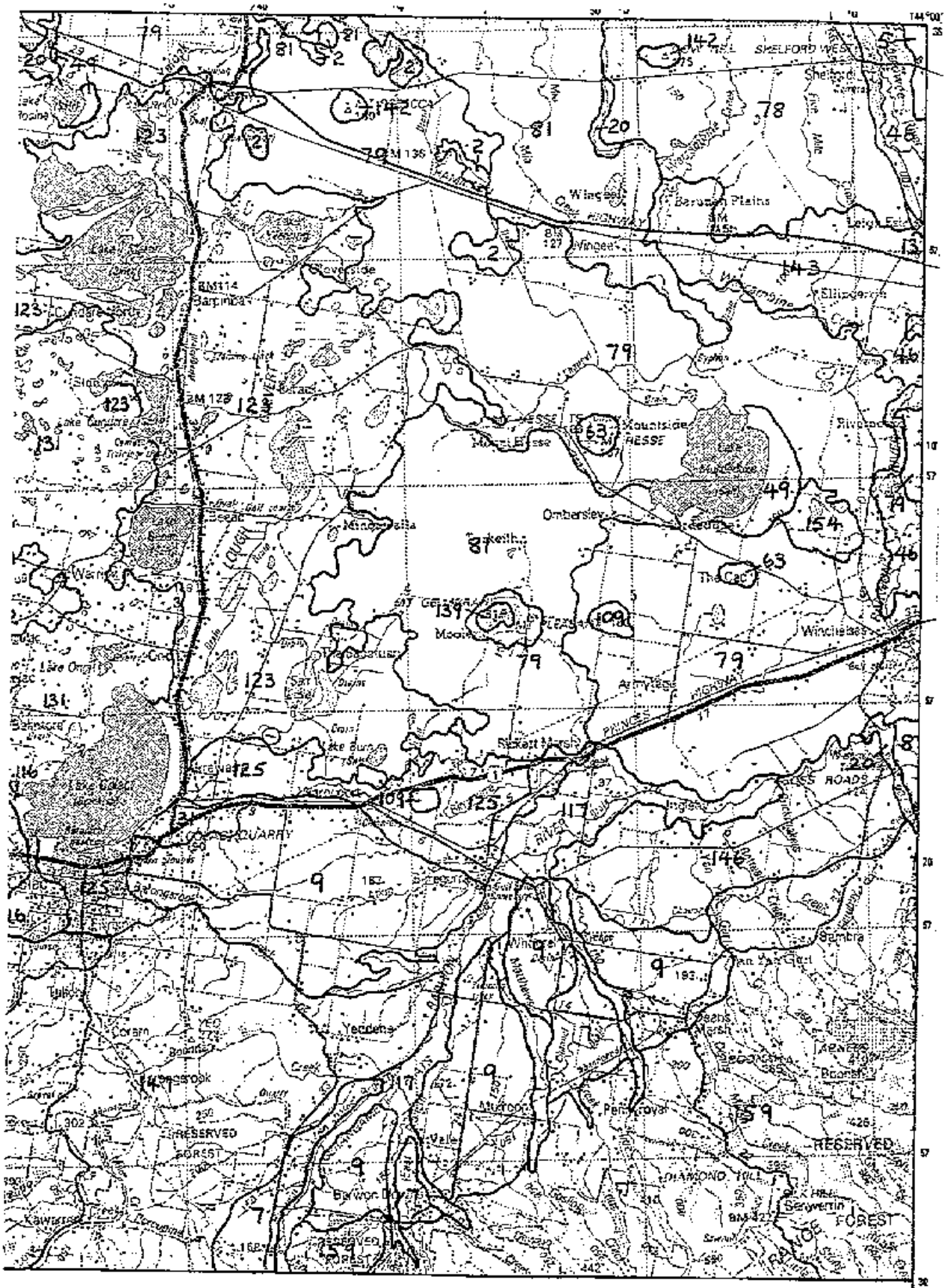
Scale 1;250,000

APPENDIX 1 (cont.)

