

## MOTION FOR CONSIDERATION BY THE NCC ANNUAL CONFERENCE

MOVED BY: Robertson Environment Protection Society Inc.

MOTION: That the Nature Conservation Council of NSW oppose the Kangaloon Borefield proposal on nature conservation grounds.

### BACKGROUND NOTES:

The NSW Government is investigating groundwater extraction as part of their Metropolitan Water Plan with the groundwater to be pumped when overall dam levels fall below 40% full. It is envisaged to extract 15GL per year from 3 separate areas (45GL/yr. total). These areas include Kangaloon, Leonay near Emu Plains and Wallacia. The Kangaloon area is located at the southern end of the Metropolitan Catchment Area (MCA), just north of Robertson in the Southern Highlands of NSW. This specially protected MCA is jointly managed by the Sydney Catchment Authority and the NSW NPWS.

The SCA proposal is to have more than 60 large diameter production bores pumping 24 hours a day, 7 days a week for 2 to 3 years with an estimated 5 to 7 year recovery period.

This catchment area has remained in almost pristine condition due to restricted access, the high water table and previous management for conservation. The area has become a refuge for large numbers of endangered plants and animals and supports extensive tracts of intact Endangered Ecological Communities including Southern Highland Shale Woodland and Montane Peatlands and Swamps.

The Australian Government have declared the Kangaloon Borefield proposal a controlled action due to the likely significant impacts on federally listed threatened species and communities (sections 18 & 18A EPBC Act.). Also the Upper Nepean Groundwater Community Reference Group oppose the proposal at Kangaloon (submission to SCA, 2006).

The proposed pumping will lower the water table from near the surface to over 60 metres below, breaking any connection with groundwater dependent ecosystems in the area (for potentially 10 years or more). Many creeks will become a lot drier due to a lack of natural discharge (base flows) from this unconfined aquifer. Canopy trees in the area will lose any access to this groundwater potentially affecting whole ecosystems.

This natural area is also under threat of fragmentation and degradation due to infrastructure and increased access. The introduction of power to this area will dramatically increase the potential for bush fires (arcing of wires), especially with the general drying out of the natural landscape from pumping. The introduction of pests, weeds and diseases due to increased access into this restricted MCA is also of concern.

Recent discoveries of endangered species in the area highlights a lack of previous surveys. A full EIS needs to be carried out (over years) before any pumping degrades this important and diverse catchment area and so that appropriate management is forth coming. The Kangaloon aquifer water now naturally feeds the Nepean Reservoir, especially in times of drought, and maintains the natural ecosystems of the area.

One reason for the use of groundwater was to put off building the desalination plant, which is now being built. An advantage of building the desalination plant could be to save this unique and diverse conservation area from degrading and unsustainable pumping.

## ACTION

That the NCC show their opposition to this Kangaloon Borefield proposal by writing to, and lobbying the relevant Ministers.

That the NCC help to inform the general public, especially Sydney Water water users, of the proposed degradation of their catchment area and of their right to comment with the imminent release of the Environmental Assessment.

AUTHORIZING OFFICER: LEON HALL (signed)

President  
Robertson Environment Protection Society  
7 September 2005

following

1 REPS submission via the Sydney Catchment Authority to the NSW environment ministry.  
14 September 2006

3 REPS submissions to the Australian environment ministry in regard to plants, animals and communities under their protection. 19 June 2007, 12 February and 8 January.

Letterhead

Robertson Environment Protection Society Inc.

PO Box 45 Robertson NSW 2576

14/9/2006

RE: UPPER NEPEAN BOREFIELD PROPOSAL

Thank you for the opportunity to comment on the Kangaloon borefields proposal.

Our society would like to make the following comments.

1) The proposal to severely deplete this sustaining groundwater, which now discharges to the Nepean Dam and the associated protected environment which also feeds the Nepean Dam, does not appear to take into account the damage to this highly valued and pristine environment that has been preserved by successive state governments and the previous land managers that protected and respected this land.

Ground water levels are very high in this area and sustain highly valued wetlands of national significance as well as large tracts of Endangered Ecological Communities, Endangered flora and fauna and species not even known to us e.g. the frog species that was unidentifiable by experts and is currently being DNA analyzed by the museum.

