

Victorian National Parks Association Inc.

Level 3, 60 Leicester Street Carlton Vic 3053,
Tel: (03) 9347 5188, Fax: (03) 9347 5199
Email: vnpa@vnpa.org.au website: www.vnpa.org.au



Submission on Referral no. 2008-03 Anglesea Borefield

Prepared by Jenny Barnett

March 2008

Summary

The proposal has potential to affect an area of very high conservation significance including part of a National Park and an area which is on the National Estate Register. The removal of ground water is likely to impact on the waterways, pools and swamps and associated vegetation in the area. The impact will add to and exacerbate detrimental effects that are likely due to climate change. Several national and state threatened species are in, or potentially in the area, not all of which have been fully considered in the referral. The proposal also sets a most controversial precedent by potentially degrading a National Park.

The paucity of past aquatic surveys and the present drought means that the creek and river system has not been well sampled. Migratory species such as grayling and mudfish that could be present may not have been detected. Another nationally threatened species that could be present is the Dwarf Galaxias as it aestivates during dry periods and will not be readily detected.

Because of the present drought, lack of previous data on stream and swampland conditions and the apparent haste to implement this project, there is a real danger that the 'baseline' environmental thresholds to control pumping levels will not be set to reflect normal conditions, but rather those of drier conditions. In the event of severe climate change, not only will impacts of the groundwater abstraction be worsened, but there will be conflict with the need to supply water if this becomes a major water source for Geelong.

This is a complex proposal with serious long-term potential effects and many unknowns. More time than a short comment period on the referral is required for the public to examine and express any concerns about it. In addition, more research in some areas is desirable. We understand that Barwon Water wishes to fast-track this proposal as next year has been postulated for commissioning the borefield. It is most important that this proposal be given proper assessment and public scrutiny and not be fast-tracked. There should be a full exhibition of an EES which fully assess the impacts of this highly controversial project and also looks at possible alternatives with a panel hearing to consider public submissions.

Importance of area

The Anglesea heathlands are internationally known for their wildflower and orchid displays in spring and are among the most orchid rich areas in the world. There are an amazing 620 species of plants in the Anglesea heath including more than 80 orchids. Significant flora species include at least 5 threatened at the national level and 8 which are rare or vulnerable at the state level. Six plant species are disjunct populations that are otherwise restricted to the Grampians. Two species are endemic - the Anglesea Slender Sun Orchid *Thelymitra sp. aff. pauciflora* and the Anglesea Grevillea *Grevillea infecunda*. There are over 100 species of native birds and 29 species of native mammals including several rare and endangered species. Within the heathlands there are extensive swamplands and associated riparian and damp vegetation that are potentially affected by this proposal.

Both the Anglesea Heathlands within the Alcoa Lease and the surrounding National Park (part of which will also be affected) are on the register of the National Estate (Place IDs 16617 and 18054). If not for the Alcoa lease, established in 1961 before the full values of the area were realized, this area would undoubtedly also be in the National Park. In addition, the Anglesea Heathlands includes an area of vegetated private land to the north encompassing the upper reaches of the Anglesea River. Protection of values here is also important.

Impacts of the proposal

The establishment of the infrastructure including bores, treatment plant and pipeline, will remove some habitat and cause habitat fragmentation that will potentially impact on a number of species including Southern Brown Bandicoot, Long-nosed Potoroo, New Holland Mouse, Swamp Antechinus, White footed Dunnart, Spot-tailed Quoll and Rufous Bristle Bird.

However far more serious is the potential long-term and permanent impact of the removal of the groundwater. It is acknowledged that the extraction of groundwater is likely to affect wetter habitats including parts of the Great Otway National Park because:

- The pumping will reduce flows to Saltwater Creek and Anglesea River and associated swamplands by about 5%. Ephemeral sections will dry more rapidly in summer and drier periods and take longer to flow after rain.
- Pools in the upper Anglesea River will be shorter lived with less permanent pools to act as drought refuges. The drawdown of the water table and hence the pools may be up to one metre and *'may impact on the level and hence the frequency and permanency of these pools'* (p49, Appendix N Aquatic Assessment).
- Reducing the amount of available water in the currently permanent Breakfast Creek tributary could have irreversible consequences on fish populations and the overall ecology of this water way (p 196 Project Impact Assessment (PIA)) should the predictions of ground water behaviour, which are based on limited data, be incorrect.
- Aquatic habitat will be reduced, especially for frogs, fish and aquatic invertebrates.
- Riparian Scrub and other wet vegetation will be reduced including habitat for species such as Long-nosed Potoroo, Swamp Antechinus, Swamp Skink and Southern Toadlet.
- The effect of any extended dry periods including the impacts of climate change will be exacerbated: *"The ~5% reduction in inflows to the swamplands, as a result of this Project, are considered incremental in the context of the predicted impacts of climate change (30% and 66% reductions"* (p50, Appendix N Aquatic Assessment) and *'increase in importance during extended marginal or dry periods'* (p 186 PIA).
- It will potentially make the swamplands even more vulnerable to damaging peat fires, such as those that occurred in 1983.
- There will be acidification of swamps and periodic acidic flows to the Anglesea estuary will be increased. *"With the information available, it is not possible to predict exactly how significant the ~5% reduction will be. Nor is it possible to quantify the inflow required to maintain sufficient moisture during drier periods, to keep the peat sediment moist enough to prevent further acidification and oxidation of the sediments. However the gradual drying through both groundwater extraction and climate change, is expected to cause the swamplands to become increasingly acidic, the wetlands to become harsher to colonise when wetted and pH slugs within the Anglesea estuary to become more severe"* (p50 Appendix N Aquatic Assessment).

The impact on the swamps, which are large and significant areas (Anglesea swamp is 153 ha) is played down in part by arguing that the drawdown of water by Alcoa from the upper aquifer has not affected the Anglesea swamplands. These are described as being in 'good condition with no evidence of significant drawdown effects'. And yet at the same time, the report remarks on the poor water quality with high acidity, lack of fish and the lack of connectivity within the swamplands. While the area is affected by drought, we question whether the ground water removal may have also depleted the over all in-flow to these swamplands, especially as there have been past records of several fish in the Anglesea River system, now apparently absent.

Alcoa's monitoring may not have detected great changes in the swamp water level – but is the duration of water now reduced? That is, while the swamp may be 'perched' the drawdown has perhaps affected the upstream inflows into the area. Indeed the referral states that *'Prior to this and associated studies little was known about ground and surface water interaction in the Eastern Otways. The effects of the relatively long-term extraction from the UEVF have not been assessed'* (p13) Whatever the case, the referral and associated documentation makes it clear that the present condition of the swamplands could well be made incrementally worse by the current proposal.

The referral maintains that few listed species are found in the area (in spite of its size and diversity) and those that are, will not be significantly affected. However, the various reasons given for predicting 'minimal' effects are largely speculative. For the terrestrial fauna species, the single field survey was inadequate to determine the current distribution of EPBC listed species such as Potoroos and Bandicoots, including how limited or spread out these are, and how closely associated these populations are with the wetter areas. With prolonged drought and climate change it is possible that association with wetter areas may become more important for some. The Swamp Antechinus, and Swamp Skink, both FFG listed species, are known to be associated with potentially affected habitat. Further studies could more definitively determine the degree of impact.

For Swamp Antechinus, statements made that areas along Salt Creek are too far from the coast for this species (e.g. PIA p 186) are incorrect. This species has been found as far inland as north of Casterton. The present more limited distribution in the Anglesea region is due to slow recolonisation post the 1983 fires. Ultimately this species will spread into other areas of suitable habitat, but not if the draw-down of groundwater renders them less suitable in 10, 20 or 50 years time.

Drought has also made it impossible to assess the present distribution of some rare plants dependant on damp areas such as Swamp Pelican Orchid, Southern Bristle Sedge and Lizard Orchid (p 30 of referral). There are also some other plants listed under the FFG Act that could be potentially in the area but would not have been detected (see further discussion below).

For the aquatic species, the survey could well have missed some important species as it was conducted during drought conditions and did not find some fish species seen in the past (see further discussion below).

Species potentially missed in the surveys and documentation.

