AGRICULTURAL LAND RELEASE PROPOSALS—SHIRE OF MANJIMUP

Report and Recommendations by the Environmental Protection Authority

Department of Conservation and Environment
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HON MINISTER FOR THE ENVIRONMENT

Your Ref.
Our Ref. BAC:jc

REPORT BY THE ENVIRONMENTAL PROTECTION AUTHORITY ON AREAS DESIGNATED HT77, JD75, HX69, HZ74, JR105 AND JA80 IN THE SHIRE OF MANJIMUP FOR POSSIBLE AGRICULTURAL RELEASE

The Working Group on Land Release (WGLR) has reported to the Environmental Protection Authority on the acceptability of release of the above land in the Shire of Manjimup. The procedure for review followed the initial steps of the recently Government-endorsed procedure in the final report of the Working Party which assisted the Agricultural Land Release Review Committee.

The Authority decided against calling for public submissions when the Authority was convinced that there was an overwhelming case against land release. The Authority determined that no useful purpose would be served by seeking public input in this instance.

The WGLR's report (attached) describes information on the suitability of 6 areas of land for release as agricultural properties. The Authority has concluded that information on soil suitability, drainage and economic viability, shows that the land is unsuitable for agricultural release. There is a preponderance of poor soils, there are problems of drainage, and there is little likelihood that these farms could be operated on an economic basis. One property, JA80, is totally unsuited for agriculture.

All properties have some value for conservation. This is particularly true for JA80 which contains floral complexes of note. WGLR's report contains the results of a biological survey of the subject areas.

Incidental to the analysis of the 6 areas of land, but relevant to the Authority consideration, is the following information:

(i) Rural industries generally are undergoing difficult times, and there is little indication that additional land release near Manjimup would aid the rural industry.

(ii) The general down-turn in agriculture is reflected in the diminished demand for use of agricultural lands in the Manjimup Shire. In the Shire of Manjimup there are 100,785 hectares of freehold agricultural land of which 21,026 hectares are still uncleared.

(iii) In the Northcliffe area it is estimated that 25% of the previously cleared land has been allowed to revert to bracken. Around Manjimup the estimate is between 5% and 10% and for Pemberton about 5%.

(iv) Good farming land in the Shire costs about $1,600 per hectare, compared to $2,500 per hectare 2 years ago.

The Authority commends the report of the Working Group on Land Release. The report recommended to the Authority that area JA80 should not be considered further for agricultural purposes, but that it should be included in the Shannon Forest. They further recommended to the Authority that the other 5 areas be set aside for further consideration until there is an improvement in the economic position of the rural sector.

Taking these recommendations into consideration, and along with the information available on lack of demand for land in the Manjimup Shire, the Authority is now proposing that this land release not be further considered. The Authority is not however prepared to recommend immediately that JA80 should be included in the Shannon Forest, but that the suitability of this proposal be further investigated.

RECOMMENDATIONS:

The Authority has concluded that the areas designated HT77, JD75, HX69, HZ74, JR105 and JA80 are not suitable for release for agriculture.

The Authority notes the particular conservation values attributed to the area designated JA80. It therefore recommends:

(a) the most appropriate land use of the area to be identified; and

(b) consideration be given to an appropriate form of reservation to secure that land use, such reservation to be compatible with, and integrated with, existing designated land uses in the vicinity.

B A CARBON
CHAIRMAN

17.10.1986

WORKING GROUP ON LAND RELEASES - INITIAL ASSESSMENT REPORT ON AREAS OF VACANT CROWN LAND PROPOSED FOR AGRICULTURE IN THE SHIRE OF MANJIMUP

1. FOREWORD

1.1 The procedure for assessing land release proposals put forward in the 'Report of the Working Party Assisting The Agricultural Land Release Review Committee - March 1985' was endorsed by Cabinet on 22 April 1985. There are two parts to the procedure:

Phase I - Initial assessment which considers currently available data (particularly climatic data) and economic influences on farm viability. The results of the assessment would normally indicate one of the following circumstances:

(a) there are insufficient data on which to make a decision leaving the option of either setting the land aside or committing resources to obtain the required data.

(b) existing data clearly indicate that the land is unsuitable for agriculture. In this event, the land could be set aside or resources committed to determine other uses.

(c) available data indicate that the land has the potential for agriculture and should be subjected to detailed assessment in:

Phase II - Land Use and Environmental Impact Assessment (LUEIA) which consists of a sequence of detailed investigations to determine the best long-term use of the land.

1.2 This report by the Working Group on Land Releases has been prepared in accordance with Phase I.

2. BACKGROUND

2.1 In October 1983 the Government advised the Shire of Manjimup that it was committed to planting 500 hectares of pine forest each year in the Manjimup region.

2.2 As the pine-planting programme involved the purchase of farm land, the Government decided that, the option of exchanging Crown land suitable for agricultural use with developed agricultural land suitable for growing pines, should be investigated.

2.3 A Study Group set up to investigate the potential for agriculture of Crown lands in the Shire of Manjimup reported to Government in October 1984 that up to 2860 hectares of such lands were believed to be suitable for agricultural development, but that further investigations were needed.

2.4 The issue was subsequently referred to the Working Group on Land Releases. Following consideration of available data the Group reported to the EPA that, while five out of the six areas investigated have the potential for agricultural use, they should be set aside for

reconsideration when the economic position in the rural sector improves. The remaining lot (JA 80) was considered totally unsuitable for agriculture largely due to high drainage costs and its proximity to the Shannon Forest.

2.5 Although Government was expected to purchase 500 hectares per year of land for pine planting only 600 hectares have in fact been purchased between October 1983 and October 1986.

2.6 At a meeting of the EPA with the Group on 30 January 1986 the Group's findings were considered. The EPA requested further information particularly on the economic aspects and on flora and fauna of the areas. This information is given hereunder.

3. POTENTIAL FOR AGRICULTURE

3.1 Appendix A provides details of soils, drainage, water supplies and distances from facilities and other farms. This information remains unchanged from the first assessment.

3.2 It is concluded that 2710 hectares of land occurring in five of the six localities investigated (Maps 1 to 6) have potential for agricultural development. The block referred to as JA 80 is not suitable for agriculture for the reasons reported above.

4. FARM VIABILITY

4.1 Appendix B provides a perspective on the economic viability of the potential forms of agricultural enterprises namely horticulture, grazing and grazing and horticulture in combination.

4.2 Budgets for the most profitable enterprise of mixed grazing and vegetable production indicate poor financial returns, and emphasise the high equity requirements required for economic viability.

5. SOCIAL AND ECONOMIC IMPACT

5.1 As the potential land releases will, at the very most, only provide an additional nine new whole farm units (and therefore nine families) in the already well-developed Northcliffe and Walpole Districts, the social and economic impact on these areas will be negligible.

6. ENVIRONMENTAL IMPACT

6.1 Release of the subject land and its subsequent clearing and development for agriculture is unlikely to lead to consequent land degradation.

6.2 Regulations under the Soil and Land Conservation Act require all landholders proposing to clear in excess of one hectare to notify the Commissioner of Soil Conservation to do so. If upon inspection, the Commissioner considers that land degradation is likely to ensue, he may issue a Soil Conservation Notice either prohibiting clearing of some, or all of the proposed area, or may impose conditions on land management or treatment thereafter. Stream salinity will not be adversely affected as all areas lie within Zone D of the Country Waters Supplies Act which is a region of low salinity hazard. Also, all of the areas have mean annual rainfalls in excess of 1100 mm.

7. FLORA AND FAUNA

7.1 Appendix C is a report from the Department of Conservation and Land Management on the results of a biological survey of the subject areas.

7.2 While none of the blocks contain unique communities or species not known from elsewhere, the Department makes the point that almost any area of natural land is, in a sense, unique and in view of the scarcity of reserved lands in the south-west it is in most cases opposed to land releases in principle. It recognises however, that other factors may overwhelmingly favour land release. In this event, a ranking of conservation values is desirable to assist in reaching final decisions.

7.3 The Department has suggested a ranking for the six areas and places block JA 80 at the top. This block is considered totally unsuitable for agriculture (see above).

8. RECOMMENDATION

8.1 The Working Group on Land Releases after further consideration of previous reports and data from the Departments of Conservation and Land Management and Agriculture recommends that:

(i) the areas designated HT 77, JD 75, HX 69, HZ 74 and JR 105 be set aside and consideration be given to subjecting them to Phase II of the Land Use and Environmental Impact Assessment (LUEIA) procedure once the economic position in the rural sector improves.

(ii) the area designated JA 80 should not be considered further for agricultural purposes.

(iii) area JA 80 be included in the Shannon Forest.

WORKING GROUP ON LAND RELEASE
INITIAL ASSESSMENT OF POTENTIAL FOR AGRICULTURE OF CERTAIN AREAS OF CROWN LAND WITHIN THE SHIRE OF MANJIMUP

Area Under Study

Six areas were examined for possible agricultural release. Factors considered were soil type, drainage, rainfall, distance from facilities and other farms, lot size, and possible water supplies.

Areas are identified by their grid reference on Conservation and Land Management Department maps and are shown on Figure 1.

Table 1 gives a summary of characteristics of these areas.

Table 1. Features of areas under study

Grid ref.	Area (Ha)	% Loam soils	% Sandy soils	pH of sands (0-10 cm)
HT 77	900	69	31	5.5 - 6.0
JD 75	710	68	32	4.0
HX 69	350	67	33	4.5
HZ 74	500	32	68	4.5
JA 80	300	11	89	4.0
JR 105	250	53	47	5.0

The sandy soils in each of the locations varied from a pH of 6.0 to 4.0. The sands of pH below 5.5 would require an application of at least 2.5 t/ha of agricultural lime before any pasture or cropping activities could be carried out.

