

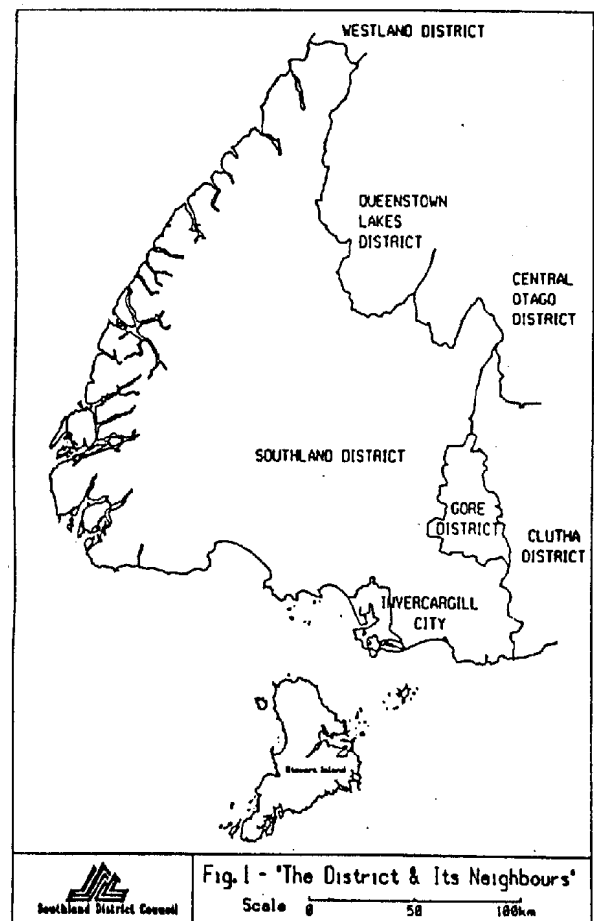
THE NEW ERA

This District Plan introduces a new era in the approach being taken towards the management of the physical and natural resources of the Southland District.

Gone are the historical techniques of planning where the emphasis was placed on the control of activities and this has been replaced by a requirement under the new legislation to manage the effects of an activity.

In order to be able to identify effects (both positive and negative) it is necessary to recognise what the values are that may be adversely affected.

As a consequence of this situation Council made a fundamental decision at the beginning of the planning process to use as the base of the District Plan **RESOURCE AREAS** which first were visually significant and second had some identifiable meaning to the general public.



As a consequence of this situation Council departed from the historical use of "zones" where like activities had been previously grouped, and in substitution identified the District by way of **LANDSCAPE CHARACTER AREAS** which are more physically recognisable.

Previously under the Town and Country Planning Act one of the difficulties with zone boundaries was that they were not readily recognisable on the ground. This led to confusion and abuse of the "zone" philosophy.

With the change in emphasis to "effects" it becomes necessary to consider the whole environment and in this regard the Act deals with amenity, intrinsic value, ecosystems, habitats, landscape, landform, natural character and cultural and heritage value.

The planning schemes currently administered by Council make little or no reference to these landscape or ecology ideas, yet the public submission on Council's issues and options document confirm that they are also important to Southlanders and must be appropriately addressed in this District Plan.

Using the landscape and ecology of those defined area as the basis of definition therefore takes on some significance and importance in relation to the Plan preparation.

There are many definitions of landscape. It is used here to mean both the visual expression of physical, biological and cultural processes and the human experience of it.

What you see in the landscape is understandable in terms of the process that had formed it. Landscape is not static - it changes and therefore we must be concerned with its management not its preservation.

People's appreciation of landscape is to a large extent influenced by:

- (a) Its appearance which can be described in visual terms such as form, shape, and texture.
- (b) Its meaning which is influenced by the viewers cultural background, prior experience and present circumstances.

Everyone may view the landscape differently and place different importance on its qualities but there are a number of recurring considerations on which there is a measure of consistent consensus - these are reflected in the Act.

Cultural influences provide another explanation of preference. Maori and pakeha appreciate landscape in a similar way although recognition of the spiritual qualities of the land is not strongly represented in the pakeha perspective.

Having established the basis on which the District is identified it then becomes necessary to initially look in a very simplistic way at the resources that make the Southland District such a significant player in a national context, and then look at the management issues that affect these resources (both rural and urban) in order to secure a high standard of environmental quality both within and outside the provisions of the District Plan.

SECTION 1

THE RESOURCES

1.1 LANDSCAPE AREAS

As explained in the introduction a fundamental consideration in the preparation of this District Plan has been the division of the District into landscape areas.

In order to properly appreciate the significance of this change it is necessary to have some understanding of the elements which make up the various categories.

Within Southland there are a range of landscape forms, including plains, rolling hills, bush and pasture, barren snow covered mountains, harbours, rocky bluffs and sandy beaches. These landscapes provide the character of the District.

The landscape areas identified within the District Plan are illustrated on Fig 2 and can be described as follows.

FIORDLAND

This is a unique New Zealand landscape with steep granite mountains, large glaciated valley systems, lakes, and largely unmodified vegetation patterns. There are few permanent settlements, although there have been some historically significant visits to, and journeys through, the area.

Fiordland National Park occupies 41% of the land area of Southland District and forms most of the area unit. At the north end, a relatively small block of land north of the Park up to the boundary with West Coast Region has been included. It shares a high degree of naturalness and remoteness with the rest of the area unit.

These areas are important to the rest of the District because of their influence on its climate as well as through the large numbers of visitors attracted to them. The District Council has responsibility for resource management on private land in the District and responsibility within the Park itself for all parties other than the Crown. However the Crown has responsibilities to ensure that any of its operations within the Park do not cause significant adverse effects beyond the Park boundary. The Council also has an interest in the quality of the environment there, because it has cross-boundary influences through much of the District (eg through visitor impacts, effects on water quality).

STEWART ISLAND

Stewart Island is dominated by the sea, and no division has been made between coast and inland parts. The influence of the oceanic climate is felt throughout the Island, and views of the sea, cliffs, dunes and inlets are seen from almost everywhere. The islands immediately offshore (eg Ulva, Muttonbirds) are included in the unit.

Most of the Island is in Crown Estate, managed by the Department of Conservation. The foci of District Planning concerns are around Halfmoon Bay and the blocks of private land around Port Adventure. The economy of the Island has always been based on its natural resources - fish, shellfish, minerals, natural history and landscape.

Native forests and shrublands are the dominant vegetation throughout the Island, although there are dune and tussocklands at Mason Bay, alpine vegetation on the mountains, and gums and pines closer to the township. With the exception of those buildings immediately around the Bay, most buildings settle into the bush, creating a unique Southland township character. Although their construction has been achieved with varying degrees of landscape disturbance, vegetation still visually dominates from both within the township and when viewed from beyond. The wharf area of Oban is a lively area, with fishing, recreation and passenger ferry boats in the water, and tourist, fishing and other commercial activities on the land.

A strong characteristic of the Island's landscape is the continuity of bush from ridges right down to the water's edge. Where this vegetation occurs in combination with clear sandy beaches the landscape is particularly charming.

THE COAST

Council has defined "the Coast" as "the area in which coastal factors are dominant". Immediately inland there may still be some coastal influence for example from salt spray or views to the sea, but the influence is no longer dominant. Further inland still, there are processes which will affect the coast, for example erosion producing silt which is carried in rivers to the sea. The landscape and ecological interconnections are readily apparent. To manage the resource wisely it is important that the District Plan is well integrated with the Regional Policy Statement, the New Zealand Coastal Policy Statement and the Regional Coastal Plan.

There are also strong connections between the management of the coast and the health of sea fisheries. Estuaries, for example, are important as nurseries for fish caught at sea.

The coast is extremely varied, ranging from high cliffs to low dunes and estuaries, reflecting the different rock-types and degrees of exposure to wind and wave action. There are strong connections between the character of the coast and of the land immediately inland. Much of the latter has been developed into pastoral land, although the natural character of most of the coast remains. It is a focus for recreation, and for the fishing and shellfish industries.

Natural processes such as sea-level rise and coastal dynamics are common issues for all parts of the coast and should be taken into account when making any decisions within the coastal environment, or assessing any proposed developments in that area.

This area is further broken down in sub groups as follows:

- (a) Catlins
- (b) Estuaries
- (c) Sandy Point - Riverton
- (d) Riverton to Orepuki
- (e) Te Wae Wae
- (f) Fiordland ⁽¹⁾

The Department of Conservation has carried out a national coastal resource inventory and natural character investigation for the Regional Coastal Plan and this provides a more detailed picture of the conservation values of the Southland coast. The District Plan will take the results of this investigation into account when dealing with the Coastal Resource Area.

CATLINS

The area known generally as the Catlins includes a number of low hill ranges running north-west to south-east and extending into Otago. About a third of this is in Southland District, about a fifth in Gore District and the remainder in Clutha District. This Landscape Type has not been further divided into units, although the more forested eastern parts may be thought of as different from the more intensively farmed western areas.

⁽¹⁾ SDC Landscape and Ecology 1993

The soils are yellow-brown earths which together with the good rainfall and gentle slopes have made intensive farming development possible. This has involved extensive clearance of forests and drainage of wetlands. Some native forest is now protected within the Catlins Forest Conservation Park, but there are many areas remaining on private land. A small number of these are protected by QEII covenants and scenic reserves. Characteristic of the western parts are the deeply incised streams with flax and other native vegetation along the banks. These streams and their associated riparian vegetation provide important habitats for native fish. The vegetation is grazed by stock and goats, and is not likely to survive for many years. There has been both large and small scale forestry planting, but native vegetation remains visually dominant in many areas.

