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Second Sydney airport site selection programme :
environmental impact assessment

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AB019344

Second Sydney Airport Site Selection Programme

ENVIRONMENTAL GEOLOGY SECTION
GEOLOGICAL SURVEY OF N.S.W.

NSW DEPARTMENT OF
MINERALS AND ENERGY

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GEOLOGICAL SURVEY OF N.S.W.

DEPARTMENT OF ENVIRONMENT AND PLANNING
SYDNEY 1985

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FOREWORD

This report has been prepared in accordance with an agreement between the N.S.W. Minister for Planning and Environment and the Commonwealth Minister for Arts, Heritage and Environment for the independent environmental assessment of projects involving both New South Wales and the Commonwealth Government. The project which is the subject of this report is the Site Selection Programme for a Second Sydney Airport.

The report does not address those aspects of the Draft Environmental Impact Statement that relate to airport operations (e.g. meteorological conditions, airspace arrangements, planning and installation of facilities). The Department accepts that these aspects have been addressed in the short-listing process and that they fall into the area of technical expertise and responsibility of the Commonwealth Department of Aviation.

The report represents the views of the Department of Environment and Planning on the contents of the Draft Environmental Impact Statement prepared for this Programme and concludes that Badgerys Creek is the superior site. In making its assessment, the Department has taken into account the advice of the New South Wales Government Authorities and the views of the public who have made submissions in respect of the Draft Environmental Impact Statement.

R. B. SMYTH,
Director of Environment and Planning

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1. INTRODUCTION

On 11 April 1983 the Prime Minister wrote to the Premier of New South Wales stating that the resolution of Sydney's airport needs, in a manner which is environmentally acceptable, is a high priority in the Commonwealth Government's aviation policy. Mr. Hawke said that past studies have shown that a site must be found for a second major airport for Sydney, but that a final decision on the site can not be made unilaterally by the Commonwealth Government.

On 27 September 1983 the Commonwealth Minister for Aviation and the New South Wales Minister for Planning and Environment announced that they had agreed on a programme which would lead to the selection and acquisition of a second airport site for Sydney. The programme would examine all suitable sites, including those considered during the Major Airport Needs of Sydney (MANS) study.

The joint statement by the two Ministers stated that the decision would be made in accordance with all the requirements of the Commonwealth Environment Protection (Impact of Proposals) Act. A Draft Environmental Impact Statement would be prepared for the most suitable sites short-listed, following an exhaustive evaluation of all feasible alternative sites.

The second airport proposal comes within the scope of an agreement between the Commonwealth Minister for Arts, Heritage and Environment and the N.S.W. Minister for Planning and Environment concerning procedural guidelines for environmental assessment involving the Commonwealth and New South Wales.

In broad terms, the provisions of this agreement require:

- (i) consultation between the Commonwealth Department of Arts, Heritage and Environment and the N.S.W. Department of Environment and Planning with a view to reaching agreement on the information required in a Draft EIS;
- (ii) the Draft EIS being made public in accordance with the specific requirements of each Department;
- (iii) exchange of written comments received on the Draft EIS;
- (iv) consultation with respect to any inquiry contemplated;
- (v) independent assessment and preparation of reports to Ministers by the two Departments but with appropriate consultation; and

(vi) reference to Ministers where the Departments are unable to reach agreement.

The first provision was met by reaching agreement on the guidelines for the preparation of the Draft EIS as included in Appendix A of the Draft EIS.

The second and third provisions have been met by the Departments' arrangements for exhibition of the Draft EIS and subsequent exchange of submissions.

This assessment report prepared by the Department of Environment and Planning fulfils provision five as it related to this Department.

In addition to the information contained in the Draft EIS, this report considers the submissions by the public and advice received from N.S.W. Government Authorities.

Chapters 2 and 3 of this report explain why it is considered that Sydney needs a second airport rather than expanding Kingsford Smith Airport (KSA), and how Wilton and Badgerys Creek were selected as the preferred sites.

Chapter 4 provides a brief description of the airport proposals at both sites.

Chapter 5 summarises the main issues apparent from the public submissions received. Public comments on specific factors are incorporated into Chapters 6 and 7.

Chapters 6 and 7 address biophysical and socio-economic factors respectively. The impact of each factor on both sites is assessed and any views expressed by the public and N.S.W. Government Authorities in regard to a particular factor are referred to, and commented upon. Finally the relative impact of each factor is compared between the sites to determine which site is a better location for airport development with regard to each particular factor.

Chapter 8 similarly compares the two sites in terms of a range of planning considerations relevant to the future growth of Sydney, and particularly its south-western areas.

Chapter 9 then compares both sites on the basis of all of the factors used in Chapters 6, 7 and 8.

Based on the comparisons in Chapter 9, Chapter 10 concludes which site is the preferred site and identifies a number of actions required to mitigate adverse effects which would result from the selection of either Wilton or Badgerys Creek for airport development.

In arriving at a preferred site the report considers the views of all parties but, in the final analysis, some factors were considered to carry greater weight and the reasons for this are given.

The report does not consider aspects of airport operation. It is accepted that, as part of the short-listing process, it has been shown that both the Wilton and Badgerys Creek sites experience meteorological conditions, and have a suitability from an engineering point of view, that permits the development and safe operation of an airport. In addition this Department accepts that the necessary changes to existing airspace arrangements can be accommodated at both sites.

The Department of Environment and Planning has therefore reached a conclusion based on environmental and planning grounds. Whether one of the sites is more suitable than the other from an operational point of view is a matter for the Department of Aviation, whose technical expertise and area of responsibility covers these matters, to resolve.

2. THE NEED FOR A SECOND SYDNEY AIRPORT

In the 16 years since 1969 there have been four major studies which have examined the need for a new major airport to serve the Sydney Region. The Draft Environmental Impact Statement which is the subject of this assessment is the result of the fourth such study, the Second Sydney Airport Site Selection Programme. This is the first study which considers the environmental impacts of the proposed sites in sufficient detail to allow publication of an Environmental Impact Statement.

Chapter 3 of the Draft EIS outlines the history of the earlier studies which considered over 100 possible sites for a second Sydney airport. The most recent of the previous studies, the Major Airport Needs of Sydney (MANS) Study (1976-79), identified four zones in the Sydney Region where it might be feasible to build a major airport. Sites in two of these zones, Badgerys Creek in the south-western zone and Scheyville in the northern zone, were short-listed by the Commonwealth-State Committee directing the Study.

In late 1979, the Commonwealth members of the MANS Committee submitted a report to the Commonwealth Minister for Transport. The State members, however, refused to endorse the report because they considered that the work done on environmental issues and surface access was incomplete.

Although the State and Commonwealth members of the MANS Committee could not agree whether the expansion of Kingsford Smith Airport (KSA) was justified, there was consensus on the need to reserve a site for a curfew-free second major airport. The disagreement between the Commonwealth and State regarding a second airport centred on matters of detail such as the time at which the airport should be developed and the method of reserving the site.

The issue of reserving the second airport site has subsequently been resolved by the Minister for Aviation's statement that acquisition of the site would commence as soon as the site decision is made. The timing of development of the second airport is not an issue in the Draft EIS because the purpose of the current study is only to select a site.

2.1 The need for increased runway capacity

The Department of Aviation's current forecasts of air passenger movements and aircraft movements at KSA are given in Chapter 1 of the Draft EIS. The range of assumptions on which the forecasts are based are reasonable, given the long term trends in population, income and air fares in Australia.

The median forecast for air passenger movements predicts an annual increase of 2.79% between 1985 and 2010. This is much lower than the growth of 4.7% per annum between 1970 and

1984, a period which included two complete cycles of growth and stagnation in the aviation industry.

The low forecast for air passenger movements predicts an annual growth rate of 1.64%. For traffic growth to fall below this level throughout the forecast period would require little or no growth in real incomes, a population growth rate well below 1% per annum and air fares to increase at more than 2% per annum between 1985 and 2010. It would be extremely foolhardy to plan on the basis of such a pessimistic set of assumptions, leaving no scope for a change of plan if the forecast turns out to be too low.

The Department of Aviation's forecasts of aircraft movements are derived from the passenger forecasts by applying a set of assumptions about aircraft load factors and the capacity of different aircraft types. These assumptions are reasonable, given the range of aircraft in production or being developed at present. Since aircraft have a life of at least 10-15 years and production runs of up to 10 years, it can be expected that the aircraft types coming into production in the mid-1980's will still be in operation during the first decade of the 21st century.

The median forecast for aircraft movements at KSA predicts an annual increase of about 2%, which would result in about 200,000 annual movements in 1990. Even at the low growth rate in aircraft movements of less than 1%, the 200,000 threshold would be crossed between 2000 and 2005.

The Draft EIS estimates that KSA has a capacity of about 200,000 annual aircraft movements if the current aircraft mix, profile of daily aircraft movements and operating procedures are continued. The Department of Aviation bases its capacity estimate on a maximum tolerable average delay of 4 minutes per aircraft throughout the day. Since this level of congestion implies 6% of aircraft would be delayed for over 15 minutes and 1.5% of aircraft would be delayed for over 30 minutes, it is reasonable to use this minimum level of service in estimating the maximum runway capacity of KSA.

The Draft EIS concludes that the runway capacity of KSA will be exceeded sometime between 1988 and 2000, although some minor increase in capacity could be achieved by changes in operating procedures aircraft mix or the daily profile of aircraft movements.

Any of these measures aimed at a minor increase in KSA runway capacity would disadvantage a large number of people:-

- (i) Aircraft operators have argued that KSA capacity could be increased by a change in the noise abatement procedures or a reduction in the curfew hours. Although such a capacity increase is possible it would exacerbate the noise impacts on

aircraft noise around KSA. In its submission to the Aircraft Noise Inquiry* on behalf of the New South Wales Government, the Department of Environment and Planning said, "No air traffic management measures should be taken at KSA which would have adverse environmental impact. The curfew must be maintained and noise abatement measures must not be reduced."

- (ii) It has been suggested that smaller and/or slower aircraft should be excluded from KSA either in the peak hour or throughout the day. (This could be achieved by regulation or by congestion pricing.) The displaced aircraft would be relocated to a local aerodrome, possibly Bankstown.

To achieve a significant increase in KSA capacity commuter aircraft would have to be excluded. This would amount to dedication of Bankstown as a limited purpose second Sydney airport, causing unacceptable impacts on the large number of nearby residents. Furthermore, the New South Wales Government has indicated the need for regular country services to remain at KSA to ensure NSW country residents are not disadvantaged by significant increases in their total travel time.

2.2 Provision of an additional runway at KSA

The earlier studies discussed in Chapter 3 of the Draft EIS investigated the possibility of increasing runway capacity at KSA by constructing an additional runway parallel to the existing north/south runway. The State members of the MANS Committee concluded that KSA should not be expanded for the following reasons:-

- (i) Three out of four approach or take-off paths at KSA are over densely built-up areas. If KSA were expanded, then in the event of an aircraft accident the risks for passengers as well as residents would be increased by the limited KSA site and its built-up approaches.
- (ii) Expansion of KSA in Botany Bay would have a severe adverse impact on the hydrological character of the Bay. Reclamation and dredging would result in severe foreshore and beach erosion and damage to marine life.

*Inquiry into Aircraft Noise by the House of Representatives Standing Committee on Conservation and the Environment.

- (iii) Expansion of KSA would take at least as long as construction of a new major airport because of the complexity of expanding an existing airport while it is operating and because of the need to build new terminals, roads and sewers before a new runway could be completed.
- (iv) Expansion on the eastern side of KSA would restrict any further development of the north side of Botany Bay for port purposes. The only practical alternative for port expansion in the Sydney Region would then be the southern shore of the Bay, resulting in massive and unacceptable damage to the environment.
- (v) While KSA is located close to the Sydney CBD, it is not close to Parramatta, the future geographic centre of the Sydney Region. Its location is not convenient for the residents of the growing outer suburbs.
- (vi) Even without additional runway capacity at KSA, major road improvements would be required to cope with increased traffic at KSA in the longer term, if it remained as the sole major airport.
- (vii) Expansion of KSA would not only require a major roadworks program but would also cause increased vehicle emissions in the surrounding suburbs.
- (viii) The present noise impact of jet aircraft using KSA is seriously affecting the lives of tens of thousands of people in the Sydney Region. It is critical that noise reductions achieved by the phasing out of older, noisier aircraft should not be offset by the increase in aircraft movements which would result from KSA expansion.

The MANS Study relied on overseas research on the correlation between aircraft noise exposure indices and community annoyance. Subsequently, the National Acoustic Laboratories (NAL) undertook a social survey in 1980 to obtain Australian data on the magnitude of unrest and disturbance attributable to aircraft noise.

The NAL Report gives estimates of the number of residents around each airport who are seriously or moderately affected by aircraft noise. It concludes that the aircraft noise problem in Sydney is far worse than anywhere else in Australia, with 78,800 people "seriously affected" and 231,300 people "moderately affected".

The submission by the Department of Environment and Planning to the Aircraft Noise Inquiry compared the NAL findings with the MANS Study findings regarding the noise impacts of KSA.

The NAL Report shows that the number of people around KSA seriously affected by aircraft noise is over 3 times the corresponding MANS estimate and the number moderately affected is over 5 times the corresponding MANS estimate.

The NAL findings justify the concern shown by the State members of the MANS Committee regarding the inadequacy of the MANS Study findings on environmental issues.

On the basis of the NAL findings regarding the noise impacts of KSA, the Department of Environment and Planning recommended to the Aircraft Noise Inquiry that no additional runways should be built at KSA. The submission proposed that only minimal extra facilities should be provided for short-term use within the existing boundaries of the airport.

Furthermore, the Draft EIS points out that although a close spaced parallel runway at KSA would raise the capacity to 240,000 annual aircraft movements, this would only defer the need for a major increase in runway capacity in the Sydney Region. The New South Wales Government has questioned in correspondence with the previous Federal Government, the economics of spending money on KSA expansion if it would still be necessary to develop a second airport subsequently.

In any event the development of a close-spaced parallel runway at KSA would only defer the need for a new major airport. The following section discusses the reasons for reserving a site as soon as possible.

2.3 The need to reserve a second airport site

Section 1.5 of the Draft EIS discusses the Department of Environment and Planning's population projections for the next 25 years and the constraints on long term metropolitan planning in the Sydney Region. The Department of Environment and Planning uses three time frames for metropolitan planning:

- (i) the five year Urban Development Program for urban release areas;
- (ii) Regional Environmental Studies and Plans for areas to be developed in the medium term, i.e. by 2000;
- (iii) the Metropolitan Strategy for the Sydney Region for the next 25-30 years.

The Urban Development Program now includes all the release areas proposed in the 1968 Sydney Region Outline Plan, except for the North West Sector which required more detailed investigation. A Regional Environmental Study (RES) for the North West Sector was completed in 1984 and a Regional Environmental Plan (REP) is now being prepared. A Regional Environmental Study is now being undertaken for the Macarthur Sub-region.

The Regional Environmental Plans for these two sub-regions will identify the release areas to be included in the Urban Development Program in the next 5-10 years and the likely sequence of servicing for the next 10-15 years. These REPs will provide the framework for government and private sector investment decisions regarding urban development into the next century.

The RES for the North West Sector included the noise contour for the Scheyville airport site as a constraint on future urban development. If Scheyville had been included in the short-list for the Second Sydney Airport Site Selection Programme, then the REP under preparation for the North West Sector would have had to exclude from future urban areas large areas which would be potentially affected by aircraft noise.

A latter section of this report discusses the provisions for potentially noise-affected areas and transport corridors which will be included in the Macarthur REP if Badgerys Creek is selected as the second airport site. Similarly if the original airport layout was under consideration for Wilton, the Macarthur REP would have to include major constraints on future urban development in the area between Douglas Park and Wilton which would be potentially affected by aircraft noise.

From these examples it is clear that if a decision on a second Sydney airport site is not taken soon, then the Department of Environment and Planning will face a major dilemma in preparing these two major Regional Environmental Plans. Either the Department sterilises many of the second airport options by ignoring their potential noise impacts in identifying future urban areas or it excludes from future urban areas large tracts of land with urban potential because they might be affected by one of 5 or 6 airport options.

To sum up, the metropolitan planning process for the Sydney Region is at a crucial stage. If a second airport site decision is not taken soon, there will be additional major costs to the community either in the urban development process or in airport development and operations.

2.4 Conclusion

The information provided in the Draft EIS supports the views previously expressed by the New South Wales Government regarding expansion of Kingsford Smith Airport and the need to develop a second Sydney airport. These views were summarised in the submission by the Department of Environment and Planning to the Aircraft Noise Inquiry:-

(a) Kingsford Smith Airport (KSA)

- (i) No additional runways should be built at Kingsford Smith Airport (KSA). Only minimal extra facilities should be provided for short-term use within the existing boundaries of the airport.

(ii) Steps should be taken to mitigate present and future environmental conflicts (particularly noise and surface access) from aviation and associated activities at KSA. In particular the anticipated benefits from the introduction of quieter aircraft should not be used to justify an expansion of activities.

(iii) No air traffic management measures should be taken at KSA which would have adverse environmental impact. The curfew must be maintained and noise abatement measures must not be reduced.

(b) A Second Sydney Airport (SSA)

(iv) A new Sydney airport should be built and brought into operation at the earliest possible date.

(v) The SSA should not be used to substantially increase passenger throughput at KSA (ie. the SSA should not be used to divert general aviation from KSA to free-up capacity there for larger aircraft).

3. SHORT-LISTING OF SITES

Chapter 3 of the Draft EIS discusses the studies which preceded the Second Sydney Airport Site Selection Programme and explains how ten sites were selected for evaluation in this study. Table 3.1 in the Draft EIS shows that all of the sites in this study except Darkes Forest and Wilton were in the "medium list" of 15 sites evaluated in the 1971-74 study.

Seven sites that were in that medium list were not considered in the present study for the following reasons:

Marsden Park	-	increased urbanisation
Rouse Hill	-	increased urbanisation
Galston	-	increased urbanisation
Prospect	-	increased urbanisation
Duffy's Forest	-	adjacent to National Park and increased urbanisation
Towra Point	-	Nature Reserve
Wattamolla	-	National Park

These sites were not considered in the MANS Study, for similar reasons, although most of them were more accessible than the 5 sites evaluated in that Study.

The five sites that were evaluated in all three studies were Londonderry*, Scheyville, Holsworthy, Bringelly and Badgerys Creek, i.e. the closer sites in the present study. The three sites that were evaluated in the 1971-74 study, excluded from the MANS study because of their distance from Sydney, then included in the present study were Warnervale, Somersby and Goulburn. (*Because of the strategic nature of the early studies some sites have changed names as studies have evolved e.g. Blue Gum Creek - Scheyville, Richmond - Londonderry, Wyong - Warnervale.)

Darkes Forest and Wilton had not been subject to detailed evaluation before the present study. The 1971-74 study considered that Holsworthy was a better site because it is closer to Sydney and the MANS Study did not consider Darkes Forest or Wilton because they could not accommodate an airport with 6 runways.

3.1 Site selection assumptions

For each of the ten sites evaluated, four conceptual airport layouts were developed. These layouts ranged from a single runway with crosswind runway to two double wide-spaced parallel runways with a pair of crosswind runways, with a land area ranging from about 1,000 ha. to 2,650 ha., respectively. The assumed mix of aircraft was dominated by general aviation for the smaller layouts whereas it was

dominated by commercial jet aircraft for the larger layouts. Consequently, the number of annual passenger movements assumed for each layout ranged from 0-11 million for the single runway to 25-45 million for the double wide-spaced parallel runways.

The guidelines for preparation of the Draft EIS required that the "worst case" be used when describing the impacts at each site. The short-listing used a worst case of 25 million passenger movements since it was considered unlikely that this level of traffic would ever be exceeded at a second airport and even the high forecast for total passenger movements in the Sydney Region in 2010 is below this level.

Chapter 2 of the Draft EIS reaches the conclusion that with the type of role envisaged for the second airport, the initial traffic levels could be 2-5 million passenger movements per annum. As a sensitivity test for the short-listing process, it was decided to use a traffic level of 5 million passengers per annum as a lower level.

The 25 million passenger level corresponds to about the maximum capacity of a wide-spaced parallel runway layout (the second largest of the four layouts) with 70% of aircraft in the commercial jet categories. The 5 million passenger level corresponds to about the mid-range of the capacity of a single runway layout with 70% of aircraft in the commuter and general aviation categories. (It is worth noting that Kingsford Smith Airport is closer to the latter option, although it is operating at over 80% of maximum capacity.)

3.2 Site selection factors

The preliminary studies in the Second Sydney Airport Site Selection Programme include a review of other site selection studies to determine a list of suitable factors for use in selecting a short-list from the ten sites. The aim of the review was to produce a list of factors which:

- (i) are mutually exclusive;
- (ii) can be measured in objective terms; and
- (iii) demonstrate an appropriate response to public concerns.

The main factors selected were environment, access, operations and cost. These factors were seen to correspond with the main groups likely to have an interest in the site selection:

- (i) individuals or communities who could be adversely or beneficially affected;
- (ii) air travellers and the airlines; and

(iii) the Commonwealth and State Governments.

Within the four main factors there were 25 sub-factors: twelve for environment, three for access, four for operations and six for capital costs. These sub-factors are listed in Table 4.4 of the Draft EIS, together with their reason for inclusion, measurement criteria and units. The list was endorsed at the start of the short-listing process by the Environment Reference Group (which comprised representatives of the Department of Environment and Planning and the Commonwealth Departments of Aviation and Arts, Heritage and Environment).

The characteristics of each site which relate to the 25 sub-factors are described in Chapter 5 of the Draft EIS.

3.3 Selection of the short-list

The short-listing process involved the following steps:

- (i) analysis of sites in relation to site selection factors and grouping of sites with similar characteristics;
- (ii) identification of sites with severe liabilities;
- (iii) identification of the superior site within each group of similar sites;
- (iv) examination of the differences between the superior sites from different groups;
- (v) sensitivity testing.

3.4 Site analysis and grouping

The ten sites were grouped as follows, after inspection of the data:

- (i) Close sites: Badgerys Creek, Bringelly, Holsworthy, Londonderry and Scheyville;
- (ii) Mid-distance sites: Darkes Forest, Somersby, Warnervale and Wilton; and
- (iii) Outlying site: Goulburn.

The location and grouping of the site are shown in Figure 1.

3.5 Sites with severe liabilities

The Draft EIS identifies those sub-factors which are likely to be regarded as "more important" than others by the major interest groups listed above. These sub-factors are:

(iii) the Commonwealth and State Governments.

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3.5 Sites with severe liabilities

The Draft EIS identifies those sub-factors which are likely to be regarded as "more important" than others by the major interest groups listed above. These sub-factors are:

- (i) acquisition of houses and consequent displacement of the resident population on the site;
- (ii) the effect of noise on people outside each site as measured by the area of noise incompatible land use within the 25 ANEF contour;
- (iii) accessibility by private car;
- (iv) airspace and meteorological considerations, which could affect safety;
- (v) the cost of site acquisition.

Three sites were assessed as having such severe liabilities on these key sub-factors that they should no longer be considered for short-listing.

Darkes Forest was eliminated because of the probability of occurrence of meteorological conditions such as wind shear, fog and turbulence, which make it an unsafe location for an airport.

Goulburn was eliminated because of its very poor ranking on all access criteria. Even with a high speed rail system, Goulburn would be no better than the mid-distance sites for public transport access and would still be far worse for car access. Furthermore, any high speed rail system serving Goulburn would pass close to Wilton, giving Wilton a dominant ranking regarding public transport access.

Holsworthy was eliminated because the topography of the site constrains the runway orientation in a direction that would cause an irresolvable airspace conflict with Bankstown Airport. This would force the relocation of the facilities and operations at Bankstown Airport. Furthermore, Holsworthy would have severe cost penalties for site acquisition and site preparation.

3.6 The closer sites

After the elimination of Holsworthy, the Draft EIS evaluates the four remaining closer sites against the 25 sub-factors. On the environmental sub-factors, Badgery's Creek was ranked well ahead of the other 3 sites. It ranked first on 7 of the 12 sub-factors including the two most significant for social impacts, displacement of residents by site acquisition and the area of existing noise-incompatible land use within the 25 ANEF contour.

On accessibility sub-factors, Badgerys Creek ranked first on the more important one, private vehicle accessibility, although Bringelly was not significantly worse on this sub-factor. Scheyville and Londonderry ranked highest on the

market potential for general aviation, but this advantage would be negated if increased use of Schofields aerodrome is permitted by the Defence Department. On public transport accessibility, Bringelly was clearly superior to the other three sites, but there is no significant difference between the three. Overall, Bringelly was the best site on accessibility criteria and Badgerys Creek was about equal to Scheyville, with Londonderry ranked last.

Although the Draft EIS states that all of the closer sites could be considered operationally equivalent, it is worth noting that Badgerys Creek ranked first or second on all operations sub-factors, whereas each of the other 3 sites ranked fourth on one of these sub-factors.

The Draft EIS estimates that Badgerys Creek and Londonderry would have similar costs, although Londonderry would have the lowest site acquisition cost. Both sites ranked well ahead of Bringelly and Scheyville, with the latter being the most costly.

Overall Badgerys Creek is considered by the Draft EIS to be the superior site in this group, principally because of its environmental and cost advantages over Scheyville and its environmental and access advantages over Londonderry. Bringelly is considered to be similar to Badgerys Creek except for its much higher social impacts and consequent higher acquisition cost.

The Department of Environment and Planning, as a member of the Environment Reference Group, concurred in the short-listing of Badgerys Creek as the best of the closer sites.

