

Jandakot Land Use and Water Management strategy

**A submission by the Environmental Protection Authority on the
draft document released for review by the Department of
Planning and Urban Development**

**Environmental Protection Authority
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THE PURPOSE OF THIS REPORT

This report is the Environmental Protection Authority's submission to the review of the document released by the Department of Planning and Urban Development entitled "Jandakot Land Use and Water Management Strategy".

This submission is not a report under Part IV of the Environmental Protection Act, and there are no provisions for appeals against the Authority's views expressed in the submission.

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1. Introduction

The Jandakot Land Use and Water Management Strategy covers an area roughly corresponding to the existing and proposed Jandakot Public Water Supply Area, part of which is also within the Peel-Harvey coastal plain catchment. The Strategy provides a detailed plan for much of the area between the south-east and south-west urban corridors to complement the structure planning which is being undertaken for those corridors. The Strategy contains a land use plan, and recommends policy and statutory mechanisms for protecting the groundwater resource and environmental values in the areas over the next 30 years. It also recommends a programme of action designed to implement the strategy (Department of Planning and Urban Development, 1992).

The preparation of the draft Jandakot Land Use and Water Management Strategy by the Department of Planning and Urban Development is a major achievement, and the Environmental Protection Authority commends the Department on its initiative in the preparation of the document.

This report is the Environmental Protection Authority's submission on the strategy which has been put forward for the Jandakot Mound.

2. Environmental issues and the allocation of land uses

The Department of Planning and Urban Development has used a number of criteria to evaluate potential approaches to allocating land uses on the groundwater mound. The Authority is generally in agreement with the criteria used, though considers that perhaps too much emphasis was placed on continuing with recommendations made by previous planning studies, which in some instances had the effect of negating strong concerns regarding the potential effect of these uses on groundwater quality and quantity.

The following is a discussion of the main environmental issues which need to be considered in the allocation of land uses on the Jandakot Mound, and the protection of identified values of the study area. Many of the issues raised below have been discussed in the Strategy document, though the Authority considers it necessary to either re-state previously published position, or to comment further on the issues raised.

2.1 Groundwater protection

The Jandakot Water Mound is an underground water resource which is currently utilised to supply Perth with potable water. The Authority considers that development over the water supply area needs to be carefully controlled to prevent pollution of this important and strategic resource.

2.1.1 Urban and rural living

The Environmental Protection Authority has long held views regarding urbanisation on groundwater mounds. In Bulletin 404 published in 1989 wherein the Authority provided its comments on *Planning for the future of the Perth Metropolitan Region*, the Authority stated that:

"The EPA considers that there can no longer be a presumption that urban development (particularly in its traditional form) will be able to proceed in areas historically thought appropriate for such development. Urbanisation is a form of development that is incompatible with wise water management of the groundwater resource for the purposes of public water supply and the maintenance of environmental values. Accordingly, areas of known value for groundwater (both in a public supply, and biophysical environmental sense) should not be designated for urban development unless it is demonstrated through environmental investigations and assessment that such development could proceed without jeopardising groundwater quality and quantity."

In its Report and Recommendations on the Thomson's Lake Urban Structure Study (Bulletin 388), the Authority stated that:

"Land in the eastern one third of the development area (eastern zone) is mostly swampy, is difficult to drain, would generate up to 70% of the drainage water from the entire development, would lead to most of the potential environmental impacts on the Beeliar wetland chain, would generate the major loss of water resource, and is within the recharge area which would supply the Water Authority of Western Australia's proposed borefield. The Environmental Protection Authority now recommends that it is appropriate to exclude this area from development and drainage."

In a further report on the Thomson's Lake Urban Structure Study (Bulletin 429), it is stated that:

"The Authority reiterates its position that it does not support urban development on land above the Jandakot groundwater mound between the two lines of public water supply bores."

It is acknowledged that much of the area identified for urban development immediately east and west of the Kwinana Freeway alignment has been given environmental approval for development by the Minister for the Environment subject to a number of conditions. There is however, one small parcel of land in this area which does not already have approval and which is between the two lines of public water supply bores. The Authority considers that, consistent with its previous advice and with the draft Environmental Protection (Jandakot Mound Groundwater) Policy (discussed below in section 3.2), no further approvals should be given to allow urban development between the borelines.