The aquatic and terrestrial surveys were conducted during a prolonged period of drought and there are some other listed species that potentially could be found in the area. The fact that only 2 native freshwater fish were detected when 5 have been found in the past, suggests that the surveys were indeed hindered by their present condition.

In addition past surveys have not been comprehensive. According to the 'Aquatic Assessment of Ground water Extraction Impacts' *'No surveys have been conducted within the Anglesea River catchment area for stoneflies'* (p11) and in the case of fish *'data for these water ways is very limited'* (p13). In concluding that no species listed under the FFG or EPBC Acts have been caught in the area, the Aquatic Assessment (p13) does not acknowledge the inadequacies of past surveys or the limitation of the present survey conducted during drought. The survey for this proposal included only 10 sites over all the rivers and streams and yet *'is the most comprehensive aquatic survey undertaken within the study are to date'*. In short we know little of the aquatic fauna here, especially in more favourable wetter periods.

The 'Aquatic Assessment of Ground water Extraction Impacts' mentions that, from the 'EPBC Act Protected Matters Search Tool', Dwarf Galaxias and the Australian Grayling could 'potentially' inhabit the area. However these species are not subsequently discussed in that document, the Project Impact Assessment or in the state and federal referrals. In fact the presence of either of these is not impossible in less harsh years if flow is sufficient. The Grayling, and a number of other native fish species migrate between fresh water and the sea as part of their life cycle (including some previously recorded in this river system) and could potentially re-enter the system if conditions are more favourable – a situation that would become less likely if the flows are reduced by the groundwater extraction. As noted on the EPBC website – species profiles *"It is not known whether there are discrete stocks of Grayling that ascend their own natal streams, or whether there is mingling in coastal areas and ascension of any convenient river"* It is possible that the dredging of Port Phillip Bay may cause some displacement of various migrating fish for at least 2 years¹ and the health of nearby rivers may be more important.

The other species from the Protected Matters Search Tool, the Dwarf Galaxias, is entirely fresh water, but is able to survive the periodic drying up of its environment – thus failure to detect it this very small species during drought (especially considering the paucity of past surveys) does not necessarily mean it is not there. Its general Victorian coastal distribution suggests this small fish, which is listed under both the FFG and EPBC Act, is a distinct possibility.

As outlined on the EPBC website – Species Profiles *"The species favours a stagnant, swampy environment (Andrews 1976). It is typically found in still waters such as swamps, drains, and backwaters of creeks and streams. It usually occurs in shallow waters (often less than 30 cm deep) with abundant aquatic vegetation. In larger pools, this species is usually collected in the marginal vegetation surrounding the edge of the pool. The waters inhabited by this species are often temporary, drying up partially or completely during summer, and being replenished by rainfall or floodwaters from watercourses during the wetter months (Backhouse & Vanner 1978). This species may aestivate (become dormant) when pools dry up (Beck 1985; McDowall 1980a; McDowall & Frankenberg 1981). The first fish to be seen after aestivation were adult females, and adult males appeared about 10 days later. By the time the males appeared females were becoming pregnant. Numerous newly hatched juveniles appeared 4-6 weeks later (Beck 1985)".*

Other documents on the web add to this: *"Believed to aestivate within yabby holes. In areas where gambusia have established significant populations, Dwarf Galaxias are often only found in ephemeral wetlands. It appears that G.pusilla's aestivating ability allows it to survive periodic drying up of its habitat whereas the exotic gambusia cannot."* (Native Fish Australia <http://www.nativefish.asn.au/dwarfgalaxias.html>). *"Changes to natural flood and drying cycles, particularly in swamps and shallow creeks, through activities such as catchment clearing, establishing extensive plantations, construction of dams and direct abstraction of water, pose*

¹ The EES and supplementary EES for the Port Phillip Bay concluded that the dredging over 2 years, including the turbidity, could disrupt fish migration within and in and out of the Bay with largely unknown effects (e.g. see Supplementary EES p12-37).

threats to Dwarf Galaxias habitat. Changes in the level of local water tables may also affect the hydrology of swamps and the ability to seek refuge in crayfish burrows” (draft Flora and Fauna Guarantee Action Statement).

The Yarra Pigmy Perch, which is EPBC and FFG listed, is another species that is not impossible, considering its western Victorian coastal and near coastal distribution. The limitations of past and present fish surveys mean that a small fish such as this could go undetected.

