- identify and preserve land needed for future urban or other use;
- maintain prime agricultural land and prevent its fragmentation into small lots of little value for commercial production purposes;
- avoid placing houses, buildings or other development in unsuitable locations such as on foreshores, flood prone land, reclaimed or improperly filled land or right next to mines, extractive, hazardous or noxious industries;
- control subdivision and development in areas liable to hazards or constraints such as posed by bushfires, landslip, or soil erosion;
- protect and conserve timber, minerals, soil, water and other useful natural resources for their highest and best use;
- protect and manage trees on farms and trees in sensitive areas, areas of natural beauty and nature conservation areas;
- protect sites of historic, cultural, archaeological or scientific value;
- maximise the benefit but minimise the social and economic costs to the community arising from all kinds of development in rural areas.

That's the justification for rural planning.

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The Conservation of Agricultural Land and the Realities of Farm Economics:

A Case Study in the Fragmentation of Good Agricultural Land

C. A. Hawkins*

Introduction

The Department of Agriculture has a policy on the protection of agricultural land (Appendix 2). This policy says, in effect, that the time has arrived, indeed may be overdue (Table 1), when we should look to conserving, for long term use, the better quality agricultural lands which are a finite, limited resource (Table 2).

This course is prompted not only by the general conservation argument that the earth's land resources are finite while world population continues to grow – advances in technology notwithstanding – but also by the need:

(i) to conserve the better lands from which our major agricultural exports come as one means of assisting competitiveness; and

(ii) to keep open options on areas covering a range of soils and climates, particularly in the higher rainfall areas of the coast, for the growth of perishable foods and new crops.

It is said, however, that, compared with the United States and Europe, Australia is well endowed with productive land if measured as land per capita (Table 3), but even from such an isolationist stand point, and long before we reach a state where the problems of land diversion become pressing, we need to take stock. Timely intervention in the land market is required, bearing in mind that changes in outlook and in planning in this area are slow. It is

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Table 1: Land Lost from Agriculture to Other Uses in N.S.W., 1970-79

Use to which land was lost	Type of Land Lost		Loss	
	Cropping Land (ha)	Grazing Land (ha)	(ha)	(percent)
Urban	17 300	7 400	24 700	4.2
Hobby Farming	215 400	348 600	564 000	95.1
Mining	1 600	2 600	4 200	0.7
Totals	234 300	358 600	582 900	100.0

Source: Logan (1980)

now more than a generation since a subdivision minimum was introduced in New South Wales to curb the loss of agricultural land but that seems to have had quite limited impact (Table 1), principally, I believe, because we were not bold enough and were too concerned about an adverse reaction.

However, rather than argue the case for bolder intervention in the market on a theoretical plane, it may be more profitable to look at a particular case and see what the Department is saying and what it proposes should be done.

A Case in a Particular Local Government Area

The following case study relates to a real case in a real local government area but the name of the landholder and the local government area have been omitted. This landholder in the wheat belt applied to his local council under the 40 ha policy ruling in that area to subdivide a property of 497 ha into 9 blocks ranging in size from 40 ha to 90 ha, each with a dwelling entitlement. He said he owed a substantial sum on the property, borrowed not too long ago at high interest and, although he works full-time in the district at another job and has sunk his earnings into the property, he has not been able to generate a cash flow sufficient to service the debt.

The landholder runs 660 dry sheep on the property. His gross income from the property was $12,000 last year. He says the land is poor, either naturally or because it has been "flogged" and is able to produce

Table 2: Estimates of Agricultural Land in New South Wales

Category	**Area** (ha x 10^6)
N.S.W. total[a]	80
Used for agriculture[a]	60-65
Area	
rainfall > 500 mm and with suitable slope for agriculture[a,b]	23
rainfall > 500 mm with suitable slope and soil[b]	17.5
Area of prime cropping land	
N.S.W. Soil Conservation Service[a]	3.5
N.S.W. Department of Agriculture[c]	4.5
Davidson (1984), cropped land	5.7
Area suitable for intensive cropping	
N.S.W. Soil Conservation Service[a,d]	0.6
N.S.W. Department of Agriculture[c]	0.5
Area of prime crop and pasture land[c]	14-15

Sources: [a] Hallam (1984), [b] Logan (1980), [c] N.S.W. Department of Agriculture (1984), [d] Commonwealth and State Governments (1978).