3.7 The mid-distance sites

After the elimination of Darkes Forest the Draft EIS evaluates the three remaining mid-distance sites against the 25 sub-factors. On the environmental sub-factors, Wilton ranked first on the two most significant for social impacts, displacement of residents by site acquisition and the area of existing noise-incompatible land use within the 25 ANEF contour. Somersby tended to rank high on the natural environment sub-factors whereas Wilton ranked high on the socio-economic environment sub-factors. Warnervale ranked lowest on half the environment sub-factors including the important land use compatibility (noise) sub-factor.

On the accessibility sub-factors, both Wilton and Somersby were significantly better than Warnervale. Somersby was slightly better than Wilton on private vehicle accessibility whereas Wilton was significantly better than Somersby on public transport accessibility. The Draft EIS states that none of the mid-distance sites has a major advantage in terms of market potential for general aviation.

Although Warnervale was ranked highest on all the airport operations sub-factors, the Draft EIS states that there are no significant differences between the three sites. Wilton was ranked low on airspace conflicts because of its proximity to Camden whereas Somersby was ranked low on site flexibility because of topographic constraints on runway alignments.

Wilton ranked first on site acquisition and on total development costs by a significant margin. Although Wilton was assumed to require catchment protection works, this was outweighed by the costs of relocating or upgrading infrastructure at the other two sites.

Overall Warnervale was clearly the lowest ranked of the three mid-distance sites, particularly on environmental, accessibility and cost factors. The distinction between Wilton and Somersby was not clear; the only factor on which one site had a significant advantage was Wilton's cost advantage. The Draft EIS states that it was considered possible to reduce the main environmental disadvantage associated with Wilton (effects on water quality) but not the main environmental disadvantages associated with Somersby (acquisition costs and noise impacts).

It is worth comparing Wilton and Somersby on the 5 sub-factors which were selected as being "more important" than the others used in the short-listing.

	<u>Somersby</u>	<u>Wilton</u>
1. No. of residents displaced	860	310
2. Noise incompatible land use within 25 ANEF contour	1,010 ha	492 ha
3. Accessibility by private car (person-hours x 1000)	31,800	33,400
4. Safety factors	No significant difference	
5. Cost of site acquisition	\$32m	\$10.9m

Apart from Somersby's marginal advantage on private vehicle accessibility, Wilton is clearly superior on 3 of the other 4 sub-factors.

The Department of Environment and Planning, as a member of the Environment Reference Group, concurred in the short-listing of Wilton as the best of the mid-distance sites.

3.8 Sensitivity testing

The Draft EIS uses a site ranking matrix to test the sensitivity of the site ranking to the weighting of the 4 main factors used in evaluating the ten sites. Because of the subjective nature of the weighting, this matrix should not be used to select one site as being superior to all others. However, it is useful for testing the robustness of the ranking within groups when the factor weighting is varied over a wide range.

These sensitivity tests show that Badgerys Creek is the best of the closer sites for all but one of the sets of factor weights tested. It is by far the most robust of the closer sites, never ranking below fourth in the twelve sensitivity tests for a 25 million passengers per annum airport.

Wilton ranks better than both Somersby and Warnervale for all but one of the 12 sets of factor weights tested for a 25 million passengers per annum airport. It ranks in the first 3 sites (out of 10) in 8 of the 12 tests. It is only when access and/or operations are heavily weighted that Wilton ranks in the middle of the 10 sites.

The sensitivity testing, despite its inherent problem of using subjective weightings, is a good test of the robustness of the short-listing process. It confirms that Badgerys Creek is the superior of the closer sites and Wilton is the superior of the mid-distance sites.

4. BADGERYS CREEK AND WILTON AIRPORT PROPOSALS

This chapter contains a brief description of the proposed airport sites at Badgerys Creek and Wilton and the preliminary airport master plans. A more detailed description of the airport proposals is provided in the Draft EIS.

4.1 BADGERYS CREEK AIRPORT PROPOSAL

The proposed site for an airport at Badgerys Creek is east of the village of Luddenham within the local government area of the City of Liverpool. The location is shown on Figure 2. It is approximately 46 km directly west of Sydney's central business district.

The proposed site comprises 1,770 ha of flat to undulating land containing a mixture of agricultural and rural residential development. The village of Badgerys Creek is located within the proposed airport boundary. There are approximately 241 separate land titles within the site. It is estimated that there are 207 houses with a resident population of 750 people within the proposed airport boundary.

Current agricultural activities on the proposed site include poultry, grazing for horses, cattle production, dairying and market gardening. The site also contains about 16.6 km of local roads and 3.2 km of a 330 kv transmission line.

Most of the land surrounding the site is devoted to agriculture, particularly poultry production, dairying and market gardening. The surrounding area also contains various specialised facilities such as the Fleurs Radio Observatory, a radio receiving station (OTC), the McMaster research station (CSIRO) and Department of Defence facilities.

The Department of Aviation has prepared a preliminary master plan for a wide-spaced parallel runway layout on the proposed site. This is illustrated on Figure 3. The plan provides for one runway 4,000m long and another runway 2,500m long; the separation distance between runways would be 1,660m. The runways would have a north-east/south-west alignment to reduce noise impacts on residents in areas around the proposed site. There would be no cross-wind runway. The wide-spaced parallel layout was selected in preference to other possible layouts because it enabled a significant increase in airport planning flexibility with a relatively small increase in land area and cost.

When fully developed, the proposed airport layout would provide a capacity of 275,000 annual aircraft movements corresponding to approximately 13 million annual passenger movements. (This is considerably larger than the current

aircraft and passenger movements at Kingsford Smith Airport.) The proposed layout would enable the airport to accommodate a possible future generation of aircraft with wing spans up to 95m.

4.2 WILTON AIRPORT PROPOSAL

The proposed site for an airport at Wilton is south of the village of Wilton within the Shire of Wollondilly. The location is shown on Figure 4. It is approximately 81 km south-west of Sydney's central business district.

The proposed site has an area of 1,440 ha. Approximately 86% of the site is protected catchment area controlled by the Metropolitan Water Sewerage and Drainage Board (MWS&DB). The remaining 195 ha is rural land owned by the MWS&DB and three private companies. There is one private dwelling on the proposed site.

About 2 km of a 330 kv transmission line and 2.5 km of a wooden pole transmission line traverse the proposed site. Mount Keira Road passes through the site for a distance of 4 km. There are no other public roads within the site although there are 10 km of access tracks and fire trails used by the MSW&DB. There is also an abandoned airstrip on the site.

The Wilton site is surrounded on all sides by the metropolitan catchment area, except for a small section of the northern boundary. The village of Wilton and rural lands are to the north of the site.

The preliminary master plan for the Wilton proposal (see Figure 5) is similar to that proposed for Badgerys Creek. It is a wide-spaced parallel layout comprising: one runway 4,000m long; another runway 2,500m long; a separation distance of 1,660m; and no cross-wind runway. An east/west alignment of runways was selected to minimise any impacts on Wilton Village and rural development to the north of the proposed site.

The Wilton proposal would have a similar airport capacity to to the Badgerys Creek proposal when fully developed (i.e. 275,000 annual aircraft movements, 13 million annual passenger movements.) It would also be capable of handling a possible future generation of aircraft with a wing span up to 95m.

5. PUBLIC SUBMISSIONS

The purpose of this section is to summarise the general views of the public and other groups as expressed in the submissions received in response to the public exhibition of the Draft EIS. Although all of the submissions received have been examined, it is not possible to address each point raised in detail. However several trends are apparent and these have been commented upon.

The figures given in relation to the number of submissions of each type are necessarily approximate as a few have been unclear in the view they are actually trying to express.

Approximately 450 submissions were received, some 260 of which were in the form of 8 proformas. Two proformas accounted for about 230 of these and were opposed to Badgerys Creek, as were 4 of the other six.

A further 100 individual letters were received, giving a total of some 350 letters which expressed opposition to an airport at Badgerys Creek.

Another 50 letters were received expressing opposition to an airport at Wilton, while 10 responses were opposed to an airport at both sites.

Eight community action groups presented submissions. Affected Families Around Badgerys Creek Airport, Badgerys Creek Anti-Airport Group and the Blue Mountains Anti-Airport Committee are opposed to Badgerys Creek; Wilton Airport Resistance (W.A.R.) are opposed to Wilton; Hawkesbury/Nepean/Georges Rivers Anti-Airport Committee are opposed to both; and South West Action Group (S.W.A.G) offered general comments on the Draft EIS.

The remaining 30 or so were from clubs and special interest groups, companies, elected community representatives and local councils expressing a full range of views and commenting on the Draft EIS.

The proformas were all one page long and most of the individual letters were less than five pages long. Some submissions however, and those from community action groups, were quite detailed in their response.

Generally the submissions received expressed opposition to one or other of the sites. Submissions which compared the advantages and disadvantages of the sites, with the view to deciding the better site, were the exception rather than the rule, and many of the submissions, though not all, objected specifically to one site without indicating how or where future traffic growth should be accommodated. Some of the Wollongong-based community and business groups (Wollongong Chamber of Commerce, Leisure Coast Tourist

Association, South Coast District of the B.W.I.U. and Bargo-Picton Branch and Corrimal Branch of the A.L.P.) together with Wollongong Council and the Member for Macarthur (Mr. Martin), came out strongly in favour of Wilton.

Groups which opposed Wilton included the National Parks Association, Illawarra Natural History Society and the South Coast Conservation Society, while the Bellambi Coal Company, South Coast Labour Council and the Water Industry Salaried Officers Union expressed concern with the possibility of coal sterilisation and water quality impacts at the Wilton site.

Opposition to Badgerys Creek was expressed by Fairfield City Council and Liverpool City Council together with the Horsely Park Protection Cooperative, Aldermen Barone (Fairfield City Council) and Jackson-Hope (Blue Mountains) and the Luddenham Agricultural and Horticultural Show Society.

Support for Badgerys Creek came from Rockdale Municipal and Blacktown City Councils; while Penrith City Council had some reservations, it recognised the advantages of Badgerys Creek. Telecom, Caltex and Qantas also supported Badgerys Creek.

Other comments were received from the Greenway Federal Electorate Council (opposed to amplification of Schofields Airport if Badgerys Creek is selected), Rose Bay Branch of the ALP (opposed to a second airport), while the Scouts Air Activities Base at Camden Airport, NSW Police Aero Club, Southern Cross Gliding Club and the Camden Aero Club were all concerned with the possible effect on their activities.

It was clear, from reading through the submissions, that there is a conflict in the public mind over the factors at each site. For example, while some Wollongong groups supported Wilton, feeling that problems with water pollution and potential coal sterilization could be resolved and that economic benefits were available, other community groups and individuals from Wollongong were not so sure. Their feeling was that the environmental and coal sterilisation costs were high and that economic benefits would be a long time coming if at all.

There is also a conflict over the expansion of KSA. A number of responses indicated that people (at least those not living in the Botany Bay sub-region) are not convinced that KSA cannot be expanded to cater for the growth in air traffic or that a second airport is required even in the long term.

However, the one view that does consistently appear in the public perception is that an airport at Badgerys Creek is more likely to be built at an earlier date than Wilton.

The main reasons stated for opposing Badgerys Creek are as follows:

- (i) too many people affected;
- (ii) cost of acquisition too high;
- (iii) social disruption;
- (iv) noise affects; and
- (v) loss of agriculture/rural lifestyle.

The main reasons stated for opposing Wilton are:

- (i) distance from Sydney;
- (ii) possible water pollution;
- (iii) environmental damage; and
- (iv) loss of coal resources.

Other views can be summarized:

- (i) environmental groups oppose selecting Wilton;
- (ii) Sydney-based businesses favour Badgerys Creek's more central location within the Sydney Region;
- (iii) Wollongong-based business and non-environmental groups favour Wilton's more central location to Sydney and Wollongong; and
- (iv) local councils located further away from the site (exception is Wollongong) tend to favour Badgerys Creek .

Finally, it is of interest to note that submissions opposed to Badgerys Creek were nearly all from the local area, with some from the lower Blue Mountains area. Submissions opposed to Wilton were from both the local Wilton area and the adjacent Wollongong area. It therefore appears that the choice between these two sites is of little concern or interest to people living in the Sydney Region who do not live directly at or near the sites. This confirms the view that, except for environmental groups, the selection between the two sites is largely a local issue.

(N.B. As part of the public exhibition process, the Premier wrote to all NSW Ministers inviting them to comment on the Draft EIS. The responses were received by the Premiers Department and presented to the Commonwealth as a joint submission on behalf of N.S.W. Government Departments. The responses were also sent to the Department of Environment and Planning for advice and used in the preparation of this report.)

6. BIOPHYSICAL FACTORS

This chapter assesses the biophysical factors associated with the development of a second airport at the alternative sites, Badgerys Creek and Wilton. The biophysical factors are categorised under the headings:

- . air quality;
- . water quality and management;
- . flora;
- . fauna;
- . geology, soils and physiography; and
- . landscape.

In addressing each biophysical factor the following general format has been adopted:

- (i) Badgerys Creek: A brief statement of the impact from an airport at Badgerys Creek.
- (ii) Wilton: A brief statement of the impact from an airport at Wilton.
- (iii) Views of the public: A summary of the views expressed in submissions received during the exhibition of the draft EIS.
- (iv) Advice from N.S.W. Government Authorities: A summary of the advice from NSW Government authorities on the significance of any impact and possible ameliorative measures.
- (v) Consideration: The relative impacts of airport development at each site are considered in order to determine any significant differences.

It should be noted that the analysis of the biophysical impacts has been based on a worst case assumption of 275,000 annual aircraft movements and full development of a wide-spaced parallel layout. Since this corresponds to a level of air traffic 60% higher than current operations at KSA, this level of impact is unlikely to occur for some considerable time in the future.

6.1 AIR QUALITY

There would be several sources of pollutants associated with a second airport. These could generally be grouped as (a) aircraft emissions and emissions from other sources at the airport site and (b) emissions from motor vehicle movements generated by the airport. Under the worst case assumption, emissions from aircraft and other sources at the airport site would be in the order of: 4,333 tonnes carbon monoxide; 649 tonnes hydrocarbons; and 2,159 tonnes nitrogen oxides. If

275,000 aircraft movements occurred in the year 2000 (which is most unlikely), the net addition to pollutants from other sources in the Sydney Region would be 0.6% carbon monoxide, 0.5% hydrocarbons and 2.1% nitrogen oxides. When assessing the air quality impacts of a second airport at either site, it is important to consider the different levels of emissions from the motor vehicle traffic generated by the two sites as well as meteorological and topographic factors which influence the dispersal of pollutants.

6.1.1 Badgerys Creek

The Badgerys Creek site is regarded as being located within the Hawkesbury Basin, which together with the Liverpool Basin and the Parramatta River Valley comprises the Sydney Basin. There are two stable air drainage flows across the site which inhibit the vertical dispersion of low-level emissions. These are a local southerly flow towards Richmond and a spillover flow from the Hawkesbury Basin into the Parramatta River Valley. Thus airport-related emissions at Badgerys Creek would affect air quality in the Hawkesbury Basin and the Parramatta River Valley.

The annual emission of pollutants from vehicles generated by the airport would be: 16,163 tonnes carbon monoxide; 1,888 tonnes hydrocarbons; and 2,328 tonnes nitrogen oxides. These emissions are far higher than those from aircraft and other sources at the airport site, however they would be widely distributed over the Sydney Basin.

6.1.2 Wilton

The Wilton site is close to the Liverpool Basin. Its location and elevation are such that some aircraft emissions would not be transported into the Sydney Basin by drainage flows since they would occur on the ocean side of the Illawarra escarpment. The south-west regional drainage flow is less prevalent at the Wilton site, hence the potential transport of airport emissions to parts of the Sydney Basin is reduced.

The annual emission of pollutants from vehicle generated by the airport would be: 21,504 tonnes carbon monoxide; 2,470 tonnes hydrocarbons; 3,097 nitrogen oxides. These emissions are considerably higher than those from aircraft and other sources at the airport site, however they would be widely distributed over the Sydney Basin. Because of the longer distances involved, vehicle emissions associated with an airport at Wilton would be higher (about 30%) than those arising from an airport at Badgerys Creek.

6.1.3 Views of the public

About 40 submissions raised air quality issues in relation to the Badgerys Creek and Wilton sites, approximately half of which were concerned with each site. Comments on air quality included the following matters:

- (i) general concerns about the local effects of air pollution on health and quality of life of residents in the areas around the airport sites;
- (ii) effects of air pollution on water supplies (particularly at Wilton), vegetation, agricultural production (Badgerys Creek), scientific research facilities (Badgerys Creek) and fauna;
- (iii) spreading of air pollution into other areas in the Sydney Region and (for the Wilton site) Wollongong;
- (iv) the incidence of fog and temperature inversions at both sites and inadequacy of meteorological data; and
- (v) the effects of dust during construction.

6.1.4 Advice from N.S.W. Government Authorities

The State Pollution Control Commission considers that the emission of air pollutants associated with a second airport would have a significant impact on air quality within the local airshed.

In the opinion of the SPCC, Wilton is a more favourable site than Badgerys Creek on air quality grounds. This is because Wilton has more favourable atmospheric dispersion and is more distant from major population areas in the Sydney Region. Surface temperature inversions are stronger and more prevalent at Badgerys Creek than at Wilton. Drainage flows and weak winds are more prevalent at Badgerys Creek than at Wilton, and the altitude difference would cause more pollutants to be trapped in the surface mixing layer at Badgerys Creek. The SPCC is concerned that the Hawkesbury Basin in which Badgerys Creek is located has the potential to experience the most air pollution in the Sydney Region because of the trapping of pollutants by strong temperature inversions.

Analyses by the SPCC in 1977 have demonstrated that an airport site in the south-west sector (which includes both the Badgerys Creek and Wilton sites) is considerably better than the expansion of KSA, and hence any transfer of aircraft movements and their associated submissions to the south-west sector is desirable from the point of view of maintaining acceptable air quality.

The SPCC also considers that dust levels generated during the construction of a second airport would cause local nuisance.

The SPCC recommended that aircraft engines be maintained to ensure no unnecessary emission of air pollutants. It also expects the airport design to incorporate the best practicable means to control hydrocarbon emissions from fuel storage and aircraft fuelling systems. Airport ground service vehicles and equipment should be maintained to minimise exhaust emissions.

6.1.5 Consideration

It is apparent that the Wilton site has advantages in terms of the dispersal of air pollutants emitted in the vicinity of the site. However, there would be a much higher emission of pollutants within the Sydney Basin by vehicles travelling to and from the Wilton site versus the Badgerys Creek site. As stated in the Draft EIS, the Badgerys Creek site would be developed at an earlier date than the Wilton site, hence there would be an earlier shift in air traffic from KSA to the south-west sector. This would be more favourable from the viewpoint of regional air quality in the Sydney Basin. After considering these factors and seeking further advice from the SPCC, the Department has formed the view that there would only be a marginal difference between the regional air quality impacts of airport development at Badgerys Creek and Wilton. It is acknowledged that an airport at Badgerys Creek would have a larger impact on the local airshed. However as pointed out in the Draft EIS, the air quality impacts of a second airport are not significant when compared with emissions likely to arise from future urban expansion in Sydney.

In regard to local impacts from dust generated during airport construction, the Department acknowledges that there would be a potential for more nuisance at the Badgerys Creek site because of the larger resident population. However, proper consultation with the SPCC should ensure that construction activities do not significantly affect dust levels in the area vis-a-vis current agricultural activities.

6.2. WATER QUALITY AND MANAGEMENT

The Draft EIS provides information on water quality safeguards and flood management at both the Badgerys Creek and Wilton sites. It also indicates that the Department of Aviation would meet the requirements of the SPCC under the Clean Waters Act in relation to all discharges from an airport site at Badgerys Creek and Wilton. The Department of Aviation would also meet MWS&DB requirements, particularly in relation to the Wilton site.

It is proposed that chemical or process effluent, domestic sewage and contaminated stormwater runoff (i.e. likely to contain significant amounts of oil or particulates) would be either pretreated on site prior to discharge to a MWS&DB water pollution control point or alternatively be fully treated on site.

"Clean" stormwater runoff would drain to retention ponds designed to contain the first flush for a one-in-ten year storm. Trash screening would be used to remove the solids washed off by the first flush of the storm. Stormwater retarding basins would also be provided for each major creek draining the Badgerys Creek site. For the Wilton site a perimeter drainage system would divert all runoff to a retarding basin on Allens Creek. Retardation basins would be designed to contain the peak flow of a 1:100 year storm, thereby enabling the controlled release of water approximating existing stream flow conditions.

During airport construction, temporary silt traps would be constructed where required to reduce the risk of sedimentation of creeks. Progressive revegetation of disturbed areas would be co-ordinated with the construction work. During initial construction, there could be increased nutrient loads affecting the water quality of streams.

6.2.1 Badgerys Creek

The majority of the Badgerys Creek site (65%) drains into Badgerys Creek. The remainder of the site drains into Cosgroves Creek (25%) and Duncans Creek (10%). Cosgroves and Badgerys Creek are tributaries of South Creek, which flows into the Nepean River 2km north-east of Windsor. Duncans Creek drains into the Nepean River about 2km upstream of Wallacia.

No runoff from the Badgerys Creek site would flow into a river or creek that is classified by the SPCC under the Clean Waters Act, 1970.

South Creek (which would eventually receive 90% of the site runoff) contains high concentrations of nutrients and has very low assimilation rates, hence it functions for part of the time as a drain for effluent; it discharges considerable amounts of nutrients into the Nepean River.

Because of projected population increases in its catchment, the nutrient loads in South Creek are expected to increase significantly. The contribution from the airport would represent only about 2.2% of the nitrogen load and 2.0% of the phosphorus load caused by urban development to the year 2000.

6.2.2 Wilton

Runoff from the proposed Wilton site currently drains into Allens Creek (14%), Cascade Creek (33%), Wallandoola Creek (12%) and tributaries of the Cordeaux River (41%).

Allens Creek flows into the Nepean River upstream of Douglas Park. At this junction it is downstream of Pheasants Nest Weir, hence water draining into Allens Creek does not enter Sydney's water supply system. All other water draining from the site flows eventually into either Pheasants Nest Weir on the Nepean River or Broughtons Pass Weir on the Cataract River, from where it is diverted into Sydney's water supply system.

Surface water runoff from the proposed site flows into Class P (protected) waters or Class S (specially protected) waters classified under the Clean Waters Act. No effluents may be discharged into Class S waters; discharges into Class P waters must be of a quality similar to that required as a raw source of potable water. The perimeter drainage system would ensure that waste water and stormwater runoff from the site would be diverted into Allens Creek thereby avoiding the Pheasants Nest and Broughton Pass Weirs and the Class S waters.

According to the Draft EIS no contaminated water from the site would enter Sydney's water supply system, and the risk of contamination of the water supply during emergency dumping of fuel would be slight. A similar comment is made about the risk of contamination by exhaust emissions from aircraft and ground vehicles.

The proposed airport would lead to a reduction in the area of the MWS&DB catchment with a loss of water valued at \$23,600 per annum.

In order to reduce the potential risk of sedimentation and pollution of the water supply system, the perimeter canal would be built before other earthworks were started. Temporary silt traps and progressive revegetation of disturbed areas would be used to reduce the risk of sedimentation.

6.2.3 Views of the public

About 50 submissions raised water quality issues, a large majority of which were concerned with the effects of airport development at Wilton on Sydney's water supply. Submissions related to the Badgerys creek site were mainly concerned about the effects on tank water, Prospect Reservoir and Warragamba Dam from emergency fuel dumping, aircraft crashes and aircraft emissions. A few submissions commented on possible pollution of the Nepean River system by sewerage effluent.

Comments on the Wilton site included the following:

- (i) There was considerable concern about the possible pollution of Sydney's water supply through emergency fuel dumping, aircraft emissions and crashes and erosion/sedimentation during construction.
- (ii) Many submissions considered that proposed measures to protect the water supply would be adequate or very expensive, although a few submissions considered that the water supply could be adequately protected.
- (iii) The Draft EIS was criticised for not addressing the problem of containing runoff during the relocation of Mt. Keira Rd, the transmission line, gas pipeline and wastewater line.
- (iv) The sewerage system and other means of waste disposal would be costly.
- (v) There was some concern about pollution of Allens Creek and the Nepean River system not only from the airport itself but industry attracted to the area around the airport.
- (vi) The siting of an airport in the protected water catchment area was seen as an undesirable precedent for further development pressures in the catchment area.

6.2.4 Advice from NSW Government Authorities

(a) State Pollution Control Commission

The SPCC favours land disposal of treated sewage effluent in preference to any discharges to watercourses.

The SPCC considers that substantial pollution of waters could occur during the construction phase of such a large development. It does not agree that the proposed first flush retention basin system would satisfactorily control sediments during the construction period. It suggests that the following two options would be satisfactory for control of pollutants during construction:

- (i) Sediment ponds based on a size of 500m³/ha (instead of 250m³/ha as proposed) could be designed on a flow-through instead of a first-flush basis; and
- (ii) The final retardation basin could be used as a retention settling pond during construction and then converted to a retardation basin following completion of the construction phase.

The discharge of treated wastewaters and stormwaters from the Badgerys Creek site is likely to have little impact on existing water quality and water uses. The treatment practices and procedures for sewage, process effluent and stormwater drainage at this site would require no special conditions.

The SPCC agrees with the concept of the perimeter drainage system for the Wilton site, which would divert all surface waters from the site to Allens Creek.

Although the risk of contamination of the water supply system through emergency dumping of fuel is estimated as being slight, the resultant hazard of this occurring is very high. For this reason, the SPCC believes that a more detailed assessment of the risk should be given and a description should be given of what action, if any, could be taken to prevent the contamination of the water supply when emergency dumping of fuel is necessitated. The problem of unforeseen catastrophic events at, or adjacent to, the Wilton site or along the transport corridor serving the site requires the development of contingency plans.

(b) Metropolitan Water Sewerage and Drainage Board

The MWS&DB has pointed out that water from the Wilton site flows directly into Campbelltown and Appin taps within half a day. It is pointed out that there would be occasions when the water supply will be vulnerable during the construction stage as recent experience with the construction of the Maldon-Dombarton Railway has shown. (Despite major efforts to control pollution during this project, pollution of the water supply did occur.)