The Environmental Protection Authority has concluded that any further urban development between the two lines of public water supply bores is environmentally unacceptable. The Authority recommends that the area of land bounded by Lyon and Rowley roads, which has not been granted approval by the Minister for the Environment previously, be removed from the Urban category of the strategy and be added to the adjoining Rural Landscape and Conservation Area.

With regard to Rural Living development, consideration must be given to the effect of allocating extra areas to this land use category on management of both the Peel-Harvey Catchment and the Jandakot Underground Water Pollution Control Area. The Strategy has only identified a relatively small new area for Rural Living, though has also suggested that all of the existing small lot subdivisions which are currently zoned rural be re-zoned to Special Rural to enable local authorities to have stricter control over permissible land uses. As small lots often attract hobby farm activities which can be associated with land degradation and nutrient problems, the Authority supports any strategies which can be put in place to exercise more control over land uses within these areas.

The Strategy outlines a number of suggested controls for Urban and Rural Living land uses. The Authority supports all of the controls outlined, however, considers that more emphasis should be given to determining the suitability of the land to accept on-site effluent disposal without affecting the water quality of the Mound before proceeding to re-zone the newly identified land to Special Rural.

In this regard, the Strategy's suggestion that a minimum average lot size of four hectares be maintained within newly proposed Special Rural zones is supported by the Authority. This larger lot size will help to manage nutrient input from on-site effluent disposal as it will lower the number of such disposal units required, and through clearing controls, would also minimise vegetation loss.

Regardless of lot sizes, careful evaluation of the land is required to determine the acceptability of on-site disposal, and what type of system is most appropriate. The Authority considers that for conventional on-site effluent systems to work effectively it is necessary for the bottom of

the leach drain to be a minimum of two metres above the highest water table and for the system to be at least 100 metres from the nearest waterbody or drain. In many cases in the Jandakot area, this requires the creation of an area of fill to accommodate the leach drains. The use of conventional on-site effluent systems in areas which cannot achieve the necessary clearances is not environmentally acceptable, however, it may be possible to use alternative systems such as Alternative Treatment Units or septic tanks which use high phosphorus retaining soils. The Water Authority of Western Australia should be consulted regarding the use of alternative on-site effluent disposal systems on the mound.

Another control which could be introduced is the limitation on the number of livestock which can be kept per property. The Authority believes that stocking rates need to be determined on a case by case basis, taking soil type, feed source and cumulative impacts in the subcatchment into consideration. Until such acceptable stocking rates can be defined, and especially on land which has low to very low land capability assessment, the Authority considers that a stocking rate of one horse (or stock equivalent) per two hectare lot is the maximum stocking rate which should be permitted in this form of land use (Environmental Protection Authority, 1991). Ideally nutrient balances of the land in question would be calculated to determine the acceptability of ancillary land uses.

2.1.2 Rural

The Environmental Protection Authority recognizes the need for some broad acre rural land uses to continue and agrees with comments made in the Strategy which suggest that management of fertiliser and chemical use, and management of drainage should be encouraged. This management is required to protect both the Jandakot Mound groundwater and the Peel-Harvey Estuarine system from excessive nutrient inputs. The Authority generally considers that rural land uses should be restricted to broad acre, dry land grazing, so as to minimise potential impacts on both the Peel-Harvey Estuary and the Jandakot Mound groundwater. Mechanisms to control uses on agricultural land should be addressed by local authorities in the preparation of their rural planning strategies and in the preparation of revised local town planning schemes and by the Department of Agriculture.