Table 3: Agricultural Land Per Capita

Country	Source of data	Area (ha/capita)
W. Europe	Davidson (1981)	0.78
U.S.A.	Davidson (1981)	2.62
Australia	Davidson (1981)	11.09
Australia	Nix (1978)	5.13
N.S.W.	Nix (1978)	8.8
N.S.W. – cropping land	Nix (1978)	2.4
N.S.W. – cropping plus grazing land	Logan (1980)	3.2
N.S.W. – grazing plus arable land	N.S.W. Department of Agriculture (1984)	2.7-2.9
N.S.W. – arable land	N.S.W. Department of Agriculture (1984)	0.77

Notes: Davidson's figures for Australia do not exclude land too physically poor for agriculture so the comparisons may be imprecise.

Nix appears to exclude poor land and gets a somewhat lower figure.

Department of Agriculture figures are a first approximation by extrapolating from field mapping exercises. Arable land embraces classes 1 and 2 of the *Rural Land Evaluation Manual* (Woodward and Neilson 1981) and grazing land, class 3 of that *Manual.*

only one wheat crop every three years on average. Between wheat crops, the land has to be spelled to enable another wheat crop to be taken off three years later. The extent of improved pasture on the property is not known but the area has the potential for it. The abbreviated farm budget (at current prices and values) below will illustrate the production potential of an average 500 ha property in the locality (see Appendix 1 for details).

Summary Farm Budget[1] (see below)

This budget is for a 500 ha property suitable for wheat and sheep on plains country; soils are lighter Red Brown

Abbreviated Farm Budget

1.	*Capital Requirements*		
	Land and improvements, plant and equipment and livestock		$236,000
2.	*Farm Budget*		
	2.1 Gross farm income (sheep, wool and wheat)	$45,033	
	2.2 Variable farm costs	$20,328	
	2.3 Fixed farm costs	$14,600	
3.	*Whole Farm Gross Margin and Profitability*		
	Gross farm income	$45,033	
	Less variable costs	$20,328	
	Gross Margin		*$24,705*
	Less overhead costs	$14,600	
	Net farm income		*$10,105*
	Less allowance for operator	$10,000	
	Return to capital and management		*Nil*
	Percent return to capital and management		*Nil*

1. R. Benson, Senior Economist, Department of Agriculture, Dubbo, pers. comm.

Table 4: Some Land Statistics for the subject Local Government Area

	Area of Local Government Area	Area of agricultural land classes*				Area subdivided with dwelling entitlement 1962-1983 into the block-size categories (ha) specified				
		2	3	4	5	0-20	21-40	41-100	101-300	>300	Total
Hectares	332,000					12,124	4,229	9,444	19,322	13,000	58,118
As per cent of Local Government Area	100	9.5	38.9	25.3	26.3	3.6	1.2	2.8	5.8	3.9	17.5
Number of lots						1,071	144	149	116	31	1,511
Percent in classes 2-3		--44.4--					--66--				
Percent in classes 4-5				--51.6+--			--33--				

Notes: * Urban land excluded from calculation
+ excludes the 48 000 ha of State forest within the local government area

Earths, responsive to phosphorus. Rainfall averages 585 mm with a slight summer bias. The enterprise has 150 ha of wheat, 30 ha of grazing oats and 700 ewes. The budget assumes good sound management, an average season and soils which are not run down.

Features of the particular case quoted:

- the land is said to be rundown
- farming is done part-time
- last year received below average rainfall
- the property is carrying a considerable debt burden at high interest.

We have insufficient detail to form a clear picture of the landholder's financial situation but under the circumstances, it would not be surprising that he wants to get out.

The owner claims he cannot sell the block as a single unit, and so he has decided to subdivide into 9 small blocks with dwelling entitlements, for which, he has been advised, there will be a ready market. One can appreciate his individual solution to his individual problem, but how does the agricultural land resource fare in this deal?

The land falls mainly into class 3 of the 5-class system with small amounts of class 4. Class 3 is capable of carrying improved pasture and cropping (but less than 4 years out of 10 on average). It comes into that group of classes which the Department of Agriculture wishes to see kept in agriculture.