Since land outside the airport boundary would be required for relocating services and providing access to the airport, the MWS&DB requests that it be consulted on these matters. The impact of all these works would require detailed consideration if deleterious impacts on water supply are to be avoided.

Given the scope and scale of the Wilton airport proposal, the MWS&DB is not convinced that water quality can be maintained in the Cataract and Cordeaux River catchments. The lack of data leads the MWS&DB to the view that water treatment works may need to be constructed at a capital cost of approximately \$70 million and an annual operating cost of \$3 million.

6.2.5 Consideration

Based on the advice of the SPCC and MWS&DB, it is clear that Badgerys Creek would be the preferable site for an airport on water quality and management grounds. An airport at Badgerys Creek would have little impact on water quality whereas an

airport at Wilton puts at risk Sydney's water supply, albeit a small unquantified risk. Unless a detailed risk assessment is undertaken and fail-safe contingency plans can be developed, the Wilton site cannot be regarded as acceptable without the introduction of costly water treatment facilities.

6.3 FLORA

6.3.1 Badgerys Creek

The majority of this site is cleared agricultural land; the remainder is discontinuous, moderately to highly disturbed, natural vegetation, which is considered to have a low floristic value. This natural vegetation is a common type which is found in other areas. The most important vegetation community is the vegetation which, despite its poor quality, provides a limited wildlife habitat along Badgerys Creek and may help regulate water quality to some degree.

Only one rare species was observed. Continued rural and possible urban development will continue to disturb the flora of the area.

6.3.2 Wilton

The greater part of this site is relatively undisturbed natural vegetation. Five vegetation types varying from forest to wet heath were recorded although some cleared land also occurs. There are a large number of species; many have restricted ranges; six species are rare; one species is considered to be threatened with extinction. Consequently, and despite the fact that the vegetation is regularly affected by fire, the flora is considered to be of high floristic value.

The vegetation is important due to the range of habitats it provides for fauna and the protection it affords to the water quality of creeks within the metropolitan water catchment area.

6.3.3 Views of the public

There were only two submissions relating to flora at Badgerys Creek, indicating that the effect of airport construction on the flora at Badgerys Creek has not been of concern to the public in general. Rather the concern has been expressed by local residents that flora should not be considered highly in relation to the people affected.

Flora at the Wilton site has, however, been of concern to some 40 members of the public, several of the conservation groups and the Wilton-based Community Action Group in regard to its destruction, its rare species, its high ecological value and the deleterious effect of fuel dumping.

6.3.4 Advice from N.S.W. Government Authorities

The Royal Botanic Gardens (RBG) considers that the assessment of vegetation by the Draft EIS is more than adequate and the comparison in favour of Wilton as the most important site is agreed with. The RBG is satisfied that the rare species observed at Badgerys Creek can be preserved despite the loss at this site due to construction activities.

The National Parks and Wildlife Service is concerned that three rare species at Wilton may be endangered in terms of their overall status in NSW and considered that the eucalypt communities occurring as open forest on shale-capped sandstone should be further investigated.

6.3.5 Consideration

In terms of flora, Badgerys Creek is clearly the preferable site for airport construction. The current rural activity has caused, and will continue to cause, disturbance to flora at this site. In fact airport construction will tend to allow limited regeneration in areas outside the runways and terminal tarmac.

Indications are that the integrity of the vegetation lining Badgerys Creek can be preserved. This is important as a way of providing shelter and maintaining a corridor for movement of fauna.

Construction at Wilton will have a major effect on the vegetation at this site, resulting in a loss of large areas of significant growth and permanently altering the remainder through clearing and levelling of the site.

6.4 FAUNA

6.4.1 Badgerys Creek

Because of the high level of disturbance to vegetation, the quality of the habitats at this site is low; consequently the diversity of species is also low. Except for some patches of remnant woodland and the creekline, the area is cleared paddock. Dams on the site provide a focal point for many birds but the greatest diversity of species occurs along the Creek. Most of the fauna is at least common in Australia (many are abundant), while those that can be considered as uncommon are not threatened within the Sydney Region.

Because of the low diversity of species and the lack of any vital habitat/or rare/endangered species, this site is considered to be of low ecological value. Airport construction would have little impact on the status of any species.

6.4.2 Wilton

This site has been left relatively undisturbed and contains a variety of habitat types. Consequently the number of species is high. Eight species are considered threatened; the rest are at least common.

A high diversity of species and the presence of habitats used by, and having potential for use by, rare/endangered species means that this site can be considered to be of high ecological value, particularly the majority of the site within the catchment.

Seven of the threatened species are birds. The Koala is also threatened, and steps will need to be taken to relocate individual animals discovered during the clearing stages.

Construction of an airport at this site would have an impact on many species, and the level of colonization of adjacent areas by displaced species is uncertain. With the loss of habitat, recolonization of the site would be limited to species that are non-habitat-specific.

6.4.3 Views of the Public

Four submissions relating to Badgerys Creek and forty-five at Wilton were received. Public comment on the fauna of both sites has been similar to that on the flora, i.e. individuals generally do not consider fauna at Badgerys Creek as important as people, while many people and group submissions refer to the importance of the fauna at Wilton. Concern was expressed to the higher possibility of bird strike and the effects on platypus, koalas and bats in the Wilton area.

6.4.4 Advice from the N.S.W. Government Departments

The Department of Agriculture considers that the lack of information relating to aquatic life is of concern and that detailed studies are warranted. The only way of minimizing the effect on aquatic life is by preserving the water quality and integrity of creeks and their surrounds. The greater significance of the Wilton site on conservation grounds is not questioned.

6.4.5 Consideration

In terms of fauna it is clear that Badgerys Creek is the preferred location for the airport, although the effect on the overall status of most species at Wilton will be minimal.

Badgerys Creek has the further advantage that current rural activity and proposed urbanization has already disturbed, and will continue to disturb, that site. Construction at Wilton will permanently alter the characteristics of the existing ecosystems.

It should also be noted that operation of an airport at Wilton will have a continuing effect on the fauna in adjacent areas of undisturbed water catchment.

6.5 GEOLOGY, SOILS AND PHYSIOGRAPHY

6.5.1 Badgerys Creek

Unconsolidated Quaternary sediments and consolidated Triassic rock occur in the Badgerys Creek site. Seismic activity is rare, and vibration effects from a 1 in 100 year tremor would be minor. The Badgerys Creek site contains a large proportion of soils that are moderately or highly erodible. It also contains areas of saline soils which are likely to inhibit revegetation. Special measures would be needed to control sedimentation and ensure revegetation.

Preliminary estimates show that earthworks necessary for airport development would involve about 15.8 million cubic metres of excavation and filling. In some locations height of fill would reach 10m and depth of cut 20m.

6.5.2 Wilton

Triassic rocks of the Wianamatta Group, Mittagong Foundation and Hawkesbury Sandstone occur in the proposed Wilton site. Seismic activity is rare, and vibration effects from 1 in 100 year earthquake could damage weak structural work. The Wilton site contains soils of moderate to extreme erosion potential. The highly erodible soils could potentially cause siltation and sedimentation problems in the surrounding drainage system. The shale-derived soils on the site could exhibit salinity problems.

Preliminary estimates show that earthworks necessary for airport development would involve about 14.2 million cubic metres of excavation and 14.0 million cubic metres of filling. In some locations height of fill would reach 20m and depth of cut 10m.

6.5.3 Views of the public

Other than mineral resources, there were few public submissions concerned with geology, soils and physiography. The comments that were made related to the difficulty of designed for mine subsidence, seismic activity and geological instability at the Wilton site and the associated development costs. The loss of trees at the Wilton site was seen as affecting soil moisture in the water catchment and also resulting in a soil erosion problem.

6.5.4 Advice from NSW Government Authorities

There were no significant comments on the above matters from N.S.W. Government Authorities.

6.5.5 Consideration

Geological formations are different at the two sites, however this would not be significant in the final decision making. Likewise seismic activity would not be an important factor. Although the Wilton site would require 1.7 million cubic metres more earthworks than the Badgerys Creek site, this is not considered to be a significant factor in selecting between the two sites.

It should be noted that preparation of the Wilton site would involve more extensive clearing of trees, and the possible effects of siltation/sedimentation on Sydney's water supply because of erosion would be more severe.

Irrespective of which site is chosen, it is essential that the Soil Conservation Service be engaged as the consultant to the project on soil conservation matters during all stages of planning, construction and final site rehabilitation.

6.6 LANDSCAPE

6.6.1 Badgerys Creek

Except for a small ridge within the site, covering about 2%, the remainder of the site is rural development on flat or gently sloping terrain and is considered to be of minimal visual quality because of its mostly cleared paddocks. The area is not highly visible except from the Sunshine Hill area at Silverdale.

6.6.2 Wilton

This site has a range of landforms from ridges and plateaux to gently sloping areas. Of particular interest are the valleys along the creeks, especially to the west of the site. Most of the area is still forested and is visible from some adjacent areas, for example certain locations at Razorback, north of Picton.

6.6.3 Views of the public

The landscape aspect is of little concern to the general public (nine submissions were received). However, while the natural beauty of the Wilton site is apparent, it must be said that the rural nature of the Badgerys Creek site appeals to the local residents of this area.

6.6.4 Advice of NSW Government Departments

No advice has been received from government departments, although National Parks and Wildlife Service and the Crown Lands Office have contributed to an Open Space Study of the Macarthur Region.

6.6.5 Consideration

While the landscape at Wilton is in a natural state compared to the highly disturbed rural lowland at Badgery's Creek, the landscape of neither area is unique, in that it occurs in adjacent areas. Within the Sydney Region there are other areas, such as the Nepean River and the Lapstone Monocline, that are identified as being regional landscape features of distinctive visual quality.

Accordingly, landscape is not considered to be an important consideration in choosing between the sites. Although the high visual quality of the landscape at Wilton is recognised, the area affected by the airport is a small proportion of the total forested land with the catchment area.

7. SOCIAL AND ECONOMIC FACTORS

This chapter assesses the social and economic factors which would influence the selection of a second airport site. These factors are categorized under the following headings:

- . noise
- . social impacts
- . Aboriginal archaeology and concerns of Aboriginals
- . European heritage
- . hazards
- . effects on agriculture
- . mineral resources
- . acquisition and development costs.

In general, each factor has been addressed in a similar format to that used in Chapter 6 for examining biophysical factors as follows :

- (1) Badgerys Creek: A brief statement of the effects of airport development at Badgerys Creek.
- (2) Wilton: A brief statement of the effects of airport development at Wilton.
- (3) Views of the public: A summary of the views expressed in submissions received during the exhibition of the Draft EIS.
- (4) Advice from N.S.W. Government Authorities: A summary of the advice from N.S.W. Government Authorities on the significance of the impact and possible ameliorative measures.
- (5) Consideration: The overall consideration of any significant difference between the sites in relation to the factor and its importance in selecting the second airport site.

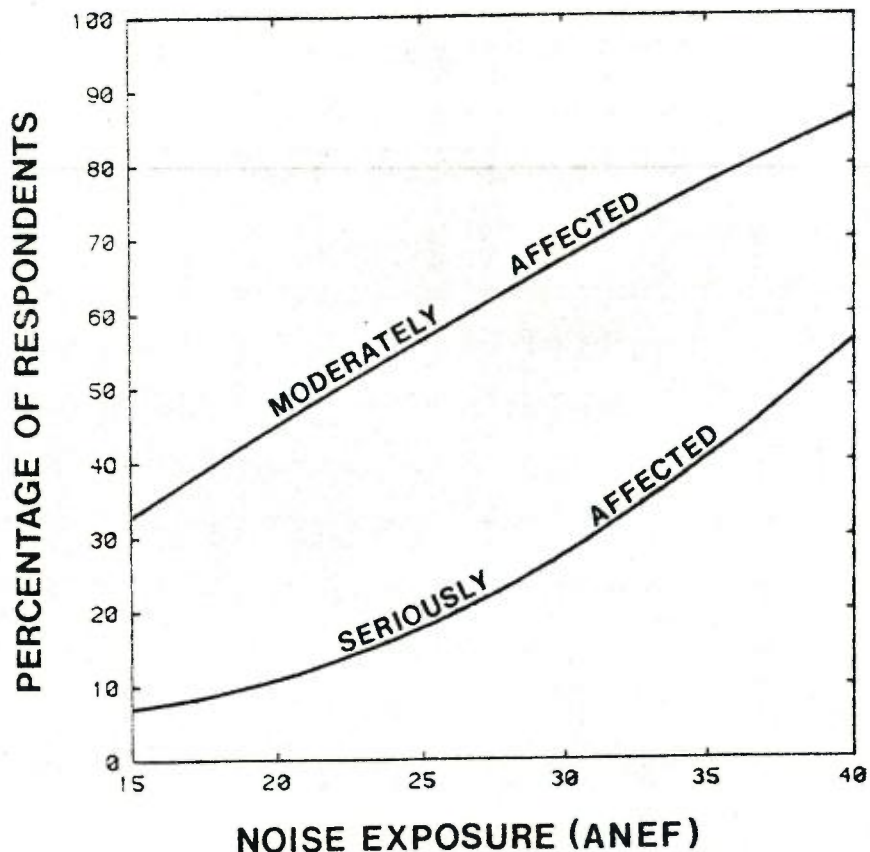
It should be noted that the social and economic factors associated with a second airport are assessed on the basis of the wide-spaced parallel runway layout and the worst case assumption of 275,000 annual aircraft movements (13 million passenger movements). This level of aircraft operations is 60% higher than current air traffic at KSA.

7.1 NOISE

In analysing the aircraft noise impacts from a second airport at Badgerys Creek or Wilton, the Draft EIS has used the ANEF system developed by the National Acoustic Laboratory. ANEF contours were estimated for a worst case assumption of 275,000 aircraft movements per year at Badgerys Creek and Wilton; the ANEF contours are shown Figures 6 and 7. The proportion of people moderately and severely affected by

noise at various ANEF levels is shown on the following diagram. As a general guide, residential development is considered compatible with aircraft noise levels when the ANEF level is less than 20. Within 20 to 25 ANEF the incorporation of noise control features in dwellings is considered appropriate. No residential development should occur in areas where the ANEF is greater than 30 ANEF.

Figure C.1 Dose/response relationship between noise exposure forecast level and community reaction



Source: National Acoustic Laboratories Report No. 88, "Aircraft Noise in Australia : A Survey of Community Reaction" February 1982.

7.1.1 Badgerys Creek

Based on the worst case assumption, approximately 6,368 ha of land outside the proposed airport boundary for the Badgerys Creek site would be within the 20 ANEF contour. The majority of this land is zoned non-urban with a minimum lot size of 40 ha. The estimated maximum population within the 20 ANEF contour is 1,951 people; this figure assumes that dwellings are built on all existing and future subdivisions permissible with the current zonings. The maximum number likely to be moderately affected by aircraft noise within the 20 ANEF contour would be 1,115 people, of whom 364 would be seriously affected.

Construction noise from earthworks operations could reach levels 10 to 15 dBA above background levels at points along the airport boundary. The noise levels would be noticeable and could cause nuisance to nearby residents.

7.1.2 Wilton

Approximately 6,786 ha of land outside the proposed airport boundary for the Wilton site would be within the 20 ANEF contour. The protected catchment land under the control of the MWS&DB accounts for 93% of the land within the 20 ANEF contour. The remainder is non-urban land with varying minimum lot sizes. It is estimated that there could be approximately 240 people within the 20 ANEF contour.

The maximum population likely to be moderately affected by noise within the 20 ANEF contour is 68 people, of whom 18 would be seriously affected.

In regard to construction noise, it has been estimated that noticeable noise levels 10-15 dBA above background levels could be experienced at some points along the boundary near construction operations.

7.1.3 Views of the public

Aircraft noise impacts were raised in about 100 submissions, the large majority being concerned about the Badgerys Creek site. Submissions stressed that ANEF contours did not take account of low ambient noise levels in rural settings, inversion layers and topography. There was considerable concern that land within the 20, 25 and 30 ANEF contours but outside the proposed airport boundaries would become useless and valueless, and no compensation would be paid. It was pointed out that current market values reflected uncertainties about an airport. Some submissions disputed the estimates of noise-affected populations and said that the effects on schools, hospitals and recreation areas had not been considered.

7.1.4 Advice from N.S.W. Government Authorities

The State Pollution Control Commission (SPCC) agrees with the use of the ANEF system to assess aircraft noise impacts from a second airport. A necessary assumption is that rural residents would respond to aircraft noise exposure in a similar manner to the urban residents interviewed during the National Acoustic Laboratory study.

The SPCC advised that complaints had been received from residents around KSA about early morning ground running operations; the complaints came from people living within the 20 ANEF contour (1990).

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The SPCC advised that complaints had been received from residents around KSA about early morning ground running operations; the complaints came from people living within the 20 ANEF contour (1990).

The SPCC also provided advice on standards which should be met during construction operations and suggested desirable setbacks from road and rail access corridors.

SPCC policy is that, where new residences are proposed and the ANEF is between 20 and 25, consideration should be given to incorporating noise controls in the design of dwellings. No new residences (or other noise-sensitive development) should be permitted where the ANEF is 25 or more.

The SPCC considered that some form of compensation should be given to property owners whose properties fall within the ANEF 20 contour.

The SPCC regarded Wilton as a superior site to Badgerys Creek in relation to noise effects from airport development and operation as well as noise emanating from transport corridors to an airport.

7.1.5 Consideration

At the time of writing this report, the findings of the Inquiry into Aircraft Noise by the House of Representatives Standing Committee on Conservation and the Environment were not available. The terms of reference for the Inquiry include the impact of aircraft noise on the health and welfare of people, effects on property values and possible compensation schemes. As such the findings would have been invaluable in assessing the overall impacts of a second airport at Wilton or Badgerys Creek and recommending appropriate acquisition/compensation arrangements

In the absence of the Inquiry findings, the assessment of noise impacts in the the Draft EIS has been based on the report of the National Acoustic Laboratory. This report attempted to measure the subjective reaction to aircraft noise exposure by means of personal interviews with 3,575 residents living around Kingsford Smith Airport and Richmond Air Base in Sydney and the major airports in Adelaide, Perth and Melbourne.

The following table compares the maximum populations likely to be affected by noise from a second airport at Wilton or Badgerys Creek with the populations currently affected by noise from major airports in Australia.

Airport	Annual Aircraft Movements	Population Total	Within Moderately Affected	20 ANEF Seriously Affected
Badgerys Creek	185,000	1,951	1,115	364
Wilton	185,000	130	68	18
Kingsford Smith, Sydney	107,000	208,810	141,436	62,198
Tullamarine, Melbourne	80,670	14,562	8,188	2,238
Adelaide	25,840	50,933	31,586	10,005
Perth	18,980	19,046	9,812	3,435

- Notes: (i) Annual aircraft movements includes planes of F27 size or larger, hence the general aviation movements are not included in the above aircraft statistics.
- (ii) The population figures for Badgerys Creek and Wilton are estimated future maximum populations assuming construction of dwellings on all subdivisions permissible with current zonings. For other airports the populations are estimates as at 1981.
- (iii) The figures for moderately affected populations include those seriously affected.

From the table, it can be seen that :

- . assuming current zonings are maintained, a second airport at Badgerys Creek or Wilton would effect only a fraction of the people currently affected by noise from other major airports despite the much higher level of operations assumed for comparison purposes;
- . the aircraft noise impacts from Kingsford Smith Airport are far greater than any other airport in Australia; and
- . significantly more people would be affected by an airport at Badgerys Creek than at Wilton, although the noise-affected populations appear to be relatively low when compared with other major airports in Australia.

When making the above comparisons, it should be borne in mind that the estimate of the noise-affected populations at Badgerys Creek and Wilton are based on 275,000 annual aircraft movements (90,000 general aviation movements and 185,000 movements of planes of F27 size or larger). This figure is 60% greater than the current aircraft movements at Kingsford Smith Airport. Using the median forecasts of traffic growth in the Draft EIS, this level of operations at a second airport would not occur till well after the year 2010. Even using the optimistic high forecasts of air traffic growth, this level of operations would not have been reached by the year 2010. By contrast there are more than 141,000 people already affected by the current operations at Kingsford Smith Airport, of whom more than 62,000 are seriously affected. (The National Acoustic Laboratory estimated that 231,000 people are moderately affected of whom 78,800 are seriously affected when affected people outside the 20 ANEF contour are taken into account.) There is therefore a clear need to contain and reduce the aircraft noise impacts around KSA by directing future traffic growth to a second airport rather than exacerbating the current serious problem by expanding facilities at KSA.

The Department's view is that the development of a second airport would mean that the future total population affected by aircraft noise in the Sydney Region would be lower than if traffic growth at KSA led to more widespread and serious noise impacts in the surrounding heavily populated areas. The Department put forward this view in its submission to the Aircraft Noise Inquiry. The submission included an analysis of various options for air traffic at KSA and a second airport and the consequent aircraft noise impacts based on the National Acoustic Laboratory report.

As stated in its submission to the Aircraft Noise Inquiry, the Department considers that the boundaries of a second airport should be adjusted to include areas seriously affected by aircraft noise in a buffer zone, within which compatible development could be appropriately controlled. Further, residential development should not be allowed within the 25 ANEF contour. In those areas less affected by aircraft noise, compensation should be paid to existing owners (or improvements made to the noise insulation of dwellings) where it can be shown that there is a significant diminution of value or a significant disturbance from aircraft noise. The timing and form of any compensation arrangements and the extent of property acquisition should be determined by the Commonwealth Government following the receipt of the findings of the Aircraft Noise Inquiry.

The Department considers that noise abatement procedures should be used during night-time operations at a second airport. The preferred flight path should be on the side of the airport furthest from existing urban corridors.

In terms of aircraft noise impacts, it is clear that an airport at Badgerys Creek would affect more people than an airport at Wilton. However, at the regional level the potential population affected at either site would be regarded as small relative to the current noise impacts around KSA.

Construction noise impacts are unlikely to be a major issue. The SPCC should be consulted prior to any development occurring so that such effects are minimised by restricted construction hours plant noise controls or other ameliorative measures such as noise bunds.

The Department considers that it is not possible at this stage to make a comparison between the sites on the basis of noise impacts from surface traffic generated by a second airport. Decisions on public transport systems to provide access to the second airport are essentially policy decisions which can only be made at a future date. The location of access roads has yet to be determined. It is however the Department's intention to minimise any impacts of access routes to the airport by taking them into account in future environmental planning instruments in the Macarthur Region.

Activities such as road and rail construction would also be subject to the provisions of the Environmental Planning and Assessment Act. This would enable noise mitigation measures to be implemented to minimise any traffic noise impacts on residential development and other noise-sensitive development.

7.2. SOCIAL IMPACTS

The Draft EIS provides details of the arrangements for the acquisition of land by agreement with owners or by compulsory acquisition. It also details the relocation expenses paid by the Commonwealth e.g. furniture removal, legal costs and costs incurred in acquiring a replacement property.

The Draft EIS acknowledges that there would be difficulties faced by people having to leave friends and family near the airport site and try to find a suitable alternative property and re-establish life styles and friendships.

Social impacts in this section refers to the impact on local residents as opposed to benefits or disbenefits to the community as a whole. The latter are addressed in Chapter 8.

7.2.1 Badgerys Creek

The development of an airport at Badgerys Creek would require the relocation of an estimated 750 people living in about 207 houses within the proposed airport boundary.

7.2.2 Wilton

The development of an airport at Wilton would require the relocation of the occupants of one property estimated at less than 10 people.

7.2.3 Views of the public

The submissions from residents within and surrounding the proposed airport boundaries were extremely concerned about the possible effects on their future. The following concerns were frequently mentioned :

- (i) In recent years, the uncertainty regarding an airport decision at Badgerys Creek had caused great distress for families living in the area.
- (ii) Since the uncertainties about an airport had been reflected in lower property values at Badgerys Creek, residents were concerned that they would not be fully compensated even if current market prices were paid for their land.

- (iii) Residents were particularly concerned about the severe disruption of their current life styles and the difficulty of acquiring suitable properties and re-establishing similar life styles elsewhere. There was a strong attachment to homes and land in the area, the purchase of which had been the culmination of long-term family plans.

7.2.4 Advice from N.S.W. Government Authorities

There was no specific advice from the N.S.W. Government Authorities on the social impacts of an airport decision.

7.2.5 Consideration

The relocation of the resident population on the Badgerys Creek site would clearly have greater repercussions than the relocation of the small number of people living on the Wilton site. Although the arrangements for land acquisition would guarantee a fair and reasonable price for homes and property and reimburse necessary relocation expenses, they cannot eliminate the trauma of residents having to move and try to re-establish life styles elsewhere. The extent of the "ripple" effects in the Badgerys Creek area is difficult to estimate given the limited treatment of social linkages in the Draft EIS. For example, the loss of facilities such as the school in Badgerys Creek village would directly affect residents in the area outside the airport boundary.

There would be continuing worries experienced by residents in areas outside the airport boundary who would be subject to aircraft noise. As stated in section 7.1. of this report, the Department considers that there should be acquisition of an appropriate buffer zone and compensation for noise-affected residents outside the buffer zone. An early decision and announcement on such arrangements following completion of the Aircraft Noise Inquiry may lessen such fears.

7.3 ABORIGINAL ARCHAEOLOGY AND CONCERNS OF ABORIGINALS

7.3.1 Badgerys Creek

This airport site has been determined to be of minimum significance because of the long history of European settlement and the consequences of the resultant disturbance. However, it is possible that archaeological evidence will be found during construction.

The Gandangara Local Aboriginal Land Council is opposed to the use of both sites for airport development because of the effect on the present life styles of Aboriginal people living in the vicinity.