The sand areas would mainly be suitable for livestock grazing. Consequently the locations HZ 74, JR 105 and JA 80 would be mostly used for grazing.

The "heavier" soil types or loams on the locations vary from yellow-grey loamy sand to gravelly loamy sand surface. Most of these are lateritic duplex soils.

Rainfall in all areas is adequate for agricultural development and the provision of water supplies would not be a problem.

Situation of Areas

Fig. 1 gives the position of each of the locations studied, with reference to rainfall and geographic position.

Table 2 gives details of the site and proximity of each location to towns, roads, electricity and other important facets of siting.

Table 2. Siting of locations.

Grid ref.	Town	Nearest (distance km) Bitumen road	Electricity	Other
HT 77	Manjimup (36 km SSE)	South West Highway (Passes on E)	South West Highway (Passes on E)	Farm (4 km)
JD 75	Northcliffe (8 km SE)	Middleton Rd (7 km N)	Boorara Rd (Passes on S)	Farm (Surround)
HX 69	Northcliffe (6 km NW)	Pemberton/ Northcliffe Rd (1.5 km W)	Datchet Rd (1 km E)	Farm (Neighbour on E and SE sides)
HZ 74	Northcliffe (7.5 km ENE)	Middleton Rd (Passes on S)	Middleton Rd (Passes on S)	Farm (Neighbour on S and W)
JA 80	Northcliffe (19 km E)	Middleton Rd (2.5 km NNW)	Middleton Rd (2.5 km NNW)	Farm (W) National Park (E)
JR 105	Walpole (12 km N)	North Walpole Rd (1.5 km W)	North Walpole Rd (1.5 km W)	Farm (Neighbour to NW)

All locations are within close proximity to facilities such as electricity and roads. Location JA 80 intrudes into the catchment of the Shannon River and therefore also into the proposed Shannon National Park.

Drainage of Areas

Table 3 gives the potential for drainage of the low lying areas of each location.

Table 3. Drainage of sites

Grid ref.	Possible drainage	Nearest outlet	Comment
HT 77	Good	Bighill Brook	Some work may be required to enlarge outlet
JD 75	Good	Gardner River	Some work may be required to enlarge outlet
HX 69	Good	Dombakup Brook	Some work may be required to enlarge outlet
HZ 74	Moderate	Gardner River	Some work may be required to enlarge outlet
JA 80	Poor	Boundary of Gardner and Shannon River water shed	Very flat, would require extensive drainage work
JR 105	Moderate	Wedding Brook	Some drainage work required, but relatively well drained already

All locations could be drained, except for JA 80.

JA 80 presents a problem being on the boundary of the Gardner and Shannon River water sheds. It is a very flat location which would present many problems in drainage, particularly for water disposal.

Locations in Detail

HT 77 (Locality Grid Reference) (Map 1)

Location: Thirty-six kilometres south-southeast of Manjimup. West of South West Highway, bounded by Beggs Road and Nairn Road.

Area: 900 hectares

Rainfall: Mean annual rainfall approximately 1150 mm.

Topography: A central relatively level winter waterlogged area is surrounded by gently sloping hill country. Streams from the north, and south east flow into the low lying area and appear to flow out in both a south westerly direction into a tributary of Bighill Brook and an easterly direction into Quinninup Brook.

Vegetation: The vegetation of the low lying swampy areas is typically Melaleuca spp. and Beaufortia sparsa, while the hill country is Eucalyptus marginata (Jarrah) and E. calophylla (Marri) forest.

Soils: The soils have been separated into two mapping units, A and B.

Mapping Unit A: (31% of the area) - The soils are deep grey sand with organic matter accumulation in the top 10 cm. A typical profile is:

0-10	cm	dark grey loamy sand, with organic matter and dense root material.
10-60	cm	grey sand becoming lighter with depth.
60-100	cm	light grey sand.
Field pH	at 20 cm	5.5 - 6.0
	at 60 cm	6.0
	at 100 cm	6.0

Mapping Unit B: (69% of the area) - The soils are lateritic duplex, varying in the amounts of ferruginous gravel present in the profile and with some occurrences of gritty sands overlying weathered quartzite rock.

A typical profile is:

0 - 20	cm	yellow grey loamy sand with slight fine gravel
20 - 75	cm	yellow grey loamy sand with much medium sized gravel.
75 cm +		yellow and grey mottled sandy clay.

JD 75 (Locality Grid Reference) (Map 2)

Location: Eight kilometres south east of Northcliffe, bounded by Jackson and Mottram roads.

Area: 710 ha

Land Tenure: Vacant Crown Land

Rainfall: Mean annual rainfall approximately 1400 mm.

Topography: The northern section consists of relatively low lying gently undulating country, including two drainage lines, one of which flows to the south west into Boorara Brook, and the other to the east also in Boorara Brook.

The southern and major section is gentle to moderately sloping hill country.

Vegetation: The low lying sandy areas are typically vegetated by Melaleuca spp., Beaufortia sparsa and scattered stunted Eucalyptus marginata (Jarrah) and E. calophylla (Marri). The hill country is dominantly Jarrah-Marri forest, with a small area of Karri-Marri forest in the south west corner.

Soils: The soils are separated into two mapping units A and B.

Mapping Unit A: (32% of the area) - The soils are typically deep grey acid sands with varying amounts of organic matter accumulation, depending on microtopography, the lower lying areas have a greater depth of organic matter enrichment. Some areas are underlain by dark brown indurated sand at about 60 cm depth.

A typical profile is:

0 - 30 cm dark grey sand with organic matter and dense-root material
30-90 cm grey sand.
90-100 cm light grey sand.

Field pH at 20 cm pH 4.0
at 90 cm pH 4.0

Mapping Unit B: (68% of the area) - The soils are lateritic duplex varying in the amount of ferruginous gravel present and in the grittiness of the A horizons.

HX 69 (Locality Grid Reference) (Map 3)

Location: Six kilometres north west of Northcliffe between Orchid Road and the Bunbury-Northcliffe Railway.

Area: 350 hectares, approximately

Land Tenure: State Forest

Rainfall: Mean annual rainfall approximately 1400 mm

Topography: A central sandy area is surrounded on all sides by gentle to moderately sloping hills. The central area is gently undulating and is drained by four drainage lines, two of them well incised.

Vegetation: The central sandy area carried Melaleuca spp. with scattered occurrences of stunted Jarrah, Marri and Banksia. The hill country is Jarrah-Marri forest, with some areas of Karri (E. diversicolor) along the western margin.

Soils: The soils are separated into two mapping units, A and B.

Mapping Unit A: (33% of the area) - The soils are mainly deep grey acid sands, becoming lighter in colour and coarser with depth. A typical profile is:

0-40 cm dark grey sand with organic matter and dense roots
40-90+ cm grey coarse sand

Field pH's at 10 cm pH 4.5
at 40 cm pH 5.0

The unit includes scattered areas of duplex soils carrying stunted Jarrah and Marri.

Mapping Unit B: (67% of the area) - The soils are duplex, usually with coarse loamy sand to sand overlying yellow faintly mottled clay.

HZ 74 (Locality Grid Reference) (Map 4)

Location: The block is 7.5 kilometres east-north east of Northcliffe along Middleton Road

Area: 500 ha

Land Tenure: Two areas of State Forest totalling 350 ha, and

Vacant Crown Land 150 ha

Rainfall: Mean annual rainfall approximately 1350 mm

Topography: The area is mainly a relatively flat swamp with gently sloping hills along the northern and eastern boundaries. Drainage is mainly to the west into the Gardner River and to the south east into Boorara Brook.

Vegetation: The swamp areas carry a vegetation of Melaleuca and Beaufortia spp. with scattered occurrences of Jarrah and Marri. The hills are either Karri or Jarrah-Marri.

Soils: The soils are separated into two mapping units, A and B.

Mapping Unit A: (68% of the area) - The soils are deep grey acid sands becoming coarse with depth and frequently including coarse quartz rock fragments. A typical profile is:

0 - 20 cm dark grey sand with organic matter
20 - 70 cm grey sand
70 - 90 cm grey coarse sand (grit)

Field pH at 10 cm pH 4.5 Lab pH 5.2
at 80 cm pH 4.5 Lab pH 5.3

N.B. Some areas are underlain by slightly indurated dark brown sands at about 50 cm.

Mapping Unit B: (32% of the area) - The soils are yellow duplex varying in the coarseness of the A horizon material. A typical profile is:

0 - 10 cm yellow grey coarse loamy sand
10 - 60 cm pale yellow coarse loamy sand
60 - 80 cm+ pale yellow gritty clay

Field pH's 0 - 10 cm pH 6.0
10 - 60 cm pH 6.5
60 - 80 cm pH 6.0

JA 80 (Locality Grid Reference) (Map 5)

Location: Nineteen kilometres east of Northcliffe, bounded to the West by Bannister Road, to the South by Preston Road and to the East by Deeside Coast Road.

Area: 300 ha

Land Tenure: Vacant Crown Land

Rainfall: Mean annual rainfall approximately 1300 mm

Topography: The area is mainly flat and swampy with drainage to the south west into the Canterbury River and to the east into the Shannon River. There are limited areas of hilly country, mainly at the western end of the block.