Because of the scattered nature of settlements and houses in a gently rolling landform, and the position of the Catlins at the “edge” of the District, there is a sense of isolation in many parts. Generally it is an attractive landscape, although there are symptoms of poor land management, such as erosion and clearfelling which are visible from the roads. The area is popular for the passing tourist, on the coastal scenic route (SH 92), but most recreational use of the Forest Park focuses on the areas outside this District.

THE MOUNTAINS

The northern boundary of the District (and of the Region) runs across a series of high mountain ranges between SH 94 to Milford and the boundary with Otago in the Umbrella Range. There is a gradient from east to west of increasing rainfall, and correspondingly wetter soils and increased native forest cover. The land to the east of SH 6 to Kingston is predominantly freehold, being primarily used for pastoral grazing and is described in the Umbrella-Garvie Mountains Unit, while that to the west is mainly Crown Estate and is described in the Livingstone-Eyre Mountains Unit. The other high altitude area in the District (apart from Fiordland) is the western side of the Takitimu Mountains and is described as a third Unit.

These mountains are very important for water management in the District, since they contain many of the headwaters of almost all the rivers which flow across the plains (ie Waiau, Mararoa, Aparima, Oreti, Mataura). They are important in recreation (eg tramping, fishing) and provide high country grazing for a number of runs.

The extensive higher altitude tussock lands are valuable because of their diversity, large area and intactness.

Generally, it is recognised that the Eyre Mountains, the Takitimu Mountains and Mount Tennyson on the Garvie Range contain significant ecological values for flora and fauna.

THE HILLS

This area includes the ranges of hills which surround the Plains - the Hokonuis, Taringaturas, the Longwoods, and Waitutu Forest. Because they are formed from softer, sedimentary rock types, they are characterised by gently rolling slopes. Places where there are localised steeper ridges, such as in the Bastion area of the Hokonuis, are characterised by outcrops or bands of harder rock types. The predominant land uses of this area are pastoral farming and forestry.

Compared with the Mountains, the Hills are generally low in altitude, up to about 700 m, but reaching over 1000m along the Hump Ridge in Waitutu. Fires, farming and forestry have had a variety of effects in the Hills - changes in vegetation cover, introduction and removal of animals, changes in openness, introduction of roads, houses and services etc. It is recognised that Longwood and Hokonui Hill areas contain important ecological values for flora and fauna.

(Note: The Catlins are treated separately from the Hills Type, because of the lower altitude, more intensive land management and their extension into Otago).

THE PLAINS

The Plains area includes all the lowland parts of the District including the Te Anau Basin. It groups together those areas where the land is flat or gently undulating, which are also generally the parts where greatest changes to land and water have taken place since settlement. Most of the District's population lives on the Plains; consequently, this area also has the greatest concentration of services - roads, power lines, waste disposal sites etc.

The ecological aspects of the landscape are dominated by cultural patterns and processes - pastoral production, cropping, growth of towns, channelisation of rivers and streams, etc. However, the ecological aspects remain important - dependence on soil health for agriculture, value of trout fishery etc.

Four units have been distinguished within the Plains area.

- The Southland Plains are the largest, being the flat and rolling areas from the Mataura River in the east, to the Longwoods in the west
- The Waimea Plains running from Mandeville to Mossburn
- The Te Anau Basin
- The Waiau Valley south of Blackmount.

1.2 THE LAND

Some interesting comparisons can be made between Southland District and other Districts in New Zealand.

Southland District has by far the largest land area in the Country although a large percentage of this is in Fiordland National Park.

To obtain a concise picture of the land resource in the Southland District the following figures are relevant.

| | |
|--|---|
| Total Agricultural Land (including forestry and horticulture) | 1,067,554 hectares |
| Fiordland National Park | 1,200,000 hectares |
| Other Land (which includes urban, other conservation land, rivers and other land not in agricultural production) | <u>807,746</u> hectares 3,075,300 hectares |

Placed in a national context, Southland has the largest land area involved in agricultural production and this makes Southland one of the major contributors to New Zealand's overall agricultural production. Approximately 18% of New Zealand's pastoral products and some 9% of New Zealand's Gross National Product comes from Southland which highlights the significance of land in the rural economy.

(i) LAND QUALITY

The various soil types within the Southland Region are identified in Table 1 which is sourced from the Southland Resource Inventory (1986 Ministry of Works and Development).

To accurately quantify Southland's soil and land resources a study on land interpretation was undertaken by Landcare Research New Zealand Limited in May 1993 as part of the District Plan preparation.

The purpose of this study was to provide interpretative maps which could be utilised for:

- Land use planning, including protection of high class soils from urban encroachment.
- Promotion of Southland's soil and land resources for economic development.
- Identification of soil and land that may require attention under the provisions of the Resource Management Act.

In essence, this study looked in greater depth at the suitability of land within the District, identifying areas that had limitations and recommending best use options for other areas.

(ii) LAND USE

Undoubtedly the major production land use in the District is sheep farming where the numbers constitute approximately 12% of the New Zealand total.²

MAF Policy has identified five major farming types in the Southland District which are summarised as follows:

- Intensive finishing farms - sheep and beef. These are located mainly on the Southland Plains, and some of the inland and coastal valleys are intensively farmed with an average size of 200 hectares carrying predominantly sheep at an average of 13 stock units per hectare (su/ha).
- Sheep and beef farms. These are located in a number of areas, particularly around the hill country adjacent to Clutha District, the lower slopes of the Hokonui Hills and Longwoods, and the inland valleys beyond Tuatapere, Benmore, and Wreys Bush.

These farms have a higher proportion of cattle, approximately 14% of the stocking units and are less intensively farmed with an average of 9.5 su/ha.
- Deer farms. These include both finishing and breeding units. The farms that include the farming of deer in combination with sheep and beef tend to be concentrated around Te Anau Basin where approximately 30% of the farms in this area include deer. There is a small concentration of intensively farmed deer units within 30 km of Invercargill.
- Dairy farms. Until recently these have been dispersed with intensive finishing farms on most Plain Areas, although two areas of concentration exist, with the first being south of State Highway between Invercargill and Gore; and the second being west or Thornbury to Riverton and beyond Colac Bay around the coast to Pahia.

² Landcare Research May 1993

Table 1
Soil Classification of the Southland District

| Soil Classification | Description | Soils | Location |
|-------------------------|--|--|---|
| Zonal Soils | The distinguishing characteristics of this group are dominantly controlled by the full effect of climate and living organisms in soil development acting on rocks of normal siliceous composition. | <p>Yellow-grey earths.</p> <p>Lowland yellow-brown earths.</p> <p>Upland and high country yellow-brown earths.</p> <p>Lowland podzolised yellow-brown earths and podzols.</p> <p>Upland and high country podzolised yellow-brown earths and podzols.</p> | <p>Waikaia Plains</p> <p>Hokonui Hills</p> <p>Taringatura Hills</p> <p>Howells Hills</p> <p>Fiordland</p> |
| Intrazonal Soils | In this group the distinguishing characteristics reflect the dominating influence of some local factor (eg parent material or drainage) over the effects of climate and vegetation. | <p>Yellow-brown sands.</p> <p>Rendzinas</p> <p>Brown granular loams clays.</p> <p>Yellow-brown loams</p> <p>Intergrades between yellow - brown loams and yellow - brown earths.</p> <p>Organic Soils</p> <p>Gley soils</p> | <p>Limehills, Clifden, Forest Hill</p> <p>Windy Hill</p> <p>Waiau River Valley between Lakes Te Anau and Manapouri</p> <p>Takitimu Mountains</p> <p>Waituna Wetlands</p> <p>Waikiwi and Te Tipua Streams, Waihopai River Valley</p> |
| Azonal Soils | Included in this group are those soils without well-developed characteristics, either because of their youth or because conditions of parent material or relief have prevented the development of definite soil characteristics. | Recent soils | Waiau, Aparima, Oreti and Mataura River flood channels |

Source: Southland Resource Inventory 1986 Ministry of Works and Development

This pattern is being exaggerated with the increasing number of conversions to dairy farms. There have been 34 new conversions with a further 68 underway at present. Within the next 2-3 years a further 200 conversions are anticipated.

- (e) Arable cropping. These are interspersed with other farm types, but are generally occur inland between Winton and Fairfax. There is also some concentration between Lumsden and Riversdale. These types are reducing in number, although there is the potential for arable cropping to expand in Southland.

Also of significance in the context of the land is to recognise the significant area which is covered by both indigenous and exotic forests.

There has long been an historical association of communities within the District to indigenous forest milling.

This activity has largely occurred around Tuatapere, and in the Catlins and the Longwoods.

There are large tracts of indigenous forest remaining within the District comprising:

- 1.2 million hectares of indigenous forest contained within Fiordland National Park.
- The appreciable tracts of indigenous forest now retained for conservation purposes in the DOC estate.
(see Section 1.6 Indigenous Flora and Fauna)
- Substantial areas of indigenous forests on Maori land concentrated in the southern coastal areas including the Waitutu Forests and Stewart Island.