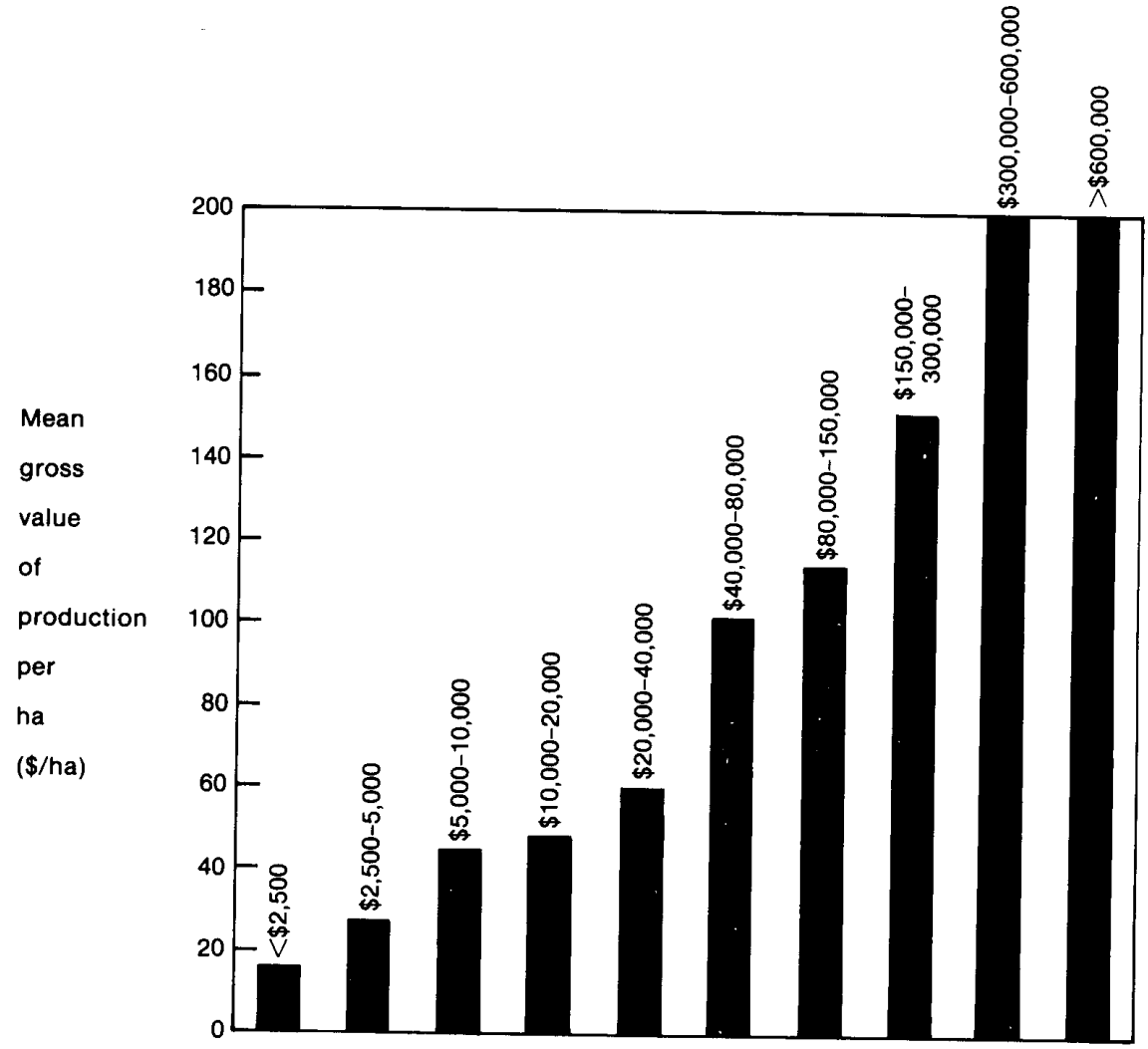
It is generally acknowledged in the district that 40 ha or even 90 ha will only be a rural residential block so by subdivision the agricultural productivity of the land will be reduced to practically zero.

Subdivision of a single block is, of course, of no significance in itself but the cumulative effect of that practice over years is.

Table 4 gives some land statistics for the local government area in which the property lies.

This local government first adopted the then 25 acre (10 ha) state minimum subdivision size in 1969. Although the 100 acre (40 ha) minimum was introduced in 1973 statewide, it was not adopted by this local government until 1979. In the next 4 years, 1676 ha were subdivided into blocks smaller than 40 ha and the total subdivided

Figure 1: Value of Production per ha versus Property Size and other data for the Local Government Area (1983/84)



Av. area of estab. (ha)	64	150	157	310	496	578	916	1255	2023	1776
Percent of total area	1	1.7	2.6	5.4	16.6	23.5	31.7	12.7	2.6	2.2
Percent of total prodn.	0.1	0.4	1.1	2.3	9.1	21.8	32.9	17.6	4.7	10.0

Source: Australian Bureau of Statistics (1983/84)

over that period was 8,800 ha or 15 per cent of the total area shown as subdivided in Table 4.

