

**Rural subdivision for horticulture
Lot 2 Gingin Brook Road, Gingin**

Talwyn Pty Ltd

**Report and recommendations of the
Environmental Protection Authority**

**Environmental Protection Authority
Bulletin 514
April 1991**

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1. Introduction

The Environmental Protection Authority has assessed a proposal by Talwyn Pty Ltd for the amalgamation and re-subdivision of 1526 hectares of land for the purpose of horticultural development in the southern sector of the property.

The creation of the proposed lots and subsequent use for horticulture would involve the application of substantial quantities of nutrients and water to the soils of the coastal plain catchment of the Moore River. The Moore River Estuary is nutrient enriched at present, and it is important that land use planning within its catchment is undertaken in a sensitive manner to ensure the River and the local community do not experience the same intractable environmental, recreational and social problems that have resulted in the Peel-Harvey Estuary.

The proposal for subdivision of Lot 2 Gingin Brook Road Gingin was referred to the Environmental Protection Authority by the Department of Planning and Urban Development. In recognition of the environmental concerns regarding the Moore River, the Authority determined that the proposal should be assessed at the level of Consultative Environmental Review (CER).

2. Proposal

The land, known as the Glencoe property, is located within the Shire of Gingin approximately 16 kilometres west of Gingin on the Gingin Brook Road and totals 1526 hectares of Rural zoned land (Figure 1). The property comprises 12 separate locations ranging in size from approximately 16 hectares to 1103 hectares.

While three of the existing southern locations have gazetted and constructed road frontage, the balance of the locations do not have frontage to a dedicated road system. Also, the proponent considers the seven locations in the north eastern sector are not ideally suited for more intensive agricultural or horticultural purposes.

The proposed amalgamation and re-subdivision seeks to relocate the boundaries so that eleven smaller lots for intensive agriculture would be located in the south west of the site which is serviced by roads, and considered by the proponent to contain soils suited for intensive horticultural purposes, and one lot for broadacre farming (Figure 2). The proposed southern lots have been designed to provide 8 to 10 hectares of irrigated crop land, and would be marketed and sold for horticultural use.

3. Existing environment

Like the Peel-Harvey Estuary, the Moore River Estuary and catchment system is located on the Swan Coastal Plain. As with many water bodies in this region, the Moore River system currently contains significant quantities of both nitrogen and phosphorus, resulting from a number of circumstances on the Coastal Plain including:

- extensive clearing of native vegetation (65-80%);
- agricultural development, and therefore fertiliser use, has been continuous and extensive along the Coastal Plain;
- soils along the Coastal Plain are valued for intensive horticulture;