In addition to the areas of indigenous forest, there is a total of 40,300 hectares of exotic forest in Southland all of which is owned by individuals, local bodies and companies. Of this, 9,000 hectares is in plantations smaller than 100 hectares.

There are a number of major industrial sites within the District. Although these industrial sites make up a small percentage of the total land area of the District they are of significance given their economic importance to the District and the actual/potential impact on the land.

(iii) THE ISSUES

The studies and investigation undertaken in the preparation of this District Plan have looked at the historical land use activities that have occurred in the past. The Act, however, requires that Council avoid, remedy or mitigate only the adverse effects of activities and that the issues relating to the land need to be addressed and recognised within Plan preparation.

The purpose of the Act is to promote the sustainable management of resources. Sustainable management means managing resources to enable people to provide for their well-being now and into the future. This requires that the life supporting capacities of air, water, soil and ecosystems are safeguarded and any adverse effects on the environment are avoided, remedied or mitigated.

In relation to land, the following issues are seen as significant.³

- **Soil degradation in the form of nutrient loss, soil compaction and erosion can affect the sustainable management of the land.**

Explanation

Pasture growth requires large amounts of nutrients and these are not all returned to the soil. Loss can occur through a number of ways including runoff, leaching, gas emission and the removal of animal products. Fertiliser application is used to compensate for this loss. If fertiliser is not applied and the present use rate continues, the probable result is soil and water degradation.

Soil compaction mainly occurs as a result of heavy concentrations of stock, wheel traffic and tillage operations and can result in the reduction of top soil, water holding capacity, fertility (through wind and rill erosion), reduced yields, and an increased need for fertiliser application.

Erosion on the other hand is a natural phenomenon which can be accelerated by human interference. It results in eutrophication of the waterways through increased siltation and aggravates flooding.

Erosion in Southland is not as severe as other parts of New Zealand. Localised areas with moderate to high erosion potential include the mudstones of the Waiau Valley and wind erosion areas of parts of the Te Anau Basin and Northern Southland. Appropriate land use management practices can avoid or mitigate erosion effects.

³ SDC Report Agriculture 1993

- **Human activity can compound water degradation.**

Explanation

Problems with water quality can arise through land disturbance resulting in eutrophication, sedimentation and drainage of wetlands, through direct discharges, and non-point source pollution. Water quantity can be affected by rural and urban activities such as changes in vegetation cover, industrial activities and water supply inlets.

- **Consequential problems of weed and pest control.**

Explanation

Common weeds that occur within the District are sweet briar, matagouri, gorse, bracken, broom, Ragwort and Californian thistles. The methods of disposing of weeds is often damaging to the environment to the extent that sprays get into the waterways and can be carried through the air. Burning is also indiscriminate and can result in air pollution. The same flow-on effects apply to the control of pests, particularly as it relates to rabbits, opossums and grass grub.

- **The loss of native habitat.**

Explanation

*Land clearance has resulted in the loss of large percentages of Southland's **indigenous vegetation and habitats for indigenous animals**. Habitats currently suffering loss and/or degradation include freshwater habitats, shrublands, coastal turf communities, lowland forest and red tussock grasslands, many of which are home to threatened species.*

- **Rural activity affected by the use of land.**

Explanation

It has long been argued that land use activity is contributing towards the decline in rural population. While this may be a factor, Council is of the view that this is also influenced by a number of other factors such as the level of service that is being provided to rural communities in the form of fundamental social services which were historically available. It is Council's intention within the preparation of this District Plan to monitor this issue as an ongoing exercise.

1.3 THE PEOPLE

Demographic statistics can provide an insight into future population demands on natural and physical resources. Population projections derived from these statistics probably provide the most insight into what can happen in Southland District in years to come.

(i) POPULATION

The population of Southland District has been decreasing for a number of years, and this is consistent with a national trend for predominantly rural areas.

Table 2 illustrates the extent of population decline experienced in Southland District from 1981 to 1991.

Table 2
SOUTHLAND DISTRICT RESIDENT POPULATION 1981 - 1991

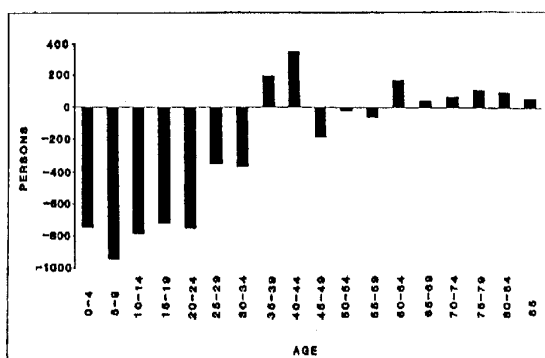
| YEAR | POPULATION | % CHANGE |
|------|------------|----------|
| 1981 | 33327 | |
| 1986 | 32565 | -2.3 |
| 1991 | 30663 | -5.8 |

The decline has been the largest in the rural sectors with only the urban areas of Winton, Riverton and Te Anau experiencing growth.

(ii) AGE STRUCTURE

An awareness of the changes occurring in the age of the District's population is very important. Figure 3 shows the population change in all age groups from 1981-1991.

Figure : 3
Population Change By Age Group in Southland District 1981-1991



The most notable decline was in the 0-24 age groups, which suggests that there is a declining birth rate, as well as fewer numbers of people in their child bearing years in the District. It also suggests that these people are going elsewhere for work, social opportunities, or to further their education.

Parallel to this decline in population in the lower age groups, Southland District has experienced an increase in the numbers of elderly persons as the baby boom era matures.

These characteristics are typical of a rural population which is becoming progressively older, and one that is having to be supported by a decreasing number of people in their working years.

(iii) ETHNIC COMPOSITION

Southland District has a low proportion of people with Maori or other ethnic origins. In the 1991 census, 6% of the population stated that they have Maori ancestry, while 93% stated that they have European origins. A summary of this information is presented in Table 3 below, which shows the ethnic composition of Southland District in comparison to that of Southland region as a whole.

Table 3
SOUTHLAND DISTRICT ETHNIC COMPOSITION 1991
(Percent)

| | European Origin | NZ Maori Origin | Pacific Island Origin | Other Ethnic Origin | Other (not specified) |
|--------------------|-----------------|-----------------|-----------------------|---------------------|-----------------------|
| Southland District | 93 | 6 | Less than 1 | Less than 1 | Less than 1 |
| Southland Region | 89 | 9 | 1 | Less than 1 | 1 |

(iv) EMPLOYMENT AND THE ECONOMY

The level of employment is a good indicator of the condition of the economy and illustrates, which sectors are growing, which sectors are in decline, and what changes in technology have occurred, and where.

Southland District has one of the lowest rates of unemployment in the country, featuring a relatively high number of people in the 'self-employed' or 'employer of others' categories. It can be said that this is typical of predominantly rural areas.

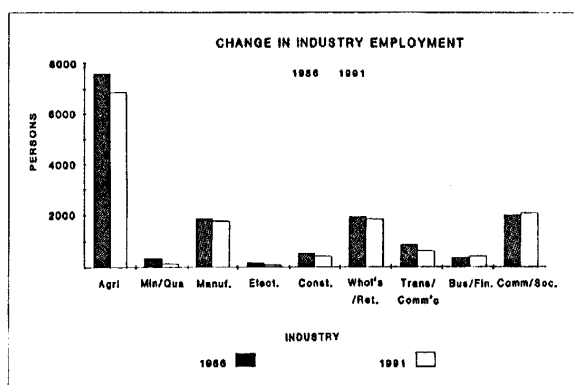
Table 4 portrays the employment situation within Southland District between 1981 and 1991. These figures show that little change has occurred during this period, except for a noticeable decline in the non-labour work force [which is most likely attributable to the decline in the younger population mentioned in Section 1.3(ii)] and a small increase in unemployment figures.

Table 4
TYPE OF EMPLOYMENT
SOUTHLAND DISTRICT 1981-1991 (%)

| | 1981 | 1986 | 1991 |
|----------------------------|------|------|------|
| Unemployed | 1 | 3 | 4 |
| Unpaid and Family Business | 1 | 3 | 3 |
| Non-Labour Force | 37 | 30 | 32 |
| Employer/Self-Employer | 21 | 23 | 23 |
| Wages or Salaried | 39 | 41 | 38 |

The District's economy is dominated by the agricultural sector and this is reflected in Figure 4 which indicates that the majority of Southland's workforce is in fact employed in the agricultural industry. As a result of Southland's dependence on agriculture, any changes to this sector will affect the District's economy.

Figure 4
Employment By Industry
Southland District 1986 and 1991



Overall it can be seen from Figure 4 that Southland has experienced a general decline in workforce numbers in the period 1986 to 1991.

This may be attributable to a decline in the actual number of jobs available, and hence may be a contributing factor to the loss in population.

Council has recognised the importance of incorporating an awareness of potential changes in the economy in the preparation of this Plan. This has been achieved by acknowledging the need for flexibility, and hence diversification.

(v) TEMPORARY AND VISITOR POPULATION

One area of consistent growth is in tourism where domestic and international visitors have steadily increased. Figures provided by the Southland Promotions Inc. indicate dramatic growth over the last three years which is best illustrated by Table 5.