How can the Sydney Catchment Authority and the State Government risk destroying this unique landscape to flush Sydney's toilets etc. Also this is not accessing deep aquifers in this area as the ground water level will drop from near the surface to at least 60 metres below and not be seen near the surface to sustain this national treasure for about 10 years (your estimate only) or maybe longer. The ecology, which is more valuable than any surrounding national parks, due to its unique structure and inaccessibility, will be unable to tap this groundwater. This is unacceptable and unsustainable.

2) Your definition of sustainable is misleading and infers that the aquifer will not run dry. This is a narrow engineering viewpoint that does not take into account the total catchment management viewpoint of environmental sustainability.

3) The potential and real damage to this environment must be considered against other alternatives. For example, is this an equitable project for the people of the Southern Highlands, the Sydney Water water users and for this pristine environment. No.

Leonay is another groundwater site you are interested in and this proposal does not affect a pristine environment and does not empty the water into nearby valuable creek environments to a reservoir where evaporation will create losses. Leonay's water will be transferred by pipe to a nearby treatment plant. Most importantly it will supply water to western Sydney which Leonay is part of (more equitable).

Recently the Botany aquifer has been considered a great source of water for Sydney by the University of Technology, Sydney. The recharge also could be quick using the now wasted storm water of Sydney. Water from Sydney for Sydney, where all the rain is, is far better than transporting it from hundreds of kilometres away through old leaking infrastructure at great monetary and environmental cost.

Large scale recycled water use must be priority number one as this will stop the pillage of the countryside's water which ends up wasted and will bring Sydney in line with other capital cities around the world. Also storm water collection and even the desalination plant are far better proposals than this one at Kangaloon.

4) You are moving too fast with this project to understand the implications of your actions. If SCA and the state government decide to continue here then a five year moratorium on test pumping would be appropriate so that the SCA can get adequate baseline data on all aspects of this environment. A recent example being that REPS got the NPWS to GPS three locations along Tourist Road which had groups of the Mittagong Geebung (*Per-soonia glaucescens*) which is an endangered species. Since then the SCA has slashed along the roadside and now there are only 2 locations of this endangered species. The first principle of a management plan is to see and record what is there and only then can you appropriately manage the area in regard to its value.

5) Tourist road is one of the most scenic roads in our shire and your proposal will severely degrade this area e.g. infrastructure and pumping effect on the terrestrial environment.

To the south of Tourist road is highly productive farming land and this may also be affected especially due to the envisaged drawdown effect. Tourist road also has been the location of many koala sightings, including a mother with baby, and any tree removal, or death associated with pumping will degrade their habitat as well.

In summary, the cost is too high for the small amount of short term water supply and the Robertson Environment Protection Society strongly opposes this proposal.

With respect, we hope that you, the SCA and the state government will stop their investigations in this area on environmental, socioeconomic, visual and equity issues.

yours sincerely,

Robertson Environment Protection Society Inc.

Leon Hall

President

following is 3 submissions to the Department of Environment and Water Resources (DEW)

REPS was also part of a delegation that met with DEW on 2 occasions in Canberra.

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Referrals Section (EPBC Act)  
Approvals and Wildlife Division  
Department of the Environment and Water Resources  
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CANBERRA ACT 2601

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21 June 2007

**REFERRAL SUBMISSION - Extra Information re: Butlers Swamp etc.**

**Reference Number 2006/3209**

**Sydney Catchment Authority Water Management and use Kangaloon/NSW/Upper Nepean (Kangaloon) Groundwater Borefield**

Dear Director,

**1. Introduction**

This submission should be read in conjunction with our previous submissions dated 8 January and 12 February 2007. The points raised in these submissions are still valid.

Although the focus of this debate appears to be concentrated on Butlers Swamp, REPS believes that the terrestrial and riparian environments are just as much under threat as the wetlands, if not more so.

Many plants and animals under your protection are at significant risk. Some of these animals are mentioned in this submission for your confirmation of their status.

A recent statement from the SCA, discussed at the last Upper Nepean Groundwater Community Reference Group meeting on 26 March 2007, is of concern. The following statement is in regard to the depth of groundwater being extracted and has implications for Butlers Swamp and the whole protected catchment area where the borefield is proposed.