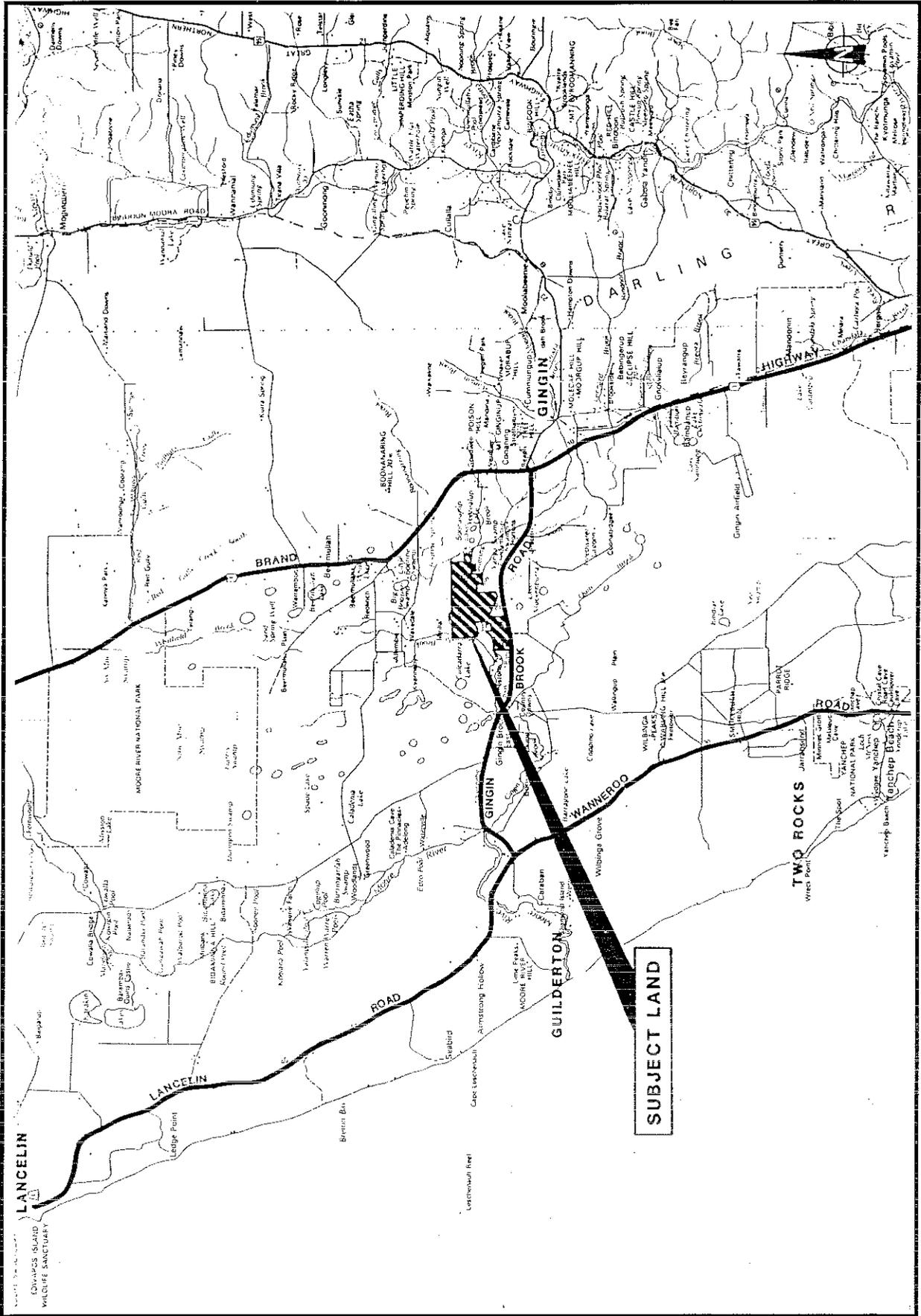


Figure 1. Location plan.