2.1.3 Intensive rural

The Environmental Protection Authority considers that new intensive agriculture between the two lines of public water supply bores is environmentally unacceptable. The Authority has also previously stated in other Bulletins, for example, Bulletins 449, 558 and 552, that new market gardening and irrigated horticulture using sprinkler irrigated systems are environmentally unacceptable on sandy soils in the Peel-Harvey coastal plain catchment because of the very high fertiliser and water applications associated with such activities. Other intensive agricultural uses such as as intensive animal production, irrigated fodder production, dairy milking sheds and aquaculture are also associated with high nutrient generation on the site (Environmental Protection Authority, 1990a, 1991, & 1991a). Such uses should be discouraged both within the Jandakot Mound groundwater area, particularly the Priority 2 source area, and the Peel-Harvey Catchment. The relevant local authority town planning schemes could possibly be modified to reflect this requirement.

2.1.4 Industrial and commercial

The Strategy states that no new industries or commercial businesses which handle or process noxious, toxic or polluting substances should be permitted. The Strategy also states that the range of uses currently permitted in the Jandakot Noxious Industry zone are inappropriate within a groundwater resource area. The Authority agrees with the proposal to amend the Metropolitan Region Scheme and the local authority town planning scheme to change this area to general or light industry as soon as possible, and that no new developments which could pollute the groundwater should be permitted. Rezoning of the Noxious Industry land may also assist in protecting nearby urban areas from adverse emissions from the industrial area (refer Section 2.4.2). Management of existing industries should have protection of the groundwater

resource as the primary objective. Approvals of new developments within industrial or commercial areas should be controlled such that pollution of the groundwater is avoided. In this regard, all new development should incorporate effluent management systems approved by the Health Department and the Water Authority of Western Australia.

The Authority is in agreement with all of the controls proposed for industrial and commercial development in the Strategy.

The Authority also supports the statement made in the Strategy that service stations and other premises requiring underground storage tanks should be prohibited from the Priority 2 Source Protection Area of the Mound. The Authority believes that there should not be any storage (including above ground) of significant potential pollutants on the Priority 2 Source Protection Area.

2.2 Wetlands

Wetlands are valuable ecological and social resources in Western Australia because they support a wide range of water and land animals and plants. They have cultural and heritage values, provide for recreation, tourism and education, are an intrinsic part of the natural as well as the modified surface drainage pattern, and they are indexes of environmental quality.

The Environmental Protection Authority has for a long time known of and sought to counter pressures on wetlands as 80 per cent of the wetlands on the Swan Coastal Plain have had their functions significantly changed since European settlement. The Authority continues to urge special consideration of wetlands, and it recommends reservation of wetlands that are important for conservation or use by people. It has worked to provide legal protection for the remaining lakes on the Swan Coast Plain through the preparation of an Environmental Protection Policy (refer section 3.1). Apart from the statutory Environmental Protection Policy for lakes, the Authority has also evolved from a number of previous studies and publications, a wetland evaluation method which was outlined in Bulletin 374 (Environmental Protection Authority, 1990b).

The Authority will assess proposals affecting significantly functional wetlands in the Jandakot region, that is:

- lakes nominated for protection in the Environmental Protection Policy;
- representative wetland areas recommended for protection in the System 6;
- wetlands with rare vegetation communities not adequately represented in reserves, or rare flora and fauna (and their habitats); and
- wetlands recognised by international agreement because of their importance primarily for waterbirds and their habitats.

The Authority appreciates that agencies with planning and management responsibilities will be deeply involved in the application of wetland policies and guidelines. Those most concerned are the departments of Planning and Urban Development, and Conservation and Land Management, and the Water Authority of Western Australia. Local Authorities and the community are also involved in reaching decisions about the best use of remaining wetlands.

Generally proposals affecting wetlands in categories other than those listed are not subject to the Environmental Protection Authority assessment process, but the Authority works in the knowledge that agencies and proponents recognise that wetlands have special values when assessing possible uses. To assist this process, the Authority is prepared to provide general advice on the use and management of these areas and generic guidelines to assist this are in preparation.

The main factors in wetland protection include:

- assessment and management of wetlands through Bulletin 374;
- protection for wetlands and associated vegetation buffers through planning controls or reservation consistent with management requirements;

- protection of water levels and water quality through management of drainage (water balance) and land use in this catchment.

As there are many wetlands within the Strategy study area, the Authority would expect that the above principles and methods be adopted when considering any development or re-zoning proposals.