Table 5
Visitor Numbers

| | Domestic | International | Total | % |
|-------|------------|---------------|---------|------|
| 88/89 | 269 000 | 147 000 | 416 000 | |
| 89/90 | 276 000 | 150 000 | 426 000 | +2.3 |
| 90/91 | 276 000est | 170 000 | 446 000 | +4.5 |
| 92/93 | 292 000 | 194 000 | 486 000 | +8.9 |

The true impact of tourism on the District is difficult to assess due to the large number of day visitors that access the District from Queenstown.

However significance of tourism is probably best highlighted from statistics which show that Fiordland is visited by 255 000 overseas⁴ visitors and is the most popular National Park in New Zealand.

(vi) THE ISSUES

While statistics in themselves take into account the demographic trends and characteristic of the District, they do not take into account, nor can they predict, external influences such as major land use changes and Government and business decisions which affect population numbers. Good examples of changes that have occurred since the last census can be seen in dairy conversions and downstream processing of timber.

- **The declining population has an adverse effect on the infrastructure and cultural resources of the District.**

⁴ New Zealand Internal Visitor Survey 1992/93

Explanation

The effect of declining population is evident in a number of the rural communities within the District where falling numbers affect the viability of these settlements. This problem compounds itself by a downgrading of services such as postal services, schooling and local shopping.

- **The need to provide an environment which enhances the quality of life.**

Explanation

The basic requirements of any community's well-being are the provision of adequate housing, opportunities for employment, and access to health care, education and recreational activities.

- **The need to accommodate activities of visitors without detriment to the District areas of natural beauty.**

Explanation

Experience has shown that pressure from visitor numbers can have a detrimental effect on the natural environment. This effect needs to be recognised in the manner in which visitors are attracted into and through scenic areas.

1.4 URBAN ENVIRONMENT

Urban areas are part of the overall environment which provides for the social, cultural, and economic wellbeing of the people of Southland District. Southland is dominated by small communities that centre around small townships or settlements. There are few large settlements in the District, the largest being Winton with a population of 2,094. The different types of urban environment within Southland District are described in the following section.

The expansion of urban areas normally encroaches on adjoining rural or rural/residential land, and is an outcome of lifestyle demands on the market. Difficulties with encroachment onto high quality soils, inundation, direction and density of development, effluent disposal, and other servicing issues can arise from such expansion.

Where populations are quoted they relate to the 1991 Census.

(i) TOWNS AND TOWNSHIPS

Winton

Winton (2,094) lies north of Invercargill on the flood plains of the Oreti River. It is one of the few urban areas of Southland District that has experienced both a population increase and an increase in the number of dwellings over the past ten years. The town's primary function is to act as a servicing centre for the surrounding rural community and it is a popular retirement locality. It is serviced by reticulated water and sewerage systems and Central Southland College is located there.

Te Anau

Te Anau (1,485) is a multi-purpose town acting as a rural servicing town for surrounding rural areas, as a tourist centre, and as the gateway to Fiordland National Park. Its growth as a tourist centre has been dramatic over the last two decades, and this growth pattern is expected to continue. It has full reticulation in the form of sewer, stormwater and water systems, provides a Secondary School education for the surrounding District at Fiordland College, and caters for high visitor numbers during the holiday periods.

Riverton

Like Winton, Riverton (1,824) is one of the few towns in Southland District to have recorded both a growth in population and in the numbers of dwellings over the last ten years. Riverton acts as a rural servicing town, is a significant holiday and retirement centre for Southlanders, and supports Southland's second largest fishing fleet.

It has well-developed services, including water and sewerage systems. Aparima College is also located there.

Otautau

Otautau (837) offers rural servicing, shopping, and community facilities. The township has reticulated water, and a reticulated sewerage scheme is to be installed in the near future.

Tuatapere

Tuatapere (741) is the main rural servicing town for the Lower Waiau Valley. The township has water reticulation and significant community facilities including Waiau College. The town is very reliant on the timber industry which is a large employer in this locality.

Wyndham

Wyndham (642) acts as a rural servicing centre to its hinterland. It is an important horse breeding and training area revolving around the local racing club. A limited sewerage system exists and the area suffers from the threat of flooding from the Mataura and Mimihau Rivers. Menzies College is located there.

Wallacetown

Wallacetown (675) is located 13 km northwest of Invercargill. The township is almost entirely residential in character. Because of its closeness to Invercargill, it acts as a dormitory town with a large number of people working in Invercargill.

Ohai

Ohai (519) is mainly a rural servicing town, also dependent on local coalfields for employment. It has a reticulated water and sewerage system.

Edendale

Edendale (573) is a rural servicing town with the Southland Dairy Co-operative factory being a significant employer in this community.

Lumsden

Lumsden (501) was originally a railway town, although now it is the main rural servicing town centre for northern Southland. It is located on the main tourist route to and from Queenstown. It has a water and sewerage scheme. Northern Southland College is located there.

Riversdale

Riversdale (375) acts as the main servicing town for the Waimea Plains and supports a diversified industrial base. There is a local trucking company, an agricultural machinery company, sale yards, a pest destruction depot, and other service industries. It has become a popular place for retirement.

Oban

Oban (387) is the main settlement on Stewart Island situated in Halfmoon Bay, with other smaller residential areas located at Horseshoe Bay, Golden Bay, Leask Bay and Ringaringa.

Oban has a number of diverse functions. Primarily it is a fishing settlement, although it is becoming an increasingly popular tourist spot particularly for those interested in the outdoors and nature conservation. Services include a school, police, fire brigade, shops, airstrip, and ferry terminal. A sewerage system has recently been installed to serve the majority of the houses in the settlement.

Nightcaps

Nightcaps (426) has historically been dependent on coalmining but with the growth in forestry in the area, diversification is occurring. The Takitimu College provides education to Form 7. The township is serviced by its own water scheme.

Mossburn

Mossburn is a small rural servicing town located on the road from Te Anau to the turn-off to Queenstown. It is the centre for Southland's deer industry and a major venison factory. The town has water reticulation.

Manapouri

Manapouri (255) is predominantly a holiday settlement, with tourism playing a significant role in its future. Presently the settlement is the base for tours to the Manapouri Power Station. It is serviced by reticulated water and sewerage systems.

Others

There are a large number of small towns in Southland District which act as small rural servicing centres for community areas. The larger of these include:

- **Browns:** has a small sewerage system connected to a few houses. The town relies on the local limeworks for employment.
- **Tokanui:** has a sewerage system.
- **Waikaia:** is one of the oldest townships in Southland. It is a popular holiday spot, with a large number of holiday homes. The township is subject to periodic flooding from the Waikaia River.
- **Woodlands:** acts as a dormitory town to Invercargill but has a research station based on the outskirts.
- **Balfour:** has a population of 147 and supports a limeworks, water and sewerage systems.

- Smaller significant settlements are formed at:

Athol, Garston, Curio Bay, Waikawa, Dipton, Gorge Road, Limehills, Ryal Bush, Fortrose, Thornbury, Orepuki, Drummond, Waimatuku, Fairfax, Wairio, Orawia, Pukemaori, Clifden, Colac Bay.

(ii) BUILT HERITAGE

Southland District is rich in its social, cultural and physical heritage, with a wealth of archaeological and historic sites of European, Chinese and Maori communities, with cultural traditions associated with such communities from the past and present.

Such a heritage, and the particular object or places associated with that needs to be properly identified, recognised for its value to the community and the District, and given the appropriate level of protection through various mechanisms and procedures. Such protection can be achieved through the use of mechanisms available under the Act, the Local Government Act and the Historic Places Act.

Council intends to clearly identify the character and quality of the District's heritage, through evaluating the items and also through recognising the significance of social and cultural traditions.

This is particularly relevant to the towns of Riverton, Winton and Oban which have strong heritage features and which justify more detailed attention.

Council intends to undertake a Heritage Protection Strategy as part of its overall Strategic Plan exercise, which will identify the significant heritage issues and programmes of action that are required. Such programmes or initiatives may include "Main Street", "Heritage Trails", "Conservation Area" designations, and publication of Heritage brochures and guidelines to assist in the protection of the District's heritage.

A list of Registered and Unregistered Historic Buildings has been compiled for Southland District for initial investigation and in order to provide statutory protection. These are identified in Schedules 6.9 and 6.10 of this Plan. Council is also investigating the development of Concept Development and Amenity Plans for Riverton, Winton, Stewart Island and Tuatapere which will assist in heritage protection.

(iii) DWELLINGS

In general, dwelling numbers for Southland have increased over the last ten years, which is in contrast to the population which has decreased over the same period. This trend may suggest different types of housing (for example holiday homes, retirement housing) are being constructed and as a consequence it does not reflect increased population.

While most areas have experienced some growth in dwelling numbers, the largest growth has been recorded in Te Anau, Winton, and Riverton respectively. It should be noted that this follows the trends discussed in the previous section on population. Four areas have recorded a decline in dwelling numbers, these being, Tuatapere, Otatau, Toetoes, and Te Tipua.

(iv) THE ISSUES

- **The need to provide for the efficient use and development of utility networks whilst avoiding and mitigating adverse environmental effects.**

Explanation

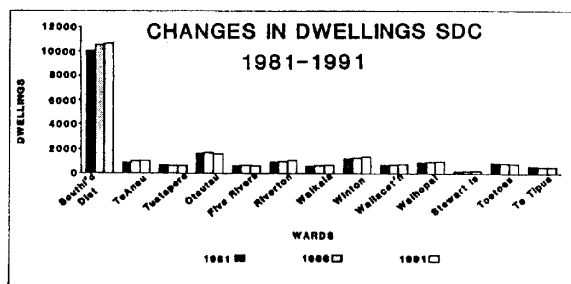
The summary of settlements highlights the basic servicing infrastructure for the various communities. The planning process is directed towards ensuring that these are properly and appropriately utilised.