Vegetation: The swampy areas are Melaleuca and Beaufortia spp. and the rises around the fringes of the block are either Jarrah-Marri or Karri forest.

Soils: The soils are separated into two mapping units, A and B.

Mapping Unit A: (89% of the area) - The swamp areas are deep grey acid sands. A typical profile is:

0 - 20 cm dark grey sand
20 - 80 cm grey sand
80 - 100 cm brown coarse sand

Field pH's 0 - 10 cm pH 4.0 Lab pH 4.8
at 50 cm pH 4.0 Lab pH 5.4

Mapping Unit B: (11% of the area) - The soils are lateritic duplex, varying in the amounts of ferruginous gravel present.

JR 105 (Locality Grid Reference) (Map 6)

Location: Twelve kilometres north of Walpole bounded by Copeland Road and the Frankland River.

Area: 250 hectares

Land Tenure: State Forest

Rainfall: Mean annual rainfall approximately 1250 mm

Topography: The northern half is generally low lying slightly undulating country which drains into the Frankland River at two positions. The remainder is gently sloping hilly country except on the northern perimeter where it is quite steep.

Vegetation: The low lying sandy areas carry Melaleuca spp. associated with sparse occurrences of Jarrah and Marri, particularly around the edges of the area. The hill country is Jarrah-Marri forest.

Soils: The soils are separated into two mapping units, A and B.

Mapping Unit A: (47% of the area) - The soils are deep grey sands with varying amounts of organic matter accumulation depending on microtopography. A typical profile is:

0 - 20 cm dark grey sand with organic matter and dense root material
20 - 60 cm grey sand
60 - 80 cm+ grey sand with coarse quartz fragments

Field pH's 0 - 20 cm pH 5.0
at 50 cm pH 5.0

Mapping Unit B: (53% of the area) - The soils are lateritic duplex, varying in the amounts of ferruginous gravel and in the grittiness of the A horizons.

Lot Sizes

Possible lot sizes suitable for release vary according to whether the lots are suitable for a whole farm development (namely large amounts of loamy soil types) or for farm build-up.

Table 4. Suggested lot sizes

Grid ref.	Lot no.	Area (ha)	Type of development
HT 77	1	180	Whole farm
	2	"	Whole farm
	3	"	Whole farm
	4	"	Whole farm
	5	"	Whole farm
JD 75	1	160	Whole farm
	2	160	Whole farm
	3	180	Whole farm
	4	200	Whole farm
HX 69	1	160	Farm build-up
	2	160	Farm build-up
HZ 74	1	290	Farm build-up
	2	195	Farm build-up
JA 80	Not for release		
JR 105	1	250	Farm build-up

On release of any or all of the areas examined, provision should be made for a condition to ensure that all farm development is in accordance with an approved initial development plan developed in consultation with officers of the Department of Agriculture.

In addition, regulations under the Soil and Land Conservation Act require all proposed land clearing in excess of 1 hectare to be notified to the Commissioner of Soil Conservation. This will ensure that any potential land degradation is minimized.

Conclusions

Of the 2860 hectares of Crown Land investigated in the Manjimup Shire, 2710 hectares are considered to have potential for agricultural development.

The area referred to as JA 80 should not be released due to its poor soil type, inadequate drainage and proximity to the proposed Shannon National park.

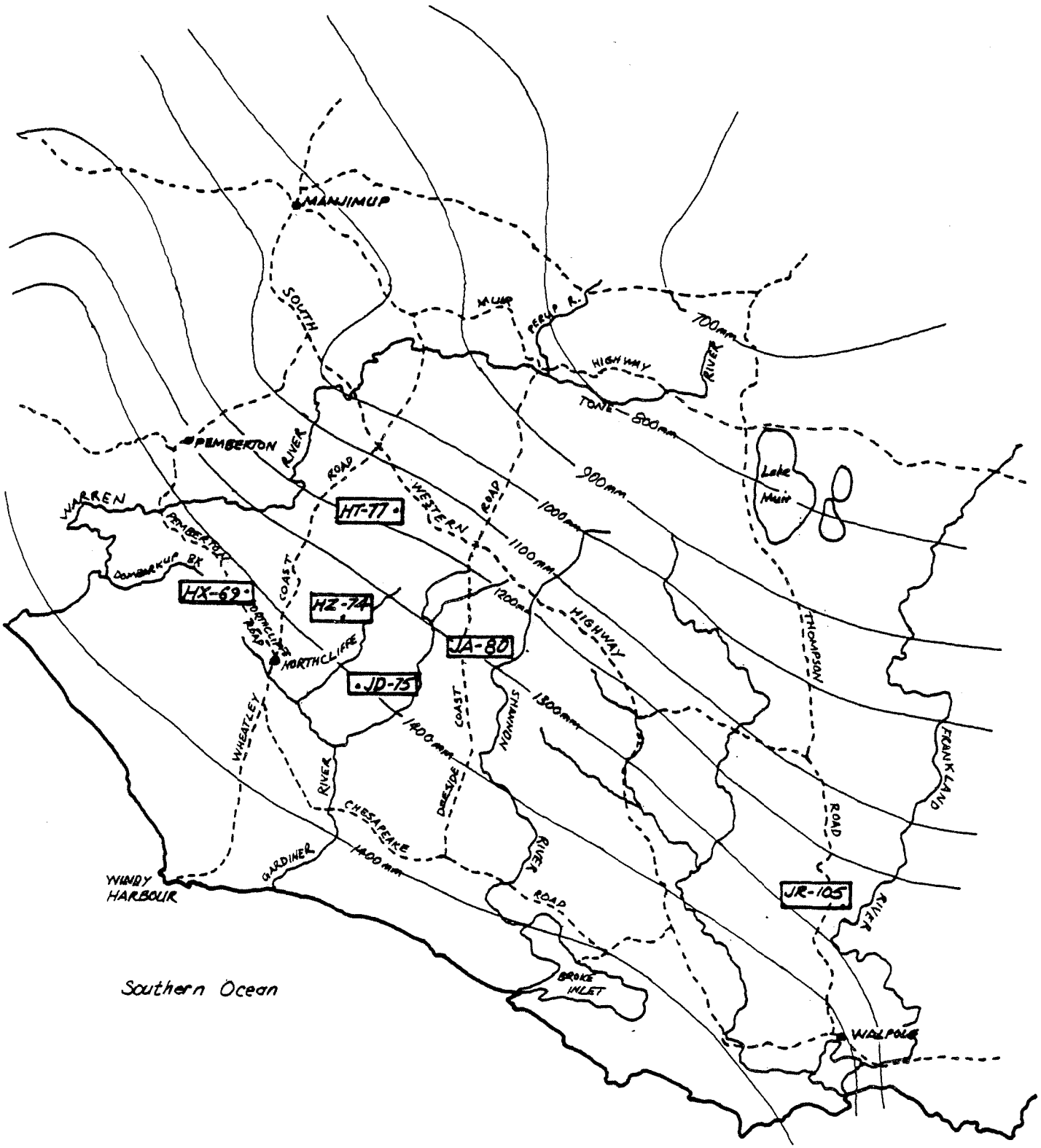
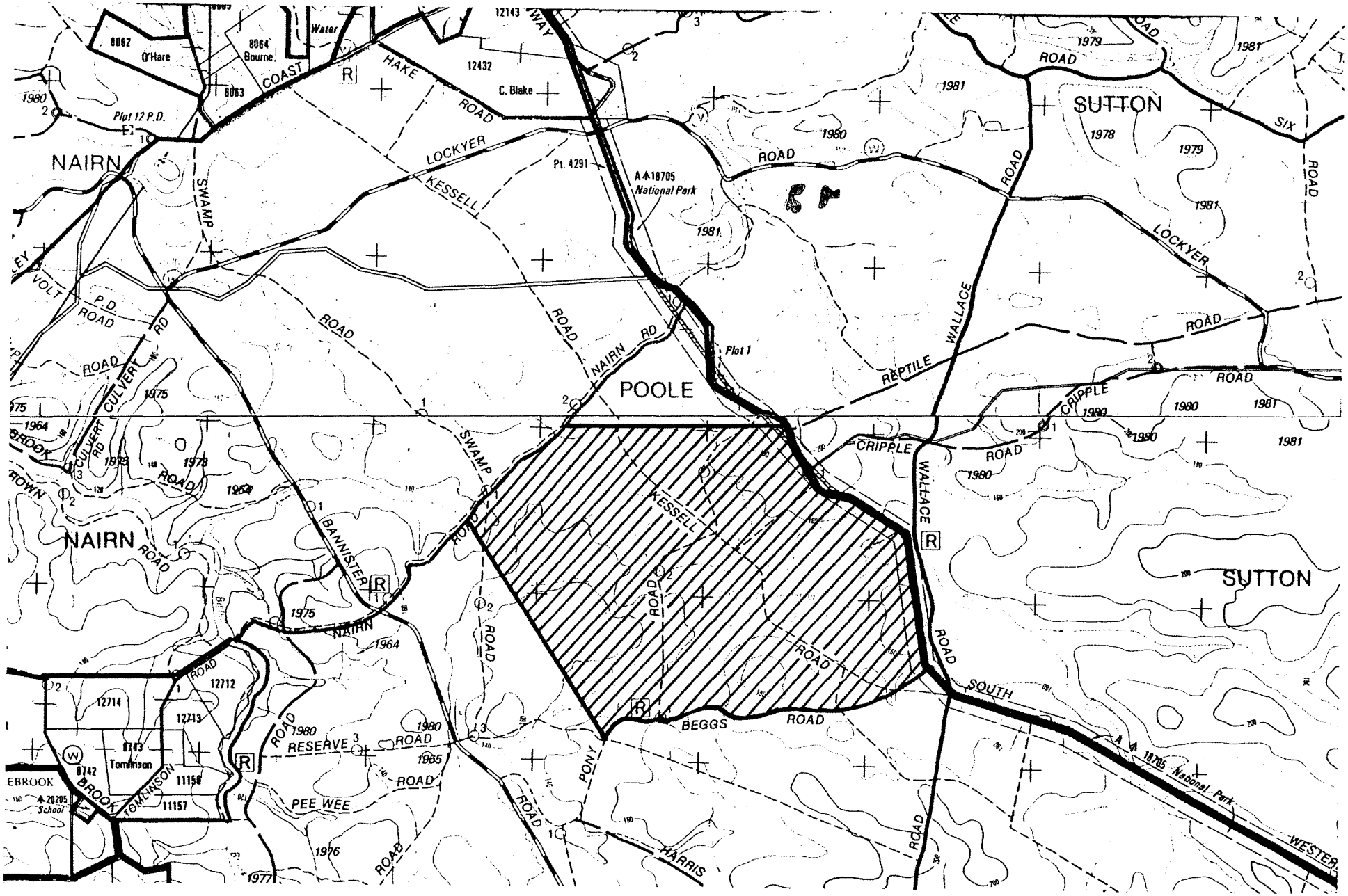