7.3.2 Wilton

This area is also of minimal significance because of the

absence of sites used as shelters by Aboriginal people where artefacts are likely to be found. However, there is a possibility of sub-surface archaeological evidence being located during construction.

Some art sites have been identified but they are exposed and poorly preserved and are outside the area directly affected by construction.

The Tharawal Local Aboriginal Land Council and the adjacent Illawarra Land Council have indicated conditional support for an airport at Wilton.

7.3.3 Views of the public

Ten submissions referred to this factor but were mainly concerned with the potential archaeological significance of the Wilton site. Some of the submissions criticised the method of sampling and argued that not enough time was given. Some submissions indicated that the Tharawal Council was opposed to the selection of Wilton, while others suggested that they did not oppose Wilton's selection. The submissions did not give specific information as to where relics may be located nor acknowledged that proper investigation during the construction stage would occur thus minimising the total loss or destruction of any artefacts.

7.3.4 Advice from NSW Government Authorities

The Ministry of Aboriginal Affairs agrees with the findings of the Draft EIS and recommends continued negotiations with each of the Land Councils.

7.3.5 Consideration

The view that road construction and other infrastructure adjacent to the site at Badgerys Creek would destroy relics ignores the fact that existing and likely future development in the area has, and will have, this result in any case.

Provided proper investigation of any archaeological evidence is carried out, Aboriginal archaeology is not an important consideration in choosing between the two sites.

The concerns of Aboriginal people for their current life styles are recognised; however these concerns are shared by the local community as a whole.

7.4 EUROPEAN HERITAGE

7.4.1 Badgerys Creek

Because of its links with nineteenth century colonial settlement in general, and the family of Gregory Blaxland in particular, this area is of significance, and the site could have sub-surface evidence of this period. However the long period of settlement and development has had its effect. Few

buildings of heritage value remain. The Draft EIS identifies a slab-shed and Vicarys Winery and its associated out buildings as the only items of significance. The buildings and vineyard area at the Winery have considerable local significance and potential for archaeological evidence relating to the first occupation of this area.

7.4.2 Wilton

The Draft EIS has indentified no items of significance at this airport site.

7.4.3 Views of the public

Ten public submissions have referred to European heritage. Concern has been expressed for several buildings at Badgerys Creek which are outside the area to be acquired (Horsley Homestead and a church) and the presence of cemeteries within the site.

7.4.4 Advice from NSW Government Authorities

The Heritage Branch of the Department agrees with the findings of the Draft EIS, but would like to see further investigation of the Vicarys Winery site to determine whether it should be conserved if the airport is constructed at Badgerys Creek. This would require a conservation analysis in the preliminary planning phase of the airport construction to determine whether any conservation measures are feasible and/or necessary.

7.4.5 Consideration

Provided any sub-surface evidence is properly examined and the Vicarys Winery site adequately investigated, European heritage does not appear to be an important consideration in choosing between the sites.

7.5 HAZARDS

The Draft EIS does not include a detailed hazard assessment for the Badgerys Creek and Wilton sites. However some consideration has been given to obstructions to flight paths in selecting candidate airport sites. The Draft EIS also indicates that, prior to commencement of airport operations, a set of Aerodrome Emergency Procedures would be prepared. The procedures would be designed to minimise the harmful effects of any emergency or accident on people, property and community services (such as the water supply near Wilton).

7.5.1 Views of the public

About 20 public submissions raised hazard-related issues. The main concerns were :

- (i) possible air crashes in populated areas;
- (ii) dangers to people and fauna from bushfires started by an air crash or emergency fuel dumping;
- (iii) hazard to aircraft (at Wilton) from restricted visibility during bush fires;
- (iv) hazard to water supply (including Prospect Reservoir) from emergency fuel dumping; and
- (v) the lack of emergency facilities to cope with an air crash.

7.5.2 Advice from N.S.W. Government Authorities

The Department of Health has emphasised the need for emergency services to be able to promptly respond to actual or threatened disaster situations. Badgerys Creeks is more accessible to existing services, being approximately equidistant from Nepean, Mt. Druitt, Fairfield, Liverpool and Camden Hospitals, while Wilton is easily accessible to only Camden and Campbelltown Hospitals. From the point of view of disaster planning, the Department of Health considers that the Badgerys Creek site is preferable.

The MWS&DB has expressed concern about the possible risks of contamination of Sydney's water supply resulting from the development of a second airport on the Wilton site. Further details are provided in section 6.2 of this report.

7.5.3 Consideration

The Department of Environment and Planning has considered potential hazards when assessing the Badgerys Creeks and Wilton sites. There would appear to be three groups of potential hazards, i.e.

- (i) hazards to people and buildings on the ground from aircraft crashes;
- (ii) hazards to aircraft from buildings, installations, topography and atmospheric conditions; and
- (iii) hazards to people on the ground from airport-related development or vehicle traffic generated by an airport.

Australia has a consistently good air safety record, usually being the world's leading nation in this regard. The very low risk of an aircraft crashing into a populated area around an airport is borne out by the fact that such an incident has not yet occurred at KSA. The enviable record at KSA is no doubt partly due to its location relative to large bodies of water and open space and its closure during the night.

Most aircraft accidents occur within airport boundaries. This is the case for about 60% of aviation accidents in Australia. However, aircraft accidents outside airport boundaries tend to be more serious. About 82% of fatal accidents occur outside airports. Overseas experience reveals a relatively high incidence of major aircraft accidents during landing/takeoff manoeuvres. Data indicate that 40-50% of fatal aircraft accidents occur in an area within 7km from the airport and within an arc 15 degrees either side of the runway alignment.

On the basis of 275,000 annual aircraft movements and the distribution of aircraft types forecast in the Draft EIS, operations at a second Sydney airport would result in approximately 0.036 fatal airline accidents per year and 0.28 fatal general aviation accidents per year. This would correspond to an average of about one fatality per annum from aircraft accidents. It is estimated that about 47% of potential fatal accidents would occur on approaches within 8 km of the airport. These estimates are based on overall aviation data. In actual fact the accident rate for a second Sydney airport would be significantly less than one fatality per annum because of the stricter air traffic controls which would be imposed at a second airport versus other airfields and aerodromes included in the general statistics.

The Department has estimated the average number of fatal accidents per year per hectare by distance from a second airport on the basis of 275,000 annual aircraft movements. The results are shown below :

	<u>Distance from Airport (km)</u>				
	<u>0-1</u>	<u>1-2</u>	<u>2-3</u>	<u>3-5</u>	<u>5-8</u>
Within 15 degrees of flight path	0.0046	0.00073	0.00023	0.000069	0.000022
Outside 15 degrees of flight path	0.00011	*	*	*	*

Notes: (1) An asterisk * denotes an incident having a frequency of less than once in a hundred thousand years, which is regarded as insignificant for hazard assessment purposes.

(2) Some 90% of fatal accidents would be general aviation accidents (hence involving only light planes)

The above results show that the risk of a fatal accident on any one hectare area of land either (a) more than 8km from the airport within 15 degrees of the flight path or (b) more than 1km from the airport outside 15 degrees of the flight

path is insignificant. The probability of a fatal accident within 8km of the airport and within 15 degrees of the flight path is still very low relative to other risks in everyday life. Nevertheless, it would be prudent to ensure that land use controls in the vicinity of the airport are compatible with the aircraft accident risk, albeit a very low risk. Development controls would be warranted in any event to minimise aircraft noise impacts, and the 25 ANEF contour may provide the appropriate buffer zone for aircraft noise and accident risks.

The Department therefore considers that zonings which have a low population or workforce density should preferably be used within 8km of the airport boundary in the directions of flight paths. These zonings could permit land uses such as non-urban and open space or some industrial development with a low workforce density such as warehousing. Uses involving residential and commercial development and sports stadiums where large numbers of people may congregate should be prohibited; a similar comment applies to tall structures and potentially hazardous industries. Particular emphasis should be given to maintaining land within 3km of the runway and 15 degrees of the flight paths as rural or cleared open space. Such land would correspond approximately to the 30 ANEF contour.

7.5.1 Hazards to people and buildings

There have been few instances in Australia of fatalities to people on the ground from aircraft crashes and accidents. The small amount of available data has made it difficult to estimate the relevant accident risk for a second airport in Sydney. Some idea of the level of risk can be gleaned from an analysis of world accident statistics, however, this would indicate a risk higher than the actual level of risk at a second airport because of Australia's exceptional air safety record.

Between 1979 and 1984 approximately 7,400 people died in world airline accidents (including U.S.S.R.), of whom only 120 people were on the ground outside any airport. Using these statistics, it can be calculated that the probability of a fatality to a person on the ground outside Sydney's second airport would be .006 per annum based on 275,000 annual aircraft operations (i.e. one fatality every 170 years). As indicated above, the actual risk for a second airport would be substantially less than this if allowance is made for Australia's higher safety record and the maintenance of appropriate land use controls in the vicinity of the airport. (Most ground fatalities overseas have resulted from aircraft crashing into residential areas or offices located close to airport perimeters.)

Because of the current low density of residences and other buildings around both the Badgerys Creek and Wilton sites, the risk of a fatality or an injury to people on the ground

from aircraft operations is considered insignificant. Land use controls should ensure that this situation is not altered.

7.5.2 Hazards to aircraft and passengers

With the exception of the transmission lines which will have to be relocated, there are no buildings or structures near the Wilton site which would constitute a hazard to aircraft safety. On the other hand the generally forested rugged topography near the site would suggest that the consequences of crash landing may be particularly severe.

By comparison to the Wilton site, the Badgerys Creek site has more even and cleared land under potential flight paths. This suggests that a light plane is more likely to sustain minimal damage during a crash landing at Badgerys Creek than at Wilton. Although there are more buildings in the Badgerys Creek area, the chance of an aircraft hitting a building is considered negligible.

7.5.3 Hazards from aircraft-related activities

The development of an airport can result in the establishment of potentially hazardous facilities within the site, such as fuel storage installations. The risks from such facilities can be minimised by appropriate airport design and hazard safeguards. This would not be a significant factor in choosing between the sites.

Potential hazards arise from the high level of motor vehicle traffic generated by an airport. People going to an airport are frequently in a hurry and have to travel long distances. The extra travel distances to an airport at Wilton significantly increase the risk of an accident. If average N.S.W. accident statistics are used, the extra distance involved could result in an additional 20-30 road fatalities per year should aircraft operations reach 275,000 annual movements. By comparison it is estimated that on average there would only be about one fatality per year from aircraft accidents, and the risk of a fatality to people on the ground should be lesser than about 1 in 200 years.

7.5.3 Consideration

In conclusion, the Department considers that there is no significant risk of a fatal aircraft accident at both the Badgerys Creek and Wilton sites in regard to people on the ground or aircraft passengers provided appropriate land use controls are maintained in the vicinity of the second airport site. The Badgerys Creek site has a number of advantages in reducing potential hazards as follows :-

- . The shorter travel distances to Badgerys Creek would result in a much lower potential for fatalities and injuries arising from motor vehicle accidents and 20-30 fewer road fatalities per annum.

A crash landing (particularly by light planes) at Badgerys Creek would probably result in less injury than one at Wilton because of the forested rugged topography at the latter site and the cleared, more even ground at Badgerys Creek.

The metropolitan water supply could be affected by an aircraft accident at Wilton either through fuel contamination or igniting of a bush fire in the catchment area.

Emergency health services are more accessible to the Badgerys Creek site in the event of an aircraft accident.

7.6 ECONOMIC FACTORS

There are a number of economic factors associated with a second airport including:

- (i) land acquisition and development costs;
- (ii) loss of agricultural production;
- (iii) sterilisation of mineral resources;
- (iv) employment generation;
- (v) promotion of regional development; and
- (vi) local effects such as changes in land values.

Items (i) to (iii) above are addressed in the following sections of this chapter. Employment and regional development implications are addressed as planning considerations in Chapter 8. Changes in local land values are inevitable results of the decision to reserve an airport site. Although this issue is of immediate local concern, it is difficult to forecast the long-term implications given future urbanisation trends and the likely development pressures around a second airport arising from improvements in transport and other infrastructure. Acquisition of buffer zones, compensation and appropriate land use controls would also tend to offset any loss in land values.

7.7 AGRICULTURE

7.7.1 Badgerys Creek

At the present time, agriculture is the dominant activity at this airport site, although the area has potential for urban expansion in the future. About 75% of the area within the 25 ANEF contour is given over to agricultural activities.

Agricultural activities can be grouped thus:

- (1) Intensive livestock
 - piggeries
 - poultry

- (2) Intensive cropping
 - nurseries
 - vegetables
- (3) Grazing
 - dairing
 - trotting/thoroughbred horses
 - beef cattle
- (4) CSIRO McMaster Research Station

The most significant production in terms of its contribution to Sydney markets are in broiler chickens and tomatoes, the former being significant to state-wide production.

In terms of gross value of production, horse spelling and egg production are worth in excess of \$1 million each while the nett value of horse spelling and dairying is in the vicinity of \$150,000 each within the site. Within the 25 ANEF contour the same general ratios hold, although the absolute values of production are lower.

In the event of urban development occurring, subdivision for residential development will be likely to occur first on land used for grazing-based activities due to their low return. After beef cattle disappears, piggeries are likely to follow.

The Draft EIS refers to a number of studies on the effect of noise on livestock and concludes that, with the exception of pigs, most animals will adapt to noise. For short-lived broilers however, there will be a need for new stock to be imported from "noisy" areas during the initial stages of operation.

The Draft EIS also concludes that while many farmers will move their operations to other areas, many will cease operations or retire. Others will be unable to move as replacement properties within proximity to existing markets will not be available.

7.7.2 Wilton

At the present time the dominant land use at this site is uncleared forest most of which comprises Metropolitan Water Catchment, a use which is unlikely to change in the future. Only 1.5% is given over to agricultural production i.e.

- (a) beef cattle; and
- (b) thoroughbred horse spelling.

Both types of activity are insignificant in terms of value of production as a percentage of the Sydney and State markets.

7.3 Views of the public

sixteen public submissions have referred to the adverse impact from noise on poultry, pig and horse establishments outside the acquisition area and the difficulty for farmers in relocating. Very little concern has been expressed for the Wilton site in this regard. According to public submissions the values of agricultural production at Badgerys Creek is variously over-and under-estimated.

7.7.4 Advice from NSW Government Authorities

The Department of Agriculture's concern is to see that all land of classes 1 to 3 should be maintained for agricultural production. Therefore, because some 80% of the Badgerys Creek site is so classed, they are not in favour of this site for airport development.

The Department agrees with the findings of the Draft EIS but estimates lost production at twice the \$5m determined in the Draft EIS. It points out that the selection of the Badgerys Creek site will bring pressure for airport-associated development and urbanization in general. The result will be that agriculture and developers will compete for a diminishing resource.

The Department is concerned that selection of the Badgerys Creek site will result in:

- (i) direct loss of agricultural land; and
- (ii) indirect loss of agricultural land through competition for alternative sites for both urbanisation and agricultural production, particularly the Cobbity-Cawdor area.

The Department of Agriculture has also referred to the lack of information regarding the removal and disposal of green timber, particularly at Wilton, and the subsequent necessity for sediment control works requiring the advice of the Soil Conservation Service.

7.7.5 Consideration

It is apparent that, from the point of view of agriculture, Wilton is the superior site because the loss of production is minimal.

The costs, identified by the Draft EIS, are underestimated because they do not attempt to quantify the value to agriculture of lost production from land outside the acquisition area as a result of airport-related construction.

The effect of this estimation is less at Wilton because on much of the land is used for Water Catchment, and therefore is unavailable for alternative uses.

However, it needs to be pointed out that lost production is possibly inevitable in the longer term due to urbanisation of the Badgerys Creek area. Prime class 1 land has already been lost at Campbelltown and around the Richmond/Hawkesbury area due to urban development.

The selection of the Badgerys Creek site will require the following short-term response:-

1. Direct urban development towards the Bringelly sector and South Macarthur; and
2. Maintain Cobbity-Cawdor for agricultural production.

In the longer term the permanence of any agricultural activity will depend upon the land supply and it is not clear how long before pressures to develop Cobbity-Cawdor will become evident.

In summary the Wilton site is superior from the point of view of agriculture but only in so far as existing agricultural activities can resist pressures for urban development. It could follow that the future for agriculture in the Badgerys Creek area is limited anyway, and the selection of the Badgerys Creek airport site can be justified, at least on that ground.

7.8 MINERAL RESOURCES

The Department of Mineral Resources has provided information on the coal resources underlying the proposed Badgerys Creek and Wilton airport sites. The Department's estimates are provided below since they are considered to be more accurate than the figures used in the Draft EIS.

7.8.1 Badgerys Creek

According to the Department of Mineral Resources the in-situ inferred resources of coal beneath the Badgerys Creek site is approximately 100 million tonnes. The coal is located in two seams at depths of 830m and 850m and has potential for both coking and thermal fuel supplies. Based on the current economic constraints within the world coal market, the relatively poor quality and thickness of the seams and the capital investment required to establish new mine, the Department of Mineral Resources considers it unlikely that the coal would be mined within the next 60 years.

The Badgerys Creek site may contain light-firing clay / shale resources which are presently in short supply. Similar resources probably occur in areas between Camden and Penrith which are currently being investigated by the Department of Mineral Resources.

If suitable clay/shale deposits were found to occur on the Badgerys Creek site, it might be possible to co-ordinate the extraction of some of this material from the site during airport construction or to completely extract the resource prior to airport development. Extraction could also take place in some noise-affected areas unsuitable for residential or other development.

7.8.2 Wilton

The proposed Wilton airport site would potentially sterilise coal resources within the proposed extension to South Bulli Colliery (West Bellambi) operated by the Bellambi Coal Company and within a coal development area which has been set aside for potential future mining (East Bargo). Total in-situ coal resources underlying the airport site are 84.4 million tonnes of which 53.6 million tonnes are recoverable. The distribution of the resources underlying the airport site is shown in the following table provided by the Department of Mineral Resources:

<u>Seam</u>	<u>WEST BELLAMBI</u>		<u>EAST BARGO</u>	
	<u>In-Situ</u>	<u>Recoverable</u>	<u>In-Situ</u>	<u>Recoverable</u>
Bulli	18.0	11.3	13.7	8.0
Balgownie	10.6	6.9	4.7	2.7
Wongawilli	<u>25.9</u>	<u>17.1</u>	<u>11.5</u>	<u>7.6</u>
Total	54.5	35.3	29.9	18.3

Note: All figures in million tonnes.

The Bulli seam is an important hard coking coal resource. The Balgownie and Wongawilli seams contains coal suitable for either steaming coal or as a coking coal blend. The Balgownie seam is not a viable minning proposition at this time, however it may become viable in a future coal market situation.

The Department of Mineral Resources has estimated that the value of the potentially sterilised coal resource in West Bellambi to New South Wales would be up to \$100 million (net present value).

It would be possible to design airport structures to withstand subsidence effects and thus allow some coal extraction under the airport. Assuming that first workings would be permitted beneath the runways and other facilities and that only runways and taxiways required protection from subsidence, 3.6 million tonnes of the Bulli seam within the West Bellambi lease would be sterilised as opposed to 11.3 million tonnes if no mining could take place.

Other than the coal resource, there are no known mineral resources underlying the proposed Wilton airport site.

7.8.3 Views of the public

About 30 submissions were concerned about the potential sterilisation of mineral resources mainly at the Wilton site. Opponents of this site considered that the significance of the coal resources had been underestimated whereas the supporters of the Wilton site considered that extraction of most of the coal could still be possible. Few submissions were concerned about the mineral resources at the Badgerys Creek site.

The Bellambi Coal Company in association with the Combined Mining Union of the South Bulli Colliery made a detailed submission on the potential effects of airport development at Wilton on the Company's future mining operations. The submission contained the following conclusions :

- (a) Location of the second Sydney airport at Wilton would have serious adverse implications for the proposed redevelopment of the South Bulli mine at West Bellambi. The airport location would sterilise some 54.5 million tonnes of in-situ coal in the South Bulli lease, and it would eliminate the proposed site of the West Bellambi surface facilities.
- (b) A redevelopment at West Bellambi is the preferred option to secure the long-term future of South Bulli, and associated employment. The economics of this re-development are already marginal, and the airport proposal would adversely affect these economics. Thus, unless offsetting arrangements can be developed, the proposal would raise further doubts over the long-term future of South Bulli.
- (c) The airport proposal would have the following impact:
 - . Reducing the planned project life for Bulli operation to an extent which may be too short to justify a \$150 million investment at West Bellambi.
 - . Extra costs arising from the need to relocate the proposed surface facilities from their presently planned location.
- (d) In addition to resources sterilised in the South Bulli lease, some 30 million tonnes of in-situ coal would also be sterilised in the East Bargo area and, potentially, significantly more unless suitable access is allowed from the South Bulli lease.
- (e) It is not realistic to mine the coal under the airport prior to construction.

(f) The quality of the coal beneath the proposed airport is not "inferior" or "uneconomic" in the negative sense implied by the Draft E.I.S. It is potentially saleable in the right market and must be viewed as an economic resource. The potential sterilisation is thus a real concern in terms of opportunity loss to the State and the Company.

(g) In these circumstances, Bellambi Coal Company strongly opposes the location of the airport at Wilton unless:-

- . Accessible resources to replace the sterilised South Bulli resources can be made available in a contiguous area at least comparable in quantity, quality and mineability.
- . Suitable land can be made available to satisfactorily relocate the West Bellambi surface facilities. Ideally, this should be incorporated in the airport land acquisition programme.
- . The additional costs involved in relocating the surface facilities can be offset in some way.
- . Access to the East Bargo area from the South Bulli lease is allowed for in the airport planning.

The Bellambi Coal Company considered that the Macarthur Regional Environmental Plan should take cognisance of the above development.

Finally, the Company's submission stressed that a decision on the location of the second airport is critical to Bellambi Coal Company's decision-making on the West Bellambi project. Given the urgency, arising from market pressures, to resolve the direction of the long-term redevelopment of South Bulli Colliery, the Company emphasised that it is important that the airport location decision be made as rapidly as possible if the Company is not to be seriously disadvantaged.

7.8.4 Advice of NSW Government Authorities

The Department of Mineral Resources does not foresee any major obstacles to the development of an airport at Badgerys Creek. The coal resources underlying this site cannot be regarded as a viable prospect in the foreseeable future. The value and importance of coal resources that may be sterilised at the Wilton site are greater than the resources of light-firing clay/shale that may be sterilised at the Badgerys Creek site.

The Department of Mineral Resources stated that it would object to the development of an airport at Wilton if it

results in a significant sterilisation of the coal resources underlying the site or has a major effect on the viability of the West Bellambi proposal. The Department also pointed out that the recovery of the coal resources underlying the Wilton site is more likely to occur because it represents an extension of an existing mining operation whereas at Badgerys Creek a new mine would have to be established. Extraction of the coal beneath the Wilton airport site prior to construction is not regarded as feasible by the Department of Mineral Resources because of time constraints, mining logistics, the marginal nature of the West Bellambi project and current availability of markets for the lower quality and product.

7.8.5 Consideration

It is clear from the submission of the Bellambi Coal Company and the advice of the Department of Mineral Resources that airport development at the Wilton site would potentially sterilise a significant coal resource. Further it could jeopardise the future of the Bellambi Coal Company, which currently has a workforce of more than 700 people. For these reasons the Badgerys Creek site would be the preferable one on the basis of resource sterilisation and potential loss of jobs in resource development. If Wilton is chosen as the airport site, plans would have to be drawn up between the Department of Aviation, Department of Mineral Resources and the Bellambi Coal Company to minimise coal sterilisation and attempt to maintain the viability of the company's operations in the long term.

7.9 ACQUISITION AND DEVELOPMENT COSTS.

7.9.1 Badgerys Creek

It will cost approximately \$31.5 million to acquire the 241 separate land titles within the site boundary.

7.9.2 Wilton

It will cost approximately \$1.8 million to acquire the 18 separate land titles within the boundary.

7.9.3 Views of the public

Some 300 submissions expressing concern with the cost of land acquisition were received. Almost all of these referred to the Badgerys Creek site. Major public views were:

- . The total cost and number of houses to be acquired is underestimated by the Draft EIS.
- . All land within the 25 ANEF should be resumed.
- . Property values have been depressed by airport speculation for years.

There would be difficulties for people in relocating their homes.

There would be general problems with the acquisition arrangements permitted by the Commonwealth Land Acquisition Act, 1955.

Comments relating to Wilton expressed the view that the land value was underestimated, particularly as it did not cover the cost of MSW&DB land. Planning blight was seen as a problem at both sites.

One organisation specifically identified the failure of the Draft EIS to include water treatment costs as part of the total cost at Wilton.

4 Advice of NSW Government Authorities

MSW&DB has identified several areas of concern, indicating a preference for the location of the second airport at Badgerys Creek:

- (i) In order to protect water quality, the perimeter drainage system would have to be more substantial than at Wilton (additional cost \$40 million approximately.)
- (ii) The MSW&DB believes that, despite views expressed to the contrary, it will be difficult to safeguard the quality of Sydney's water supply, and water treatment works costing \$70 million plus \$3 million per year operating cost will be required if the second airport is located at the Wilton site.
- (iii) The costs of serving an airport at Wilton with water and sewerage is greater because it is further from existing urban development (\$70m at Wilton versus \$60m at Badgerys Creek).

Other Government Departments have identified various costs:

1. Local Government: \$100,000 pa in rate revenue lost at Liverpool Council (Badgerys Creek) versus \$300 pa by Camden Council (Wilton).
2. Various: costs of relocating electricity lines, gas pipelines etc.
3. Transport Costs: Neither the Ministry of Transport, Department of Main Roads nor the Minister for Industry and Decentralization have questioned the broad costings for road and rail access.
4. The Department of Mineral Resources has valued resources at Wilton as being more valuable than clay/shale resources at Badgerys Creek.