- **The need to protect and conserve the District's significant cultural heritage resources including buildings, objects and archaeological sites.**

Explanation

To ensure the District retains significant aspects of its heritage for the benefit of existing and future generations, the Plan identifies resources of heritage value and adopts notable methods to secure their protection and conservation.

**Figure 5
Changes in Dwelling Numbers
Southland District 1981 - 1991.**



- **The need to provide opportunity for housing in a manner that maintains and enhances the quality of the environment.**

Explanation

The primary focus of resource management is people, both as individuals and communities, and how they are accommodated and provided for is fundamental to the District's satisfactory development.

- **The need to monitor development in the peri-urban areas, and take steps to counter any short-term or long-term environmental effects of that development.**

Explanation

Peri-urban development can cause significant adverse environmental effects particularly if the development and market demands generate medium to high density developments. Monitoring is considered the appropriate method to assess the overall impacts of such developments. (Refer to Section 4.2 - Transitional Resource Area).

1.5 WATER

(i) RIVER CATCHMENTS

Southland District is rich in water resources, having four major catchment systems, namely the Waiau, Mataura, Aparima, and Oreti River catchments.

Within these catchments Council has responsibility for controlling any actual or potential effects of activities in relation to the surface of water.

The Waiau River is Southland's largest river in terms of catchment, draining an area in excess of 8,000 km². The river connects Lake Te Anau with Lake Manapouri. From Manapouri, it is dammed just below the confluence with the Mararoa River which diverts the Waiau water back to Lake Manapouri. The lake now drains through the Deep Cove hydro-electric scheme. The Waiau River discharges into the Tasman Sea at Te Wae Wae Bay.

The Mataura River drains an area of 5,360 km² and has four major tributaries, the Waikaia, Mokoreta, Waikaka and Mimihau rivers.

The Waikaia River drains approximately half the catchment and contributes approximately half the flow of the Mataura River at its confluence. As part of the Mataura River catchment at Wendon and Wyndham flows within Gore District Council's area of jurisdiction, Council recognises the importance of co-ordinated management of entire catchments.

The Mataura River rises on the eastern side of the Eyre Mountains and flows east to the valley in the vicinity of Fairlight. The river turns south, and then east, to run through a pass between the Mataura and Garvie Mountains adjacent to East Dome. The remainder of its course is through the rolling flat farmlands, of the Waikaia, Waimea, and Mataura Plains, to its discharge into Foveaux Strait at Toetoes Bay.

The Aparima (Jacobs) River drains an area of 1,260 km². It rises in the swampy valleys of the Takitimu Mountains to the south of Mossburn and then flows over a shallow alluvial shingle bed to enter Foveaux Strait at Riverton through the Jacobs River Estuary. There are three main tributaries of the Aparima River, the Hamilton Burn, the Otatau Stream, and the Pourakino River.

The Oreti River has a catchment of 3,400 km². The river has its origins in the Thompson Mountains immediately to the east of the North Mavora Lake.

It then flows south from the hills to the Oreti Valley, through Mossburn, and to Lumsden where it turns south through a pass in the Hokonui Hills at Dipton. The river then meanders over the plains to discharge into the sea at New River Estuary, Invercargill.

Like the Mataura River, the lower reaches of the Oreti River below the confluence of the Makarewa River, flow out of Southland District and through Invercargill City's area of jurisdiction. The Makarewa River is the Oreti's largest tributary, draining the low-lying, farmland to the north-east of Invercargill, and flowing into the Oreti River below Wallacetown.

There are numerous small river catchments on Stewart Island. The most significant are the Rakeahua and Freshwater Rivers which both flow into Paterson Inlet, and Lords River which flows into the Pacific Ocean

(ii) LAKES AND WETLANDS

The pristine lakes of Southland District are an important ecological asset

The majority of the 24 significant lakes fall within Fiordland National Park.

These lakes, along with the major water catchments mentioned previously, constitute a significant number of wetland ecosystems within Southland District.

Wetlands (ie rivers, streams, lakes and their marginal riparian areas, swamps, bogs and estuaries) are amongst the most highly productive ecosystems in the world, supporting high numbers of birds, fish, and many species of plants and invertebrates.

Many of the wetlands of the district have been lost or degraded through damage or drainage and, to a lesser extent, by recreational use, mining (peat), invasion of plant species, and nutrient enrichment.

However, as the Wetlands of Ecological and Representative Importance (WERI) database (as compiled by the Department of Conservation) and Schedule 6.15 indicate significant wetlands still exist in Southland District. A number of these habitats are of national and international significance, for example Toetoes Harbour, Waituna Wetlands and the Kepler Mire.

The various coastal and tidal inlets around the District's coastline form part of the national chain of coastal wetlands.

These are important for overseas migrant and New Zealand wading birds, gulls, terns, the juvenile stages of a number of marine fish species and migrating adults and juveniles of many native freshwater fish. Individually, these smaller wetlands are generally of local significance, but it is important to note that with less than 10% of New Zealand's wetlands remaining in existence, collectively they are of regional importance, particularly those that are more 'natural' and contain larger water areas with good vegetation buffer zones. Wetland ecosystems are not closed systems. Energy, nutrients, and organisms flow into and out of the system via waterways, and for many of the bird species the wetland is only part of the total habitat. For example, many bird species use the wetland but are based in forest and bush on wetland margins, or feed on surrounding farmland. Human activities both extract from the system (for example, fishing, grazing) and a discharge to it (for example, sewage, agricultural runoff). Thus, wetland ecosystems, cannot be considered in isolation, but as part of a larger system.

(m) WATER QUALITY

The water quality roles of the Regional and District Councils are complementary to the point that integrated management of the resource is required. The District Council has to consider the effects or impacts of land uses on water quality, while the Regional Council is responsible for maintaining and enhancing the quality of water through consideration of effects of land management on water.

The District Council also has the responsibility of controlling the effects of activities on the surface of lakes and rivers.

Our waters serve numerous purposes. They offer recreational opportunities and are a culturally and aesthetically valued component of the landscape. Because of their diversity, water resources provide the specified habitats required for at least 22 native freshwater and estuarine species of fish and for trout. Many other native animals and plants are also found in these waters. Surface and sub-surface waters are also abstracted for domestic supply purposes, stock watering, irrigation, and for agricultural processing and other industrial uses. They also receive wastes from rural, urban, and industrial sources which impact upon, and sometimes degrade, the value of, or usefulness of, waters for other purposes.

In general, the major Southland rivers progressively decline in quality as they flow downriver due to agriculture, industry, and discharges from urban areas. Some small lowland streams are also in poor condition. For example:

- Water quality in the Mataura River declines markedly below the meatwork and paper mill discharges at Mataura township in Gore District.
- The Makarewa tributary of the Oreti River is severely impacted along a four kilometre reach down river of two meatwork discharges.

Little information is available about the water quality of Southland's largely unmodified lakes.

Several of Southland's large rural communities rely on groundwater for farm supply, and domestic potable supply. These groundwater supplies are usually in close proximity to watercourses. As the groundwaters are often drawn from shallow wells, they are more vulnerable to contamination from surface pollutants. Generally groundwater sources remote from streams, rivers, or lakes, are of poor quality and inappropriate for potable supply.⁵

(n) THE ISSUES

- **The need to avoid and mitigate the degradation of water quality as a result of human activities, removal of vegetation and contamination from sewage and animal effluent.**

Explanation

While the control of water quality is the responsibility of the Southland Regional Council the proposed Regional Policy Statement (Policy 4.5) requires Local Authorities to assess the effects of land use activities at the time of consent.

- **The need to manage the effects of activities on the surface of water so as to avoid adverse effects on the environment and enhance public safety.**

Explanation

Water based activities for both commercial and recreational use have the potential to generate adverse environmental effects which require management to ensure that the surface water resource is available for all users.

⁵ MAF (September 1993): Towards Sustainable Agriculture: Freshwater Quality in New Zealand and the Influence of Agriculture, MAF Policy Technical Paper 93/10.

- **The need to maintain and enhance the District's significant aquatic plant and animal life, particularly indigenous species, and the district's fresh water fishing resources.**

Explanation

Many waterbodies within the District are expected to perform a diverse range of function and care needs to be exercised to ensure a balance is achieved between activities, and species.

1.6 MINERALS

A wide range of mineral resources occur in Southland District, some of which are currently mined and some of which have potential for being mined in the future. Minerals only become resources when Society develops a use for them and has the financial resources to extract them.

Minerals can be defined as naturally occurring inorganic substances beneath or at the surface of the earth, whether or not under water; and include all metallic minerals, non-metallic minerals, fuel minerals, precious stones, industrial rock and building stones, and a prescribed substance within the meaning of the Atomic Energy Act 1945 (Section 2(1) Crown Minerals Act 1991).