FIGURE 1 LOCATION OF AREAS



MAP 1 HT-77

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KILOMETRES

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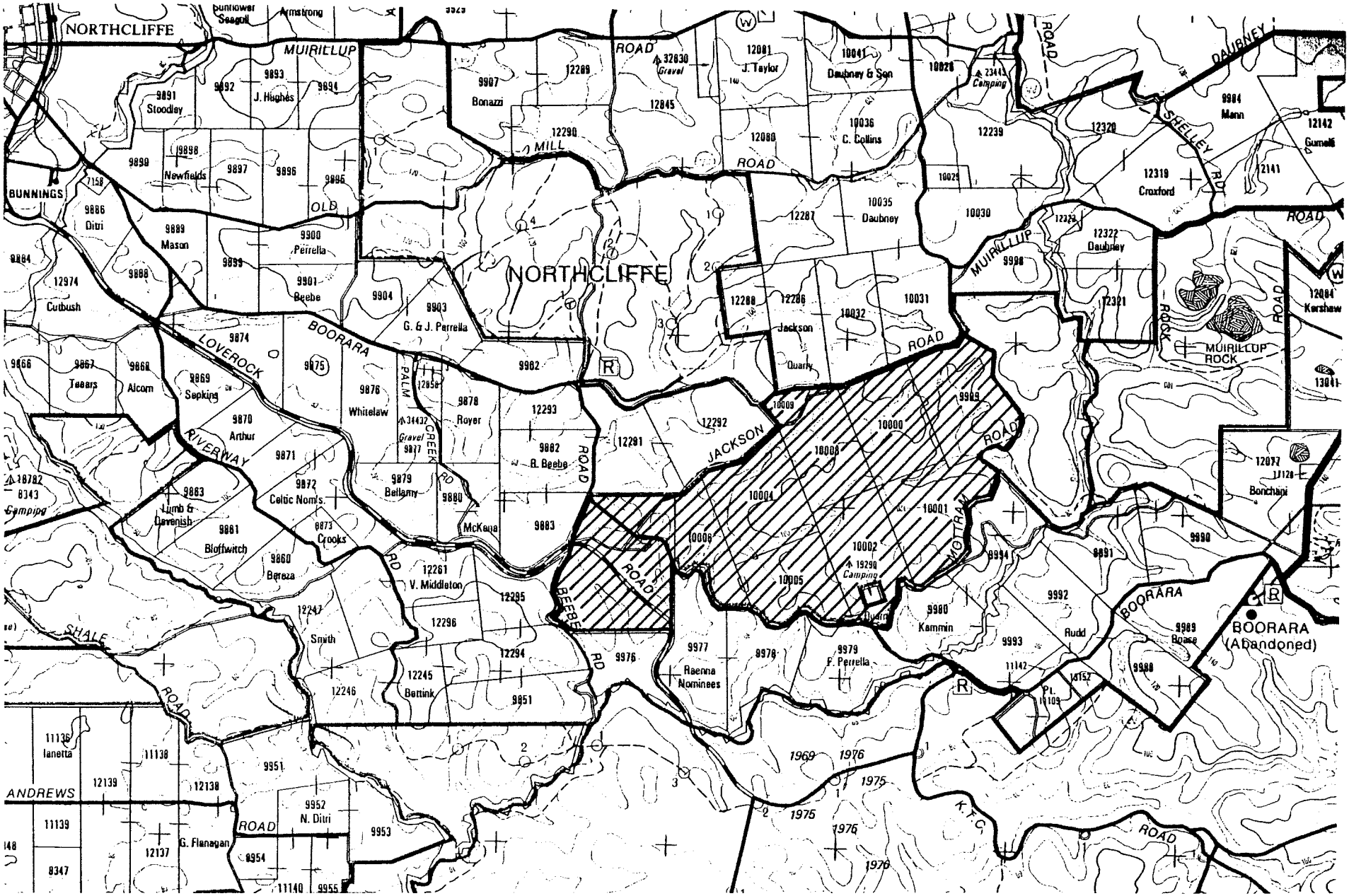
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LOVEROCK
RIVERWAY
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RD
BEEBE
SHALE
ROAD
ANDREWS
ROAD
SHELLEY RD
DAUBNEY
ROAD
MUIRILLUP
ROCK
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MUIRILLUP ROCK
BOORARA
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BOORARA
(Abandoned)
K.F.C.
ROAD
9891 Stoodley
9892
9893 J. Hughes
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9897
9896
9895
9898 Newfields
9899
9886 Ditri
9889 Mason
9900 Perrella
9901 Beebe
9888
9884
12974 Cutbush
9874
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9903 G. & J. Perrella
9962
9866
9867 Tears
9868 Alcom
9869 Sepkins
9876 Whitelaw
9878 Royer
12293
9882 R. Beebe
9870 Arthur
9871
9872 Celtic Nom's.
9879 Bellamy
9880
9883 Lumb & Davenish
9881 Bloffwitch
9873 Crooks
9860 Bereza
12261 V. Middleton
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12286 Jackson Quarry
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10036 C. Collins
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12845
9907 Bonazzi
12081 J. Taylor
10041 Daubney & Son
10028
11138 Ianetta
12139
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9952 N. Ditri
9953
12137 G. Flanagan
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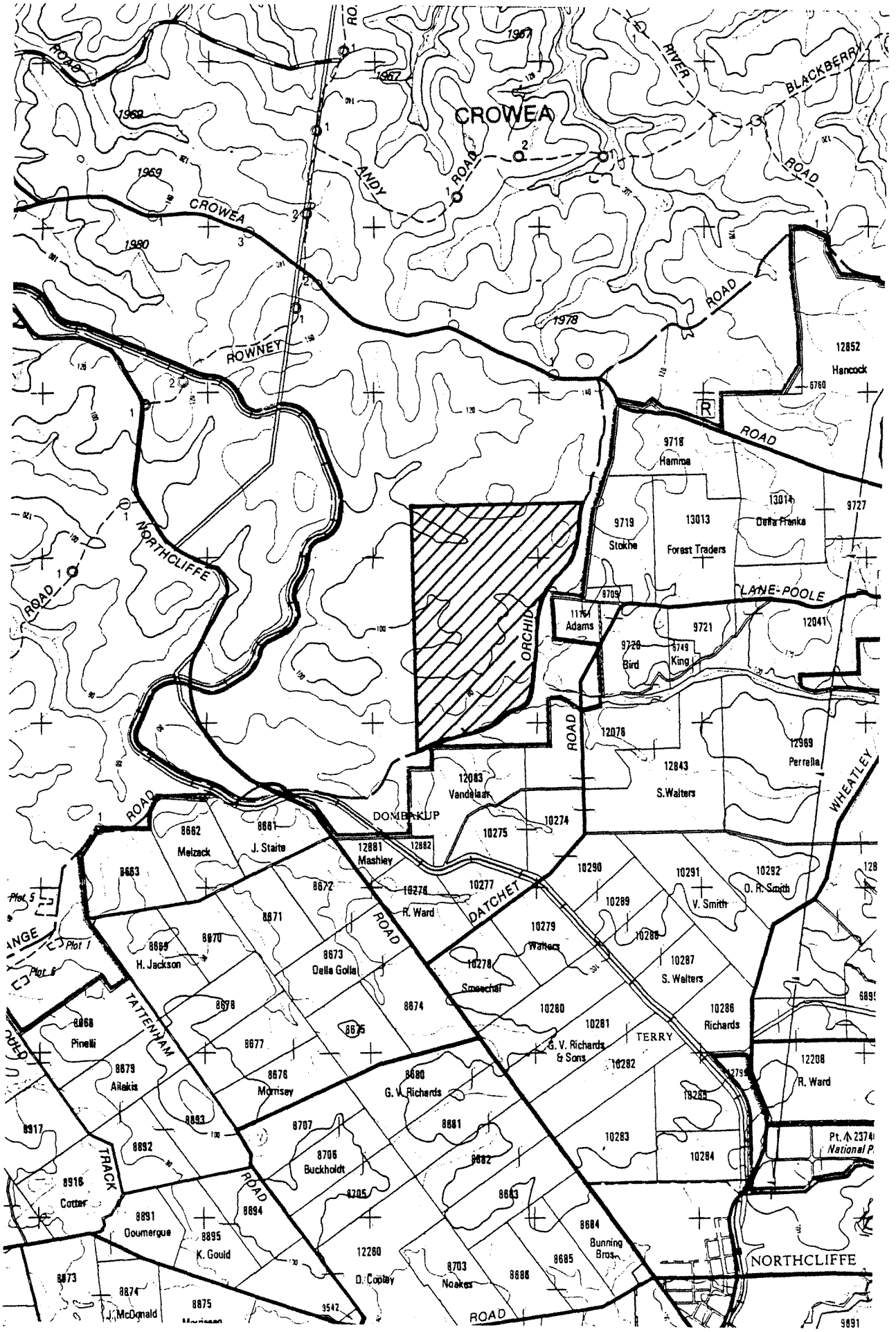
MAP 2 JD-75