5. The Department of Agriculture has valued agricultural resources at Badgerys Creek highly in comparison to Wilton.

7.9.5 Consideration

It is clear that a choice between the sites on the basis of acquisition favours the Wilton site. However such a decision is misleading. The expected costs of the more substantial perimeter drainage system required at Wilton alone is enough to "balance" the figures. Additional costs of water treatment at Wilton give a cost advantage to Badgerys Creek in the order of \$70 million plus saved operating costs, if such works are required to safeguard Sydney's water supply.

Other costs are extremely difficult to quantify. The potential loss of coal resources depends upon a number of factors while the loss of agricultural production might occur anyway because of urbanisation. Relocation of services has not been quantified.

The costs of road and rail access and service infrastructure attributable to the airport are difficult to isolate. These would depend on the services required in any event for future urban development in the south-western areas of Sydney.

It may be that although the costs of service are substantial, they could be similar in both locations when all factors are balanced out.

In the absence of a detailed financial analysis, a clear preference for either site in terms of acquisition and development costs cannot be made.

8. PLANNING CONSIDERATIONS

In this chapter, the Department addresses a number of factors which are important elements in planning for Sydney's urban expansion, particularly in the western half of the Region where the Badgerys Creek and Wilton sites are located. The role of the second airport will have an important influence in this regard. Specific factors examined are employment, accessibility and transport and service infrastructure. These are also important considerations in the Department's work on the metropolitan strategy and centres policy for the Sydney Region and the preparation of regional environmental plans for future growth areas.

The Draft EIS argues that many large metropolitan regions in developed countries are served by multi-airport systems, notwithstanding a wide diversity of economic and regulatory conditions. It can be expected that as the two largest metropolitan areas in Australia reach a similar size, they will also be best served by multi-airport systems.

A multi-airport system can operate more efficiently than a single airport system for two reasons. Firstly, the second airport allows the separation of different types of traffic, enabling the number of aircraft movements per hour to be increased at the primary airport. In addition, the second airport will tend to cater for the daily or seasonal peaks in air traffic, allowing the utilisation of the primary airport to be increased in off-peak periods without increasing that airport's peak capacity.

As well as its contribution to efficient utilisation of infrastructure, a second airport can have environmental and economic development benefits for a metropolitan region. The environmental benefits of a second airport stem from the relief of aircraft noise impacts around the primary airport. An earlier section of this report has argued that development of a second airport would remove any need for expansion of Sydney's primary airport.

A second airport can assist economic growth by providing opportunities for the development of innovative services in new market sectors and for existing services that are constrained by the curfew at the primary airport. Services which are seen as an environmental or operational nuisance at the primary airport will often be assisted by the second airport operator as a means of promoting use of the second airport. In this way, development of a second airport can stimulate competition in the air transport services of a metropolitan region.

Because of the factors discussed above, airports in a multi-airport system tend to specialise in the markets they serve. The primary airport, which may have between 2 times and 5 times the number of passengers at the second airport, will tend to specialise in business travel, providing high

frequency in services and a broad range of destinations but at premium fares. The second airport will tend to specialise in leisure travel, providing cheap fare and charter services plus facilities for air cargo and traffic sensitive to curfew restrictions.

The Draft EIS points out that the location of a second airport would influence the time at which it would need to open. Passengers at a second airport will be trading off the access time to the second airport against the delays and higher costs at the congested primary airport. The greater the access time to the second airport is, the worse the congestion level will have to be at the primary airport before passengers will transfer to the second airport. It could be expected, therefore, that an airport at Badgerys Creek would attract the level and type of traffic discussed above many years before an airport at Wilton would.

As Chapter 2 (on the need to reserve a second airport site) discussed, the Department of Environment and Planning is developing a long-term Metropolitan Strategy for the Sydney Region. Within the framework of the Strategy, the Department is also preparing Regional Environmental Plans (REPs) for the north-west and south-west sectors of the Region.

These REPs will determine the spatial pattern and sequence of urban development in the western half of the Region from 1990 into the first decade of the 21st century. The planning implications of the two second airport options for the Macarthur REP are considered in detail at the end of this chapter.

8.1 METROPOLITAN STRATEGY

The Metropolitan Strategy is aimed at planning for the Sydney Region's growth from a population of 3.25 million in 1981 up to a population of 4.5 million. On current trends, it is expected that this level will be reached around 2011; but it may eventuate as early as 2006 or as late as 2016.

The major areas of new urban development after 1990 will be the north-west and south-west sectors and, to a lesser extent, Warringah and the Central Coast. Although the Department is supporting a major programme of urban consolidation in the established urban areas, this programme is not expected to result in an increase in population in those areas, because of the continuing fall in occupancy rates (number of people per household). Consequently, most of the 1.25 million extra people will have to be housed in the areas of new urban development.

The Department has examined a wide range of population distributions for the Metropolitan Strategy, but has reduced these to two options for accommodating 4.5 million people. The preferred option is the Consolidated Scenario based on

9,000 new multi-unit dwellings per year and a density of 10 lots per hectare in new areas. The other option is the Dispersed Scenarios based on 6,000 new multi-unit dwellings per year and a density of 8 lots per hectare in new areas.

These distributions are summarised below for the sub-regions as shown in Fig. 8.

SUB-REGION	POPULATION 1981	CONSOLIDATED SCENARIO	DISPERSED SCENARIO
Eastern	932,000	853,000	798,000
Northern	689,000	727,000	673,000
Southern	366,000	415,000	386,000
Liverpool	226,000	499,000	502,000
Macarthur	130,000	456,000	508,000
Parramatta	413,000	416,000	386,000
Penrith	213,000	333,000	323,000
North West	118,000	452,000	552,000
Central Coast	116,000	308,000	332,000
TOTAL	3,253,000	4,460,000	4,461,000

It is worth noting that in both scenarios about 2.2 million people, i.e. about half the Region's population, will be living in the western half of the Region, i.e. the Liverpool, Macarthur, Parramatta, Penrith and North-West Sub-regions. This is double the present population of 1.1 million in the western half of the region.

The Strategy is not just planning a population distribution but deals with economic and social development, the location of future employment, the need for new infrastructure (including extensions to the arterial road system and the public transport system) and environmental issues.

As the Region's population grows to 4.5 million, the workforce is expected to grow from a current level of about 1.4 million to about 1.8 million.

Since most of the population growth will be housed in the areas of new urban development, it can be expected that most of the 400,000 extra workforce will reside in those areas.

Most of the growth in employment in the next 25 years is expected to be in the tertiary or quaternary (ie. service)

8.2.1 Badgerys Creek

A comparison of access times by road to Badgerys Creek with access times to Kingsford Smith Airport, shows that all of the western half of the Sydney Region is closer to Badgerys Creek than KSA. Road access has been used here because there is no rail service to KSA and it might be a long time before a second airport had such a service. (The "western half" was defined above as the following sub-regions: North-West Sector, Parramatta, Penrith, Liverpool and Macarthur). In fact, all of the western half of the Region is within 60 minutes travel time of Badgerys Creek.

This means that in 1981 there were already 1.1 million people living closer to Badgerys Creek (in travel time) than to KSA. By about 2011, there will be about 2.2 million people living closer to Badgerys Creek than to KSA.

In 1981 there were nearly 1.6 million people living within 60 minutes driving time of Badgerys Creek. By 2011 there will be at least 2.6 million people living within the same catchment.

Since the second airport could eventually serve business travel from the western half of the Region, it is also worth noting the travel times to the regional and sub-regional centres:

Centre	Road access time (minutes)
Parramatta	45
North-West Sector	50
Blacktown	40
Mt. Druitt	40
Penrith	45
Liverpool	25
Campbelltown	40
Bringelly Sector	10
Bankstown	45
Wollongong	90

The Draft EIS also estimates an average access time for all air passengers using a distribution of origins and destinations based on 1983 trip generation rates for different areas. The average access time by road for Badgerys Creek is 69 minutes.

8.2.2 Wilton

Access times to Wilton by road (see Fig. 15.4.9 of the Draft EIS) can also be compared with access times to Kingsford Smith Airport. It appears that the Macarthur sub-region and the western part of the Liverpool sub-region are the only areas in the Sydney Region which would have a shorter travel

time to Wilton than to KSA. They had a population of less than 140,000 in 1981 and are expected to have a population of at most 750,000 by 2011. However, the whole Illawarra Region is closer to Wilton than KSA. The 1981 population was 305,000 and the median population forecast for this region is 459,000 in 2011. So the total population which would be closer to Wilton than KSA was less than 450,000 in 1981 and would be about 1.2 million by 2011.

For the other accessibility criterion, the Macarthur sub-region and the southern part of the Liverpool sub-region are the only parts of the Sydney Region within 60 minutes travel time by road from Wilton. The 1981 population was about 180,000, which is predicted to grow to at most 750,000 by 2011. However, all of the Illawarra Region except Shoalhaven is within 60 minutes travel time by road. The 1981 population of this part of the Illawarra Region was less than 260,000. Recent work for the Department suggests that the population of Wollongong, Shellharbour and Kiama could grow to 290,000 by 2011. Assuming that Wingecarribee will continue its recent growth rate, it may have a population of 55,000 by 2011. Therefore, there will be at most 1.1 million people within 60 minutes travel time by car from Wilton in 2011 compared with about 440,000 in 1981.

The travel times by road from Wilton to regional and sub-regional centres would be:

Centre	Road access time (minutes)
Parramatta	85
North-West Sector	100
Blacktown	90
Mt. Druitt	90
Penrith	105
Liverpool	65
Campbelltown	35
Bringelly Sector	60
Bankstown	75
Wollongong	25

The Draft EIS also estimates for all air passengers an average access time by road to Wilton of 102 minutes.

8.2.3 Views of the public

Public submissions objecting to each site have emphasised the distance of each site from the existing urban areas, particularly as road transport is seen as the likely mode of access to the new airport. Some submissions have considered high speed rail access as a means of ameliorating the problem of access. Concern has also been expressed for access related problems such as greater congestion, cost of transport infrastructure and the need to acquire transport corridors.

8.2.4 Advice from N.S.W. Government Authorities

The Ministry of Transport considers that the treatment and measurement of access issues in the Draft EIS are adequate given the nature and objectives of the document. It would be desirable for the N.S.W. Government to commission, for its own information, further economic and financial analyses for user access costs and rail operating costs.

8.2.5 Consideration

It was clear at the short-listing stage that Badgerys Creek is more accessible than Wilton. However, it is only when they are compared in the context of the Metropolitan Strategy that it becomes apparent that a second airport at Badgerys Creek would have a population catchment 2-3 times the size of Wilton's, even when the Illawarra Region's population is included.

It is likely, therefore, that an airport at Badgerys Creek would reach a threshold at which it would be viable to provide higher order services than an airport at Wilton could provide. This threshold would be analogous to that between a sub-regional centre such as Campbelltown serving the Macarthur sub-region and the regional centre at Parramatta serving the western half of the Sydney Region. Similarly, an airport at Badgerys Creek with a population of 2.6 million people within 60 minutes travel by car could eventually develop the full range of air services demanded by the western half of the Region.

In contrast, an airport at Wilton would really only serve the Macarthur sub-region and the Illawarra Region. At present, about two-thirds of the population in Wilton's catchment is in the Illawarra Region. Until South Macarthur is developed Wilton would be in an isolated location halfway between the two markets it would be trying to serve. Since it is unlikely that Wilton would ever have a more significant role than a regional airport, it would merely provide facilities which could be more conveniently developed at Camden and Albion Park Aerodromes.

The difference in potential roles of the two airport sites is emphasised by a comparison of access times to the regional and sub-regional centres. In the case of Badgerys Creek, it would have an access time by road of 50 minutes or less to every centre in the western half of the Sydney Region. Wilton would have a road access time of 60 minutes or more to all these centres except Campbelltown.

Badgerys Creek would have an average road access time of 38 minutes to the 9 centres whereas Wilton would have an average of 78 minutes. If these centres develop as envisaged in the proposed Centres Policy, Badgerys Creek could eventually provide for the business travel generated by a total of 200,000 jobs in commercial centres in addition to the leisure travel generated by over 2 million population.

When viewed from the perspective of existing urban development, the public's perception of the relative remoteness of each site appears correct but this does not take into account future urban expansion nor the current remoteness of KSA from many areas in Sydney's west.

8.3 EMPLOYMENT/ECONOMIC IMPACTS

The assessment of economic impacts in the Draft EIS covers the acquisition of the proposed site and the future construction and operation of an airport. Impacts have been considered on 3 spatial levels - regional (Sydney Region), subregional and the immediate airport locality. The sub-regional area for Badgerys Creek has been defined as the LGAs of Penrith and Liverpool and for Wilton the LGAs of Wollondilly, Campbelltown and Wollongong.

8.3.1 Effects at acquisition stage

The Draft EIS has attempted to calculate the value of agricultural production likely to be displaced by a Badgerys Creek siting but presented no evaluation of employment effects. A similar assessment of the Wilton sub-region concluded that agricultural production is insignificant but neglected to evaluate the potential for sterilisation of coal reserves and the consequent employment implications for the mining industry.

8.3.2 Effects at construction stage

A construction workforce reaching 1,600 people in a peak year has been estimated in the Draft EIS for an airport at either site. Employment multiplier effects in the associated sub-regions were based on the multiplier for the building and construction sector of the Kingsford-Smith sub-region used in an economic impact study of KSA. The KSA multipliers were discounted because of the expected higher leakages of flow-on effects in fringe areas with lesser developed industrial structures. However, no rationale has been provided for the actual level of discounting and the KSA multiplier is still used to calculate a maximum employment level. The Wilton subregional analysis uses higher multipliers than Badgerys Creek suggesting that a lower level of leakage effects has been assumed. The reason for this has not been specified in the Draft EIS but probably reflects the geographic extent of the LGAs in this sub-region, since the larger the defined sub-region the smaller the leakages out of that sub-region. This flow-on employment in the Badgerys Creek sub-region has been estimated by the Draft EIS to be between 600-1100 people compared to 950-1100 people in Wilton sub-region.

No indication has been given in the Draft EIS of the proposed phasing of construction. These maximum employment figures would apply only if the entire airport was constructed in one phase, however it may be more realistic to expect a phasing

of construction in a series of stages as demand increases. Hence both the level of direct and flow-on employment would be lower but spread over a longer period.

8.3.3 Operation of airport

The maximum direct employment levels associated with a second airport operating at a level of 13 million passengers per year have been estimated by applying maximum likely ratios of employment to traffic based on existing movements at Australian airports. An estimated maximum direct employment (includes international and domestic airlines, airport commerce and administration, general aviation) of 10,500 was calculated.

This figure will be sensitive to the eventual mix of functions at the airport and the extent to which transfers of airline employees from KSA takes place. No detail has been provided to establish the period over which this maximum level of employment is likely to be reached and how this may differentially impact upon either site. The Draft EIS suggests (p.546) that due to various constraints "the time at which development of a second airport at Wilton would become viable would be later than at Badgerys Creek". Thus estimates of maximum direct employment could be misleading and should be qualified by some statement about the likelihood and timing of reaching what in employment terms is a 'best case'.

Employment benefits relating to airport-associated industries (freight, customs, car rental firms etc.), airport-induced industries and multiplier effects will also be affected by the timing of investment. Employment in airport-associated industries has been assumed to be about 900 persons based on the assumption that freight forwarders and customs agents (the major component of this sector) are unlikely to duplicate operations at a second airport. It could be equally argued that given the attraction of extra land and the absence of a curfew, freight forwarders may choose to base their operations at a second airport. Airport induced industry has been assumed to be minimal (employing 100 persons). Overseas studies do indicate that such industry is attracted in the long term by the substantial infrastructure associated with an airport but not necessarily by the airport per se.

Subregional employment multiplier effects were based on KSA multipliers discounted only for the absence of an oil refinery (providing aviation fuel), producing a maximum flow-on employment of 2,300. Multiplier values have not been specified in the Draft EIS, and no attempt has been made to provide a range of flow-on figures for less developed subregional economies similar to those provided with the construction employment effects.

8.3.4 Views of the public

In general, public submissions have focussed on the likelihood of obtaining maximum net employment benefits. On the sub-regional level, job losses in both the Badgerys Creek sub-region, in dairy and poultry industries, and the Wilton sub-region, in mining, local wineries, etc were predicted. On a regional level a number of submissions emphasised the potential job losses in the local business environment at KSA if jobs were transferred to a second airport.

The potential of a new airport to generate employment in sub-regional tourism was raised in a number of submissions.

The submission by Wollongong Council has argued that an airport at Wilton would provide employment for the Illawarra Region and that area deserves special attention because of its "continuing employment crisis".

8.3.5 Consideration

Apart from airport accommodation (included in airport associated industries) the potential to stimulate other tourist activities in the sub-region is likely to be minimal and probably not enough to be more favourable to one site over another.

The estimated unemployment rate in the Illawarra Region was 14.1% in March 1985, with a total of 19,800 people unemployed. Although the Illawarra Region's unemployment rate is higher than that in Western Sydney (11.6%) or South Western Sydney (11.8%), the number of unemployed in the Illawarra is far smaller in absolute terms, with 48,800 unemployed in Western Sydney and 12,700 unemployed in South Western Sydney.

Whereas the Wilton site has about 32,500 unemployed people within 60 minutes travel time, Badgerys Creek has about 87,500 unemployed within the same travel time (including 26,000 in Southern Sydney). The labour force within 60 minutes of each site is about 250,000 for Wilton and 750,000 for Badgerys Creek.

Although no detailed workforce estimates are available for 2011, it can be assumed that they will be proportional to population. Therefore, the workforce living within 60 minutes of Badgerys Creek will be more than double the workforce living within 60 minutes of Wilton.

On the basis of any of these criteria, an airport at Badgerys Creek would draw on a much larger labour force catchment than Wilton and, therefore, could increase employment in the area with the largest concentration of unemployment in New South Wales (in absolute numbers).

It should be emphasised that the predicted sub-regional employment effects quoted in the draft EIS are maximum levels and will vary according to such factors as the phasing of airport construction, the eventual mix of airport functions and the complexity of sub-regional industrial structure in the future. On the basis of the information provided, employment effects in absolute numbers do not differ significantly by site.

However, given that both sub-regions currently have high unemployment levels, the earlier a site becomes viable the more immediate will be the impact on employment in that sub-region and in the Sydney Region as a whole. Given the preceding discussion about the relative timing and scale of development at Badgerys Creek and Wilton, it can be concluded that an airport at Badgerys Creek would provide more jobs and earlier jobs than an airport at Wilton.

An airport at Badgerys Creek, therefore, would bring greater employment benefits than one at Wilton. These benefits would occur in the area with the largest concentration of unemployment in New South Wales.

8.4 TRANSPORT INFRASTRUCTURE

The Draft EIS examines the impact of a "worst case" second airport on the future road and rail systems in the Sydney Region. The assumptions about the future transport systems are based on a population of 4.5 million for the Sydney Region.

Although the Metropolitan Strategy is based on this population, the long-term transport systems assumed in the Draft EIS have no general government commitment. However, the Access Working Group (which included officers of the State Transport on Study Group, the State Rail Authority, the Urban Transit Authority, the Department of Main Roads and the Department of Environment and Planning) considered that the base networks assumed by the Draft EIS are a reasonable basis for comparing the relative impacts of the two airport sites.

The base road network assumed for 2011 (the forecast year for 4.5 million population) includes:

- (i) widening of the Western Freeway from four to six lanes;
- (ii) widening of the South Western Freeway to six lanes and extension east to King George's Road;
- (iii) development of a grid of 4 or 6 lane arterial roads in the areas of new urban development.

The base rail network assumed for 2011 includes:

- (i) the current extension of the East Hills line to Glenfield on the Main Southern Line;
- (ii) the linking of Merrylands on the Main Southern Line to Harris Park on the Main Western Line;
- (iii) the current construction of the Maldon-Dombarton railway for coal traffic;
- (iv) the operation of inter urban services between Sydney and Wollongong following completion of electrification of the Illawarra Line.

The Draft EIS also considers the following possible developments:

- (i) electrification of the Main Southern Line south of Campbelltown;
- (ii) construction of an electrified freight railway between Werrington on the Main Western Line and Glenlee on the Main Southern Line.

These are only considered as options which may be developed in the long term. They are not part of the base network of passenger services assumed for 2011.

The Draft EIS assumes that, in the worst case of 13 million passengers per annum, 20% of air passengers would be in transit and would not require ground transport. It is also assumed that a busy day would represent 17% of weekly passenger movements. This would result in 34,000 air passengers travelling to or from the airport on a busy day.

It is assumed that there would be 10,500 people working at the airport plus 2,100 people in nearby airport related jobs.

The Draft EIS examines 3 levels of public transport use corresponding to a 'no-rail' (to the second airport) case, a 'low-rail' case and a 'high-rail' case. The first two levels give a range of traffic loads for the worst case for the road network, whereas the last two levels give a range of public transport loads for the worst case for the public transport network.

In the no-rail case, the airport public transport service is assumed to consist of bus services to major centres. In the two rail cases, the airport public transport service is assumed to consist of a separate inter-urban rail service running to Sydney Terminal with a limited number of intermediate stops at major interchanges.

On the basis of British and Australian studies, the Draft EIS assumes a range of mode splits for access to the second airport. In the no-rail case it is assumed that 30% of air passengers travel by bus and coach, 5% by taxi and 65% by private car. In the two rail cases the bus and coach share is assumed to fall to 15% with the taxi share remaining unchanged.

The split between private car and rail is assumed to depend on the remoteness of the airport. In the two rail cases Wilton is assumed to get 35% and 45% rail share whereas Badgery's Creek is assumed to get 30% and 40% rail share.

After allowing for employees, meeters/greeters, airport business trips, freight deliveries etc., the road traffic generation ranges from about 55,000 vehicles per day in the low-rail case to nearly 70,000 in the no-rail case.

There is quite a variation in daily rail passenger volumes depending on the airport site, public transport use by air passengers and employees and the rail route used to the airport. However, when the peak hour demand is examined in the Draft EIS, it becomes apparent that the level of rail use by employees is the key variable (because employees form a much higher proportion of peak hour travel than daily travel).

At the low level (10%) of employees travelling by rail, the peak hour demand for rail travel is between 1,250 and 1,550 people. With 20% of employees travelling by rail, the peak hour demand rises to between 1,950 and 2,250 people.

It is worth noting that these passenger demand estimates would only eventuate for the 'worst case' airport. None of them would justify on economic grounds construction of a railway for the specific purpose of serving a second airport. However, with 20% of employees travelling by rail, these demand estimates are comparable to existing peak period flows between Campbelltown and Liverpool and between East Hills and Riverwood.

Although the above assumptions have not been officially adopted for long-term planning by the New South Wales Transport Administration, the officers on the Access Working Group confirmed that they would give a reasonable and robust estimate of the 'worst-case' transport impacts of a second airport.

8.4.1 Badgerys Creek

On the basis of all the above assumptions, the Draft EIS estimates the road improvements required for a 'worst case' airport at Badgerys Creek in addition to those required for anticipated urban development in that subregion. These airport necessitated improvements would be:

- (i) widening of the South Western Freeway from four to six lanes between Liverpool and King Georges Road;
- (ii) widening of Bringelly Road from four to six lanes between the South Western Freeway and the Northern Road;
- (iii) widening of Elizabeth Drive from four to six lanes between Wallgrove Road and Badgerys Creek Road;
- (iv) widening of the Northern Road to four lanes between Bringelly Road and Narellan;
- (v) construction of a new six lane road east of the airport between Bringelly Road and Elizabeth Drive;
- (vi) construction of a new four lane connection between Elizabeth Drive and Erskine Park Road.

Provision of rail access to the airport only affects the standard of upgrading for Bringelly Road, reducing the estimated capital cost of roadworks from about \$217 million to \$159 million.

The Draft EIS examines two possible rail connections;

- (i) a route via Glenfield and the East Hills Line to Sydney;
- (ii) a route via St. Mary's and the Main Western Line to Sydney.

The New South Wales Government submission has made a number of comments on the second rail connection. There is doubt about the future capacity of the Main Western Line to accommodate airport traffic. In addition, the cost of the link between the airport and St. Mary's would be wholly attributable to the airport, since there is no requirement for this line for freight traffic. The Draft EIS also shows that the route via Glenfield would be preferred for its lower operating costs, lower travel times and higher patronage.

The attributable capital costs of the route via Glenfield are estimated to lie between \$158 million and \$217 million, the difference being the additional cost of upgrading the East Hills and Illawarra-Lines.

8.4.2 Wilton

The Draft EIS estimates that the road improvements required for a 'worst case' airport at Wilton in addition to those required for anticipated urban development in that sub-region would be:

- (i) widening of the South Western Freeway from four to six lanes between Wilton and Campbelltown and between Liverpool and Henry Lawson Drive;
- (ii) widening of Picton Road from two to four lanes between Picton and the South Western Freeway;
- (iii) construction of a six lane road from the South Western Freeway to the airport;
- (iv) construction of the Georges River Parkway between Campbelltown and Milperra Road.

Provision of rail access to the airport would only reduce the need for construction of the Georges River Parkway, reducing the estimated capital cost of roadworks from about \$237 million to about \$154 million.

The Draft EIS examines two possible rail connections:

- (i) a route via Maldon Junction (in common with the Maldon-Dombarton railway) and then via the Main Southern Line to Glenfield and then the East Hills Line and the Illawarra Line to Sydney.
- (ii) a new railway line through Appin to Menangle Park, then via the Main Southern Line to Glenfield and then the East Hills Line and the Illawarra Line to Sydney.

The New South Wales Ministry of Transport has advised that the cost of the second rail route, via Appin, would be wholly attributable to the second airport, since there would not be sufficient demand generated by long term urban development south of Campbelltown to justify this railway. Although the route via Appin is slightly superior in terms of lower operating costs, lower travel times and higher patronage, these are far outweighed by the capital cost of new track between Menangle and the airport.