The mineral resources in Southland District are identified under three main headings below:

Metallic Minerals

Gold
Platinum
Copper, Lead, Zinc
Iron, Titanium, Vanadium
Manganese
Molybdenite
Tin, Tungsten
Zirconium
Silver

Non-Metallic Minerals

Limestone
Aggregates
Clay
Mica
Quartz Gravel
Quartz Sand
Other Non-Metallic Minerals

Energy Minerals

Coal
Lignite
Oil Shales
Peat
Oil and Gas

(i) **METALLIC MINERALS**

Gold

Gold is found in three different forms. Alluvial gold is gold that has been eroded from its original source and carried away by a river or glacier. It is mined by panning, sluicing, washing through screens, or by dredging.

Lode gold (occurring in quartz veins) and disseminated gold both may be mined by underground as well as opencast methods.

In Southland District, a number of goldfields have been prominent in the last century. Gold was first discovered in 1862 in the Nokomai Valley in the northern Southland, and then in 1867 a further deposit was located at Orepuki. Other goldfields occurred at Roundhill, Ourawera Valley, Longwood Range, Waikaka Valley, Waikaia Valley, Charlton Valley and along the Otago-Waikawa Coast.

Deposits can be, or have been in the past, also found at Preservation Inlet, Tuturau, and in parts of Fiordland.

Less rich alluvium fields in the Pourakino and Lower Waiau and other places around the coast were also worked last century. Today, these deposits still contain gold, and depending on gold prices, potential still exists for further working.

Gold was, until recently, being opencast mined in Nokomai Valley. This was the largest alluvial mine in New Zealand, producing approximately 50,000 ounces of gold over the period 1992 and 1993. A second Nokomai opencast alluvial goldmine started late in 1994 and produced until late 1996.

A further opencast mine also operated at Victoria Gully on the Nokomai Station. It began operating at the beginning of 1992 and was a similar operation to the one at Nokomai.

Some small scale mining is also occurring near Waikawa and along the coast east of Waikawa.

At Orepuki, further prospecting is being carried out with potential for future deposits being found.

Platinum

Platinum is a minor by-product of goldmining in Southland. It was recovered in small quantities with the gold at Orepuki. Other deposits are located at the Waiau River Mouth, Round Hill, and along coastal beaches from Waituna Lagoon to Waikawa Harbour. At present, no platinum is actually being produced, although considerable interest is being expressed in locating the source of the resource.

Copper, Lead, Zinc

Copper is used in construction, electronics and electrical industries, and in chemicals such as fungicides and germicides. Lead is used in batteries and paint pigments, and zinc is used for galvanising and for brass products.

Copper, lead, and zinc deposits have been found along the western boundary of the Mataura and Waimea Rivers, in the Takitimu Mountains, and in Fiordland.

Iron, Titanium, Vanadium

These deposits occur at Fiordland, Orepuki, and Stewart Island and also occur as beach sands.

Titanium is processed from titanium dioxide. Ilmenite, which comprises a certain percentage of titanium dioxide, is a common constituent of beach sands along the District's coast.

Manganese

A Manganese deposit in the form of Psilomelane occurs with Barite near Ermedale and may have commercial potential.

Molybdenite

Molybdenite, which is used in steel for the making of high speed tools, is found at Happy Valley in the Longwood Range, and around Fiordland. This resource may have commercial potential.

Nickel

Deposits of nickel can be found at Doubtful and Dusky Sounds and Longwood Range.

Tin, Tungsten

Tin, and to a lesser amount Tungsten, are found at Pegasus, Stewart Island, where Tin was mined extensively in the past. Other occurrences are at Fiordland and Lake Manapouri.

Tungsten is used as tungsten carbide, an extremely hard material from which machine tools subject to intense wear and abrasion are made. It also has a variety of other industrial uses, especially in electronics.

Zirconium

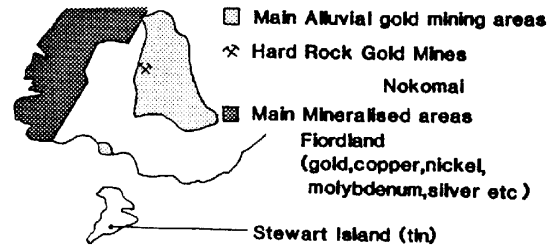
This mineral is found in beach sands at Orepuki.

Silver

Silver, which has a wide range of uses, almost always occurs with gold but to date it has not been mined. Within the District deposits are located at Preservation Inlet and Stewart Island.

**FIGURE 6
Active Metallic Mines and Key Metallic Mineral Prospects in Southland District**

**Figure 6
Active Metallic Mines and Key Metallic Mineral Prospects in Southland District**



(ii) non-metallic minerals

Limestone

Crushed limestone is used as a fertiliser for agricultural purposes and in cement manufacture. As the production and price of limestone are closely linked to overall farm income, it is a good indicator of the state of farming generally within the District.

Southland is a significant producer of limestone. Limestone occurs right across the central District. The main workings are along the ridge to the north of Winton township, although other deposits are worked at Limehills, Browns, Forest Hill, Balfour, Clifden, Feldwick, and Otautau. Castle Rock, Dipton, North Range, Waiau Valley, and Doubtful Sound also have limestone deposits.

Aggregates

The term "aggregates" is used to describe a variety of rocks, gravels, and sands used primarily for roading and concrete construction purposes. They are available in plentiful amounts in most parts of the District (except in the southeast). However there is a lack of good quality aggregate deposits. For example, while the Oreti River is one of the main sources of supply, it is difficult to get good quality rock from this location. The Mataura River forms the other main source of aggregate, and in addition there are many small local pits, usually on old river terraces.

Pebble aggregate suitable for ornamental manufacture is available at the Waiau River Mouth, Colac Bay, and Pebbly Hills.

Clay

Clay deposits are widespread across most of eastern Southland and are used for brick and drainage tile manufacturing at Invercargill and Browns.

Mica

Mica, which is used in electronics, is found in Fiordland west of Lake Te Anau and Stewart Island. It was mined in small quantities at Henry Saddle, George Sound, and Lake Te Anau earlier this century.

Quartz Gravels

Extensive deposits of Quartz Gravels occur in eastern Southland. The best known deposits are at Hedgehope, Pebbly Hills, Mabel Bush, and Grove Bush. The reserves are estimated at 360 million tonnes. At present the gravels are used for road construction and in decorative aggregates. Their potential lies in being utilised in a ferro-silicon or silicon carbide industry, both of which have been talked about, but without any firm commitment being made.

Quartz Sand

Quartz Sand deposits at Hedgehope, Mabel Bush, Landslip, Orepuke, and Waimotu Creek are used in making refractory bricks and mortar and for decorative plastering.

Other Non-Metallic Minerals

Other non-metallic minerals and their locations are identified as follows:

| | |
|----------------|---------------------------|
| Zeolite | : Lumsden and Mossburn |
| Lump silica | : Landslip Hill |
| Marble | : Doubtful Sound |
| Serpentine | : Mossburn and Greenhills |
| Talc Magnesite | : Western Southland |
| Feldspar | : Fiordland |

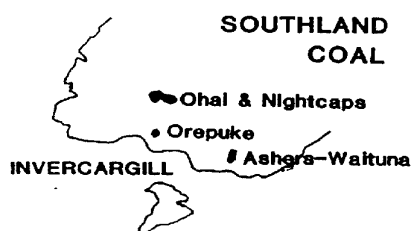
(iii) ENERGY MINERALS

Coal

Southland is the third largest coal producing region in the country. New Zealand coal includes three types: bituminous, sub-bituminous, and lignite.

Coal production itself is confined to the Ohai and Nightcaps fields, but other deposits are known to exist at Orepuke, Waiu Valley, Takitimu Mountains and Forest Hill (Figure 6).

Figure 7
Location of Southland's Coalfields



The Ohai field in particular is estimated at approximately 53 million tonnes. The field contains large deposits of high-grade sub-bituminous coal.

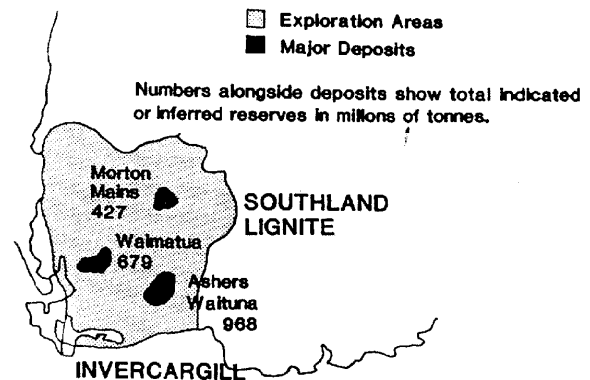
Given Southland's dominant position in terms of the amount of recoverable coal resources, the long term outlook for coal in the District is good. The introduction of new thermal power generation technologies may allow coal to be used for power generation at a cost and level of thermal efficiency that allows it to compete with natural gas.

Lignite

Lignite is a very low rank coal with lower heat value and higher water content than the higher ranked bituminous and sub-bituminous coals. The extent of lignite deposits in Southland is huge. The District has an inferred 3,000 million tonnes of lignite which equates to something like four times the energy potential of the Maui gas field.

There are three major deposits in eastern Southland (Figure 7); Morton Mains, Ashers-Waituna, and Waimatua, and it should be noted that the Waimatua deposit is partially situated within the boundaries of Invercargill City. These deposits are, as yet, poorly defined.