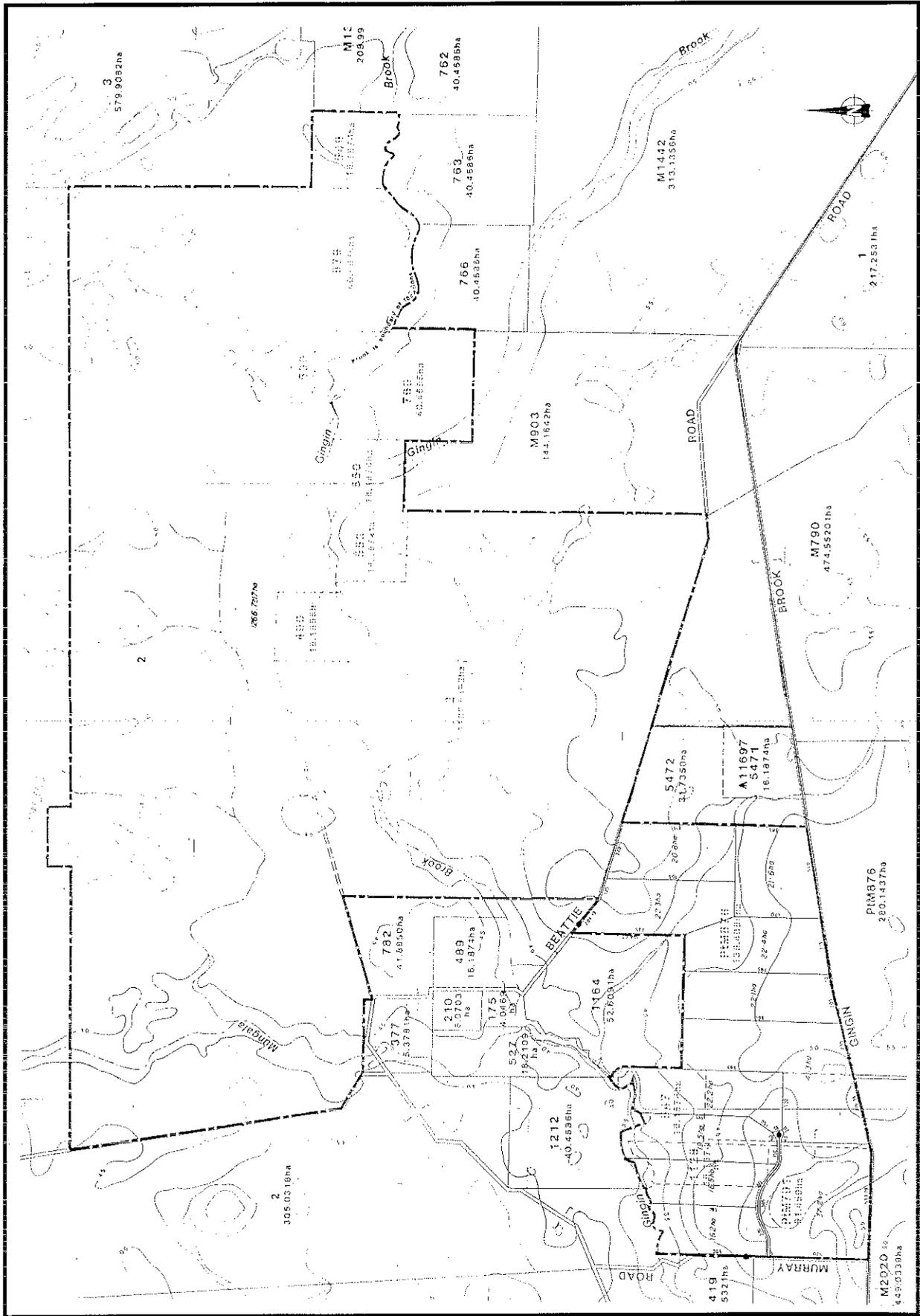


Figure 2. Proposed subdivision design.

- the soils of the Coastal Plain are sandy and have only low potential for adsorbing mineral nutrients; and
- urban and residential development is concentrated on the Coastal Plain.

At present the Moore River is nutrient enriched. However, the large algal blooms experienced in the Peel-Harvey Estuary have not occurred as the waterbody contains large quantities of tannin, a substance which stains the water and reduces light penetration to bottom growing (benthic) algae. Nutrient concentrations in the Moore River have been measured by Bott and Maling (1989) and found to be similar to the catchment concentrations in the Peel-Harvey system. The nitrogen:phosphorus ratios measured in the Moore River Estuary are considered optimal for phytoplankton growth. As phytoplankton is suspended in the water column it is not limited by light (Bott and Maling, 1989). Under suitable environmental conditions these waterbodies can alter rapidly and suspended algae (phytoplankton) can proliferate.

It has been demonstrated that the current proportions of mineral nutrients in the Moore River suit the proliferation of phytoplankton. Furthermore it is estimated that over the next 5-10 years nutrient loadings and proportions flowing into the River and Estuary will increase. As the nutrient load increases, so do the opportunities for massive algal blooms. In the Peel-Harvey estuarine system this excessive algal growth has greatly reduced the estuary's recreational, environmental, social and economic value.

In regard to the Glencoe property, Gingin Brook, a tributary of the Moore River, traverses the land, running from the north east to the south west. The soils vary from Bassendean sands in the southern portion, to Yanga sands in the north, and Moore sands along Gingin Brook. Also, the property is located within the Gingin Groundwater Area where there is a need to obtain a groundwater licence from the Water Authority of WA before a bore or well can be constructed.

4. Environmental impacts

An increasing population and an expanding export market have caused rapid growth in the Western Australian horticultural industry. This growth is expected to continue, with some 9000 hectares of additional land required to meet these demands by 2011. According to a report by the Western Australian Department of Agriculture (Gallagher, 1986) approximately 6000 hectares of this would be required on the Swan Coastal Plain, which currently provides some 90% of the State's horticultural land.

Careful planning is required to ensure that the needs of the horticultural industry and other forms of irrigated agriculture for land and groundwater are not met at the expense of the many other competing demands for land on the Swan Coastal plain. To this end the Water Authority of WA and the Western Australian Department of Agriculture have assessed the availability of land and water for horticultural purposes on the Swan Coastal plain. That assessment has shown that a limiting resource for the expansion of this industry is the underground water supply. The Environmental Protection Authority advises those contemplating irrigated agriculture to consult those two agencies before purchasing land for that purpose.