Colac

Map Unit Symbol	General Description	Classification Code (refer source)
9	Hard pedal mottled-yellow duplex soils on undulating low hills (sedimentary)	BaA, BaN - HSL - LOW
46	Black self-mulching cracking soils on alluvial plains	EaK - PLA - ALP
49	Black self-mulching cracking clays on rolling lunettes	EaK - LUN
63	Hard pedal and friable red duplex soils on moderately inclined low cones (basalt)	AiN, AiNt - CON
79	Hard pedal mottled - black duplex soils on gently undulating plains (basalt)	AgK, AgKs - S - LAV
109	Hard pedal mottled-black duplex soils on undulating low hills (basalt)	AgK - HSL - LOW
117	Black self-mulching cracking clays on alluvial plains	EaN, EaK - PLA - ALP
123	Hard pedal mottled-black duplex soils on gently undulating plains (sedimentary)	BhK, BhKS - S - PLA
139	Black smooth-ped earths on moderately inclined high cones	DcK - CON
146	Hard pedal mottled-yellow and mottled-brown duplex soils on gently undulating rises (sedimentary)	BaN, BdN - HSL - RIS
147	Hard pedal mottled-yellow duplex soils on rolling hills (sedimentary)	BaA - HSL - HIL
154	Grey self-mulching cracking clays on level plains	EcK - PLA - PLA
159	Hard pedal mottled-yellow duplex soils on steep hills (sedimentary)	BcAhs - HSL - HIL

SOIL - LANDFORM MAP
COLAC



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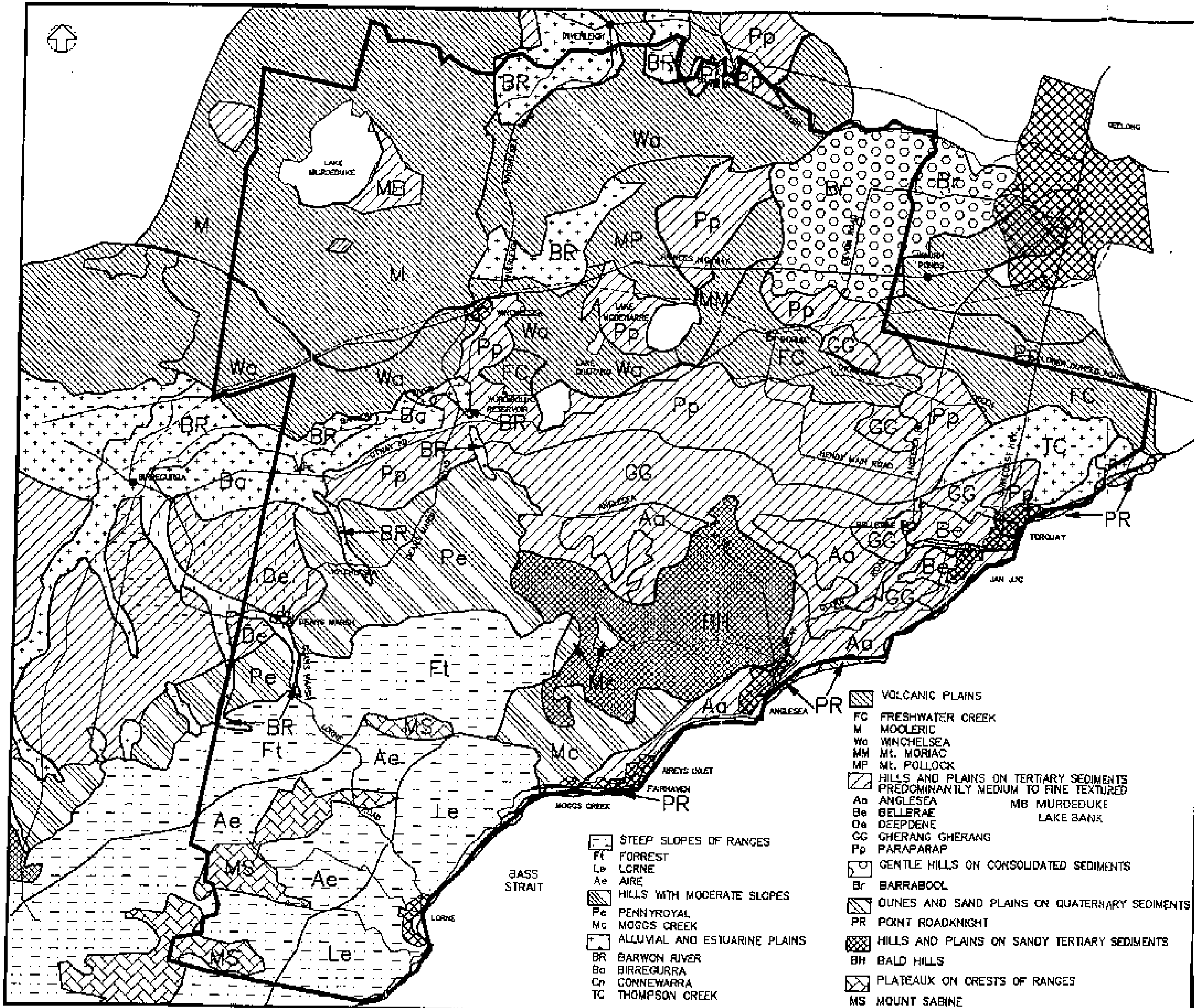
APPENDIX 2: Land Systems