The attributable capital costs of the route via Douglas Park are estimated to be between \$85 million and \$144 million, the difference being the additional cost of upgrading the East Hills and Illawarra Lines.

8.4.3 Comparison of Badgerys Creek and Wilton

The costs of road upgrading for a 'worst-case' airport at the two sites are very similar. At first glance, it appears that Wilton would be the lower cost site for rail access, the difference being about \$73 million.

The Draft EIS points out, however, that due to the extremely poor access times by road to Wilton, it would probably be necessary to provide rail access at a very early stage in its

development. In contrast, Badgerys Creek could be serviced by buses until there was sufficient passenger demand to warrant development of rail access. This could make the discounted capital cost of transport infrastructure for Wilton considerably higher than for Badgerys Creek.

Given the relatively low passenger demand estimated for any of the rail options, it is extremely doubtful whether any government would consider constructing a railway for the sole purpose of serving a second airport. It is probably reasonable, therefore, to compare the infrastructure costs for the no-rail case and conclude that there is little difference between the two airport sites.

8.5 OTHER INFRASTRUCTURE

The construction of an airport has implications for service infrastructure in two ways. Although airports require the same services as urban development (water, sewerage, power, telephones, etc) the size of an airport does not allow for the shaping of the site boundaries around existing infrastructure. Instead airport construction necessitates the relocation of existing services to provide a clear area for airport operations. Additionally the decision to locate away from existing urban development means that existing infrastructure cannot be simply extended but that major amplification of works is required to cater for existing and future levels of demand.

Advice of the various servicing authorities on relocation of existing services and the provision of new services is summarised below.

In addition there is other infrastructure which, while not being required as a result of airport development, is affected or displaced by airport construction and operation; this infrastructure comprises mainly educational and research facilities.

8.5.1 Waste disposal

The major waste disposal problem at an airport is the disposal of quarantine wastes, which are mainly food wastes from aircraft arriving from overseas.

Currently all wastes from Kingsford Smith Airport are classified as quarantine wastes, the disposal of which comes under the responsibility of the Commonwealth Department of Health. These wastes are disposed of at Waverley/Woollahra incinerator. In the event of breakdown of the incinerator special arrangements have been authorised for the disposal of these wastes under supervision at the Metropolitan Waste Disposal Authority's Lucas Heights Regional Depot.

Depending on the use of the second airport for overseas aircraft there could be a problem of prompt disposal of quarantine waste from the two airport sites at the Waverley/Woollahra incinerator.

The Draft EIS has stated the maximum weekly waste generated at the second airport would be about 16,000 cu.m and would be disposed of in regional waste disposal sites operated by the MWDA.

Overall costs of waste disposal include collection, transportation to and disposal at the disposal site. Both the sites appear to be equidistant from the MWDA's Jacks Gully depot. This would have an impact on the life of this depot in the region and the Authority would have to look for future sites in the Region earlier than its current planning.

8.5.2 Water Supply

Both the sites are in areas which are not serviced by a reticulated water supply. An estimate of water requirements for an airport and associated industrial development is stated in the Draft EIS.

If the Badgerys Creek site is selected water requirements would be supplied from the Warragamba Dam via the Warragamba-Prospect pipeline. This would include: a connection to the Warragamba-Prospect pipeline; a water treatment plant; a pumping station; a reservoir on high land; a rising main from the pumping station to the reservoir and an outlet main from the reservoir.

Facilities needed to service a future airport at Wilton and adjacent development would include: a pumping station at the Cataract River level at Broughtons Pass; a water treatment plant and pumping station on a site above the river; a reservoir on high land close to the airport site; rising mains between the pumping stations, water treatment plant and reservoir. The establishment of these facilities would cause short-term disturbance to the area.

8.5.3 Sewerage facilities

There are no sewage treatment schemes in the vicinity of either of the sites and none is scheduled under short to medium term urban development proposals. Hence a second airport and the associated developments would require construction of a new sewerage facility. The Draft EIS neither indicates the capacity nor the cost of building such a plant.

In the case of the Badgerys Creek site the Draft EIS has stated that effluent from the sewage treatment plants may be discharged into either South Creek or the Nepean River upstream of Wallacia. The State Pollution Control Commission

would require removal of nutrients from the effluent before it is discharged into the Nepean River or South Creek, but the Commission would prefer it to be discharged on land by irrigation.

The effluent from the sewage treatment plants for the Wilton site would be discharged into Allens Creek. The SPCC considers that any discharge into Allens Creek, which carries P classification, would have to be of a high quality. Although the Draft EIS has not indicated the site for a sewage treatment plant, a plant outside the catchment area and discharging effluent on land by irrigation could be preferable.

The MWS&DB has estimated the cost of servicing an airport with water and sewer to be \$60 million for the Badgerys Creek site compared to \$70 million for the Wilton site. The Board has stressed that it would need to be provided with financial or material resources to design and construct these facilities, because its own resources are fully committed in servicing areas to be released under the New South Wales Government's Urban Development Program.

8.5.4 Electricity

The Prospect County Council is responsible for the supply of electricity for both sites. No detailed costing of the supply of electricity to either site has been made available in the Draft EIS.

If the Badgerys Creek site is selected, the Electricity Commission of N.S.W. will have to deviate its Yass-Sydney West line via Kemps Creek Substation. This would involve about 20 km of new line directly attributable to the development of the second airport at an additional cost of about \$10 million. Other transmission line works that may be necessary would cost approximately \$5-\$10 million.

The selection of Wilton site would require construction of an additional 15 km of new line in order to redirect the Avon-Kemps Creek 300 kV line which currently crosses the site. This line deviation around the airport site has been estimated to cost about \$2 million and is expected to be substantially within the MWS&DB catchment area.

The Commission considers that the cost of new lines should be substantially borne by the Department of Aviation.

8.5.5 Other services

The natural gas pipeline from Wilton to Wollongong owned by the Australian Gas Light Company (AGL) crosses the Wilton site and 4 km of it would need to be relocated within the service easement beside the re-routed Mount Keira Road. The relocation would not cause any difficulties, however, the cost of such relocation has not been made available.

The petroleum needs of the second airport could be supplied by road from Sydney to Badgerys Creek and from Wollongong to Wilton. The proximity to Wilton of the Maldon-Dombarton railway line would facilitate supply of petroleum products by rail to the Wilton site. If a petroleum line is built from Sydney to Canberra then the likely route to follow would be the existing natural gas pipeline, and connection to the Wilton site would be a simple matter.

The telecommunication facilities for the second airport would be provided by Telecom. The type of services that would be provided to the second airport would depend upon the changes in telecommunication technology such as communication dishes and satellites etc. However, if cable easements were required they would be incorporated within the road corridors.

8.5.6 Educational and research facilities

The Badgerys Creek Primary School is located within the proposed airport boundary and would have to be acquired by the Commonwealth Government if the second airport is located at Badgerys Creek. Demographic studies should be undertaken to determine whether surrounding educational facilities would be able to cope with future development in the area.

The Fleurs Radio Observatory, although not within the Badgerys Creek site, would be rendered inoperative by a second airport at that location. The cost of relocation would be \$10 million.

An airport at Badgerys Creek would affect research at the McGarvie Smith Farm operated by the University of Sydney. The University suggests that it should be compensated if Badgerys Creek is selected as the second airport site.

The Wilton site would not directly affect educational and research facilities.

8.6 REGIONAL PLANNING IMPLICATIONS

This section addresses the regional planning implications resulting from the decision to locate the second airport at Badgerys Creek or Wilton. The land use effects in the vicinity of the airport, the consequence for planned urban development and the implications for the Department's centres policy are discussed. Finally, the need for an environmental planning instrument to reserve the airport site and control development in its vicinity is examined.

8.6.1 Areas affected by the second airport

The primary area affected by the construction of a second airport is the airport site itself; secondary impact relates to those areas which are likely to be subject to noise from aircraft movements.

Perception of adverse noise impact is subjective but there is considerable experience in Australia and overseas in relation to the effects of aircraft noise on a variety of land uses.

The Draft EIS focusses on the affectation of the two short-listed airport sites and the noise effects within the 20 ANEF contour. Current Commonwealth legislation limits compensation payable to owners of land required for the airport site and does not provide any mechanisms for compensation as a result of exposure to aircraft noise.

Table 8.6 (from the Draft EIS) indicates the compatibility of various building types with different levels of aircraft noise exposure.

In each of the ANEF ranges, some uses will be precluded, while others will only be possible subject to the implementation of appropriate noise insulation measures.

By virtue of the nature and intensity of existing development, the noise effects of a second airport at Badgerys Creek would be significantly greater than those which would result from the selection of the Wilton option.

In either case, the effects outlined in the Draft EIS need to be supplemented by consideration of land exposed to 20-25 ANEF.

While noise exposure from a second airport will restrict potential development in affected areas, it may encourage the continuation of certain, existing land uses which are relatively noise insensitive. In this regard, a Badgerys Creek second airport could encourage retention of the existing agricultural pursuits (dairying and grazing) and some rural residential development. These areas are located between the site and Greendale Road and between Elizabeth Drive and Mamre Road/Horsley Park. This airport option may also facilitate the continued viability of the more intensive horticulture and market gardening which takes place further west on the Nepean River flats and to the east in Horsley Park.

8.6.2 Airport related land uses

A decision about the second airport will provide opportunities to encourage optimum siting of certain noise-insensitive land uses which may be associated with or attracted to the environs of a major airport.

Unlike the situation at KSA, it is intended that the second airport will provide large areas of land within the airport site boundary for use by airport-associated activities. Some 158 ha are to be made available on-site, irrespective of site selection, for freight forwarders, car rental firms, hotels, etc.

Table 8.6 Building site acceptability
for noise reduction assessment

Building site acceptability based on ANEF zones			
Building type	Acceptable	Conditional	Unacceptable
Houses, home units, flats	Less than 20 ANEF (Note 1)	20-25 ANEF (Note 2)	Greater than 25 ANEF
Hotels, motels, hostels	Less than 25 ANEF	25-30 ANEF (Note 3)	Greater than 30 ANEF
Schools, universities	Less than 20 ANEF (Note 1)	20-25 ANEF (Note 3)	Greater than 25 ANEF
Hospitals, nursing homes	Less than 20 ANEF (Note 1)	20-25 ANEF (Note 3)	Greater than 25 ANEF
Public buildings	Less than 20 ANEF (Note 1)	20-25 ANEF (Note 3)	Greater than 25 ANEF
Commercial buildings	Less than 25 ANEF	25-30 ANEF (Note 3)	Greater than 30 ANEF
Light industrial buildings	Less than 30 ANEF	30-35 ANEF	Greater than 35 ANEF
Heavy industrial buildings	Acceptable in all ANEF zones		

Notes:

1. The actual location of the 20 ANEF contour is difficult to define accurately, mainly because of variation in aircraft flight paths.
2. Some people may find the areas within the 20-25 ANEF contour to be unsuitable for residential use. Land use authorities may consider that the incorporation of noise control features in the construction of residences is appropriate.
3. An analysis of building noise reduction requirements should be made by an acoustic consultant and any necessary noise control features included in the design of the building.

Source: Draft Australian Standard for Acoustics: Aircraft Noise Intrusion - Building Siting and Construction (revision of AS 2021-1977).

It may be that some such activities could choose to locate in the vicinity of the site and these may be appropriately located on potentially noise-affected land. Further, some noise-insensitive activities, which include general industrial uses, are also likely to be attracted to the vicinity of the second airport as a result of good accessibility and the image/prestige connotations afforded by such a location. There would be ample opportunities to locate such uses in noise-affected areas to the north-east of the Badgerys Creek site in the vicinity of Elizabeth Drive. Land in the vicinity of Badgerys Creek, South Creek and Kemps Creek is flood-affected, and in the medium term continued rural pursuits would be the most appropriate form of development in this area.

Due to its location in a water catchment area, the Wilton site presents relatively few opportunities to locate airport related land uses in adjacent noise affected areas.

8.6.3 Implications for urban development

There will be both direct and indirect urban development implications of a decision to locate the second airport at Badgerys Creek or Wilton.

(a) Badgerys Creek

At Badgerys Creek the potential land sterilisation effects are considerable. On the basis of physical urban land capability, the bulk of the site and most of the potential noise-affected area could sustain urban development. However, some of the affected land is flood-labile, precluded from urban development due to steepness or is in the vicinity of Bents Basin State Recreation Area and is already excluded from urban development by open space zonings or reservations. The location of these areas in relation to current and likely future urban release areas suggests that urban development could be expected to take place during the medium and long term.

The location of the second airport will also influence the phasing of medium and long term urban development particularly in relation to the Macarthur sub-region.

If Badgerys Creek is selected, it is likely to accelerate and reinforce proposals for future urban development in the areas west of Liverpool and enhance the attractiveness of Bringelly to accommodate medium-term growth. This airport option may have quite tangible benefits for the urban potential of this area as it may focus attention on the need to overcome the impediments to urban development which are posed by the high degree of land fragmentation which has already taken place. Such urban potential is less likely in the southern parts of Penrith.

In terms of the expected provision of infrastructure and services which would be associated with the second airport cost advantages are likely to be achieved by phasing development in the Bringelly Sector with the construction of a second airport at Badgerys Creek. This scenario for Macarthur's medium-term development would improve linkages with Western Sydney and hence the North West Sector. It would also consolidate the other economic and social advantages of more closely relating future growth to the existing urban fabric.

(b) Wilton

Direct implications relate to the areas of land sterilised from future urban development by construction of an airport at either site. Most of the Wilton site and the likely aircraft noise-affected areas which would result from selection of this option, are within Crown lands and/or within metropolitan water catchment areas. For this reason and given the location of this site on the fringe of the Sydney Region, the direct urban development implications of this option are significantly lower than those which would be caused by the choice of Badgerys Creek. At Wilton, the sterilised areas comprise those portions of the site which are currently in private ownership (approx. 10% of the site) and relatively small areas potentially affected by the 20-25 ANEF. Investigations of the physical capability of these areas for urban development indicate that urban development would be possible. However, the areas are remote from current urban releases and their suitability is diminished by relative isolation.

The indirect urban development implications are more subjective and indicate a less obvious comparison. Firstly, it should be noted that to date water catchment areas have generally been excluded from consideration for major urban development, even though they have been affected by access corridors such as the Maldon-Dombarton rail line and resource development projects, mainly related to coal mining. A decision to locate the second airport within a water catchment area may by virtue of its size and significance irrevocably alter the way in which catchment areas have previously been regarded in relation to urban development.

If the second airport was to be located at Wilton, the projected pattern of medium-term growth could be expected to affect areas in the southern parts of the Macarthur sub-region, such as Macarthur South, which are relatively isolated from existing, well-established urban areas. This would reinforce the north-south growth pattern which already characterises development in Macarthur and may increase requirements for public sector assistance in respect of future urban development.

8.6.4 Implications for the Centres Policy

The Department has released a discussion paper outlining a Centres Policy for the Sydney Region, as discussed in Section 8.1.

The paper suggests that Sydney should be served by two regional centres, the first being the Sydney/North Sydney C.B.D. with Parramatta as the second regional centre. In addition, a series of subregional and secondary centres are proposed.

(a) Badgerys Creek

The selection of Badgerys Creek for the second Sydney airport is likely to enhance the development of Parramatta as the second regional centre and to this extent would be consistent with the proposed centres policy.

Movements along an east-west axis will account for substantial volumes of future traffic, using either public or private transport modes, which will result from a second airport at Badgerys Creek. Given Liverpool's strategic location on such an axis, it could be expected to benefit at least to some degree from the selection of this option.

As outlined above, the timing of urban development in the Bringelly Sector may be accelerated as a result of a Badgerys Creek second airport. One consequence of this would be to speed up development of the Liverpool centre by expanding its catchment sooner than might otherwise have occurred. Development of Bringelly will also involve the establishment of one or more district centres to serve future populations. The prospect of a second airport at Badgerys Creek and the associated access improvements would be taken into account in determining the location and size of these centres.

(b) Wilton

The selection of Wilton for the second Sydney airport is not expected to enhance Parramatta's role as a regional centre.

A major direction for future traffic in relation to the Wilton second Sydney airport option will be along a north-south axis. For this reason, Campbelltown may function as an intervening centre between Wilton and the rest of the Sydney Region, strengthening its role as a subregional centre.

The proximity of a Wilton second airport to the south coast could increase interaction between south-western Sydney and Illawarra. While Wollongong is acknowledged as the major centre for Illawarra, its development has been constrained by the dominance of Sydney. The Wollongong C.B.D. is currently undergoing major redevelopment. A Wilton second airport could reinforce and further encourage consolidation of this centre.

The Wilton option would also be expected to influence the siting and size of district centres which would be required to serve future urban areas in the southern districts of the Macarthur sub-region such as Macarthur South.

8.6.5 Requirements for environmental planning instruments

The need for adequate and timely environmental planning measures in relation to a second airport is threefold:

- (i) to protect the integrity of the selected site, the off-site noise affected or other associated areas and ensure that establishment of an airport is not unnecessarily prejudiced by unsympathetic development;
- (ii) to encourage development in the vicinity of the site for uses that will be compatible with likely noise exposure levels;
- (iii) to ameliorate any adverse environmental impacts which may result from the second airport.

To date, planning measures introduced for Sydney Region airports have primarily related to the second category. The incompatibility of airports and some forms of land use is recognised by 3 directions under section 117 of the Environmental Planning and Assessment Act, 1979, namely:

- (i) Direction G.16 "Airport Noise",
- (ii) Direction S.19 (Badgerys Creek),
- (iii) Direction S.20 (Wilton).

Direction G.16 limits the intensity of development in areas affected by aircraft noise and specifies requirements to mitigate interior noise levels under certain circumstances.

Directions S.19 and S.20 were applied to the Badgerys Creek and Wilton sites on 15 May, 1985 as interim measures to control development on the possible airport sites and surrounding areas which may be noise-affected above 20 ANEF. Their effect is to limit subdivision and development without unnecessarily restricting landowners from undertaking minor alterations etc. The Direction for the site not selected will be revoked when a decision is taken by the Commonwealth about the location of the second airport.

Upon announcement of the selected site it will be necessary to ensure that suitable planning measures are put in place to prevent attempts to maximise the value of holdings by applications for subdivision or development. It will also be necessary to safeguard off-site areas for transport or services corridors, which will be required for the second airport.

There are a number of options available under the provisions of the Environmental Planning and Assessment Act to achieve the above intentions. The major options are:

- (i) Local environmental plans: The primary responsibility for initiating this type of environmental planning instrument rests with local government. Such an instrument would not be appropriate in connection with a matter of State or regional planning significance like the second Sydney airport.
- (ii) Regional environmental plans: A regional environmental study may be required; this type of instrument would reflect the significance of the second Sydney airport and lend itself to the preparation of a comprehensive land use plan for the site and its environs.
- (iii) State environmental planning policies: These would enable speedy implementation as no prior exhibition is required; while it would reflect the importance of the second Sydney airport to the State, it would be less appropriate as a vehicle for a land use plan.
- (iv) Section 117 Directions: This method is useful for indicating planning intentions until more specific controls can be prepared.
- (v) Section 101 Direction: This would mean that the Minister would determine all development applications; like section 117 directions, this technique could be used until more specific controls were introduced, but it is likely to be unnecessarily onerous on the State.

It is likely that the preferred planning measures will incorporate a combination of the above options. The announcement of the selected second Sydney airport site should soon be followed by the implementation of an appropriate regional environmental plan. Between announcement of the selected site and gazettal of the R.E.P., appropriate interim measures will be required. The minimum intervention would be to retain the relevant section 117 direction. However, this may need to be modified/augmented with a direction under section 101 for the site and surrounds to allow the Minister or Department to control development.

The nature of the planning measures and the extent of State intervention which may be required will be influenced by the Commonwealth decision regarding the preferred method of site acquisition. If the Commonwealth decided to give effect to compulsory acquisition at the time the selected site is announced, then there would be no need to introduce simultaneous planning measures to protect the site. If the

Commonwealth proceeds with acquisition by negotiation then it would be necessary to reserve the site for airport purposes as soon as possible after the selected site is known. For this to occur, the Commonwealth and the State would need to reach agreement on the acquisition provisions to be included in an R.E.P.

An R.E.P. prepared for the second Sydney airport soon after the site is announced will essentially be a single purpose R.E.P. focussing on the airport and related matters only. Earlier in the site selection process it seemed desirable to implement planning measures for the second Sydney airport as part of a comprehensive R.E.P. for the Macarthur sub-region. This could be complicated in the case of Badgerys Creek, because a second airport would affect land in Penrith and Fairfield which are not included in that region. Furthermore, the region-wide planning process is not sufficiently advanced for this to be possible. The Macarthur R.E.S. is to be exhibited early in 1986 and a draft Macarthur R.E.P. is unlikely to be available for exhibition for at least 12 months after that. Clearly, planning measures for the second airport must be in place much sooner. However, it is noted that the Macarthur R.E.P. will incorporate specific proposals for a range of matters including urban and regional economic development, which would not be possible within the context of an airport-oriented R.E.P.

The following measures should be included in the R.E.P. for a second Sydney airport:

- (i) Reservation of the site for airport purposes with appropriate acquisition provisions; this would only be necessary if the Commonwealth was to acquire the site by negotiation.
- (ii) Development control measures in noise-affected areas (within 20 ANEF contour) to prohibit inappropriate land uses in accordance with compatibility guidelines for areas affected by aircraft noise.
- (iii) Requirement that buildings in certain noise-affected areas meet acceptable standards with regard to noise insulation measures.
- (iv) Identification and reservation of land for future airport-associated uses beyond the site boundary; such uses may include industry, freight forwarders and services.
- (v) Introduction of controls for uses such as solid waste sites and wetlands, which increase bird strike potential in surrounding areas.

- (vi) Provision for obstacle limitation surface; this requires the introduction of height limits on development within a defined area surrounding the airport.
- (vii) Identification and reservation of access corridors (private and public transport modes); provide appropriate acquisition provisions and introduce controls for development in the vicinity of access corridors.

The above measures would need to be introduced irrespective of which site is chosen. However, it is noted that existing land uses and planning measures in the vicinity of the Wilton site are less varied and less numerous. Therefore, the preparation, implementation and enforcement of appropriate planning measures for a Wilton second airport would be significantly less complex than for a Badgerys Creek second airport.

9. COMPARISON OF SITES

The preceding chapters contained a discussion and consideration of a wide range of complex factors which are relevant to the selection of a site for Sydney's second airport. Where either the Badgerys Creek or Wilton site appeared superior based on a particular factor, this situation was highlighted in the relevant section.

Under the objects of the Environmental Planning and Assessment Act, the Department has a responsibility to encourage the proper management, development and conservation of resources for the purpose of promoting the social and economic welfare of the community and a better environment. In addressing the second airport issue, the Department has therefore attempted to select a preferred site on comprehensive environmental and planning grounds. In doing so, the Department has critically examined the information contained in the Draft EIS, considered the major issues raised in public submissions and sought the expert advice of its own professional staff and from other NSW Government Authorities on key issues.

As an integral part of the site selection process the primary concern was that the sites selected for final examination would be suitable for the operation of a major airport facility. This involves ensuring that meteorological conditions, such as incidence of fogs and wind shear, do not prevent safe and efficient operations and that any necessary alterations to existing airspace arrangements in the Sydney Region can be accommodated. The Department of Aviation is the responsible authority in this area, and the Department of Environment and Planning accepts that, despite differences between conditions at Badgerys Creek and Wilton, both sites are suitable in this regard.

The Department has therefore concentrated on a number of environmental and planning factors which could influence the final decision on the airport site. Twenty factors have been identified and are listed below. A comment on any differences between the two sites, which would be relevant to the decision making process, is provided below.

1. AIR QUALITY

A consideration of emissions from aircraft, other sources at the airport and vehicles at, and travelling to and from, the airport indicates that any difference in air quality impact between the two sites would be marginal.

2. WATER QUALITY X Badgerys Creek is clearly the superior site in terms of lower impacts on water quality because of the location of Wilton within the catchment area for Sydney's water supply. 10.
3. FLORA The floristic value of the Wilton site is high, particularly because of the diversity of species, some of which are rare. 11.
4. FAUNA The Wilton site has a much higher value for fauna than the Badgerys Creek site because of the diversity of species present. 12.
5. GEOLOGY X Although geological conditions at the two sites are different, there are no geological structures at either site likely to influence the choice between the site. (Mineral resources are dealt with below.) 13.
6. SOILS Development of the Badgerys Creek site involves more earthworks; however the soils are more erodible at the Wilton site and the consequences of erosion on water quality would be more severe. Proper erosion control procedures would ensure that soil erosion was minimised. 14.
7. PHYSIOGRAPHY Topographic differences between the sites would result in more earthworks being required at Badgerys Creek, but this would not be significant in terms of total development costs. 15.
8. LANDSCAPE The Wilton site has a higher visual quality than the Badgerys Creek site, but the effects of airport development at either site would not destroy a regionally significant landscape.
9. NOISE When fully developed, an airport at Badgerys Creek would potentially affect (moderately or seriously) 1115 people within the 20 ANEF contour, whereas there would be 68 people so affected at Wilton. Aircraft noise impacts are therefore higher at Badgerys Creek.