However, the suitability of land for irrigated agricultural activities is not only determined by the availability of water and land. Careful consideration must also be given to the suitability of the land for irrigated agriculture, having regard for planning and environmental constraints. Some of the constraints which need to be considered include System Six and conservation reserves,

buffer zones around wetlands, rivers and estuaries, remnant vegetation, buffers around public water supply bores, depth to groundwater and groundwater movement, existing infrastructure, and capability of the soil to support horticulture and retain water and nutrients.

The work being undertaken by various state and local government agencies on the strategic planning for horticulture on the Coastal Plain is almost complete. The strategic plans will ensure that the most suitable land for horticulture with the least environmental impact is selected for development, and land on which alternative technology to conventional sprinkler irrigated horticulture would be required is identified. The Shire of Gingin is also preparing a Horticultural Policy to ensure that planners and developers will have the information that they require regarding water availability and environmental acceptability, in order that land can be subdivided and/or developed for horticulture, and appropriate land use controls and management provisions introduced.

5. Consultation

The Environmental Protection Authority received comments on the proposal from the Department of Planning and Urban Development, the Water Authority of WA and the Shire of Gingin.

6. Environmental assessment

In regard to the current subdivision proposal, the Environmental Protection Authority is primarily concerned with the subsequent landuse of the southern lots for horticulture.

The Authority has assessed the proposal on the basis of:

- the information provided by the proponent;
- the Authority's knowledge of current horticultural practice and its environmental effects, and the information compiled to date for the draft Swan Coastal Plain Horticultural Policy; and
- the Authority's knowledge of the current status of the Moore River and associated catchments.

The soils in the southern sector of the Glencoe property, whilst 'capable' of supporting conventional irrigated horticulture, are not considered 'suitable' for this purpose given the well established knowledge of the poor water and nutrient retention properties of the soils, and the proximity of Gingin Brook. In fact, conventional passive farming practices on similar soils have led to the degradation of waterbodies in other areas.

Accordingly, the Authority considers that conventional sprinkler irrigated horticulture on the proposed eleven lots in the southern sector of the property would result in an unacceptable increase in nutrient load to the Moore River.

Further, the Environmental Protection Authority has been advised by the Water Authority of WA that it has given no commitment concerning the availability of groundwater. Approximately 700 000kL of groundwater from the shallow superficial formation aquifer is available in the area for the development of horticultural projects, and until groundwater is allocated (via licensing), that water is generally available.

The Authority therefore recommends that, if the subdivision is to proceed, prospective purchasers should be advised of the requirements associated with horticultural development on the land. Specifically, prospective purchasers should be advised that alternative horticulture technology, satisfactory to the Department of Agriculture, must be used, and that the availability of groundwater will be determined by the the Water Authority of WA.

The proponent has prepared draft guidelines for prospective purchasers discussing pre-purchase investigations and consultations which should be undertaken regarding water availability, land use restrictions and environmental issues (Appendix 1). The proponent has also given a commitment to ensure that prospective purchasers would, in the transfer of lots, acknowledge in writing that they are aware that the lots are located in an area where the ability to carry out horticultural pursuits is subject to the appropriate approvals being gained from the Environmental Protection Authority, Water Authority of WA and the Shire of Gingin.

Recommendation 1

The Environmental Protection Authority has concluded that the proposal, as described in the documentation submitted by the proponent, for subdivision of Lot 2 Gingin Brook Road is environmentally acceptable providing conventional irrigated horticulture does not occur on the proposed lots, and recommends that it could proceed subject to the Authority's recommendations in this Assessment Report.

Recommendation 2

The Environmental Protection Authority recommends that, prior to subdivision approval being granted, the proponent finalises guidelines for prospective purchasers, to the satisfaction of the Department of Agriculture, Water Authority of WA, Shire of Gingin and Environmental Protection Authority.

Recommendation 3

The Environmental Protection Authority recommends arrangements are made by the proponent satisfactory to the local authority to ensure that prospective purchasers of the proposed lots are:

- advised that conventional sprinkler irrigated horticulture would not be acceptable on the land; and**
- provided with the guidelines discussed in Recommendation 1.**

Recommendation 4

The Environmental Protection Authority recommends that, prior to a groundwater licence being issued by the Water Authority of WA for any of the proposed lots, a nutrient and irrigation management programme is prepared for development of the lot, to the satisfaction of the Water Authority of WA on advice from the Department of Agriculture.