Another potential and very hard to detect species is the FFG listed Mudfish which could have suitable habitat in the Anglesea swamplands if more well watered. Like the Grayling it has a larval period on the ocean and could re-enter the system when conditions are more favourable. It can also aestivate for short periods if the swamp or stream dries up. With coastal records from the Barwon River and some in the eastern Otways, its occurrence here is quite possible.

A potential plant species would seem to be the Swamp Everlasting *Xerochrysum palustre* listed under both the EPBC and FFG Acts. This has several coastal records including one south of Geelong – see <http://www.wgcma.vic.gov.au/mediaLibrary/files/Biodiversity/swamp02.pdf>. Another possibility is the Swamp Diuris, an orchid listed under the FFG Act, which has coastal records on either side of the Otway region and also possibly also the FFG listed Helmet Orchids, Coastal Helmet Orchid and Late Helmet Orchid. The current drought would have made detection of orchids and some other plant species difficult.

Setting of baselines and conditions on groundwater removal

As noted in the state referral document (p 20, 32) ‘*the hydrogeological and ecological interactions are complex, and uncertainties and information gaps remain*’. To counter this, the state and federal referral and accompanying documents outline various monitoring proposals as conditions for the groundwater licence. However nothing is said about what the acceptable environmental thresholds for the swamps and streams should be. Documenting the gradual demise of a system is not sufficient. The acceptable condition of the vegetation and aquatic biota that should be maintained must be determined before water abstraction commences.

Instead the PIA (p 177) defines the 7000ML/yr abstraction as being ‘sustainable’ provided the impacts are ‘acceptable to regulatory authorities and stakeholders’ and notes that this ‘sustainability’ may be reduced to less than 50 years’ if ‘more extreme climate change occurs’. Just what impact is ‘acceptable’ in a National Park and in adjacent high value areas must be scientifically assessed and determined.

In addition, as the surveys were undertaken in a time of drought, which still continues in this region, there is a real danger that that a depleted state will be taken as a baseline. The area lacks historical data for river and stream flows. It is imperative that more normal conditions and the condition of the waterways and its biota under more ‘average’ conditions be determined. Although the suggested monitoring includes ‘*streamflow accretion profiling along each of the main creeks during dry and wet periods, pre and post development, to determine the areas of baseflow and establish baseflow conditions*’ (PIA p 202) the fact that the drought is far from broken in this region and that Barwon Water wishes to have the system operational by 2009, means that there is a real risk that a baseline that will be detrimental to the ecology will be established. Determining more normal ‘non-drought’ conditions for these streams and swamps is a most important reason for more assessment and might take some time – in conflict with the demand that this water supply be commissioned rapidly.

Climate change and possible salinisation of groundwater

The referral (p35) and accompanying documentation discusses the possibility that some of the upper level aquifer, with more saline water, may be drawn down into the water being abstracted, but that the salt level will still be below the required drinking water standards. However a CSIRO report just released² suggests that with sea-level rise, salinisation of near-coastal ground water could occur: "*Sea levels will increase which will lead to coastal inundation and affect mangroves, salt marshes and coastal freshwater wetlands. Freshwater aquifers may also be affected by saltwater intrusion, especially if recharge is reduced or extraction for human use is increased.*" (p 33 and Appendix 1, p.149).

Thus further salinisation of the extracted ground water could occur. This issue and the possible combined impact of the water groundwater drawdown plus sea level rise from climate change entering the Anglesea estuary needs to be carefully examined before embarking on a long-term infrastructure project.

Other aspects not adequately covered by the referral

The referral (p 28-29) gives a long list of Potentially Threatening Processes listed under the FFG Act that may be aggravated by the proposal. These deserve much fuller discussion in an EES, including a draft Environmental Management Plan, rather than the two short paragraphs here and fragmentation of the issues in the accompanying documentation.