MAP 3 HX-69

KILOMETRES

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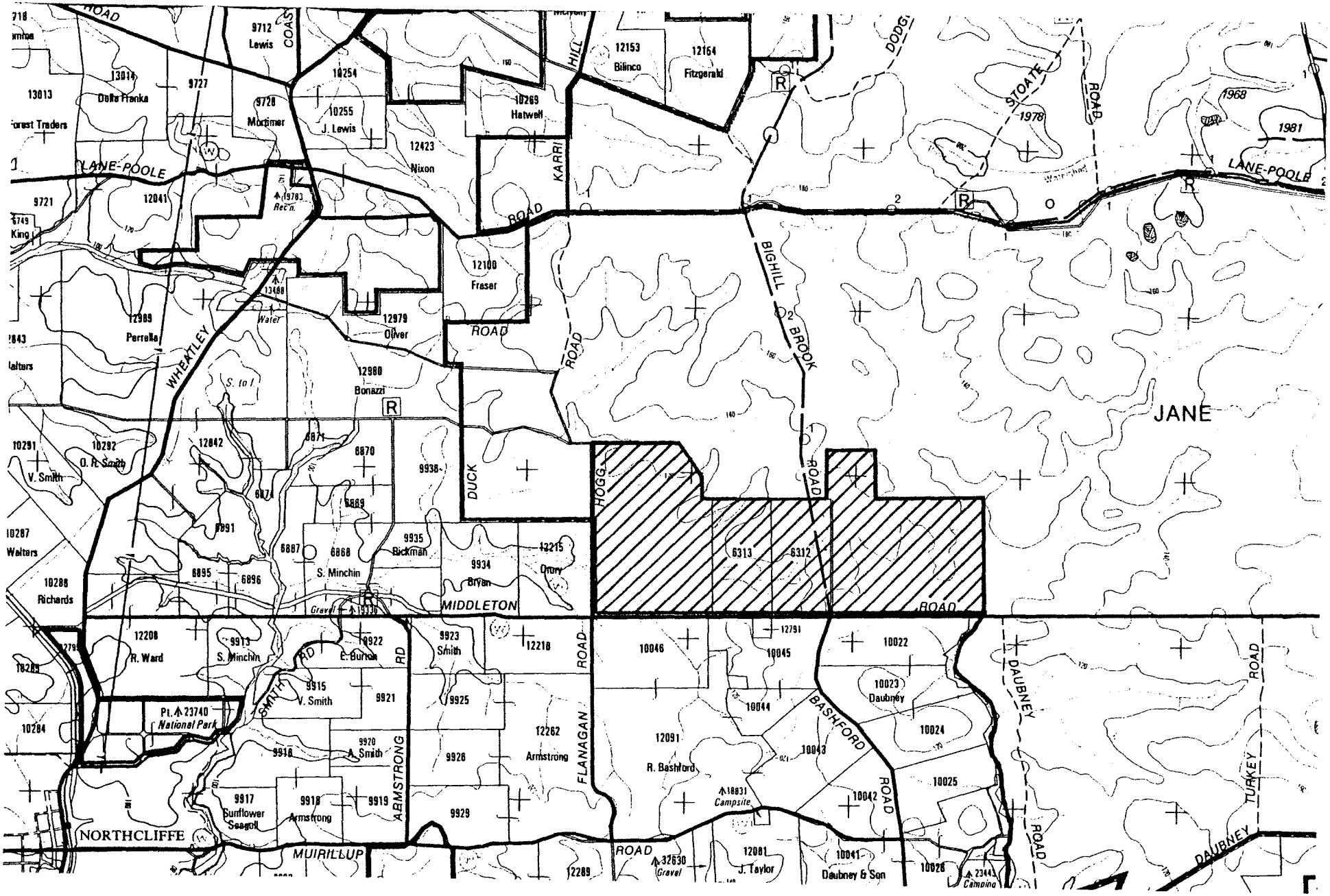

MAP 4 HZ-74

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KILOMETRES

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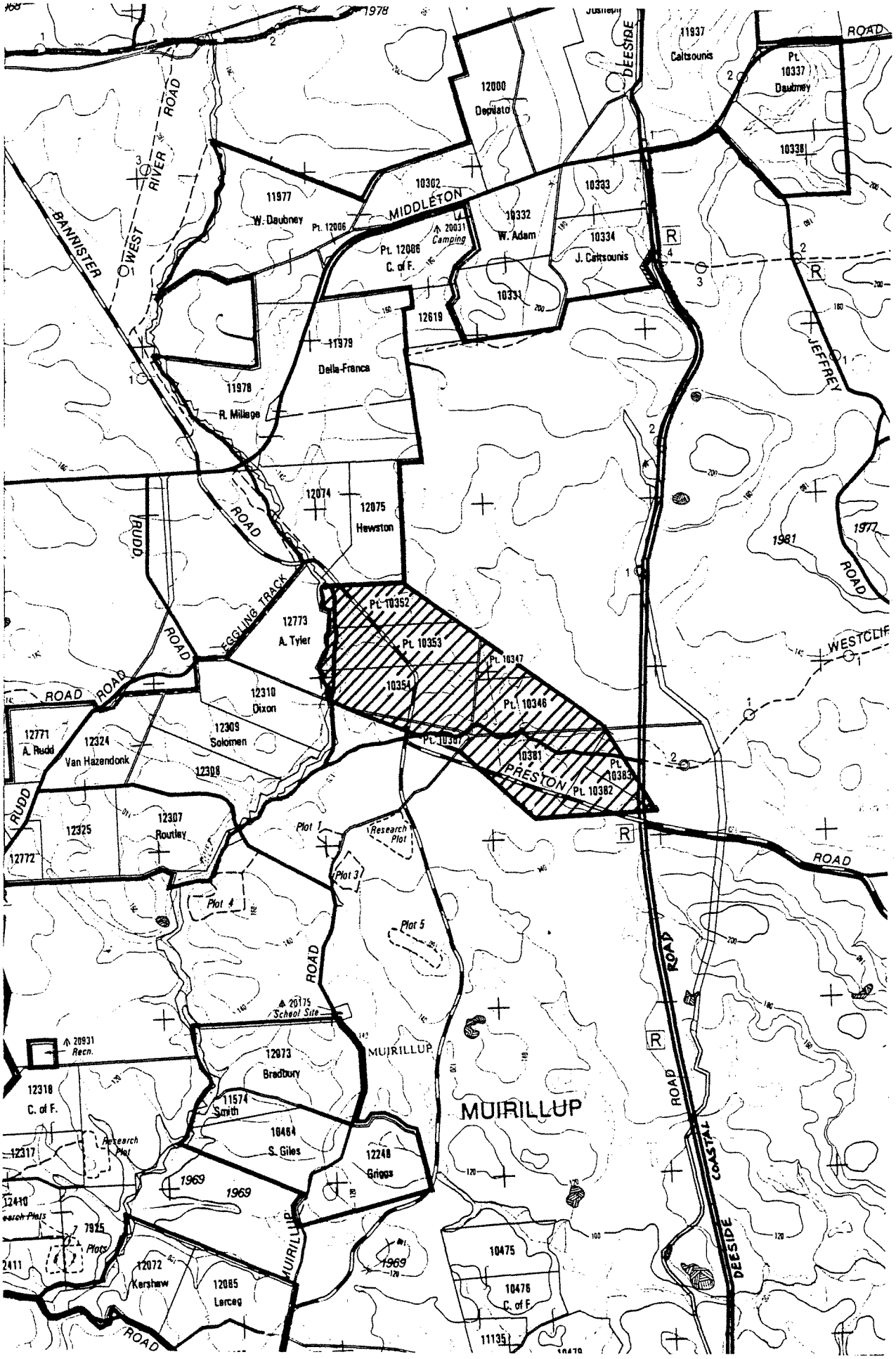