10. SOCIAL IMPACT The social impacts through relocation of people (750 at Badgerys Creek versus 10 at Wilton) and general community impacts would be far higher at Badgerys Creek, which is a factor against the Badgerys Creek site.
11. ABORIGINAL ARCHAEOLOGY The archaeological importance of both sites appears to be low because of the paucity of known archaeological sites; but it would be necessary to undertake full and proper examination of any artefacts located during construction.
12. CONCERNS OF ABORIGINALS Local Aboriginal Land Councils have expressed reservations about the use of either site. While these concerns are noted, they do not provide a basis for choosing between the two sites.
13. EUROPEAN HERITAGE Other than the Vicarys Winery on the Badgerys Creek site, which may require further investigation to determine its heritage value, there are no heritage items of regional significance to choose between the sites.
14. HAZARDS An analysis of air accident statistics indicates that risks from aircraft operations are insignificant. Since vehicle travel to and from the airport would entail much higher accident risks, Badgerys Creek is clearly the superior site on overall risk grounds.
15. SERVICES
(Water, Sewerage,
Roads, Rail, etc) Both sites would require some relocation of existing services on the site and provision of major infrastructure to service an airport. However many of the costs associated with servicing are difficult to quantify because of the problem of separating the costs due to future urban requirements from those due to airport requirements. It is possibly cheaper at Badgerys Creek in the short term because the site is closer to existing urban development, but

differences in the total costs of services and infrastructure may be less significant in the longer term. While many costs can be met over a long period, some Authorities, for example the MWS&DB, would have to meet substantial costs in the short term because of the need to provide services and infrastructure well in advance of their current programmes. At either site, costs are likely to be very large and will involve changes in existing programmes. Nevertheless costs are not considered as providing a basis for choosing between the sites because of the difficulties in obtaining accurate final figures.

16. EMPLOYMENT

The Badgerys Creek site has some two-and-a-half times as many unemployed people living within 60 minutes travel time as Wilton (which takes into account Wollongong). A similar ratio applies for the existing labour force. As stated in the Draft EIS an airport at Badgerys Creek is likely to be developed sooner thus providing more job opportunities at an earlier date.

*Wilton may
reduce 700 jobs!
∴ B.C. save 700 jobs.*

17. ACCESSIBILITY

The higher accessibility of the Badgerys Creek site to major areas of population and centres of commercial activity in Sydney, will provide long term-benefits to the travelling public and to businesses.

18. ACQUISITION/ DEVELOPMENT COSTS

The acquisition cost difference of \$29m in favour of Wilton is more than balanced by the additional development costs necessary at Wilton because of the site's location in a catchment area. In addition to the estimated \$40m required to build a more substantial perimeter drainage system at Wilton, an estimated \$70m for installation of water treatment works and \$3m in operating costs per year may be required to guarantee the quality of Sydney's water supply.

19. MINERAL RESOURCES

The potential sterilisation of coal resources at the Wilton site (54 Mt in-situ coal) is far greater than any potential loss of light-firing clay/shale resources at Badgerys Creek. The future of the current mining operation employing more than 700 people would also be jeopardised.

20. AGRICULTURE

The potential loss of agricultural production is far higher at Badgerys Creek (\$5m p.a.). This may be inevitable in any case given possible urban development in the area, with or without an airport.

Some of these factors can be considered to be of minor significance in the final analysis either (a) because the absolute impacts are low at both sites or (b) because there is only a marginal difference in impact between the sites, even though, in absolute terms, the impact may be substantial. The factors falling into this category are:

- . air quality
- . geology
- . soils
- . physiography
- . landscape
- . Aboriginal archaeology
- . concerns of Aboriginal people
- . European heritage
- . acquisition and development costs
- . services

In weighing up the remaining factors, it is important to consider whether the implications are: local or regional in significance; of short, medium or long term duration; the extent to which one or both sites are advantaged or disadvantaged in terms of each factor; and whether there are means available to considerably reduce the possible effects.

Eight of these factors are inevitable, adverse impacts resulting from the establishment of an airport at either site, the only difference being the relative extent of the impacts. Two of these factors (employment and accessibility) result in major benefits at both sites, although again there are differences in the relative extent of these benefits.

9.1 FACTORS HAVING GREATER ADVERSE IMPACT AT BADGERYS CREEK.

1. NOISE (Local, long-term impact):

Noise would be an impact at either airport site, but in terms of the alternative of expanding KSA which already affects in

the order of 230,000 people, such an impact is justified. However, noise decreases with distance from the site and therefore is a local effect. The airport noise impact can be reduced in the local area by acquisition of buffer zones and proper land use planning controls. For residents living outside the buffer zone who are affected by noise, the only ameliorative measures are monetary compensation or the acoustic treatment of buildings.

2. SOCIAL IMPACT (Local, short-term impact):

The social impact of dislocation can only be reduced by a fair purchase price plus relocation assistance, although it is accepted that this does not overcome the trauma experienced by residents who are required to leave their homes. The community disruption is an inevitable result of airport development.

3. AGRICULTURE (Regional, medium-term impact):

The loss of agricultural production is of importance to the regional rural economy, however, the continued tenure of agricultural establishments is at risk because of the likely future urban expansion into the Badgerys Creek area.

9.2 FACTORS HAVING GREATER ADVERSE IMPACT AT WILTON.

1. WATER QUALITY (Regional, long-term impact):

The only guarantee of high quality safe drinking water with a airport at Wilton is through the provision of water treatment works at an estimated expenditure of some \$70m (installation costs) and \$3m yearly operating costs.

2. FLORA (Local, long-term impact):

Airport construction will involve the destruction of existing flora on the site. However, the likelihood of finding representatives of the site's rare species elsewhere may mean that the overall conservation status of each species is not affected.

3. FAUNA (Local, short-term impact):

Relocation and recolonisation of species on the site will occur, and, in any case, the overall conservation status of species is unaffected.

4. HAZARDS (Regional, long-term impact):

Risks of aircraft accidents in Australia are exceedingly low, and of greater concern is the likely increase of motor vehicle accidents caused by ground traffic to and from the airport. Major upgrading of transport infrastructure may lessen but not eliminate this risk.

5. MINERAL RESOURCES (Regional, medium-term impact):

Airport development at Wilton will sterilise mineral resources under the site. The potential for sterilisation can be reduced by designing airport buildings for subsidence effects and providing alternative surface access to the Bellambi Coal Company. The only way of eliminating such sterilisation is to delay construction for a very long period.

9.3 FACTORS PROVIDING GREATER BENEFITS AT BADGERYS CREEK.

1. EMPLOYMENT (Regional, long-term impact):

A second airport would provide regional benefits in terms of promoting job opportunities where there is a large labour force containing a high number of unemployed people. Badgerys Creek is definitely the superior site in this regard because of its strategic location in relation to existing urban development and the direction of committed future urban development.

7. ACCESSIBILITY (Regional, long-term impact):

Because of its higher accessibility, an airport at Badgerys Creek would provide continuing substantial benefits for the general travelling public and for businesses reliant on airport services such as air freight or frequent business trips. These benefits would involve reduced travelling times and business costs. The inherent advantages of the Badgerys Creek site will remain regardless of any variations in the patterns of future urban development which are likely to occur.

In comparing the effects of airport development, it can be seen that three factors have greater adverse impact at Badgerys Creek whereas five factors have greater adverse impact at Wilton. Two of the adverse factors at Badgerys Creek are of local significance (noise and social) and the regional effects of the other factor (agriculture) are inevitable in the long term. By contrast, three of the adverse factors at Wilton have regional significance (water quality, hazards and mineral resources), and the remaining two are of local significance (flora and fauna). It could be argued that flora and fauna losses are not significant issues since further field investigations in the water catchment area are likely to establish that species conservation is not threatened by an airport at Wilton.

Major inputs to the weighing-up of the two sites are the regional long-term benefits accruing to the Badgerys Creek site (employment and accessibility) by virtue of its strategic location relative to the general public, a large pool of unemployed people and commercial activity. The Department considers that, in the final analysis, Badgerys Creek must be regarded as the superior site owing to its

regional long-term benefits and the regional significance of the factors which disadvantage the Wilton site. Given a limited availability of funds, the Department is of the view that the community's financial resources would be better invested in mitigating the local impacts of the Badgerys Creek site through compensation/acquisition arrangements rather than investing in an airport site with inherent, major long-term disadvantages.

10. CONCLUSIONS

In assessing the second airport sites, the Department's objective, in accordance with its responsibilities, is to identify the site which would more successfully promote the social and economic welfare of the community as a whole. The selection of the Badgerys Creek site would better achieve this objective by leading to: a more balanced regional development; the provision of employment opportunities where the needs are greatest; and greater accessibility for the travelling public and business users. Moreover, these benefits would be realised at an earlier date since, as stated in the Draft EIS, a second airport would be developed sooner if Badgerys Creek is selected as the site. *Sunny*

The other major benefit is in the early reduction in pressure for the expansion of Kingsford Smith Airport to cater for increasing air traffic demand. Expansion of KSA would lead to major increases in aircraft noise and air pollution problems. For this reason the second Sydney airport should be built and brought into operation at the earliest possible date. Further, the second airport should not be used to transfer general aviation from KSA to free up capacity there for larger aircraft.

The selection of the Badgerys Creek site has the added advantage of eliminating the environmental problems of water pollution and loss of flora, fauna and the natural landscape at the Wilton site. Even if the Wilton site was moved out of the metropolitan water catchment area to overcome these problems and permit extraction of all coal resources, the inherent regional disadvantages of Wilton for employment and accessibility factors due to its location within the Sydney Region would still remain, and higher social disruption and noise impacts would emerge in the Wilton area.

The adverse impacts on the residents near Badgerys Creek are of concern but it is anticipated that acquisition/compensation arrangements could mitigate these local problems. The boundaries of the second airport site should be adjusted to include areas likely to be seriously affected by aircraft noise in a buffer zone. In areas less seriously noise-affected, consideration should be given to compensation for existing property owners or improvements to the noise insulation of dwellings where it can be shown that there is a significant diminution in value or a significant disturbance from aircraft noise. The timing and form of any compensation and acquisition of buffer zones should be determined in accordance with the forthcoming findings of the Aircraft Noise Inquiry.

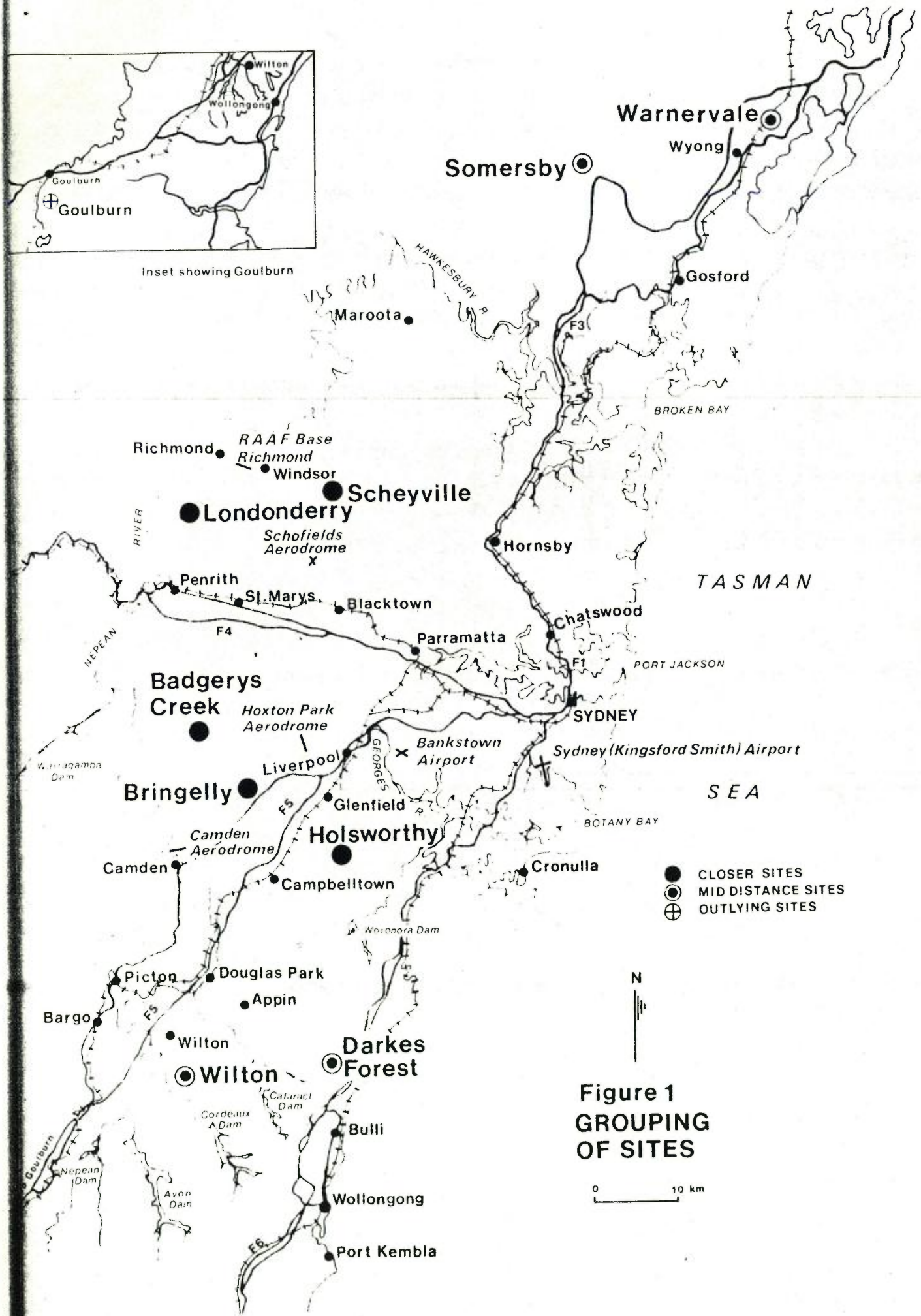
The loss of agriculture is also of concern but is inevitable because of future urban development.

In order to minimise any air, water and construction noise impacts arising from the development of the second airport, the Department of Aviation should have regard to the requirements of the State Pollution Control Commission; likewise the advice of the Soil Conservation Service should be obtained on measures to control soil erosion.

The N.S.W. National Parks and Wildlife Service and the Heritage Council should be consulted in regard to further Aboriginal archaeological and European heritage investigations of the second airport site. The Department of Aviation should also consult with the Department of Mineral Resources with a view to designing a programme for the extraction of any significant light-firing clay/shale resources that may be found on the Badgerys Creek airport site, if such extraction proves to be a practical proposition.

If Wilton is selected as the second airport site (which is not favoured by the Department of Environment and Planning), the Department of Aviation should consult with the Department of Mineral Resources and the Bellambi Coal Company and undertake action required to minimise the sterilisation of coal resources and ensure the viability of the West Bellambi project. In addition, the Department of Aviation should consult with the Metropolitan Water Sewerage and Drainage Board and the State Pollution Control Commission regarding the preparation of a detailed hazard assessment for the metropolitan water supply and the preparation of fail-safe contingency plans in the event of an emergency. If the Board is not satisfied that the water supply can be adequately protected, the Commonwealth Government should finance the provision and operation of necessary water treatment works.

In the final analysis, the Department considers that Badgerys Creek is clearly the superior site when all environmental and planning factors are taken into account in the interests of promoting the social and economic welfare of the community as a whole.



Warnervale

Somersby

Wyong

Gosford

Maroota

Richmond

RAAF Base
Richmond
Windsor

Londonderry

Scheyville

Schofields
Aerodrome

Hornsby

Penrith

St. Marys

Blacktown

Parramatta

Chatswood

Badgerys
Creek

Hoxton Park
Aerodrome

Bankstown
Airport

SYDNEY

Sydney (Kingsford Smith) Airport

Bringelly

Liverpool

Glenfield

Holsworthy

Cronulla

Camden

Camden
Aerodrome

Campbelltown

Picton

Douglas Park

Appin

Bargo

Wilton

Darkes
Forest

Wilton

Bulli

Wollongong

Port Kembla

TASMAN

SEA

N

0 10 km

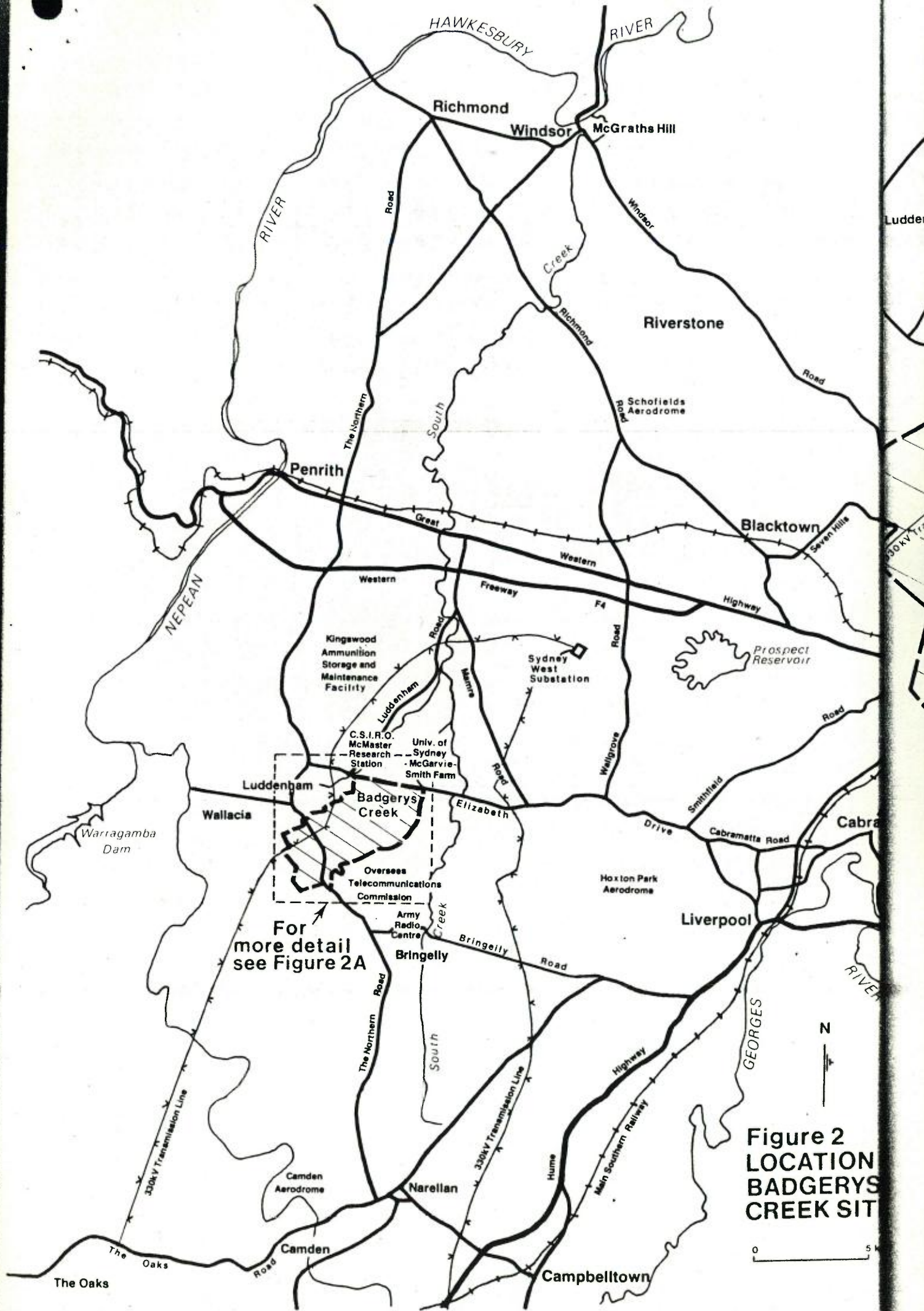
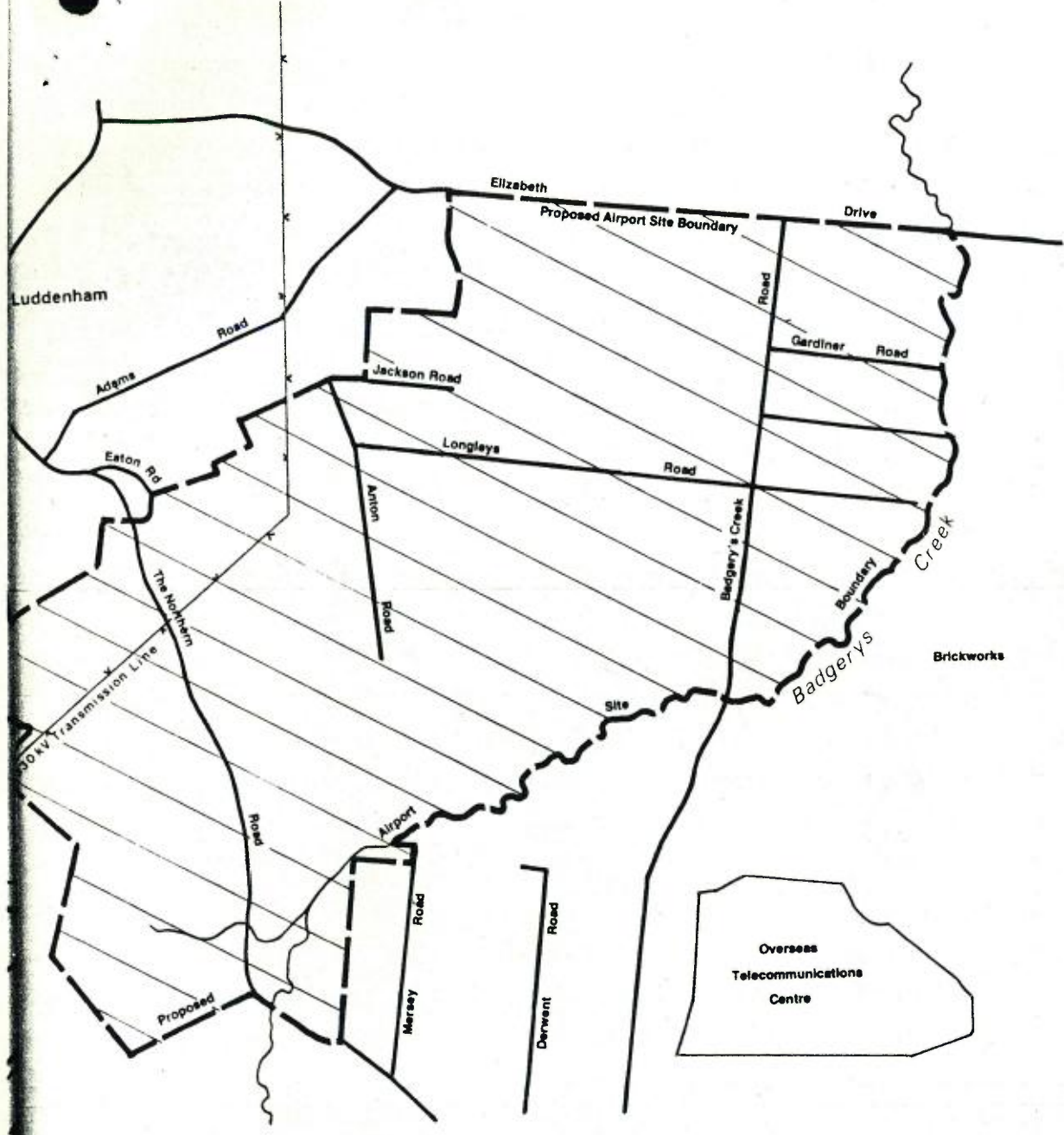
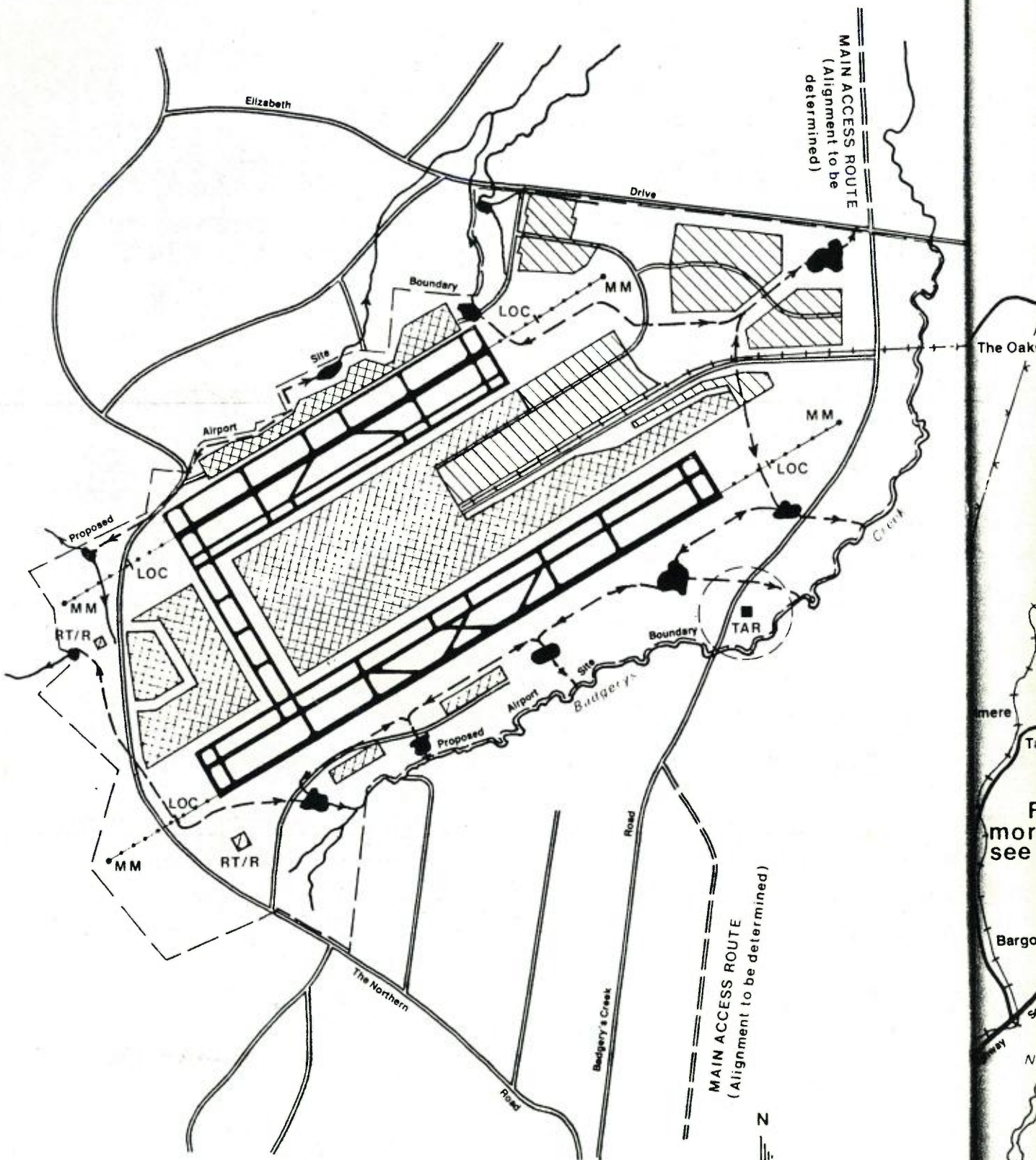