Source: Pitt, A.J. (1981), A Study of the Land in the Catchments of the Otway Ranges and Adjacent Plains, Soil Conservation Authority.

Land systems are areas of land each with a characteristic pattern of the following environmental variables: climate, geology, topography, soils and vegetation. The land systems for the Surf Coast Shire are described in the following table and shown on the Map to Appendix 2..

Land systems described	Map reference	Farming system	Classification of land quality	Minimum lot size ha
Anglesea	Aa	G, F, CF	4-5	60
Bald Hills	BH	CF, F	5	60
Barrabool	Br	IC, IG, MF	2	40
Barwon River	BR	IC, IG	1-2	40
Bellbrae	Be	G, F, CF	4	60
Birregurra	Ba	IC, IG	1-2	40
Deepdene	De	IG, F	2-3	40
Freshwater Creek	FC	G	2-3	60
Gherang Gherang	GG	G, F, CF	4	60
Moggs Creek	MC	F, CF	5	-
Mooleric	M	G	3	80 or 100
Mount Sabine	MS	IG, IC, F	2	40
Paraparap	Pp	G, IG, CF, F	3	60
Pennyroyal	Pe	IG, CF, F	2-3	40
Thompsons Creek	TC	G, F	3	60
Winchelsea	Wa	G, MF	2-3	80 or 100
by the Author:				
Mt Moriac	MM	IG, MF	2-3	40
Mt Pollock	MP	G, MF	2-3	60
Murdeduke Lake bank	MB	IC, IG	1	40
Other non agricultural areas:				
Forrest	Ft	Forest		
Lorne	Le	F		
Aire	Ae	F		
Connewarre	CA	Conservation		
Point Roadknight	PR	C		

See Appendix 3 for key to farming systems.



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DATE: 1\11\95	STATUS:

LEGEND

URBAN AREA

MUNICIPAL BOUNDARY

ROADS/HIGHWAYS

RAILWAY

RIVERS/CREEKS

SOURCE: PITT, A.J. (1981) 'A STUDY OF THE LAND IN THE CATCHMENTS OF THE OTWAY RANGES AND ADJACENT PLAINS. SOIL CONSERVATION AUTHORITY AND DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (1992) 'CORANGAMITE SALINITY REGION—LAND MANAGEMENT UNITS'.

REV	REV DESCRIPTION	REV	DATE

0 5 10
SCALE IN km

CLIENT
SURF COAST SHIRE

PROJECT
RURAL LAND USE STUDY

TITLE
LAND SYSTEMS

MAP TO APPENDIX 2

A3

Woodward Clyde

MELB/SJL/10-95

APPENDIX 3: Farming Systems of Victoria

Source: Phillips Agribusiness (1993),"Impacts of Urban Growth and Related Development on Agriculture in the Westernport Region".