MAP 5 JA-80

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KILOMETRES

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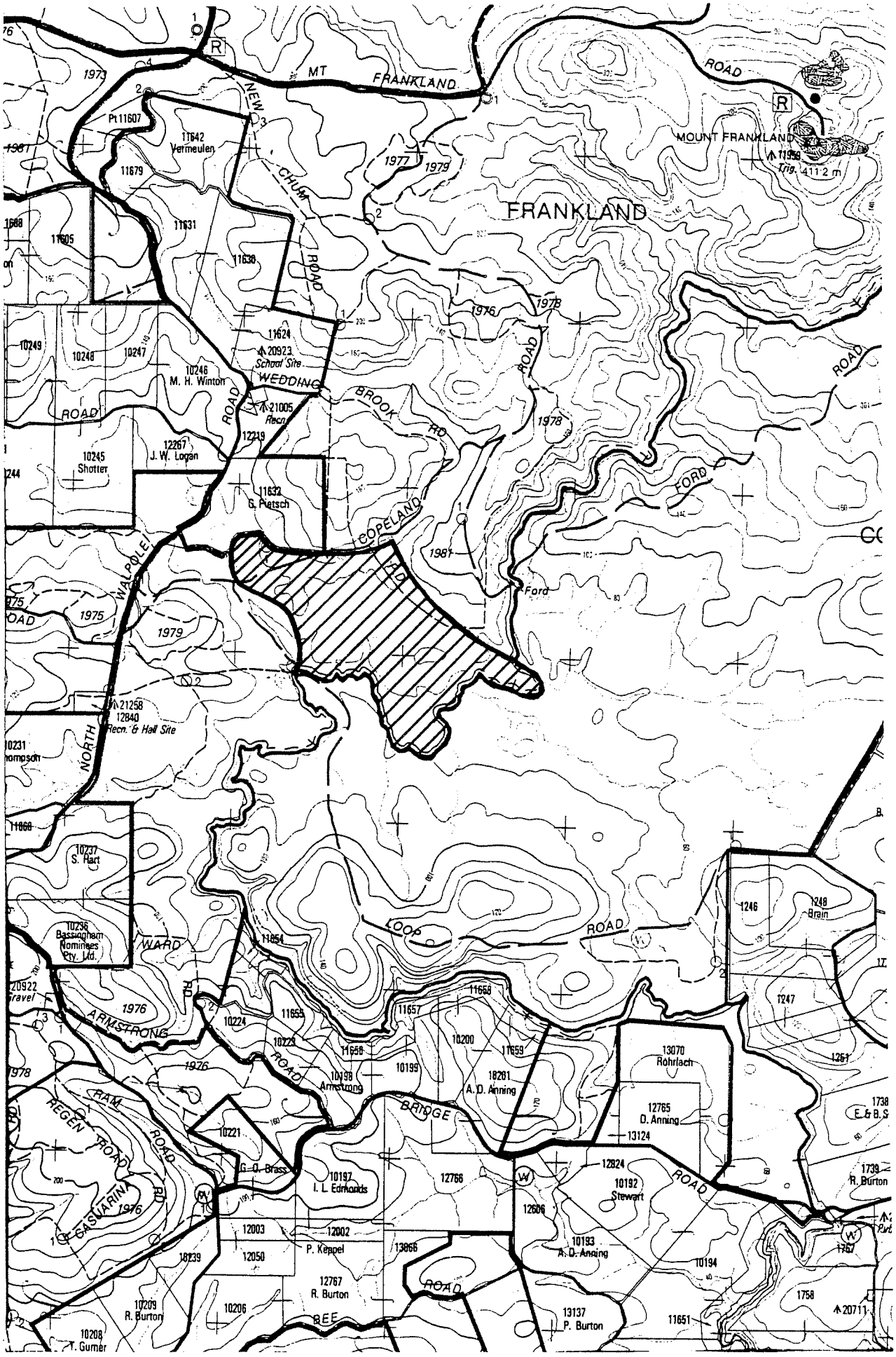
FRANKLAND
MT FRANKLAND ROAD
MOUNT FRANKLAND
Trig. 411·2 m
NEW CHUM ROAD
WEDDING BROOK RD
FORD ROAD
COPELAND RD
WALPOLE NORTH ROAD
WARD ARMSTRONG ROAD
LOOP ROAD
BRIDGE ROAD
REGEN RAM ROAD
BASSARINA RD
BEE ROAD
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10248 M. H. Winton
12267 J. W. Logan
10245 Shotter
11632 G. Pietsch
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21258 12840 Recn. & Hall Site
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10236 Bassingham Nominees Pty. Ltd.
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11658
11657
11655
11654
11659
10224
10223
Ford
KILOMETRES
0
1
2
N

MAP 6 JR-105

PROPOSED RELEASE OF CROWN LAND IN THE MANJIMUP SHIRE

(Based on notes prepared by P. Eckersley, Rural Economist)

Economic perspective

1. Suitability of the land for horticulture

i) Water supply

Horticultural crops require of the order of 1000 mm of irrigation each year. Subsequent comments assume that water is available at similar costs to most horticultural properties in the Shire.

ii) Area

The proposed size of holdings (see Appendix A) is adequate for horticulture on the scale presently practiced in the industry, but is minimal in terms of least cost production technology.

iii) Convenience to markets

The blocks are at a slight freight disadvantage relative to other properties around Manjimup and Pemberton.

iv) Produce Prices

The Study Group October 1984 report showed a potato budget which approximates the present costs and returns (per farm hectare) for ware potatoes under the present marketing system. Recent negotiations between the industry and potential processors suggest a potato price which is no more than 60 to 70 per cent of the current price for ware potatoes. Budgets done with efficient growers suggest that only extra potatoes, grown with spare capacity of existing farm resources, could be produced for that sort of return.

In other words, it is unlikely that it will be economic for new, small-scale, producers to grow potatoes.

Cauliflower prices are at present also barely sufficient to cover costs. (See attached potato and cauliflower budgets.)

Anticipated development of export markets for these and other vegetables may improve the prospects of success, though production could be greatly increased from presently cleared land.

2. Suitability of the land for grazing

The scale of the proposed holdings is not adequate to make efficient use of necessary overheads involved in beef production, especially labour, management skills, yards and vehicles. They are therefore at a competitive disadvantage with present 400 to 800 ha beef properties.

3. Beef and horticulture in combination

The rationale for suggesting 160 ha blocks for release as whole farms is that this size would allow a reasonable scale of vegetable production, with a 3 bull unit beef sideline.

(a) The following budget represents the likely annual income and expenses for an efficient established farm producing potatoes, cauliflowers and beef.

INCOME	$
Beef cattle 62 baby beef @ $280	
41 other cattle @ $347	31 587
Processing potatoes 13 ha @ 45 t @ $140	81 900
Export cauliflowers 6 ha @ 960 ctn @ $7.50	43 200
GROSS INCOME	156 687
EXPENSES	
Fertiliser	16 200
Crop costs (seed, sprays, twine)	20 956
Stock purchases	950
Stock expenses	414
Fuel	17 086
Repairs and maintenance	13 000
Labour @ $7/hr incl on-costs	16 424
Contract (hay, cartage)	8 800
Other overheads (rates, lic, ins, SEC, fees, phone etc)	7 000
Operator allowance	16 000
Interest on working capital	6 400
Plant replacement (depreciation)	12 000
TOTAL EXPENSES	135 310
OPERATING SURPLUS	$21 377

CAPITAL COSTS

Livestock - average value $69,600 @ 8%	5 568
Plant and machinery - average value $120,000 @ 8%	9 600
. . Return to capital invested in land and improvements	6 208

Value of land and improvements
160 ha @ $2,500 = $400,000

. . Rate of return	1.55%

ESTABLISHMENT COSTS

Land purchase @ $588	94 100
Fencing and yards	20 000
Dams and water reticulation	30 000
Clearing and sowing @ $600	96 000
Seed @ $30/ha	4 800
Fertiliser @ $80/ha	12 800
Buildings	50 000
Interest on above outlays @ 15% for 2 years	92 300
	400 000

This is a somewhat optimistic scenario which demonstrates the low likely return on capital, hence the need for high equity capital if such blocks are to be viable. Implied in the above is a good deal of operator labour in the establishment phase.

(b) The next budget presented relates to the development of a 160 ha mixed beef/vegetable property.

DEVELOPMENT BUDGET FOR 160 ha AT NORTHCLIFFE

YEAR			1	2	3	4	5	6	7	8
LABOUR (hours) including owner/operators			3000	3800	4000	4500	5000	5346	5346	5346
LIVESTOCK		$/unit								
On hand										
at start	COWS	450.00			20	40	73	104	109	110
	HEIFERS	300.00			9	10	15	20	20	30
	STEERS	300.00			9	10	12	20	20	12
	BULLS	800.00			1	1	2	3	3	3
Purchased	COWS	550.00		20	20	20	20			
	BULLS	1000.00		1		1	1	1	1	1
Sold	COWS	350.00						10	17	18
	HEIFERS	300.00			2	4	3	4	2	11
	STEERS	370.00			8	10	12	19	20	11
	BULL	600.00						1	1	1
	BABY BEEF	280.00			15	27	40	50	57	62
POTATOES										
planted	hectares			4	4	8	12	13	13	13
sold	tonnes	140.00		120	140	280	420	585	585	585
CAULIFLOWERS										
planted	hectares			2	4	4	5	6	6	6
sold	cartons	7.50		2000	4000	4000	5000	6000	6600	7200
INCOME			0	31800	57360	81660	112840	153230	161910	167530

CAPITAL EXPENSES	$/unit								
Land purchase (ha)	300.00	48000							
Land clearing (ha)	500.00	40000	40000						
Stump removal (ha)	200.00	2000	2000	2000	2000	2000			
Fencing & yards		10000	10000						
Dams & water reticulation			10000	10000	10000				
Buildings		10000		30000	10000				
Machinery purchase		30000	25000	5000		5000	3000	5000	7000
Irrigation plant			25000	5000	10000	10000			5000

Table continued...