Recommendation 5

The Environmental Protection Authority recommends that a foreshore reserve 20 metres each side of the centre line of Gingin Brook is ceded free of cost to the Crown as a condition of subdivision.

As discussed previously, strategic planning for horticulture on the Coastal Plain is nearly completed. It is the Authority's view that the results of this work should be considered by the relevant local authorities with a view to developing local policies and/or strategies which address the issue of horticulture, and reflecting these in the town planning schemes. In so doing, clear guidance to developers and planners could be provided, the necessary land use controls could be introduced, and the intractable environmental, recreational and social problems that have resulted elsewhere on the Coastal Plain could be avoided.

7. References

- Bott, G. and Maling, C. (1989). Moore River Estuary - Water Quality and Catchment Status. In proceedings of "Soils and Land Use in the Gingin Region", Australian Society of Soil Science (Inc) WA Branch.
- Gallagher, J, Eckersley, P and Brennan, D (1986). The future demand, value and transfer methods of irrigation water. Publication by Marketing and Economics Branch, Western Australian Department of Agriculture.

Appendix 1

Draft

**Interim Horticultural Developers Guidelines to prospective
purchasers**

Glencoe Rural Lots, Gingin Brook Road West Gingin

Talwyn Pty Ltd

The Glencoe rural lots are centrally located within an area being successfully developed to a diverse range of horticultural crops - vegetables, flowers (wildflowers/exotics), fruit and nut trees. It is expected the area's considerable potential for future horticultural development will make the lots attractive to prospective investors for this purpose.

The Developer advises however that it will be necessary for prospective investors to undertake a pre-purchase study of the requirements or conditions relevant Authorities have placed or may place on development of the lots to horticulture. The lots should also be carefully studied for suitability to practise conventional horticulture and/or the new advanced techniques of production.

The Studies should consider:

The requirements for abstraction and use of groundwater, the drawing of water from permanent surface flows, and/or construction of catchment and storage systems.

Land use restrictions contained in the terms of Shire zoning.

Environmental issues relating to land use.

Topographic suitability for conventional open field cropping and/or adoption of modified environment enclosures and/or soil-less production techniques.

Climatic suitability of the area for the crops being considered.

Suitability of soils for crops being considered.

The Developer (or agent) can advise prospective purchasers of the Authorities that should be consulted and the nature of the enquiries that should be made to ensure the selected lot (lots) will be allowed to be used for the purpose intended by the purchaser.

It may be necessary for interested investors to have pre-purchase consultations with:

- The Water Authority of WA (Northam)
- Shire of Gingin
- Environmental Protection Authority
- State Energy Commission of WA
- Horticultural consultants and/or Department of Agriculture

The Developer advises that the Glencoe lots fall within the Water Authority's Gingin Groundwater licence area controlled from Northam. All prospective users of groundwater are required to apply for a licence to do so. The groundwater licence application for horticultural purposes requires the annual irrigation demands of the crops proposed to be grown to be quantified. Evaporation tables for the area and direction of the irrigation 'season' are used for this purpose. This information can be obtained from the Department of Agriculture, Horticultural and/or Irrigation Consultants.

The Water Authority advises that applications for the use of groundwater are referred to the EPA for environmental assessment. For this reason, it is recommended that description of the proposed horticultural operation be submitted with the water application.