Figure 1 shows, for the local government area, the mean gross value of production per ha plotted against average area of establishments (ha) for each of the standard gross value of production categories used in Australian Bureau of Statistics data for 1983. This adds weight to the argument that below a certain size (which varies with the type of agriculture), small blocks are uneconomic and are basically rural residential blocks.

Conclusions

1. Market forces do *not* guide those wanting a rural residential lifestyle away from the good land (Table 3). In this respect, they are quite blind as "everybody wants the best land".
2. As economic conditions worsen, the cost/price squeeze will accelerate the rate of subdivision of good quality agri-

cultural land for that middle group of landholders seeking a way out of their difficulties. This trend gives added respectability to speculation in good agricultural land.

3. Subdivision controls introduced so far have generally tended only to document and legitimise that which they were intended to prevent – the loss of agricultural land to non-agricultural uses.
4. Because of both its potential unpopularity and its doubtful effectiveness, subdivision control alone may have to give way increasingly to alternative controls if we wish to keep good land for production in the long term. That is not to say there is no need for controls over subdivision at a certain level, rather than sole reliance upon it may be an inadequate approach and one difficult to "sell".
5. The current approach being taken by the Department of Agriculture is to advocate considerable relaxation of subdivision controls but tighter controls over dwellings. Often the presence of a dwelling on a small block makes it quite uneconomic as an agricultural proposition and keeps it out of agriculture. Subdivision to almost any size but without a dwelling entitlement would facilitate farm adjustment, help the young farmer starting out and focuses attention on agricultural land as a means of production rather than as a means of speculation.
6. There is a definite need to guide, through the planning process, market forces if we wish to keep the better land in agriculture so that non-agricultural uses are directed to the poorer land.

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Appendix I

Wheat Farm

1. Description

The area is suitable for wheat growing and grazing on plains country. Soil type is a lighter red brown earth. The country is responsive to phosphate fertilizer. The property studied is of 500 ha. Rainfall in the area is 585 mm per annum and is distributed 140 autumn, 140 winter, 140 spring and 165 summer.

Enterprises on the property are 150 ha wheat, 30 ha grazing oats and 700 ewes.

1	**Capital Requirements**	$	$
1.1	Land and Improvements	185,000	
1.2	Plants and Equipment	36,000	
1.3	Livestock	15,000	
	Total		**236,000**
2.	**Farm Budget**		
2.1	Gross Farm Income		
2.1.1	Sheep		
	265 1st cross ewe hoggets at $25	6,625	
	265 1st cross wether lambs at $18	4,770	
	126 c.f.a. ewes at $12.00 head	1,512	
	3 c.f.a. rams at $10.00 head	30	
			12,937
2.1.2	Wool		
	695 ewes x 4.5 kg at $3.30 (net)	10,321	
	14 rams x 5 kg at $2.50 (net)	175	
			10,496
2.1.3.	Wheat		
	150 ha x 1.6 tonne/ha at $90 (net at silo)	21,600	
			21,600
	Total Gross Income		**45,033**
2.2	Variable Farm Costs		
2.2.1	Sheep		
	155 Replacement ewes at $25	3,875	
	5 Replacement rams at $100	500	
	700 Drench ewes at $0.085	60	
	560 Drench lambs at $0.085	48	
	1395 Vaccines at $0.10	140	
	695 Dip at $0.18	125	
	695 Jetting (x2) at $0.30	417	
	695 Shearing ewes at $1.95	1,355	
	14 Shearing rams at $3.00	42	
	700 Crutching at $0.50	350	
	1395 PP Board Rates at $0.10	140	
			7,052
2.2.2	Wheat		
	150 ha seed at $8.75	1,313	
	150 ha Fertilizer at $20.35	3,053	
	150 ha Weed control at $11.00	1,650	
	150 ha Cartage at $15.00	2,250	
	150 ha Tractor costs at $24.00	3,600	
			11,866
2.2.3	Grazing Oats		
	30 ha Seed at $8.00	240	
	30 ha Fertilizer at $15.00	450	
	30 ha Tractor costs at $24.00	720	
			1,410
	Total Variable Costs		**20,328**
2.3	Fixed Farm Costs		
2.3.1	Cash		
	Rates	1,500	