Category of Use	Description	Characteristics
Intensive Agriculture (IA)	Intensive, high output, soil-based cropping activities including floriculture, vegetable growing, berry fruits, viticulture and other orchard crops	Deep, permeable and fertile soils. High rainfall and/or irrigation. Favourable climatic conditions. Well located to markets. Farm sizes > 8 ha.
Mixed farming (MF)	Semi-intensive agriculture, crop-rotation based, including a ley phase, either pasture or crop. Livestock association through the ley phase. Includes some forms of vegetable production (potatoes, peas) and intensive grazing.	Suitable soil structure and fertility for cropping. High rainfall and/or irrigation. Farm sizes > 100 ha.
Broadacre cropping (BC)	Extensive cropping, moderate inputs, seasonal, timely activities, principal crops, cereals, legumes, oilseeds, pasture ley phase. Grazing mainly sheep, but including cattle.	Soils suited to cropping. 7-8 months growing season within defined summer dry. Farm sizes > 400 ha.
Intensive grazing (IG)	High input, pasture-based activities, located either in high rainfall or irrigation districts. Principally dairying, but includes some beef and sheep enterprises.	Well drained, moderate to high fertility soils. High rainfall and/or irrigation. Climatic features favour grass production. Farm sizes > 60 ha.
Grazing (G)	Low to moderate input, grassland based, intermittent cropping but principally to achieve pasture improvement. Sheep and beef production.	Variable soil types, low to medium fertility. 7-10 months growing season. Farm sizes > 400 ha.
Conservation farming (CF)	Low input, extensive grazing, no cropping. Environmental sensitivity to poor management practices.	Unstable soil types due to structure, climate or slope. Unfavourable climatic conditions especially in association with soils. High incidence of hazards, pests, erosion.
Forestry (F)	Native eucalypt forest, some eucalypt plantations, Pinus plantations.	Specific use either because of steep terrain, unstable soils or public ownership

APPENDIX 4: ABS Statistics Tables I - VI

Table I: 1983/84 - Areas

	Barrabool (Population - 258)		Winchelsea (Population - 319)		Total (Population - 577)	
	ha	Resp	ha	Resp	ha	Resp
Total area of holding	34952.1	258	76467.8	319	111419.9	577
Salt affected land - area	100	12	492.1	45	592.1	57
Crops excluding pastures and grasses	5255.9	134	8787.7	149	14043.6	283
Crops (including pastures and grasses)	9145.5	195	16986.0	253	26131.5	448
Pure lucerne at 31 March - area	131.3	18	691.4	21	822.7	39
Sown pasture excluding pure lucerne	19787.9	200	49874.3	272	69662.2	472
Sown pastures and grasses at 31 March	19919.2	201	50565.7	273	70484.9	474
Pastures (cut for hay) total area	3886.6	159	6810.7	213	10697.3	372

Table II: 1993/94 - Areas

	Barrabool (Population - 176)		Winchelsea (Population - 247)		Total (Population - 423)	
	ha	Resp	ha	Resp	ha	Resp
Total area of holding	27240.4	176	62803.2	247	90043.6	423
Salt affected land - area	90.8	12	397.1	47	487.9	59
Crops (excluding pastures and grasses)	1478.3	49	5354	81	6832.3	130
Crops (including pastures and grasses)	3525.3	89	12219.3	182	15744.6	271
Pure lucerne at 31 March - area	215.5	17	368.0	20	583.5	37
Sown pasture excluding pure lucerne	20429	154	41908.8	203	62337.8	357
Sown pastures and grasses at 31 March	20644.5	156	42276.8	205	62921.3	361
Pastures (cut for hay) total area	2133.9	98	4365.7	153	6499.6	251

Table III: 1983/84 Stock and Production

	Barrabool (Population - 258)		Winchelsea (Population - 319)		Total (Population - 577)	
	No.	Resp	No	Resp	No	Resp
Total sheep and lambs	134925	174	278498	205	413423	379
Total wool production (kg)	547717	162	1259651	200	1807368	362
Lambs marked	46463	141	103862	176	150325	317
Total dairy cattle inc bulls	2102	50	8085	91	10187	141
Total cattle and calves	7443	144	25353	222	32796	366
Calves born (exc stillborn)	2970	109	10522	173	13492	282
Live meat strain chickens grown on	216440	2	960000	3	1176440	5

APPENDIX 4 (cont.)