2.3 Noise

Noise emanating from the Kwinana Freeway, the railway line, and from operations at the Jandakot Airport should be an issue which is given careful consideration in land use planning for the study area.

Provision should be made for adequate, well vegetated or earth bunded buffers between all major roads and railway lines and residential development.

In terms of management of noise impacts from Jandakot Airport, the general practice is to follow Civil Aviation Authority land use recommendations and the Standards Association of Australia AS 2021, that residential development not be permitted on land which is within the 25 or greater Australian Noise Exposure Forecast (ANEF) contour. Residential development of land between the 20 and 25 ANEF contours should only be permitted if noise control features are incorporated during the design and construction of buildings.

Whilst the ANEF system is widely used throughout Australia to predict potential noise impact on surrounding land, the Authority is concerned at the ability of the ANEF system to accurately predict aircraft noise annoyance in this instance, particularly as Jandakot Airport is used in large part for circuit training by pilots. The Authority believes that planning agencies at both the State and local Government level should be conservative in their use of ANEF contours as a decision making tool. The Authority is currently undertaking noise monitoring at Jandakot Airport and will provide the data gathered to the Department of Planning and Urban Development to assist them in developing strategies for improved management of land use allocation around airports.

In the absence of other data at this stage, the Authority offers the following advice based on the ANEF system. Part of the area shown as Urban which is bounded by the Kwinana Freeway to the east, the railway line to the north and Lakes Road to the west is within the 20 and higher ANEF contours for the Jandakot Airport. It is considered that this area should not be used for residential purposes, particularly the land within the 25 ANEF contour. Another area shown as urban along Nicholson and Randford roads, Canning Vale is also within the 20 or greater ANEF contours, though it is understood that this area already has all the necessary approvals for residential development.

The Environmental Protection Authority has concluded that residential development on land which could be subject to high levels of noise from airport operations is not environmentally acceptable. The Authority recommends that residential use of the land within the region of Berrigan Drive which is within the 25 or greater ANEF contour not be permitted, and that serious consideration be given to not allowing residential use within the 20 - 25 ANEF contours.

Noise is also an issue in terms of Special Rural development. There is one new area of Special Rural development on Acourt Road which could be subject to unacceptable noise levels, and the Authority would recommend that careful consideration be given to this issue before any re-zoning takes place.

2.4 Buffers

2.4.1 Kwinana Air Quality Policy Area

Part of the Jandakot Land Use and Water Management Strategy Study Area is within the Kwinana Air Quality Policy Area. This Policy establishes, through associated regulations, the

air quality objectives for sulphur dioxide and particulate matter such as dust, with the opportunity for other pollutants to be added later (Government Gazette, Western Australia, 1992). Whilst this Policy does not control land use within the Policy Area, the Authority generally recommends against intensification of residential uses within the Policy Area. The Strategy has generally recognised the existence of the Policy Area, and has not suggested the intensification of land use within this Area except for in one instance on land south of Banganup Lake. The Authority considers that this land should not be included in the Urban category as future residents would be exposed to a lower level of air quality than would be acceptable.

The Environmental Protection Authority has concluded that residential development within Areas A and B of the Kwinana Air Quality Policy Area is environmentally unacceptable. The Authority recommends that land within the Kwinana Air Quality Policy Area, being Lot 615 Mandogalup Road and the land immediately south of this lot within the transmission line corridor, be removed from the Urban category and placed in another category which will not allow for an increase in residential use of the land.

2.4.2 Industry buffer

Consideration should be given to ensuring that buffers are provided around industrial estates, particularly the existing noxious industry estate north of Forrest Road. In particular, the land to the north of this estate could be exposed to unacceptable levels of emissions of noise, odour and dust due to prevailing climatic conditions.

2.4.3 Sand mining buffer

Adequate buffers should be provided between areas identified as Priority Resource Areas for sand mining to protect residents from noise, dust and vibration emanating from mining activities.