	Fuel and electricity	2,000	
	Weeds and pest control	500	
	Vehicle registration	600	
	Repairs and Maintenance – Plant	1,500	
	Repairs and Maintenance – Improvement	1,000	
	Insurance	400	
	Accountant	400	
	Telephone	500	
			8,400
2.3.2	Non cash – depreciation		
	Vehicles – $20,000 at 15%	3,000	
	Plant – $20,000 at 10%	2,000	
	Improvements and Structures – $40,000 at 3%	1,200	
			6,200
	Total Fixed Costs		**14,600**
2.4	Whole Farm Gross Margin and Profitability		
	Gross farm income	45,033	
	Less variable costs	20,328	
	Gross margin		**24,705**
	Less overhead costs	14,600	
	Net farm income		**10,105**
	Less allowance for operator	10,000	
	Return to capital and management		**NIL**
	Percentage return to capital and management		**NIL**
3.	**Schedule of Values**		
	500 ha at $370/ha (includes house and improvements)		185,000
	Utility	5,000	
	Bike	1,000	
	Tractor + Plant	30,000	
			36,000
Livestock			
	695 ewes at $19	13,200	
	17 rams at $100	1,700	
			14,900
	Total		**235,900**

Appendix 2

N.S.W. Department of Agriculture: Policy on the Protection of Agricultural Land

Rising world populations are placing additional demands for food and fibre on the agricultural lands of the world. Agricultural output over the next 20 years will be required to grow by over 50% to meet the food and fibre needs of this population growth. Urban and industrial expansion, erosion, salinisation and other forms of land degradation are increasingly alienating and depleting agricultural land resources.

Australian Agricultural Council, in adopting its National Agricultural Objectives, stated that agricultural policies should be directed at among other things conserving natural resources to maintain their long term productive capacity for the community as a whole.

New South Wales as Australia's most important agricultural producing State must maintain its ability to produce food and fibre not only for the nation's resident population but also through exports for populations in the rest of the world.

Agricultural land is vital for this purpose and the Department of Agriculture recognises that such land with a high suitability for production is a limited resource in N.S.W. and that the continued alienation of good agricultural land is undesirable for the future well-being of the State's rural and urban citizens.

The Department clearly states that its policy is to support the retention of good agricultural land for commercial food and fibre production. Such agricultural land is defined as being Classes 1, 2 and 3, as described in the Rural Land Evaluation Manual, plus special purpose lands as defined by the Department of Agriculture.

The Department acknowledges that the basic unit of production in Australian agriculture will remain the family owned farm for the foreseeable future and land use policy should support and strengthen this structure.

The concept of a holding size capable of supporting efficient sustainable production in the long term should remain the cornerstone of land use planning policy decisions.

It is recognised that a uniform minimum subdivision policy, applied on a statewide basis, is arbitrary and often counterproductive to the protection of agricultural land. More appropriate subdivision sizes should be determined for a local government area or region. The primary determinants should be:

(a) productivity and suitability of the land in question
(b) structure and nature of agricultural industries in the area being considered.

The Department of Agriculture is committed to the planning principles contained in the Environmental Planning and Assessment Act of 1979 and will assist local government departments and other authorities by providing land suitability mapping studies of the agricultural land classes and other information. This will be achieved by bringing together teams of specialist officers who will assemble relevant biophysical and economic data. Advice on general planning policy and development proposals for agricultural land will also be provided.

While it is recognised that there is a legitimate demand for rural residential and similar holdings, such developments will be encouraged in areas with land of lower agricultural quality providing all other planning considerations are also met.

Alternative proposals for land tenure and new approaches to rural living concepts will be studied and assessed.

The Department will work to increase community awareness of the social, economic and environmental consequences that occur when good agricultural land is alienated from production. It will support local government policies which prevent infrastructure costs of rural residential and similar developments being passed on to the rest of the rural community.

The Department is the determining authority where a land owner objects to mining on his property to ascertain whether the subject land is agricultural land as defined under the Mining Act.

Where agricultural land has been disturbed by extractive industry, the Department will work closely with other authorities such as the Soil Conservation Service of New South Wales to ensure that the land is suitably restored to its former or improved productivity.

The Department of Agriculture will research and promote the adoption of farm management practices which are compatible with sustainable agricultural production, maintenance of the resources and protection of the environment.

The Department will act in cooperation with others to arrest the decline in tree cover in rural New South Wales. It will actively promote through its network of advisory officers and in cooperation with other state departments and authorities, the variable and multi-faceted use of trees on farms.

The Department supports the system of environment impact assessment to ensure that a development will be beneficial to, compatible with, or have minimal effect on the rural industries. Advice will be given to planning authorities during the preparation of environmental impact statements as well as at the assessment stage.