Table IV: 1993/94 Stock and Production

	Barrabool (Population - 176)		Winchelsea (Population - 247)		Total (Population -423)	
	No.	Resp	No	Resp	No	Resp
Total sheep and lambs	118502	124	214964	144	333466	268
Total wool production (kg)	1000542	115	999047.6	139	1999589.6	254
Lambs marked	38894	100	66063	119	104957	219
Total dairy cattle inc bulls	1471	12	8494	48	9965	60
Total cattle and calves	7283	77	18555	153	25838	230
Calves born (exc stillborn)	2187	56	5547	116	7734	172
Live meat strain chickens grown on	757850	2	1239000	3	1996850	5

Table V: 1983/84 Crop Production

	Barrabool (Population - 258)			Winchelsea (Population - 319)			Total (Population - 577)			
	Ha	T	Res	Ha	T	Res	Ha	T	Res	Yd
Pasture Seed (inc pure lucerne)				1270.6	577.4	22	1270.6	577.4	22	0.45
Wheat for grain area	665	1742.6	26	1458.1	3611.9	29	2123.1	5354.5	55	2.52
Wheat total area	677		26	1458.1		29	2135.1		55	
Oats for grain	1619.6	3019.2	65	2671.1	5394.5	82	4290.7	8413.7	147	1.96
Oats total area	2195.5		102	3254.5		111	5450		213	
Barley for grain - total area	1748	3388.6	61	1494.7	3002.4	35	3242.7	6391	96	1.97
Barley total area	1830		67	1558.7		38	3388.7		105	
Total cereals for grain - area	4032.6		97	5715.9		95	9748.5		192	
Linseed area	22	28	1	492	554.2	12	514	582.2	13	1.13
Legumes for grain - total area	156		13	51		4	207		17	
Field Peas for grain	144	181.5	12	25	52.8	3	169	234.3	15	1.39
Rapeseed / canola - area	31	24	3	233	288.5	7	264	312.5	10	1.18
Safflower				72	82	1	72	82	1	1.14
Sunflower	171	145.3	8	858	741.7	17	1029	887	25	0.86
Potatoes - total area	3	25	1	154.9	3319	8	157.9	3344	9	21.18
Vegetables for human consumption	11.4		3	270.6		15	282		18	
Artificial Fertilisers - pastures	6882.3		101	26018		188	32900.3		289	

APPENDIX 4 (cont.)

Table VI: 1993/94 Crop Production

	Barrabool (Population - 176)			Winchelsea (Population - 247)			Total (Population -423)			
	Ha	T	Res	Ha	T	Res	Ha	T	Res	Yd
Pasture Seed (inc pure lucerne)	10	1.5	1	1703	1050.6	14	1713	1052.1	15	0.61
Wheat for grain area	84.2	176	5	290	899.5	11	374.2	1075.5	16	2.88
Wheat total area	84.2	176	5	290	899.5	11	374.2	1075.5	16	2.88
Oats for grain	120	659.8	9	337	605	16	511	1264.8	25	2.48
Oats total area	229		22	391		18	620		40	
Barley for grain - total area	550.8	3026.3	15	1500	2209	27	2050.8	5235.3	42	2.54
Barley total area	550.8	3026.3	15	1500	2209	27	2050.8	5235.3	42	2.54
Total cereals for grain - area	678	1726.1	24	3016	5544.1	39	3694	7270.2	63	1.97
Linseed area				547	538.2	16	547	538.2	16	0.98
Legumes for grain - total area	97.2	87	5	163	274	5	260.2	361	10	1.39
Field Peas for grain	84.2	67	4	163	274	5	247.2	341	9	1.38
Rapeseed / canola - area	106	83	2	129	219	5	235	302	7	1.29
Safflower										
Sunflower				55	116	6	55	116	6	2.11
Potatoes - total area	159.5	1900	3	115.8	3037	6	275.3	4937	9	17.9
Vegetables for human consumption	162	1906.9	4	116.3	3038.2	6	278.3	4945.1	10	17.7
Artificial Fertilisers - pastures	7860.8		76	22128		152	29988.8		228	