2.4.4 Midge buffer

The chain of wetlands within the Beelihar Regional Park have, or have the potential to have, a midge problem. The consequential nuisance effects on nearby residential development can be difficult to control. Adequate buffers between residential developments and wetlands should continue to be provided so that this problem is avoided. It must be recognised that midge control measures which may be sought in the future by residents could be considered environmentally unacceptable because of potential environmental impact.

2.5 Beelihar Regional Park management

The Beelihar Regional Park forms the western boundary to much of the Strategy study area. The preferred Strategy shows urban and possible future urban uses immediately abutting the park boundary. Each area of the park has identified land use and management guidelines. Any planning for change to land use which currently abuts the park should take into consideration the land use and management guidelines for those areas within the park.

Of most concern is the land which abuts the region of Thomsons, Kogolup, and Banganup lakes. According to the Beelihar Regional Park documentation, this general area is intended to be managed for Conservation and Protection by the Department of Conservation and Land Management. Management of these Beelihar areas for Conservation and Protection is defined as including restricted public access, prohibition of vehicles except for management vehicles, development of facilities restricted to minor nature trails, signs, cycle tracks, through access where necessary, rehabilitation of vegetation and habitat protection for bird species and fauna (Department of Planning and Urban Development, 1992a).

The Environmental Protection Authority has concluded that careful management of land uses abutting the Beeliar Regional Park is required. The Authority recommends that Urban zoning of land immediately abutting the Beeliar Regional Park should only be considered if it can be managed so that it does not compromise the stated management objectives of the park.

3. Implementation of identified environmental controls

The Jandakot Land Use and Water Management Strategy has narrowly identified environmental controls within the Implementation section (section 10) of the proposal. The Authority considers that a number of other suggested controls which are scattered throughout the whole document and especially those which are also included under the headings of Planning and Groundwater Controls can also be viewed as environmental controls. It may be desirable to broaden the headings in this section to reflect this.

The Strategy has specifically proposed that Environmental Protection Policies be prepared by the Environmental Protection Authority for the protection of wetlands and vegetation in the study area. The Authority has in fact prepared two Environmental Protection Policies which apply to the study area, one of which is finalised.

3.1 Environmental Protection (Swan Coastal Plain Lakes) Policy

An Environmental Protection Policy for the protection of Swan Coastal Plain Lakes was declared by the Government in December 1992. This Policy establishes beneficial uses of lakes to be protected, and prohibits the carrying out of activities which cause the destruction and degradation of lakes. It also requires persons who cause the destruction or degradation of lakes to undertake the rehabilitation or re-establishment of those lakes. The Policy specifically prohibits the filling, excavation and mining of identified lakes, the discharge or disposal of effluent into lakes, and the construction or alteration of drainage system in lakes (Government Gazette, Western Australia, December 1992).

The Authority considers that this Policy is a valuable mechanism for the protection of lakes and together with the approach to wetland protection described in Section 2.2, complements the management objectives identified in the Strategy.

3.2 Draft Environmental Protection (Jandakot Mound Groundwater) Policy

The Environmental Protection Authority published for public review and comment in October 1992, an Environmental Protection Policy to protect groundwater of the Jandakot Mound. Following receipt of submissions on that draft policy from members of the public, industry, community and conservation groups, local government and State agencies, the Authority revised the draft policy in line with comments received.

The changes to the first draft policy were substantial and as such, the Authority released the second draft policy for public review and comment in January 1993 (Environmental Protection Authority, 1993).

Essentially, the current draft Environmental Protection Policy has the policy area divided into two areas, A and B. Within Area A, which covers the top of the mound and is between the public water supply borelines, urban industrial and horticultural development should not take place and there are further controls on the use of groundwater, filling of land and discharge of contaminants. In Area B all these activities may take place, but subject to stringent controls.

This draft policy is to be reconsidered by the Authority following the review of further submissions, and a revised draft policy will be published for public inspection and forwarded to the Minister for the Environment. The Minister may then consult with people and agencies affected by the policy, and when satisfied, may approve that policy by order in the Government Gazette. Unless otherwise specified by the Minister, the approved Policy must be reviewed within seven years of gazettal.