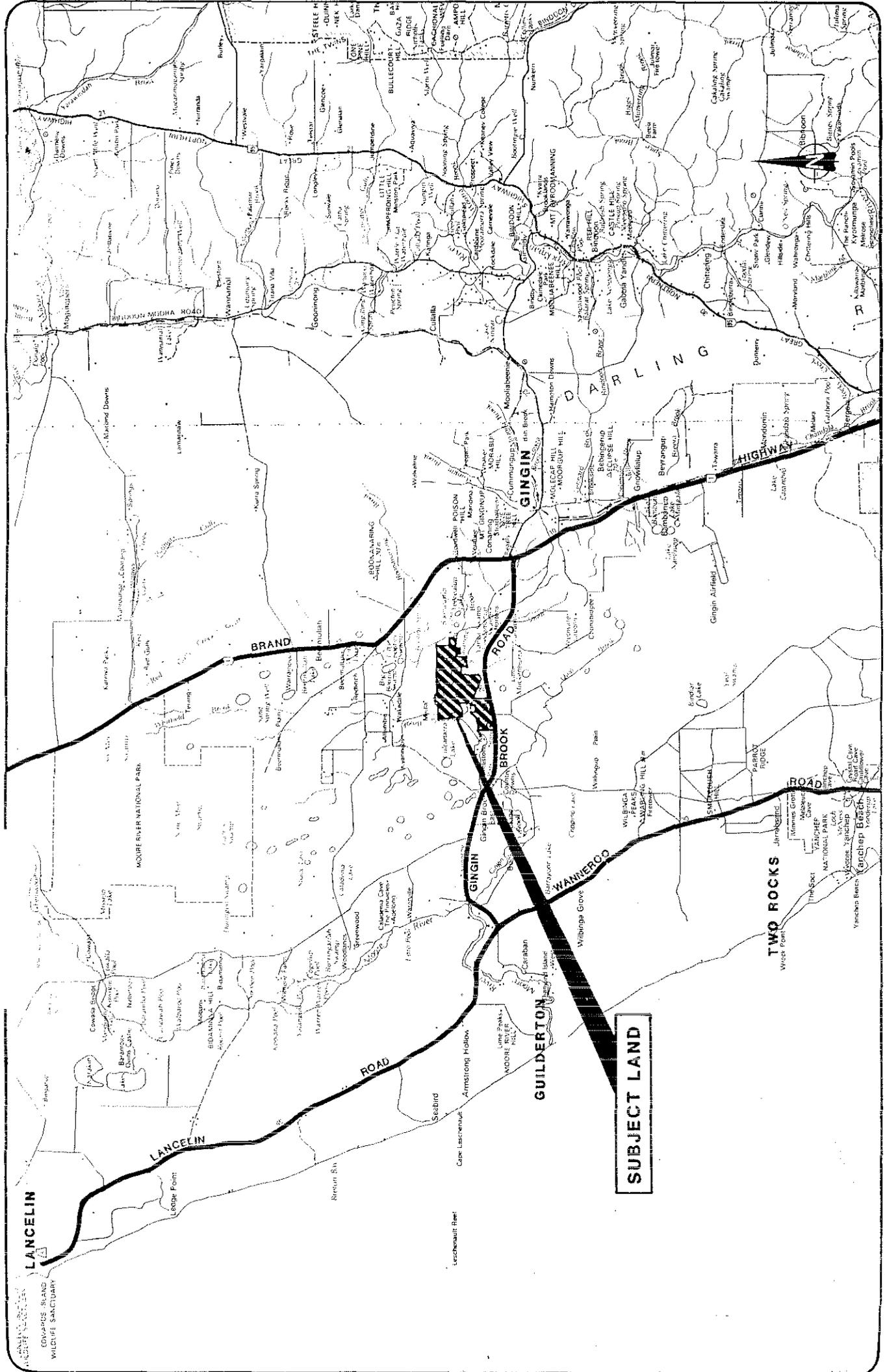
In order to facilitate a thorough environmental assessment, the proposed horticultural development submission should describe:

The crop types - vegetable, flowers
(wildflowers and/or exotics) fruit and/or nut trees, essential oil,
fodder, etc

- | | |
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| The production technique being employed | <ul style="list-style-type: none"> - open field - modified environment enclosure - soil-less (hydroponic) ground level or above ground |
| The irrigation system | <ul style="list-style-type: none"> - pivot, linear or reel type travelling irrigators - overhead knockers or butterflies - driplines or tapes - micro sprinklers - hydroponic (NFT, flood and drain, flow to waste, recirculation) - nutrient disposal procedures |
| The fertilisation system | <ul style="list-style-type: none"> - machine or manual broadcast - liquid injected (spray or drip) - foliar spray - monitoring control and recording |
| The fertilisers | <ul style="list-style-type: none"> - granular and/or liquid - NPK compositions - slow release - organic manures - soil conditioning byproducts or wastes |
| The chemicals | <ul style="list-style-type: none"> - This information should be in general terms itemising the recognised chemicals, procedures and practices commonly used to control or eradicate pests and diseases of the crops proposed to be grown. |

It is the considered opinion of the developer that submission of the information as recommended should lead to a balanced environmental assessment of the horticultural development proposed for the lot.

4 January 1991



PROPOSED BOUNDARY RATIONALISATION
 AMALGAMATION AND RESUBDIVISION
 GLENCOE PROPERTY

PLAN 1
 LOCATION PLAN
 Scale 1:25,000 Date 3.5.80

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ISSN: 1030-0120
ISBN: 0 7309 3445 4