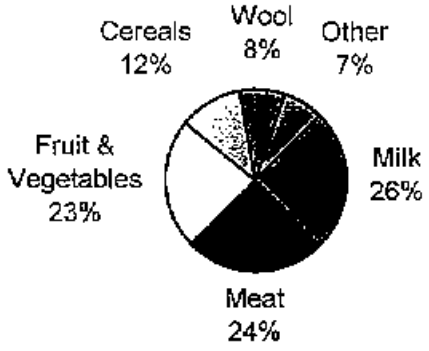
(Source: ABS, Agricultural Census)

APPENDIX 5: Gross Value of Agricultural Production Victoria

COMMODITY	AMOUNT ($)	%
Milk Production	1,332,454,933	(25.6)
Cattle and Calves Slaughterings	678,886,317	(13.0)
Total Cereals for Grain	600,974,084	(11.5)
Wool Total	413,177,763	(7.9)
Total Orchard Fruit (inc. Nuts)	328,395,995	(6.3)
Total Vegetables	316,239,311	(6.1)
Total Pastures and Grasses	266,564,032	(5.1)
Poultry Slaughterings	224,880,940	(4.3)
Sheep and Lamb Slaughterings	203,311,899	(3.9)
Pigs Slaughterings	164,242,821	(3.1)
Grapes - Total Value	155,721,350	(3.0)
Total Legumes for Grain	140,090,555	(2.7)
Total Other Crops Net	108,681,724	(2.1)
Eggs Produced	74,251,023	(1.4)
Nurseries (excl Turf)	69,953,020	(1.3)
Cut Flowers	62,640,840	(1.2)
Total Crops for Hay	24,481,128	(0.5)
Total Oilseeds	15,682,444	(0.3)
Total Small and Berry Fruit	12,492,366	(0.2)
Cultivated Turf	6,363,750	(0.1)
Total Honey/Beeswax	5,016,425	(0.1)
Total Fruit Net	2,780,347	(0.05)
Goat Slaughterings	200,725	(0.01)
TOTAL AGRICULTURE - GVP	**5,207,483,792**	**(100)**

Source: ABS, Regional Value of Agricultural Commodities Produced Victoria 1992-93

Gross Value of Agricultural Production Victoria



APPENDIX 6: Information Requirements for Applications

An application for use, development or subdivision must be supported by a **farm management plan**, comprising the following documentation, as appropriate to the particular application being made:

1. **Land Management Plan** - This plan is to provide details of the natural resources of the farm and how they are to be managed in the future. The plan is to be prepared along the guidelines of a "whole farm plan" as described in *"Whole Farm Planning, Principles and Options"* edited by B.K. Garrett and published by the Department of Conservation and Natural Resources and the Department of Agriculture, 1993. The plan should include, as appropriate:

   - A site analysis which identifies existing land features and improvements.
   - A description of the existing soils, trees, pastures, water supply both natural and man made, and any identified land problems and how they are to be managed.

2. **Site Plan** - This plan to show all buildings and works and other improvements intended to be constructed as envisaged by the farm management plan.

3. **Enterprise Plan** - This plan is to provide details of the existing enterprises on the land and any changes which are proposed. It should detail any capital expenditure proposed as to type, timing and amount. Specific details on proposed land use, stock numbers and management practices are to be provided for the next 3 years. The plan should include, as appropriate:

   - farm size and productive capacity of the site to sustain the agricultural use of the land;
   - agriculture requirements of the existing or proposed industry;
   - existing and proposed agricultural infrastructure;
   - assessment of industry requirements, growth patterns and investment requirements.

4. **Financial Plan** - This plan is to provide details of how the proposed changes are to be financed, and how the landowner can afford to develop and maintain the property. The plan is to provide a 3 year projected cashflow showing likely income and expenditure and how any deficits are to be financed.