There are some differences between what is proposed in the Jandakot Land Use and Water Management Strategy and what is proposed in the draft Environmental Protection Policy, particularly in terms of urban development. Clearly, the draft Environmental Protection Policy is subject to rigorous scrutiny and is at this point in time some distance from being finally resolved, though when finalised, it will be legally enforceable. As such it is considered that the Jandakot Land Use and Water Management Strategy should not be finalised until the Environmental Protection Policy is proclaimed so that consistency between the two documents is achieved.

3.3 Habitat and vegetation protection

The Strategy suggests that the Environmental Protection Authority prepare an Environmental Protection Policy to protect vegetation within the study area. The draft Environmental Protection (Jandakot Mound Groundwater) Policy is one mechanism which can offer protection. The Policy has established protection for native vegetation through the definition of beneficial uses and a programme to protect the groundwater and its beneficial uses. The draft Environmental Protection Policy states that the beneficial uses to be protected under the Policy are:

- use of the groundwater for public and private water supply and use; and
- use of the groundwater to support native vegetation and wetlands in the policy area.

Aside from the draft Environmental Protection Policy, the Authority has established approaches and mechanisms for dealing with the issue of vegetation and habitat protection.

The Environmental Protection Authority's focus for conservation on the Swan Coastal Plain is primarily based on the System 6 Study (Environmental Protection Authority, 1983). The aim of this study was to identify areas of the region that should be kept mainly natural. Specifically, this study identified 108 areas in the metropolitan region, and 101 areas in the adjoining country region, which are recognised to be of regional conservation significance and/or regional representation of biological and physical values, and made recommendations for their management. The Authority believes the integrity of System 6 recommendation areas should not be further compromised.

There are some instances where areas that have potentially very high conservation values have not been included in System 6 recommendation areas, and have consequently been the subject of development proposals. One example of this was a development proposal for an area of land at Brixton Street, Kenwick, in 1992 where the Authority recommended that a substantial area of the land be set aside for conservation (Environmental Protection Authority, 1991b).

The Authority considers that decisions on the use of these areas outside Systems recommendations and conservation areas should be made through the planning process, both at the State and local level. The Authority provides assistance to ensure that environmental principles are incorporated into major planning documents and policies such as this one. The type of advice offered by the Authority in dealing with re-zoning and development proposals includes:

- maximum retention of indigenous vegetation;
- appropriate management of public open space, and
- vegetation buffers along watercourses and drains.

Small areas of bushland in the metropolitan area require much more intensive management and resources in order to safeguard their integrity in relatively unfavourable surroundings. As part of the planning process, the Authority likes to see local authorities developing conservation strategies to protect and manage these smaller areas of urban bushland. In this regard, the Jandakot Botanic Park as proposed in the Jandakot Land Use and Water Management Strategy is a good initiative on the part of the Department of Planning and Urban Development in the protection of Banksia woodland and other areas of native habitat.

4. Conclusion

The Environmental Protection Authority has long held and published views that the Jandakot Mound groundwater is a valuable State resource which requires protection. The Authority has identified in this report, and in its draft Environmental Protection (Jandakot Mound Groundwater) Policy that there are a number of land uses which it considers incompatible with protection of the groundwater resource, particularly between the two lines of public water supply bores. The Authority believes that further discharge of contaminants, urban development, industrial activities which involve the storage or discharge of contaminants, and intensive agriculture should be prevented between the two lines of public water supply bores, and that they should be strictly controlled elsewhere on the mound.

The Environmental Protection Authority considers that the Jandakot Land Use and Water Management Strategy has made much progress towards providing a framework for management of the Jandakot Mound. The suggestions made by the Authority in this submission are intended to increase the Strategy's effectiveness in achieving its objectives.

The Authority commends the Department of Planning and Urban Development for taking the initiative in preparing the Jandakot Land Use and Water Management Strategy, and for the content of the Strategy. Through this submission and other discussions, the Authority will continue to work with the Department of Planning and Urban Development and the Water Authority of Western Australia to protect the Jandakot Mound as an important and strategic resource.

The comments offered in this submission are general observations on the Management Strategy put forward and do not preclude the Authority from undertaking assessment of specific proposals at a later date.

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