Figure 8
Location of Major Lignite Deposits in Southland



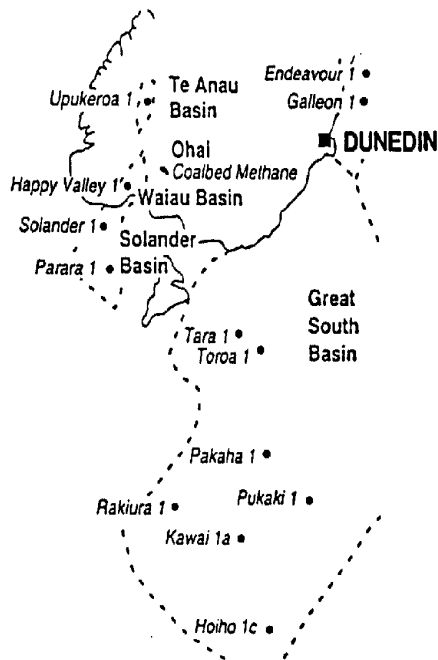
To date, there are no commercial lignite mines operating in Southland District.

It is important to note that the Ashers-Waituna deposit is in close proximity to the coast and is in an area of national and international importance for its populations of bird, fish, and plant species.

Oil Shales

There are known deposits of oil shale at Freshford, near Waikaia (where a seam estimated at 750,000 tonnes is located), Orepuki, Brydone, Wyndham, in the Nevis Valley, and in the Te Anau and Waiiau Basins. An off-shore deposit is also situated in the Solander Basin. The location of these deposits is shown in Figure 9.

**Figure 9
Potential Oil Producing Basins of Southland**



In 1902 work began extracting oil from shale at Orepuki, but within a year operations were closed down because of the high cost of mining, the limited quantity of shale, and the removal of the duty on imported oil products. However, a recent study published by the Institute of Geological and Nuclear Sciences indicates that source rocks for oil might be trapped in at least 30 places in the Te Anau and Waiiau Basins, and in the off-shore Solander Basin.

Peat

There are thousands of hectares of peat lands in Southland District. The main deposits are found in the vicinity of Otautau, Mossburn, Manapouri, and at Tussock Creek, Roslyn Bush, Wyndham, Hokonui, and at the Awarua Plains. Some of these areas are now wildlife reserves, and some have been modified by burning and grazing. Peat is harvested commercially from the Tussock Creek, Roslyn Bush, Wyndham, and Hokonui deposits for such uses as soil conditioning. A limited amount of extraction also occurs at the Otautau, Mossburn, and Manapouri deposits.

Oil and Gas

Methane and other gaseous hydrocarbons occur in the overlying sediments of the Ohai Coalfield (see Figure 5). It is also known that other areas within Southland have potential deposits of this resource.

(iv) KEY ISSUES

- **The need to address some resource extraction as a cross boundary issue.**

Explanation

Minerals are good examples of how natural resources pay little or no respect for territorial boundaries. A good example is lignite which occurs in major deposits in the adjoining Districts of Gore, Invercargill and Southland. The downstream consequences of development of these resources requires cross-boundary cooperation.

- **The need to ensure that land and soil are not adversely affected by human activity and remain free from contamination and instability.**

Explanation

The history of mineral extraction has left many unwanted legacies of poor land management and these are to be avoided in future development.

- **The need to enable the efficient use and development of the District's mineral resources while avoiding or mitigating adverse effects on the environment.**

Explanation

The control of mineral extraction is a complex system of interacting consents which is both time consuming and costly. The Plan attempts to identify these adverse effects which are to be mitigated against by the activity.

1.7 INDIGENOUS FAUNA AND FLORA

The Council's obligations to consider this issue stem from Section 6(c) of the Resource Management Act, which, along with the other requirements of that Section, requires the Council to provide for the management of those particular resources. Southland District has many areas of significant indigenous vegetation and habitats of indigenous fauna, including habitats of threatened species. Within the District the areas of indigenous forest can be broken into four distinct groups:

1. Those administered by the Department of Conservation

| | | |
|-------------------------|---------------|-----------------|
| Western Southland | 105000 | hectares |
| Fiordland National Park | 1212000 | hectares |
| Northern Southland | 29500 | hectares |
| Eastern Southland | 17100 | hectares |
| Catlins Otago | 36000 | hectares |
| Stewart Island | <u>147100</u> | <u>hectares</u> |

TOTAL 1646900 hectares

2. Indigenous Forest in Private Ownership

| | | |
|---------------------------------------|---------------|-----------------|
| Primary Regeneration of Native Forest | 2649.5 | hectares |
| Podocarp/Hardwood/Shrub | 6520 | hectares |
| Beech | 11224.5 | hectares |
| Beech/Podocarp/Hardwood | 2900 | hectares |
| Podocarp/Hardwood | <u>5551.5</u> | <u>hectares</u> |

TOTAL 28845.5 hectares

TOTAL FOREST COVER 26196 hectares
(excluding native shrub)

3. Maori Lands

| | | |
|------------------|--------------|-----------------|
| Waitutu | 2200 | hectares |
| Western Rowallan | 1720 | hectares |
| Rowallan Alton | 13200 | hectares |
| Hokonui | 5210 | hectares |
| Marahiku | 180 | hectares |
| Stewart Island | <u>11210</u> | <u>hectares</u> |

TOTAL 33720 hectares

4. Crown Beech Management Programme

TOTAL 12000 hectares⁶

⁶ (Source: Ministry of Forestry Correspondence, 5 August 1992)

Part IIIA of the Forests Act, as inserted by the Forests Amendment Act 1993, neither attempts to prohibit clearance nor totally protects natural forest areas. The purpose of these provisions is to promote the sustainable forest management of indigenous forest land.

There are four land class areas that are not subject to this part of the Act namely:

- any West Coast indigenous production forest
- any indigenous timber from or on any land permanently reserved under the South Island Landless Natives Act 1906 and having the status of Maori land or General land owned by Maori under Te Ture Whenua Maori Act 1993
- any indigenous timber from or on any land held, managed, or administered by the Crown under the Conservation Act 1987 or any of the Acts specified in the First Schedule of that Act
- any indigenous timber from any planted indigenous forest.

There are a number of exceptions from sawmill control set out in the Act. All of these exceptions require some form of approval from the Secretary of Forestry prior to harvesting or milling taking place.

This has implications for Southland's indigenous forests which fall prominently within these categories exempt from protection under the Forest Amendment Act. Council must consider the significance and future protection of areas not protected by this Act. The extensive areas administered by the Department of Conservation are, to a large extent, already protected, for example Fiordland National Park which comprises 1,212,000 hectares of Southland's Conservation Estate.

Substantial areas of Maori land are situated within the District, and these are concentrated in the southern coastal area and on Stewart Island. These lands support significant indigenous forests which are a valuable resource held by the owners. Council recognises that it is up to the owners to determine whether this resource is utilised in an economic manner. However the provisions of the Act will still apply in relation to the effects of any removal of that resource. Council's view is that where it is demonstrated that such area should be left untouched in the national interest, it is up to the national community to compensate the resource owners for the loss of their private rights.

Council has no intention of purchasing such land on behalf of the national or local community and sees its function only to administer the provisions of the Act in relation to any use of those forests.

These areas of indigenous forests are not the only significant areas of indigenous vegetation. Other areas include QEII covenanted areas which are formally protected. A list of these are included in Schedule 6.12 to this Plan for information.

Areas of vegetation which provide important habitats for many native bird species are identified in the Department of Conservation's SSWI (Sites of Significant Wildlife Interest) database.

These areas have been identified from the Department of Conservation's SSWI (Sites of Significant Wildlife Interest) database. The SSWI data base is held in the form of imperial reference file cards which provide for each site, information on the locality, area, land status, whether or not the site is threatened by development, habitat description, habitat ranking, and general comments and suggestions for preservation.

For discussion on wetland habitat refer to Section 1.5 (ii).

Some sites of significant indigenous vegetation within Southland District are listed in Schedules 6.11, 6.12 and 6.14. The Council will work with relevant agencies to make the schedules more comprehensive over time, but it will be several years before the schedules are all-inclusive.

The use of sites identified in Schedule 6.14 (SSWI database) has given rise to problems in the past due to the difficulties which arise when one use is incompatible with other site values.

Threats to the values of wildlife habitats are many and varied and are primarily human-induced. In general, variation in habitat types is largely a result of modification caused by logging, repeated burning, and extensive browsing. Furthermore, forests are at risk from conversion to pasture or harvesting for firewood. Continuing impacts of introduced mammals also means that forest habitats are continually being altered.

(i) THE ISSUES

These issues are addressed in detail under Section 3.4 Heritage, Section 4.3 Fiordland and Section 4.6 Coastal Resource Area.

1.8 THE COAST

As already mentioned in Section 1.1, 'the coast' is defined as 'the area in which coastal factors are dominant'. Southland's coast is extremely varied, ranging from high cliffs to low dunes and estuaries, reflecting the different rock-types and degrees of exposure to wind and wave action. There are strong connections between the character of the coast and of the land immediately inland. Much of this has been developed into pastoral land, although the natural character of most of the coast remains. It is a focus for recreation, and of the fishing and shellfish industries.