“ It was restated that groundwater extraction was from the entire sequence of Hawkesbury Sandstone strata - fracture zones occur throughout the whole of the sandstone and the zones are not consistent from bore to bore. When a bore is pumped it is known that water levels in all sandstone zones decline.” (UNGCRG Minutes, 29 January 2007, page 2 of 14)

## **2. Butlers Swamp**

This above statement, coupled with the knowledge that no shale was encountered when drilling at Butlers Swamp (Temperate Highland Peat Swamp on Sandstone) indicates a hydraulic connection between Butlers Swamp and bore pumping in the vicinity.

If shale was encountered then this may have isolated the swamp from drawdown.

Only sandstone rock has been encountered here (also some clay), seen from drilling in the swamp and beneath it, so “When a bore is pumped it is known that water levels in all sandstone zones decline.” implies that there will be interference to this protected wetland from drawdown.

Even if there is an aquitard of some sort then this is defined as “ A low permeability unit that can store groundwater and also transmit it slowly from one aquifer to another” which also indicates a connection between pumping drawdown and Butlers Swamp over time.

## **3. The Terrestrial Environment**

Immediately above the water table is the capillary zone (tension saturated zone). This saturated zone of water is in direct contact with the water table held in the soil pores against gravity by capillary tension. This zone is frequently accessed by plant roots. (SMEC 2006 Glossary)

With pumping and the water level declining in all sandstone layers there will be a general drying out of the landscape. Canopy trees could be put under stress losing this capillary zone to drawdown over many years. The risk of fire will be increased (also with the introduction of power to the area (3 phase power)). These problems are exacerbated by the fact that the SCA wants to pump under drought conditions (emergency drought supply) when this water will be needed the most by the creeks (base flows) and vegetation.

This water catchment area is home to a number of federally protected species and any changes to the environment here could affect the whole forest ecosystem, with habitat and species loss.

Some animals of the area protected under the EPBC Act ;

the Spotted-tailed Quoll (*Dasyurus maculatus*) Endangered

Southern Brown Bandicoot (*Isodonen obesulus obesulus*) Endangered

Long-nosed Potoroo (*Potorous tridactylus*) Vulnerable

These three mammals need dense undergrowth and a healthy ecosystem for survival.

Macquarie Perch (*Macquaria australasica*) Endangered

Giant Burrowing Frog (*Heleioporus australiacus*) Vulnerable

Stuttering Frog (*Mixophyes balbus*) Vulnerable

Altered hydrology and a drying landscape could also affect these species.

#### 4. Conclusion

Is it not the Commonwealth Government's responsibility to protect these Federally listed species under the EPBC Act ? In a recent Federal Court decision involving the EPBC Act (19/12/2006 Senator Bob Brown v Forestry Tasmania) the judgement stated that '... "to protect" is seen as a duty not just to maintain population levels of threatened species but to restore the species'. (ECOS 2007)

The Temperate Highland Peat Swamps on Sandstone and endangered plants and animals in this area appear to be under significant threat from this proposal. A "Controlled Action" is needed to maintain or restore these species and communities where a full EIS can be carried out over time (e.g. 5 years) and before any further pumping can be contemplated.

To manage an area properly, one first of all needs to know the population levels of protected species in the area and research into their needs so that appropriate action can be taken "to protect" these species.

It also gives time to consider whether or not this proposal at Kangaloon should be pursued. (The aquifer already feeds the Nepean Dam with water, especially in times of drought and supports the surrounding undisturbed ecosystems).

The Robertson Environment Protection Society also requests the opportunity to provide comments on any further information that is provided to the Minister under s76 of the Act.

If any further information is needed please contact us.

Yours sincerely,

Leon Hall  
President - REPS.

#### References

ECOS (2007) issue 135 p.4 Feb-March "Historic biodiversity case outcome" CSIRO.

SMEC Australia (2006) Baseline Groundwater Dependent Ecosystem Evaluation Study- Upper Nepean Groundwater Pilot Studies - Final Report. September 2006.