OPERATING EXPENSES	$/unit							
Labour (hour)	7.00	0	5600	7000	10500	14000	16422	16422	16422
Fertiliser		3200	12400	10000	12200	14200	16200	16200	16200
Crop costs		240	7000	10000	14000	17000	20956	20956	20956
Stock purchases			12000	11000	12000	12000	1000	1000	1000
Stock costs			100	100	200	300	414	414	414
Fuel		5000	9000	10000	12000	15000	17000	17086	17086
Repairs & Maintenance		5000	7500	9000	11000	13000	13000	13000	13000
Contract (hay, cartage)			1500	2500	4500	6500	8880	8880	8880
Overheads (rates, lic, ins, fees, SEC, phone)		6000	6000	6500	7000	7000	7000	7000	7000
Operator allowance		6000	6000	8000	10000	12000	14000	15000	16000
Interest on working acc's (%)	15.00	12408	13433	9458	9405	9600	8840	9072	9672
TOTAL EXPENSES		177848	192533	135558	134805	137600	126712	130030	138630

CUMULATIVE SURPLUS/DEFICIT including interest on the cumulative deficit.

Starting capital		175000	75000						
Real interest rate (%)	5.00	-2848	-88723	-171357	-233069	-269483	-256439	-237381	-220350
	10.00	-2848	-88865	-175949	-246689	-296118	-299212	-297253	-298079

The budget confirms:

i) the poor financial returns on funds required to develop such a property.
ii) the high equity requirement (at least 90%) to ensure economic viability.

It should be noted that the budget as presented assumes -

* low wages for the operator in early years
* competent management
* use of second-hand machinery
* very basic accommodation in the first two years
* land clearing costs minimised by use of own labour and some revenue from sale of timber
* alternative real interest rates on the cumulative deficit
* $250,000 starting capital
* no serious seasonal problems in early years
* improved variety of cauliflower grown relative to the cauliflower budget presented for the established farm

ENTERPRISE BUDGET FOR 13 ha of WARE POTATOES AT MANJIMUP (2)

Item	Unit	Month(s)	Times	Amount /ha	Price $/unit 1984/85	$/ha	Total $
INCOME	t		1.0	45.00	199.00	8955.00	116415
DIRECT COSTS							
Seed	t		1.0	3.70	275.00	1017.50	13228
Seed cartage	t		1.0	3.70	20.00	74.00	962
FERTILISER:SuperCuZn	t		1.0	0.10	182.00	18.20	237
Potato Manure E	t		1.0	2.50	202.00	505.00	6565
Agran 34	t		1.0	0.10	341.00	34.10	443
Muriate of Potash	t		1.0	0.12	248.00	29.76	387
Trace Elements	kg		1.0	10.00	4.00	40.00	520
Magnesite	t		0.2	0.50	68.00	6.80	88
Lime	t		0.2	2.50	28.00	13 00	69
WEEDICIDE:Sprayseed	L		1.0	1.50	8.00	12.00	156
Linuron	kg		0		17.00	0	0
Sencor	kg		1.0	0.00	47.50	38.00	494
INSECTICIDE:Heptachlor	kg		1.0	4.50	8.00	38.00	468
Nitofol	L		1.0	2.00	10.45	38.90	480
Ambush	ml		0			0	0
Rogor	L		0			0	
NEMATICIDE:Nemacur	L		0	12.00	14.85	0	0
FUNGICIDE:Dithane M-45	kg		4.0	2.00	3.94	31.52	410
Cuprox	kg		3.0	1.20	3.80	13.68	178
MACHINERY:Tractor fuel	hr		1.0	35.00	10.00	350.00	4550
Repairs, maintenance						450.00	5850
IRRIGATION:Water pumping	mm		15.0	33.33	0.86	429.96	5589
Labour: (*) Seed cutting	hr		1.0	34.00	7.00	238.00	3094
Cultiv., plant, spray	hr		1.0	35.00	7.00	245.00	3185
Irrig'n, crop insp'n	hr		1.0	42.00	7.00	294.00	3822
Harvesting	hr		1.0	80.00	7.00	560.00	7280
CONTRACT:Harvesting	t		0	45.00	18.00	0	0
CARTAGE: to shed	t		0			0	0
to P.M. Board	t		1.0	45.00	27.00	1215.00	15795
BIN HIRE	t		1.0	45.00	3.37	151.65	1971
COOLSTORE CHARGES	t		0	3.70	30.00	0	0
COMMISSION	%		0			0	0
INTEREST on above	$/mth		5.0	1.25		244.59	3180
TOTAL DIRECT COSTS THIS ENTERPRISE						6084.66	79101
GROSS MARGIN THIS ENTERPRISE						2870.34	37314
MACHINERY REPLACEMENT						617.54	8028
SHARE OF FARM ADMINISTRATION COSTS						313.46	4075
MANAGEMENT FEE (**)	nr		52.0	14.00	12.00	672.00	8736
OPPORTUNITY COST OF CAPITAL:	Value						
MACHINERY	%	68292.00		8.00		315.19	4098
POTATO LICENSE	%	5000.00/ha		8.00		300.00	3900
LAND	%	2500.00/ha		3.00		75.00	975
TOTAL COSTS						8377.85	108912
COST OF PRODUCTION PER TONNE:	Direct			135.21		P. Eckersley	
	Total			186.17		18/3/85	

ENTERPRISE BUDGET FOR 13 ha extra POTATOES PROCESSING at MANJIMUP (2)

Item	Unit	Month(s)	Times	Amount /ha	Price $/unit 1985/86	$/ha	Total $
INCOME	t	March	1.0	45.00	150.00	6750.00	87750
DIRECT COSTS							
Seed	t	Sept.	1.0	3.00	275.00	825.00	10725
Seed cartage	t		1.0	3.00	20.00	60.00	780
FERTILISER:SupercuZn	t		1.0	0.10	182.00	18.20	237
Potato Manure E	t		1.0	2.50	202.00	505.00	6565
Agran 34	t		1.0	0.10	341.00	34.10	443
Muriate of Potash	t		1.0	0.12	248.00	29.76	387
Trace Elements	kg		1.0	10.00	4.00	40.00	520
Magnesite	t		0.2	0.50	68.00	6.80	88
Lime	t		0.2	2.50	26.00	13 00	169
WEEDICIDE:Sprayseed	L		1.0	1.50	8.00	12.00	156
Sencor	kg		1.0	0.80	47.50	38.00	494
INSECTICIDE:Heptachlor	kg		1.0	4.50	8.00	36.00	468
Nitofol	L		1.0	2.00	18.45	36.90	480
NEMATICIDE:Nemacur	L		0	12.00	14.85	0	0
FUNGICIDE:Dithane M-45	kg		4.0	2.00	3.94	31.52	410
Cuprox	kg		3.0	1.20	3.80	13.68	178
MACHINERY:Tractor fuel	hr		1.0	35.00	10.00	350.00	4550
Repairs, maintenance						450.00	5850
IRRIGATION:Water pumping	mm		15.0	33.33	0.86	429.96	5589
LABOUR: Seed cutting	hr		1.0	34.00	7.00	238.00	3094
Cultiv., plant, spray	hr		1.0	35.00	7.00	245.00	3185
Irrig'n, crop insp'n	hr		1.0	42.00	7.00	294.00	3822
Harvesting	hr		1.0	48.00	7.00	336.00	4368
CONTRACT:Harvesting	t	Feb.	0	45.00	18.00	0	0
CARTAGE: to shed	t		1.0	45.00	5.00	225.00	2925
to P.M. Board	t		0	45.00	27.00	0	0
BIN HIRE	t		1.0	45.00	3.37	151.65	1971
COOLSTORE CHARGES	t		0	3.70	30.00	0	0
COMMISSION	%		0			0	0
INTEREST on above	$/mth		5.0	1.25		231.68	3012
TOTAL DIRECT COSTS THIS ENTERPRISE						4651.25	60466
GROSS MARGIN THIS ENTERPRISE						2088.75	27284
MACHINERY REPLACEMENT						445.31	5789
SHARE OF FARM ADMINISTRATION COSTS						31.38	408
MANAGEMENT FEE	hr		52.0	7.00	12.00	336.00	4368
OPPORTUNITY COST OF CAPITAL:	Value						
MACHINERY	%	55987.00		6.00		258.40	3359
POTATO LICENSE	%	0/ha		6.00		0	0
LAND	%	2500.00/ha		3.00		75.00	975
TOTAL COSTS						5797.34	75365

Table continued...

COST OF PRODUCTION PER TONNE:	Yield (t/ha)	38.00	45.00	52.00
	Direct	119.48	103.36	91.58*
	Total	149.64	128.83	113.62

* Harvesting, cartage and bin hire adjusted for yield.
Lower yield is often associated with lower inputs of fertilisers and chemicals, but here assume same for all yields.