As a result of a study undertaken for Southland District Council by Boffa Miskell in April 1993 entitled 'Landscape and Ecology in Southland District', the District's coastline has been categorised in terms of eight separate units:

- Catlins Coast Unit
- Estuaries Coast Unit
- Sandy Point to Riverton Coast Unit
- Riverton to Orepuki Coast Unit
- Te Wae Wae Coast Unit
- Fiordland Coast Unit
- Big Bay Coast Unit
- Stewart Island Coast Unit.

The Council's District Plan responsibilities cease at the landward side of Mean High Water Springs (MHWS). The Southland Regional Council's Coastal Plan is the controlling document on the seaward side of MHWS. This means that on places along the coast the District's boundaries and the area of its District Plan responsibilities do not coincide.

The characteristics of the individual units are described below.

(i) CATLINS COAST UNIT

This unit is noted for its diversity, naturalness, and landscape quality. From the District boundary at The Brothers Point to Fortrose, there are rocky reefs and high cliffs with estuaries at Waikawa and Haldane, and long beaches and dunes such as Porpoise Bay and Waipapa Beach. Immediately behind the dunes there is a series of coastal lagoons which provide important animal habitats. The quality of the coastal landscape reflects the largely unspoilt appearance of the coastline. Throughout, the coastal vegetation is windswept, and native remnants of shrubs and former forest cover are scattered along the upper shore.

Among the significant characteristics of this unit are the scattered and isolated nature of the settlements, the diversity and natural appearance of the coastline, the remnant vegetation important as habitat for endangered species and the popularity of the area for recreation and tourism.

(ii) ESTUARIES COAST UNIT

The stretch of coast between Fortrose and Invercargill is characterised by large estuaries and lagoons, sand spits and bars, and low coastal vegetation. This unit is important because of the rarity of such an extensive complex of relatively unmodified lagoon landscapes. There is a large number of significant sites representing a range of ecological values within the unit, and the presence of rare and endangered species makes it even more important. In fact, the unit is of international significance because of its populations of birds, fish, and plants.

(iii) SANDY POINT TO RIVERTON COAST UNIT

This long stretch of relatively isolated sandy beach stretches from immediately east of Riverton to the mouth of the New River Estuary. It is backed largely by farmland. Although the beach has a natural appearance, it has been modified. This unit is significant in terms of its educational, recreational, and tourism opportunities which are related to the closeness of parts of the unit to population centres.

(iv) RIVERTON TO OREPUKI COAST UNIT

This section of coastline includes a variety of landforms. It is mainly rocky shore backed by grazed grassland or windswept forest, but there are long sandy beaches (for example, Colac Bay), and dunes (for example, Kawakaputa Beach). It includes the Jacobs River Estuary and its immediate margin. This is an attractive landscape of small inlets contrasting with sweeping bays, and including the settlement of Riverton. This unit is popular for recreation and tourism due to the high quality of the landscape which is dependent on the clean sea water, clean beaches, small scale developments, and a variety of views. The Jacobs River Estuary is important for birds, salt marsh vegetation, shellfish and fish.

(v) TE WAE WAE COAST UNIT

The long sweeping bay from Orepuki to the edge of Fiordland National Park is made up of a coastal terrace and gravel beach backed in places by high cliffs covered in grassland and windswept shrubs. It includes the forest and coastal section adjacent to the Waitutu Hills Unit. The remnants of coastal vegetation cover, and the lagoon as a fish and waterfowl habitat, make this unit important, while the views across to Fiordland are a strong feature. There are few houses in this Coastal Unit, and many of those that do exist are cribs. The scenic route along State Highway 99 runs above the cliffs in the eastern part. There is some fishing at the Waiiau Mouth, and a coastal walking track in the Waitutu Forest section.

(vi) FIORDLAND COAST UNIT

With the exception of some small parcels of freehold land originating from early European settlements, this Unit comprises the Fiordland National Park managed by the Department of Conservation. The Fiordland coast is long and diverse, and has numerous unique, unusual, and outstanding natural features and habitats. It offers wonderful experiences to the visitor.

(vii) BIG BAY COAST UNIT

This is a very small piece of coastline between the northern boundary of Fiordland National Park and the northern boundary of Southland District. It includes some rocky reefs, but is mainly the large sand and gravel beach area at Big Bay backed by a large dune system. Most of the land is in Pyke Forest which extends far inland but there is some freehold land. This is one of the more natural parts of the coast, because of its naturalness of habitats and landscape, its rare, unusual, and endangered species of plants and animals, and its remoteness. While there is significant evidence of Maori occupation, and while early Europeans settled briefly in the area, there are few permanent residents now. Whitebaiting and fishing focus around the Awarua River mouth and off the Fiordland coast respectively.

(viii) STEWART ISLAND COAST UNIT

All of Stewart Island is dominated by the sea, and no division has been made between coast and inland parts. The influence of the oceanic climate is felt throughout the Island, and views of the sea, cliffs, dunes and islets are seen from almost everywhere. The Islands immediately offshore (eg Ulva, Muttonbirds and Ruapuke) are included in the unit.

Most of the Island is in Crown Estate, managed by the Department of Conservation. The foci of District Planning concerns are around Halfmoon Bay and the blocks of private land around Port Adventure. The economy of the Island has always been based on its natural resources - fish, shellfish, trees, minerals, natural history and landscape.

Native forests and shrublands are the dominant vegetation throughout the Island, although there are dune and tussocklands at Mason Bay, alpine vegetation on the mountains, and gums and pines closer to the township. With the exception of those buildings immediately around the Bay, most buildings settle into the bush, creating a unique Southland township character. Although the construction of the buildings has been achieved with varying degrees of landscape disturbance, vegetation still visually dominates from both within the township and when viewed from beyond. The wharf area of Oban is a lively area, with fishing, recreation and passenger ferry boats in the water and tourist, fishing and other commercial activity on the land.

A strong characteristic of the Island's landscape is the continuity of bush from ridges right down to the water's edge. Where this vegetation occurs in combination with clear sandy beaches the landscape is particularly charming.

Tourism is growing, reflecting an increase in interest throughout the world in plants, animals and "unspoilt" or remote places. Stewart Island offers the tourist the opportunity to see large numbers of seabirds, unusual bush birds and a largely unmodified flora, as well as spectacular scenery.

(Refer to Section 4.4 Stewart Island Urban Resource Area and Section 4.6 Coastal Resource Area).

(12) NATURAL CHARACTER OF THE COAST

To assist the Councils in defining the "natural character" of the coast, Alan Petrie, a landscape architect with the Department of Conservation undertook a natural character and landscape study of the Southland coastal environment. For the purposes of the study the coast was subdivided into 31 distinct units.

Within each unit the key landscape elements, distinctive features and cultural elements were identified. For each unit an assessment was made of its existing naturalness on a scale of 1 to 5 and potential activities that could adversely affect the natural character were identified.

The study has been used to help identify the values that exist along the coastline. It is not meant to be an absolute or finite study. It was undertaken to provide base information and help define the factors that contribute to natural character and landscape quality in the Southland coastal environment. A copy of that study can be viewed at the Council's Resource Management Department.

At the time of the study, the New Zealand Coastal Policy Statement had not been finalised. While Mr Petrie's study focuses mainly on those elements of the environment immediately detectable by the senses, Policies 1.1.2, 1.1.3 and particularly 1.1.4 of the New Zealand Coastal Policy Statement suggest that there are other elements or processes which contribute to natural character. It is most probable the elements and processes described in these policies will rate highly in areas assessed as having a high degree of naturalness.

Natural character generally arises from the presence of one or more of the following attributes:

- visual values, including light
- qualities of expansiveness
- an absence of unnatural noise and tranquillity
- dynamics of air water and sediment
- significant areas of indigenous vegetation
- significant habitats of indigenous fauna
- landscapes, seascapes and landforms
- characteristics of special spiritual, historical or cultural significance to Maori
- significant places of historic and cultural interest
- natural movement of biota
- natural substrate composite
- natural air and water quality
- natural biodiversity, productivity and biotic patterns
- intrinsic value of ecosystems
- tranquillity.

The New Zealand Coastal Policy Statement expects that the provisions in District Plans and Regional Coastal Plans, will discourage new subdivision, use or development in those areas with a predominance of natural character and to concentrate future subdivision, use and development within areas where natural character has been significantly modified or reduced.

This may require prohibiting various activities in areas where the adverse effects of those activities would impact on the natural character of the coastal environment: for example, prohibiting the erection of buildings on headlands.

(z) ISSUES

Refer to Section 4.6 Coastal Resource Area.

1.9 GEOLOGICAL SITES AND LANDFORMS

New Zealand has a unique and extremely diverse natural landform and geological heritage as a result of the country's long and complex geological history and its location on a volcanically- and deformationally-active boundary between two of the world's major crustal plates. Protection of this rich and diverse heritage has to date been rather random and biased, being predominantly for aesthetic or biotic values. In light of this, the New Zealand Geological Society has developed a comprehensive inventory of significant geological sites and landforms within Southland Region.⁷ This information, as it relates to Southland District, is contained in Schedule 6.13 to this Plan.

The Resource Management Act requires that outstanding natural features be protected from inappropriate subdivision, use, and development [Section 6(b)]. The listing in Schedule 6.13 provides a general listing for information purposes, and identifies those geological sites or landforms that are specifically 'outstanding' in the context of an international, national and regional rating provided by the Geological Society.

⁷ Geological Society of New Zealand (1993): Inventory of Important Geological Sites and Landforms in the Southern Region. Miscellaneous Publication No. 77.