12 February 2007

Mr Steve Mercer  
Director, Referrals Section (EPBC Act)  
Approvals and Wildlife Division  
Department of the Environment and Water Resources  
GPO Box 787  
CANBERRA ACT 2601

Dear Mr Mercer,

I am writing in regard to further information sought by your department about the Sydney Catchment Authority/Upper Nepean (Kangaloon) Groundwater Borefield proposal (Reference Number 2006/3209).

The Robertson Environment Protection Society (REPS) has made a submission which you have. The further information supplied by the Sydney Catchment Authority (SCA) does not adequately cover many of our concerns. REPS position is still that the proposed action should be declared to be a Controlled Action and that the imminent 'test' pumping (six month trial) should also be declared a Controlled Action. The points raised in our submission are still valid and further concerns are listed here. Also of concern is an option in the Referral.

1. The description of the action in the Referral (2.4 - third dot point) " Options to transfer the water to Avon Dam are also under consideration".

This infers that Shoalhaven Transfers piping options (proposed) Option 4 (pipeline) & Option 5 (tunnel) could be used to transfer the water to the Avon Dam instead of river transfers. Option 4 involves a 1.8m diameter pipe along Tourist road with a 25 metre clearance needed, covering a distance of approximately 18.8km to the dam.(DOC 2006 et.al.) This or a similar pipeline is discussed in the Engineers report to the SCA.

This increases the study area for the proposal and could impact on Federally-listed species and communities.

Option 4 " There is a high chance of loss of flora and fauna habitat including threatened flora and fauna species and endangered ecological communities as a result of pipeline and access road construction. There is some potential for the spread/introduction of terrestrial and aquatic weeds, as well as facilitating access for pest species, such as foxes, cats and dogs" (Southern Highlands Terrestrial Ecology Report. DOC 2006).

This could create added significant risk to the the Potoroo's and the Southern Brown Bandicoots, known in the area, and even to the Spotted-tailed Quolls, for example, due to predatory introduced species access, such as the fox and cat.

These options are compounded by both including option 6 - Illawarra Spur Pipeline.  
“ This option would involve construction of the pipeline across a number of water courses in heathland and woodland that provides potential habitat for threatened frogs. In addition it may include removal of forests, woodland, heathlands, tall forests and rainforests habitat which provides potential habitat for a number of threatened fauna species” (DOC 2006).

2. The loss of flow and potential sedimentation to the depleted creeks is a concern.

Ecosystem Vulnerability Analysis. ...”The modelling predicts a reduction of between 30 and 115 % of groundwater inflow to rivers over the study area. This scenario does not take into account any effects of the transfer of groundwater flows;”(SMEC 2006).

This, and the water quality, and discharge parameters from the aquifer could have an adverse effect on the Macquarie Perch, known in the area, for example.

3. The potential for changes to the aquifer water quality and the quick reduction in water quantity is also a concern.

Potential Impacts to Stygofauna (SMECC 2006 P.106)

a) lowering the water table ..... ”Drawdown of water dries the uppermost/most permeable part of the aquifer, possibly leaving the remainder unsuitable for stygofauna.

b) Rapid changes in aquifer environment” ..... ”Their loss in turn, compromises the functioning of the aquifer and its ecosystem resulting in a decline in groundwater quality due to: build up of organic matter; bacterial activity; and the clogging of interstitial pores by sediment;”(also c).

4. This project appears to be done in haste and quite possibly could have a degrading effect on this water catchment area, including the upland swamps. There is also a lack of data on all of the protected upland swamps.

5. Taking base flow aquifer water away from parts of the Nepean catchment area and changing the hydrology does not seem practicable when you consider that the water from the aquifer and creeks already enters the Nepean Dam.

6. There is insufficient data to evaluate the ‘test’ proposal (documentation needed). It also needs to be considered as a Controlled Action due to the long period of extraction proposed and potential adverse effects.

The Robertson Environment Protection Society also requests the opportunity to provide comments on any further information that is provided to the Minister under s76 of the Act.

If any further information is needed please contact us.