** Total cost should also include loss of net grazing income

ENTERPRISE BUDGET FOR 6 ha of CAULIFLOWERS (WA LATE)

Item	Unit	Month(s)	Times	Amount /ha	Price $/unit	$/ha
INCOME:	hds		0.8	14400.00		
Export	ctns			960.00	7.50	7200.00
DIRECT COSTS						
Seedlings	plant	March	1.0	18000.00	0.05	900.00
SOIL TESTING	sample		1.0	1.00	65.00	10.83
FERTILISER:						
Potato Manure E	t		1.0	2.00	200.00	400.00
M.A.P.	kg		5.0	10.00	0.88	44.00
Potassium nitrate	kg		10.0	10.00	0.70	70.00
Trace element spray			1.0			320.00
Calcium nitrate	kg		10.0	6.00	0.74	44.40
Wuxal dip	L		1.0	1.00	3.04	3.04
WEEDICIDE:Sprayseed	L		1.0	2.00	8.68	17.36
Lasso	L		0	2.50	9.00	0
Sertin 186 EC	L		0.5	2.00	39.00	39.00
INSECTICIDE:Lorsban 50EC	L		10.0	0.90	14.45	130.05
Dibron	L		2.0	0.90	20.00	36.00
Mesurol 75	kg		1.0	1.00	55.50	55.50
Mesurol pellets	kg		0	5.00	5.20	0
NEMATICIDE:Nemacur	L		0	12.00	20.35	0
FUNGICIDE:Dithane M-45	kg		6.0	0.90	5.48	29.59
Roval spray	kg		2.0	0.10	49.00	9.80
Roval dip	kg		1.0	0.10	49.00	4.90
Kocide 101	kg		10.0	1.00	9.22	92.22
MACHINERY:Tractor fuel, repairs, maint'ce, for irr.	hr		60.0	4.00	14.00	3360.00
LABOUR:Cult., plant, spray	hr		1.0	30.00	8.00	240.00
Irrig'n, crop insp'n	hr		9.0	10.00	8.00	720.00
Harvesting	hr		1.0	100.00	7.00	700.00
CARTAGE: to shed	days		1.0	20.00	10.00	200.00
BIN HIRE	t		0			0
COOLSTORE CHARGES	t		0			0
COMMISSION	%		0			0
INTEREST on above	$/mth		5.0	1.25		407.92
TOTAL DIRECT COSTS THIS ENTERPRISE						7834.62
GROSS MARGIN THIS ENTERPRISE						-634.62
MACHINERY REPLACEMENT						336.00
SHARE OF FARM ADMINISTRATION COSTS						679.17
REPAYMENTS ON LOAN FOR IMPROVEMENTS @ 18.0% incl. Princ. & Int.						300.00
OPPORTUNITY COST OF CAPITAL:						
MACHINERY						846.67
Land leasing						0
TOTAL COSTS						9996.45

Table continued...

MACHINERY AND EQUIPMENT	$/ha	COST $	Life yrs	Deprec'n $	Interest @ 6%
Tractor *		25000.00	10.00	2250.00	825.00
Fittings,irrigation/ha	2700	16200.00	15.0	1080.00	486.00
Pump *		6500.00	15.0	400.00	210.00
Other equipment *		15000.00	10.0	1350.00	495.00
Improvements/dam etc *		10000.00			
TOTAL				5080.00	2016.00

* enough for 5 to 10 ha

BUDGET DETAIL FOR 380 ha BEEF UNIT

CURRENT STOCK

STOCK TYPE	NUMBERS	VALUE
Cows	300.00	450.00
Heifers	87.00	300.00
Steers	27.00	300.00
Bulls	9.00	300.00
Sell Cows	48.00	350.00
Sell Heifers	27.00	300.00
Sell Bulls	2.00	600.00
Sell Baby Beef	156.00	280.00
Sell Steers	27.00	370.00
Buy Cows	0	0
Buy Bulls	2.00	1200.00

FARM AREA AND SOIL TYPES

SOIL TYPE	REL. CAP.	AREA
A (KARRI LOAMS)	100.00	50.00
B (LIGHT LOAMS)	90.00	80.00
C (GRAVEL SOILS)	80.00	180.00
D (SANDS)	70.00	70.00
TOTAL FARM		380.00

%
15.00

MACHINERY

ITEM	VALUE	DEPRECIATION	REPAIRS
Tractor	5000.00	750.00	3200.00
Other			
Truck	5000.00	1000.00	0
Ute	5000.00	1500.00	0
Car	5000.00	1500.00	0
Farm bike	200.00	50.00	0
Plough	1000.00	200.00	0
Other			0
Mower	2000.00	500.00	0
Rake	500.00	100.00	0
Baler	0	0	0
Trailer	500.00	100.00	0
Pumps	500.00	100.00	0
Tools	2000.00	300.00	0
Sheds	1000.00	100.00	0
Spreader	1000.00	200.00	0

FERTILIZER

SOIL TYPE	FERTILIZER	RATE	PRICE
A	Super	150.00	123.00
	Sup/potash	60.00	176.00
	Nitrogen		0
	Other		
B	Super	150.00	123.00
	Sup/potash	40.00	176.00
	Nitrogen		0
	Other		
C	Super	110.00	123.00
	Sup/potash		176.00
	Nitrogen		0
	Other (5:1)	40.00	165.00
D	Super	150.00	123.00
	Sup/potash	50.00	176.00
	Nitrogen		0
	Other		

Rate=kg/ha
Price=$/t on farm

OTHER FARM COSTS

ITEM	COST
Crop costs (Spray, twine)	400.00
Stock costs	1050.00
Casual labour	1050.00
Contract (Hay rolling)	2000.00
OVERHEADS	
Fuel	4400.00
General Repairs	2000.00
Rates	1300.00
Insurance	600.00
Licenses Tel.Sub.SEC	2500.00
Admin,account,conting.	1500.00
Interest	2000.00
OPERATOR ALLOWANCE	16000.00

BUDGET SUMMARY

INCOME	ITEM	TOTAL
	Cows	
	Heifers	
	Bulls	
	Baby Beef	
	Steers	79,770.00
COST		
	Fertiliser	9021.00
	Crop costs	400.00
	Stock costs	1050.00
	Stock purch	2400.00
	Labour	1050.00
	Contracting	2000.00
	Fuel	4400.00
	Repairs-mach	3200.00
	Repairs-gen.	2000.00
	Rates	1300.00
	Insurance	600.00
	Licenses, etc	2500.00
	Admin. acct	1500.00
	Interest	2000.00
	Depreciation	6500.00
	Operator Al.	16000.00
	Stock int.	14112.00
	Machine int.	2357.00
		72390.00
	Net	7380.00

D. -

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

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Mr J McFadden
Chairman
Working Group on Land Release
Department of Lands and Survey
Cathedral Avenue
PERTH WA 6000

Biological survey of Lands proposed for release to Agriculture in the Manjimup Shire

Following a request from the EPA for more information on the area, specifically the flora and fauna, officers from CALM biological survey's unit visited the blocks in question in late 1985.

The results of their survey indicate that none of the blocks proposed for release contain unique communities or species not known from outside the blocks.

Because almost any area of natural land is in a sense unique and in view of the scarcity of reserved lands in the south-west the Department is in most cases opposed to land releases in principle. In cases where other factors overwhelmingly favour release and choices may have to be made, it is possible to rank areas for their conservation value based on available ecological data. When using such ranking it should be recognized however that these priorities are only one of several criteria which might be used to make the final decision on release.

The six blocks under consideration may be ranked as follows in order of increasing conservation value;

1. JD 75 - This area is surrounded by farmland and has been cut over for timber. Nothing outstanding was found in the area.

2. HZ 74 - Adjacent to farmland, nothing of particular significance was found.

3. HX 69 - Adjacent to farmland - The Crested Shrike-Tit, a bird on the 'rare and otherwise in need of special attention' list was recorded here. This species is however fairly widespread in the southern forest area.

4. JR 105 - Adjacent to farmland, another bird in the 'rare and otherwise in need of special attention list' was recorded here. This species is however common over most of the southern forest area.

5. HT 77 - Surrounded by State Forest - This area has a higher conservation potential due to its location. In addition the area includes the second known occurrence of the plant Lomandra ƀrittanii outside the Perth-Boddington area. It also contains one of the furtherest known inland occurrences of Banksia quercifolia.

6. JA 80 - Adjacent to farmland but partly within the Shannon watershed. The plant species of significance also occur in the area, Aotus passerinoides a species with a restricted occurrence and Meelboldina denmarkica a species in a monotypic genus restricted to the south-west.

The report from the field is attached for your information.

Syd Shea
EXECUTIVE DIRECTOR

29 April 1986

BIOLOGICAL SURVEY OF LANDS PROPOSED FOR RELEASE TO AGRICULTURE IN THE SHIRE OF MANJIMUP

All six blocks were visited in September 1985. Plant assemblage data were collected in 13 quadrats, and data on the occurrence of vertebrate animals were collected opportunistically. A total of 224 vascular plant species and 69 vertebrate (7 frog, 3 reptile, 54 bird and 5 mammal) species were recorded. None of the blocks contained unique communities or species not known from outside the blocks.

Block JA80, which overlaps part of the Shannon Basin (the proposed Shannon National Park), includes a plant species of restricted occurrence (*Aotus passerinoides*) and a species of a monotypic genus restricted to the south-west (*Meelboldina denmarkica*) i.e. it is a site of botanical significance.

Block HT77, which borders the Sir James Mitchell National Park, includes the farthest inland occurrence of *Banksia quercifolia*. This block also includes one of only two known occurrences of *Lomandra brittanii* outside the Perth-Boddington region.

Two faunal species gazetted as "rare, or otherwise in need of special attention" were found to occur on several blocks - Crested Shrike-tit on JA80 and HX69, and the Red-eared Firetail on JR105. While these two species are known to be relatively widespread in the south-west, reduction in available habitat would have a detrimental effect on their populations.

Release of any of the blocks for agriculture would reduce the extent and diversity of the plant and animal communities contained within them, in an area where considerable fragmentation has already occurred.

In particular, Block JA80 should not be released for agriculture, because of the significant plant occurrences known to occur there, and release of block HT77 would reduce the genetic diversity in each of *Banksia quercifolia* and *Lomandra brittanii* near the limit of its range. Release of block HT77 would also form an enclave in an extensive forest area, causing significant management problems in the adjacent National Park as well as in surrounding production forestry areas.

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