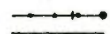
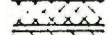


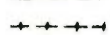

Figure 2
LOCATION
BADGERYS
CREEK SIT



**Figure 2A
BADGERYS
CREEK SITE**





-  RUNWAY AND TAXIWAYS
-  RUNWAY APPROACH LIGHTING
-  TERMINAL AND APRON AREA
-  LEASED SITE FOR AIRPORT RELATED ACTIVITY
-  PERIMETER DRAINAGE SYSTEM
-  POSSIBLE ROAD ACCESS SYSTEM
-  POSSIBLE RAIL ACCESS SYSTEM
- MM MIDDLE MARKER
- TAR TERMINAL AREA RADAR
- LOC LOCALIZER
- RT/R RADIO TRANSMITTER / RECEIVER

**Figure 3
BADGERYS CREEK
PRELIMINARY
MASTER PLAN**

0 1 km

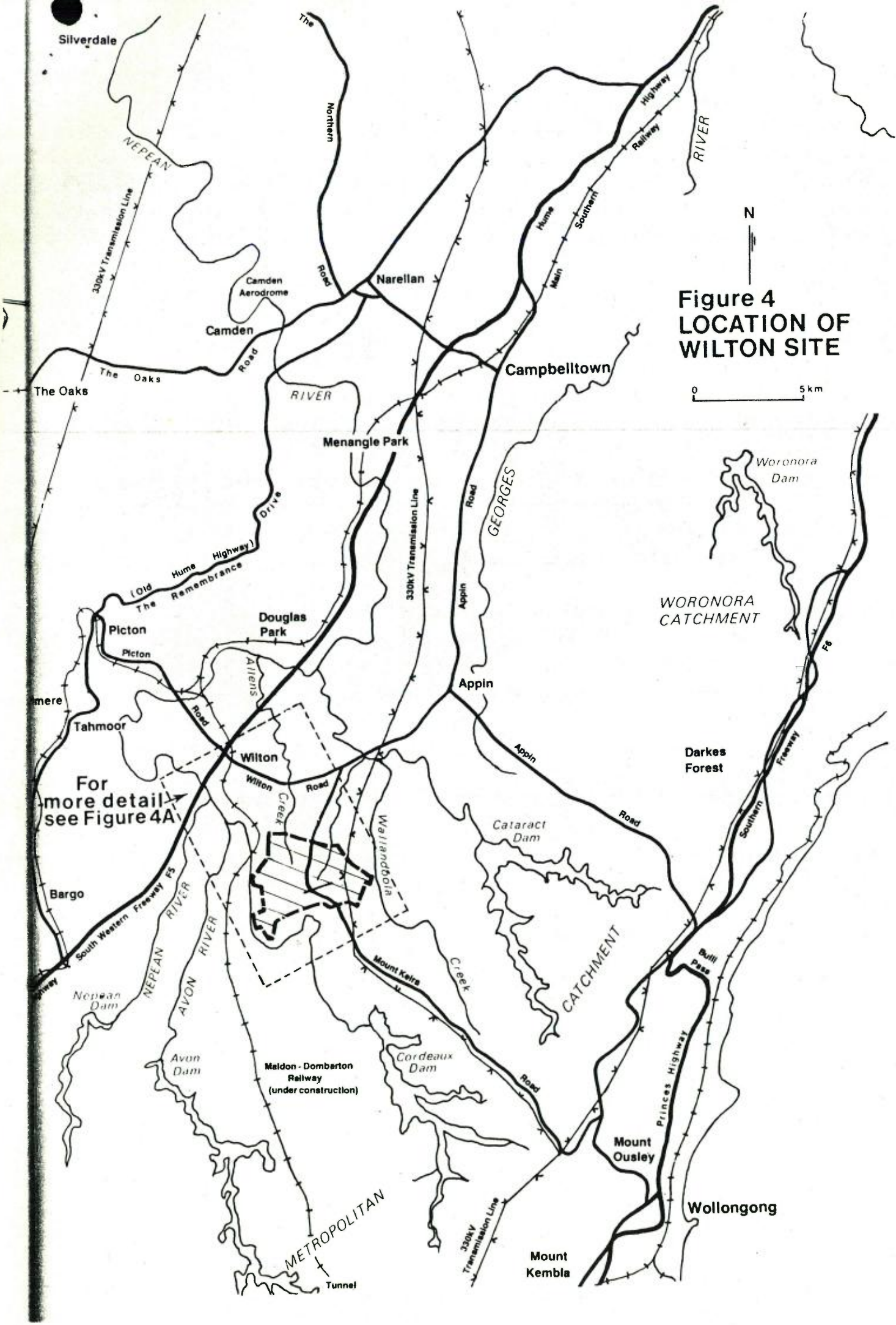
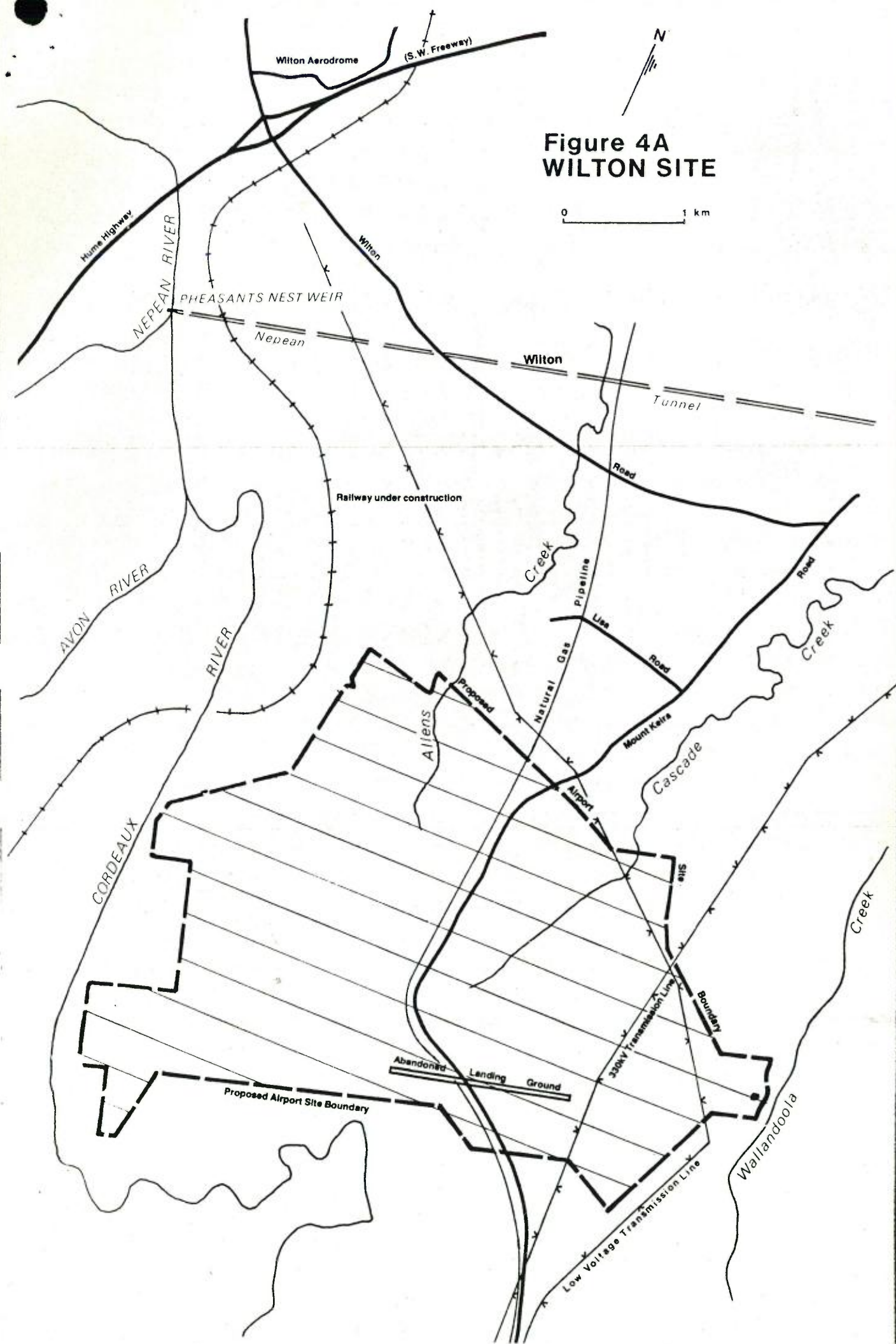


Figure 4
LOCATION OF
WILTON SITE

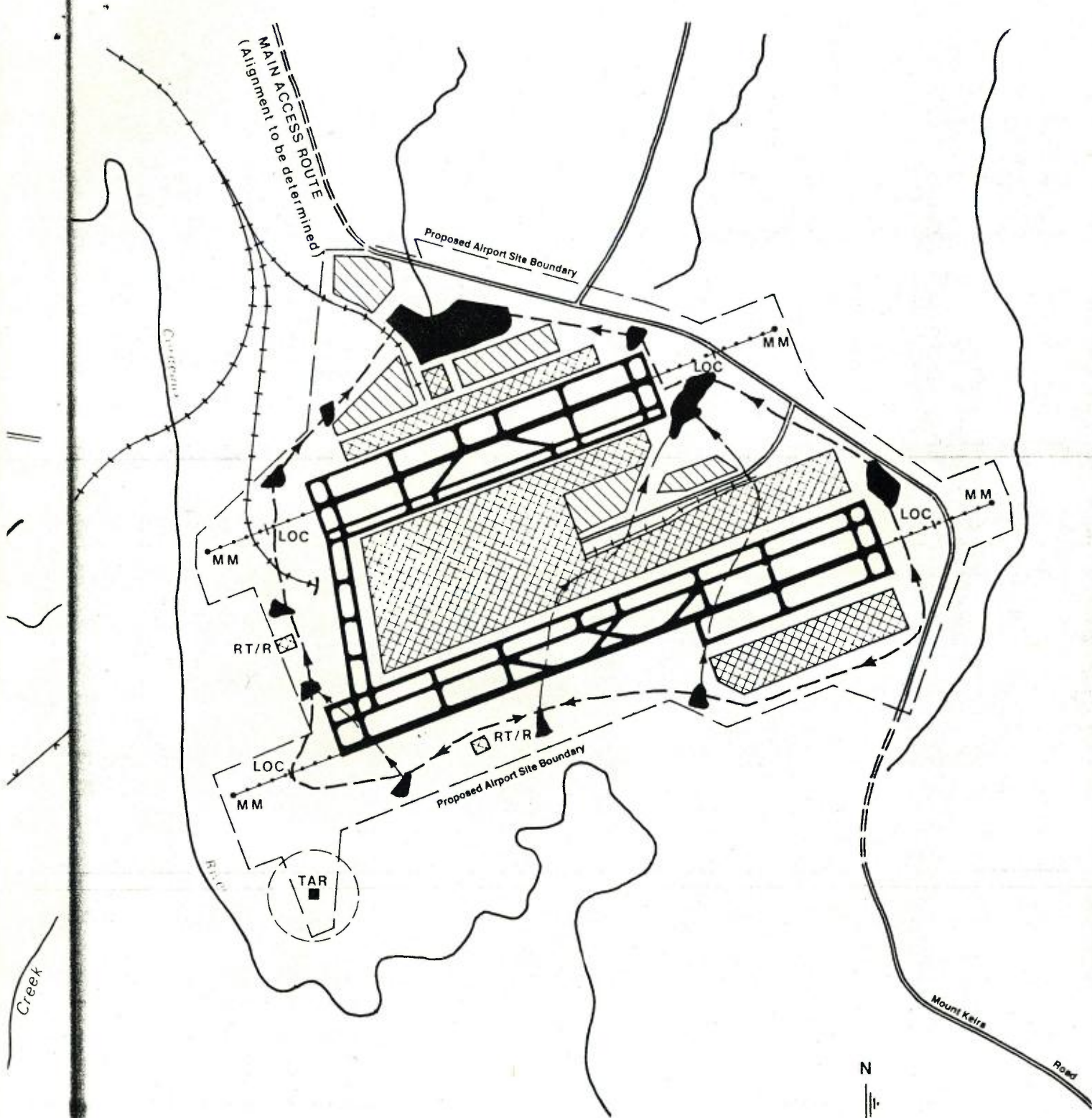
0 5 km


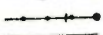
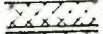
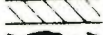

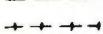
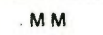
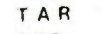
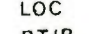
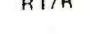

For more detail see Figure 4A

Figure 4A
WILTON SITE



Legend symbols:
+
T
L
R

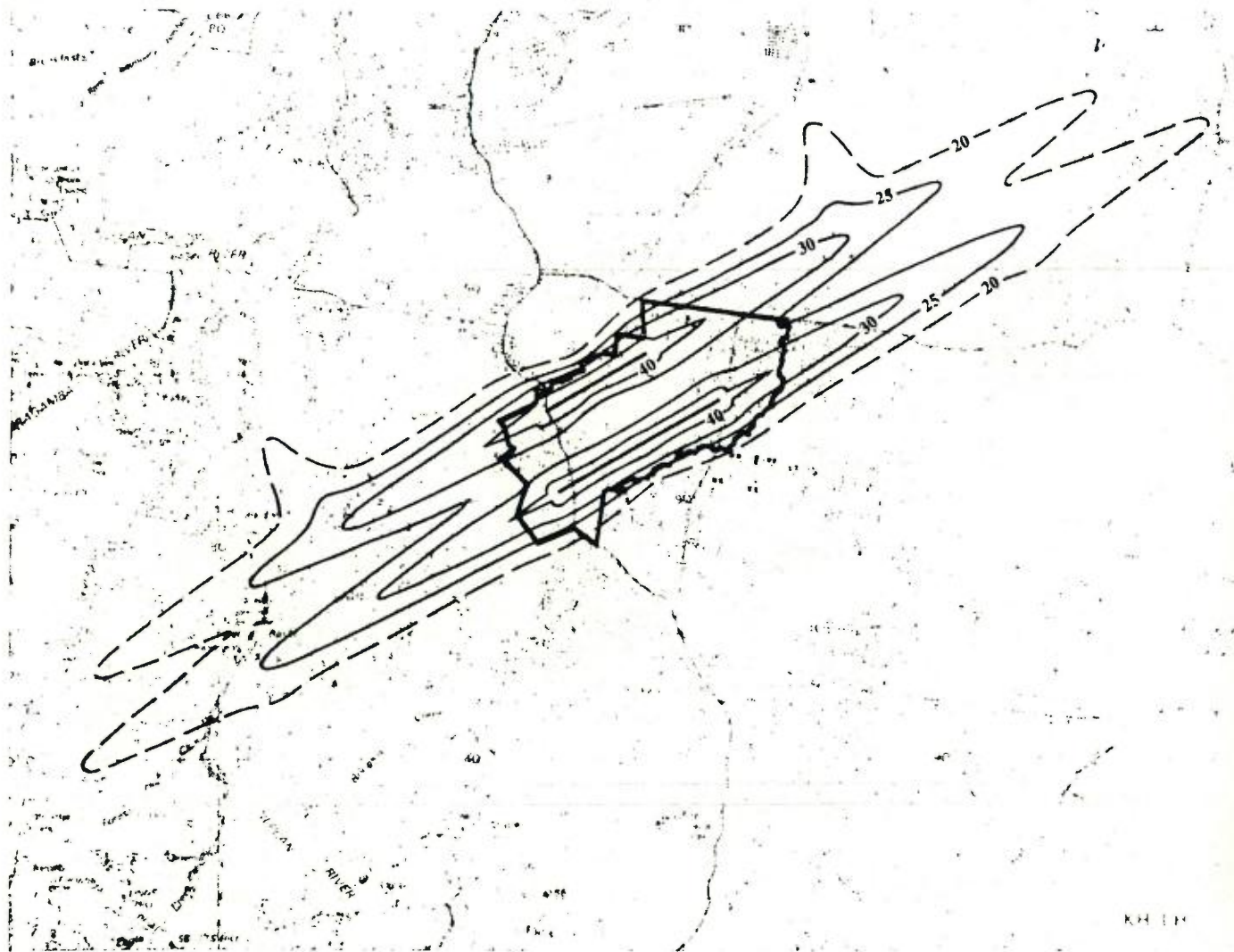


-  RUNWAY AND TAXIWAYS
-  RUNWAY APPROACH LIGHTING
-  TERMINAL AND APRON AREA
-  LEASED SITE FOR AIRPORT RELATED ACTIVITY
-  PERIMETER DRAINAGE SYSTEM
-  POSSIBLE ROAD ACCESS SYSTEM
-  POSSIBLE RAIL ACCESS SYSTEM
-  MM MIDDLE MARKER
-  TAR TERMINAL AREA RADAR
-  LOC LOCALIZER
-  RT/R RADIO TRANSMITTER / RECEIVER

**Figure 5
WILTON PRELIMINARY
MASTER PLAN**

0 1 km



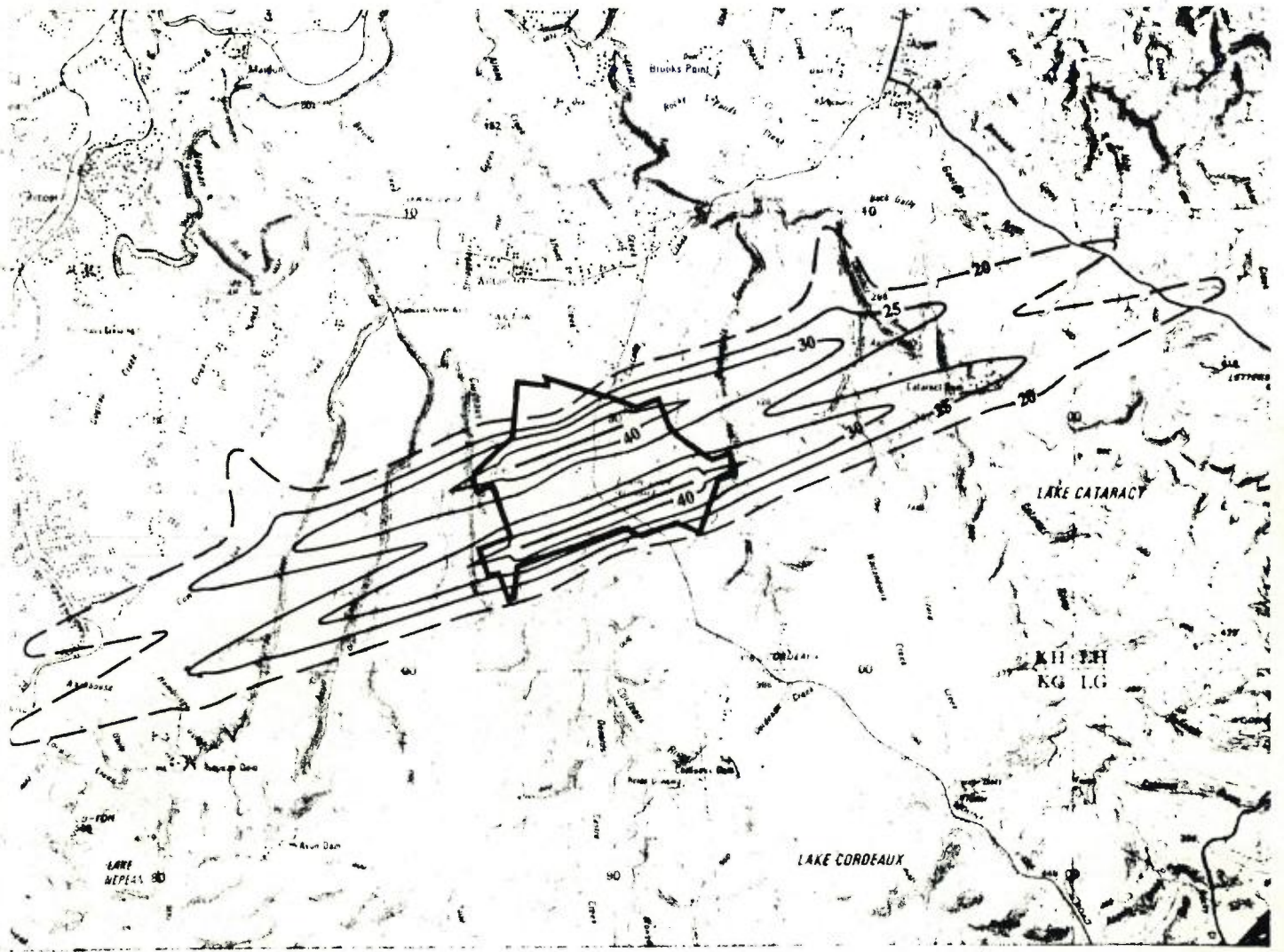


— 25 — A.N.E.F. CONTOUR FOR PROPOSED RUNWAY ALIGNMENT

0 1 km

N

Figure 6
A.N.E.F. CONTOURS
FOR BADGERYS CREE

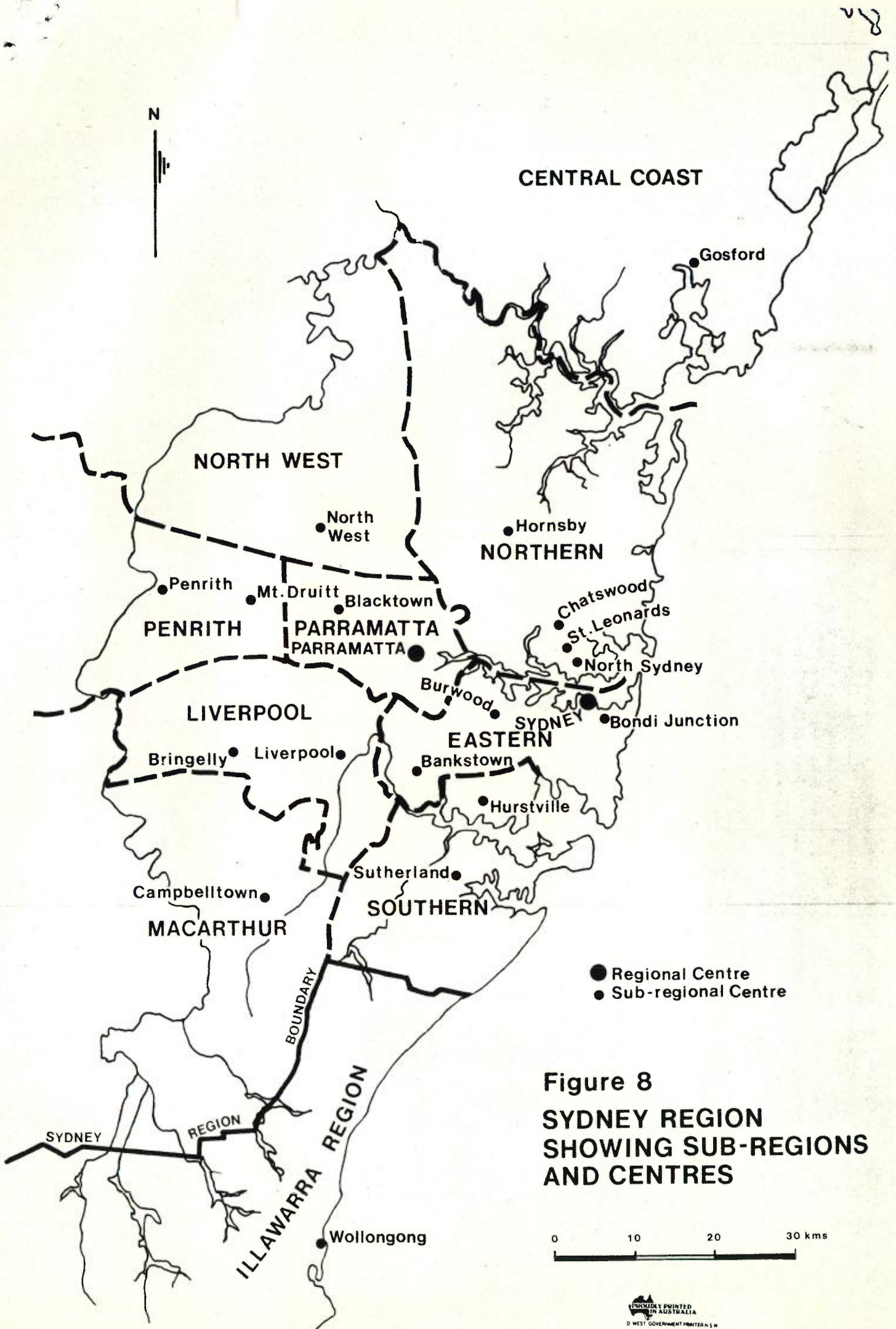


— 25 — A.N.E.F. CONTOUR FOR PROPOSED RUNWAY ALIGNMENT

0 1 km

Figure 7
A.N.E.F. CONTOURS
FOR WILTON

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Second Sydney airport site selection
programme