Yours sincerely,

Leon Hall

President Robertson Environment Protection Society Inc.

member

Upper Nepean Groundwater Community Reference Group

Shoalhaven Transfers and Environmental Flows Community Reference Group

Upper Nepean Catchment Management Committee (2 terms - 6 years)

Wollondilly Catchment Management Committee (1 term - 2 years)

## **8. References**

Department of Commerce (2006) Southern Highlands Terrestrial Ecology Report - Literature Review and preliminary Impact Assessment Terrestrial Flora and Fauna and Wetlands. Eco Logical Australia Pty Ltd.

SMEC Australia (2006) Baseline Groundwater Dependent Ecosystem Evaluation Study- Upper Nepean Groundwater Pilot Studies - Final Report. September 2006.

Director

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8 January 2007

**REFERRAL SUBMISSION**

**Reference Number 2006/3209**

**Sydney Catchment Authority Water Management and use Kangaloon/NSW/Upper Nepean (Kangaloon) Groundwater Borefield**

Dear Director,

**1. Introduction**

The Robertson Environment Protection Society (REPS) is making a submission on the Sydney Catchment Authority (SCA) Referral under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for approval to pump large quantities of groundwater from the Kangaloon area (protected Metropolitan Catchment Area) which is part of the fractured sandstone aquifer known as Nepean Sandstone (607). The EPBC reference number is 2006/3209.

REPS submit that this action should be declared to be a controlled action for the purposes of the EPBC Act. The controlling provisions for this action should be ss.18A and 18 of the EPBC Act on the grounds the action is likely to have a significant impact on a listed nationally threatened ecological community ( Temperate Highland Peat Swamps on Sandstone), and listed federal vulnerable and endangered species in the immediate area.

**2. Summary**

The Sydney Catchment Authority (SCA) proposed action should be declared to be a controlled action because;

- the proposed action will break the connection between the very high regional groundwater level and the associated groundwater dependent ecosystems of the area for approximately 10 years or longer, which could likely have irreversible effects for these federally protected ecosystems and species.
- the proposed action will access very shallow groundwater (as reported by SCA documentation) compounding dot point 1. Of interest this has been denied by the state government but not by the SCA and their reports.( e.g. DoC and DNR(2006) Detailed Pilot Investigation - Drilling and Pumping Tests - Upper Nepean Catchment (Kangaloon) Volume 1. Report No. 06-GL31A/4 May 2006).
- the proposal will isolate and degrade the area, including Butlers Swamp (a nationally listed threatened ecological community ( Temperate Highland Peat Swamps on Sandstone)) and nationally protected species, especially through the introduction of 3 phase power needed for the project, further fragmenting the sections of Butlers Swamp by clearing and infrastructure, as well as creating a major fire threat and more access areas, for feral weeds and animals to enter. There is also the potential for the introduction of diseases and pollution from this activity.

### **3. Description of proposed activity**

This proposed activity involves the drilling of approximately 60 large diameter production bores over the area referred to in the Referral form. This form also mentions that the bores are from 90 to 180 metres deep. This may be misleading because these bores are slotted and /or screened to take shallow water. The bottom of page 3 of the referral also mentions "... in the deep regional sandstone aquifers".

The large diameter production bore immediately adjacent to Butlers Swamp (40982) is 92 metres deep but the major water bearing zone tapped is between 26 and 62 metres deep (DOC and DNR 2006).

Another example is the large diameter production bore at Stockyard Swamp (40993) where water is taken from as shallow as 11 metres below the surface through slotted steel casing (DOC and DNR 2006).

All other water bearing bores drilled so far also show shallow off take areas.

If pumping begins, then any groundwater dependent ecosystems will be affected and under stress. This is compounded by the fact that the large scale water extraction will be happening 24 hours a day, 7 days a week, for 2 to 3 years (SCA documentation).

This continuous extraction period has not been done previously anywhere in Australia (pers.comment Dan McKibbin) and should be looked at with great concern. It is not ecologically sustainable.

Also of interest, but not mentioned in the referral, is a 'test' pumping scheduled to start early this year (January 2007), with 7 large diameter production bores, the main one being directly adjacent to Butlers Swamp (wetland of national significance). This test, will continuously pump these 7 bores (7 days a week, 24 hours a day) for 6 months.

This test pumping is to monitor if this main proposal is sustainable. This 'test' pumping of the smaller borefield area should be included in the SCA referral due to the fact that it could badly affect Butlers Swamp and associated endangered species. This imminent test pumping also does show that the SCA does not yet know if there will be a significant impact on Butlers Swamp and the surrounding rare and protected areas even though they say there will not be a significant impact, in the Referral.

The current and proposed land uses for this catchment area appear to be completely different where the current land use is mainly catchment area conservation and the proposed land use is degradation to the hydrology and ecology of the area, not as is listed in the referral (3.4) that the land uses will remain unchanged by the borefield.

### **4. EPBC Act requirements**

The adverse impacts this action (and also the test pumping not mentioned in this Referral) is likely to be significant (as detailed below) for Temperate Highland Peat Swamps on Sandstone and also for nationally endangered species.

The precautionary principle must also be taken into account.

### **5. Impact on Temperate Highland Peat Swamps on Sandstone**

The SMEC 2006 Baseline Groundwater Dependent Ecosystem Evaluation Study, on p.111, under Butlers Swamp says that a reduction of groundwater levels has a predicted level of risk of Medium for likelihood and High for consequence and potential vulnerability in regards to Reduced swamp flora, Reduced habitat for fauna and Impact on threatened species at Butlers Swamp.

This obviously infers that there is likely to be a significant impact here, especially when the precautionary principle is taken into account. The extremely high regional groundwater level here at Butlers Swamp compounds this problem.

“Just upgradient and opposite Butlers Swamp, a large diameter production bore has been constructed (Site2C). The regional water table is around 4m below the surface”. (SMEC 2006 p. 2 ).

The dependence of Butlers Swamp on this very high ground water level has not yet been determined. It has been anticipated that the regional groundwater level here will drop to 60 metres below the surface and even up to 80 metres below the surface.

The installation of 3 phase power will need tree clearing and disturbance which will further fragment Butlers Swamp which is on both sides of the road. Trenching for water pipes will further fragment Butlers Swamp connection under the road.

This new power infrastructure also has the potential for great fire risk (e.g. arcing due to fallen branches etc. This is a concern of members of the bush fire brigade). This fire risk has the potential to burn Butlers Swamp (especially with any drying of the peat) and other nearby swamps as well as vast tracts of protected land all the way to Sydney. Just to the south of Butlers Swamp (over the hill) is Wingecarribee Swamp (also a named Temperate Highland Peat Swamps on Sandstone). This Swamp cannot have ANY fire and if lit may burn indefinitely due to the previous swamp collapse drying the peat. (SCA management information).

The other wetlands in this area may also come under commonwealth protection as they share characteristics to those listed as Temperate Highland Peat Swamps on Sandstone. The reduction in groundwater levels at Stockyard Swamp in relation to reduced swamp flora, reduced habitat for fauna and impact on threatened species is recorded as having a high likelihood, high consequence and extreme potential vulnerability. (SMEC 2006 p.112). This also appears likely to be a significant impact.

## **6. Impact on federally listed (EPBC Act) vulnerable and endangered species**

The continual and extended lowering of the water table has not been sufficiently taken into account in this referral in regards to vulnerable and endangered species under the EPBC Act.

With the water table so high, especially in the eastern part of the proposed borefield, it is extremely likely that trees (and shrubs etc.) can depend on the groundwater , especially in times of drought, and this is when the SCA propose to pump the groundwater (for an emergency drought water supply) lowering the water table to at least 60 metres below the surface.

The stress put on these plants could be immense, due to them previously relying on this water resource. These forests are in excellent condition and species rely on each other for survival (e.g. frost protection) so if forest trees are lost then most other species are also degraded including endangered flora and fauna under the EPBC Act.

Surveys of plants and animals have not been done over all seasons and have only been done briefly, in small areas and transects. It is also surprising the finds they have come up with recently as it shows previous research in the area has been minimal.

Mittagong Geebung (*Persoonia glaucescens*) plants next to Butlers Swamp bore were found by a member of REPS. A pumping test had a pipe about a metre away and then a telegraph pole marker the same distance away without knowing what the plant was (vulnerable under the EPBC Act.). REPS then had 3 locations, with groups of these plants, marked by GPS (with NSW NPWS) but after SCA slashing, one of these locations does now not exist. Also an orchid was found by a REPS member and it appeared to be the Wingecarribee Leek Orchid (endangered EPBC Act) and these were marked by GPS with the help of the threatened species unit of DEC (Nick Corkish). The orchids were subsequently found to be slightly different (maybe a new species) and many were cleared for a large diameter production bore site (2D). The SCA later looked for orchids but their season was over (being ephemeral).

The SCA then found other Mittagong Geebungs next to site 2D and the population could be the largest known, in the best condition and within the most secure habitat (NSW DOC 2006 - Appendix 1- Section 5A Assessment). These are right next to bore site 2D which will be pumped as part of the 6 month continuous pumping trial to start most probably this month. Endangered species are only just being discovered and pumping is about to start creating large draw downs, changing the hydrology and disturbing a perfectly working catchment area (the aquifer already supplies its water to the Nepean Dam, especially in times of drought).

Many creeks will become a lot drier due to lack of natural discharge from the aquifer (e.g. Dudewaugh creek -fed by the aquifer via Stockyard swamp and springs) while other areas will get new unnaturally high and continuous flows of transported groundwater of different quality and temperature. To say that there is no likely significant impact on the four protected frog species (EPBC Act. Referral) could be an oversight.

“There is potential for a reduction of around 70% of the influx of groundwater over the study area due to groundwater extraction. This in turn will cause reduction in baseflow within the study area and downstream. Under certain conditions during and after pumping, the rivers may recharge the groundwater. The total loss of flow, reduction of influx and recharge of the aquifer from the river, is estimated to be between 14 - 42 ML/day over the study area.” (SMEC 2006). This is a huge hydrological change when continuous pumping for 2 to 3 years is envisaged.

This area could be a biodiversity hot spot as both state and federally protected endangered species and communities appear to be all over this area. There is also the chance of finding new plants and animals especially due to the lack of previous surveys. An example being a frog found by SMEC at three swamps in the study area could not be identified and is awaiting DNA analysis.

## **7. Conclusion**

The potential adverse impacts on federally listed wetlands and species is likely to be significant and the Australian Government needs to understand this and take action as this may be your only opportunity to help protect these areas and species that are listed under your protection (EPBC Act).

This proposed action and the imminent test pumping action described here (not listed in the referral but see above - under 3. Desc. of proposed activity) should be declared to be a controlled action.

The Robertson Environment Protection Society opposes this borefield proposal and the test pumping as it will severely degrade this protected area. The desalination plant mentioned in the Referral is a far better option. We also support the recommendations of the Upper Nepean Groundwater Community Reference Group.

A 5 year moratorium of pumping groundwater here has been recommended by the UNGCRG. They also oppose the borefield proposal. (UNGCRG submission- public document). A full EIS needs to be carried out in this time before any pumping degrades this important and diverse catchment area. More nationally listed species are bound to be found due to the limited surveys to date and these investigations are needed to get proper baseline information about what else is at risk (including nationally) so that appropriate management is forth coming.

The Robertson Environment Protection Society also requests the opportunity to provide comments on any further information that is provided to the Minister under s76 of the Act.

If any further information is needed please contact us.

Yours sincerely,

Leon Hall  
President - REPS.

The Robertson Environment Protection Society has a membership of over 100 people and started in 1990. We have received a number of nature conservation and heritage awards including winning the 2005 NSW Landcare award for Bushcare and Nature Conservation.

## **8. References**

Department of Commerce and Department of Natural Resources (2006) Detailed Pilot Investigation - Drilling and Pumping Tests - Upper Nepean Catchment (Kangaloon) Volume 1. Report No. 06-GL31A/4 May 2006.

NSW Department of Commerce and NSW Water Solutions (2006) Sydney Catchment Authority - Upper Nepean Trial Borefield - Review of Environmental Factors. Report No. 06167. September 2006.

SMEC Australia (2006) Baseline Groundwater Dependent Ecosystem Evaluation Study- Upper Nepean Groundwater Pilot Studies - Final Report. September 2006.

Upper Nepean Groundwater Community Reference Group (2006) Report to the Sydney Catchment Authority on the Proposed Borefield at Kangaloon NSW. September 2006. (public document)