Several sections of the referral are not responded to in full by the proponent:

- In response to the question on what beneficial uses of the water bodies could be affected (p35) only the possibility of saline intrusion and inter-aquifer-flow is dealt with. From the EPA website, 'Beneficial uses of water environments' include (amongst other things) "aquatic plants and animals" which must be acknowledged as potentially affected.
- In response to the two questions on effects to marine, estuarine and aquatic ecosystems (p36 and 36) the responses ignore the issue of the decreased water flows in Anglesea River potentially causing increased releases of slugs of acidic water from the swamps to the Anglesea River estuary with impacts on the ecology, river health and biodiversity. Nor is this issue mentioned in the section on acid sulphate soils on p 39. Only impacts of construction methods on acid sulphate soils are dealt with.

Land subsidence is an issue that is briefly passed over, with a statement that '*this will be further assessed with the numerical models, following testing of soil samples recovered from the investigation boreholes*' (Referral p 24). As this is an issue that could evoke some community concern and should be dealt with in an EES rather than leaving this issue in some doubt.

² *Implications of Climate change for Australia's National Reserve System: A preliminary assessment.* Report to the Department of Climate Change, and the Department of the Environment, Water, Heritage and the Arts. CSIRO, March 2008

Why more public consultation is necessary

The proposal is complex with voluminous documentation. It is most contentious as it has potential to affect an area of very high conservation significance including a National Park and registered National Estate areas. The concept of affecting a National Park through partial withdrawal of its water resources is most controversial as it sets an alarming precedent for the maintenance of conditions within National Parks generally.

The present brief comment period is totally inadequate for the public to properly digest the bulky documentation and write fully informed submissions. Our own submission is somewhat limited by our ability to do this and to research for material that has been omitted from the documentation. In the limited time available we have been able to identify several threatened species that should have been investigated and discussed but which were ignored or glossed over. There are other issues, some of which are outlined above, that should be covered.

The public (and possibly some of the affected government departments) have not until very recently been informed of the potential impact of ground water removal, but rather have been consulted about the effects of the infrastructure – a far more localized and less controversial effect. Instead the two ‘community information bulletins’ stated that *‘Due to depth of the water level within the aquifer, it is extremely unlikely groundwater harvesting within the deep aquifer will impact on the surface waters within the Great Otway National Parks’* (April ’07 bulletin) and *‘the proposed borefield and pipeline will not have any adverse impact on flooding or water quality within the Anglesea River’* (July ’07 bulletin)³. Both of these statements are now contradicted by recently released documents. No other community bulletins have been issued and groups such as ours were first informed about potential groundwater impacts in late February – early March with access to all the documents only since mid-March. It is unlikely that the broader Geelong and Otway coast residents are well aware of the possible impacts of the project.

The Planning Minister intends to amend the planning scheme, using a Ministerial power that excludes public participation, in order to remove any need for planning permits and hence any public objections. The only opportunity for public participation will be if an EES is required. However it has been expressed in the Project Overview (Feb 2008) that the aim is to commission the new water supply by 2009, and that a government agency group was set up to ‘facilitate a streamlined approach to project approvals’⁴. In addition, *‘in order to meet project deadlines, it was necessary to begin drilling of test bores before approvals for the project were obtained’* (p17 Victorian referral document). We therefore fear that Barwon Water wishes to avoid an EES. As noted above, undue haste may conflict with the ability to determine proper ecological baselines for maintaining adequate conditions in the swamps and waterways.

Because of the potentially serious long-term effects on a large area of high ecological importance including part of the reserve system, it is essential that this proposal be properly assessed with full public participation. It is important that the ‘extensive consultation’ promised in the state referral document (p13) takes place in practice is not merely tokenistic one-way public information sessions or localized consultation with individual groups, without an independent assessor, that can readily ignore comments.

While there is also the Bulk Entitlement process to follow, this is not designed to encompass all the environmental issues that are raised by this project. An EES and an independent panel is the best way to achieve this. This could then feed into the Bulk Entitlement by having the EES

³ It should be noted that this was the state of public knowledge when the Surf Coast Shire agreed to support a planning amendment in May ’07 to facilitate the proposal.

⁴ From the minutes provided as Appendix I, it would appear that even this group was not aware of the degree of potential impact on surface waters during their deliberations.

panel and its recommendations form part of the latter process which, on its own, would not adequately cover the broad range of issues outlined above.

Conclusion

The establishment of this proposal has potential to affect a valuable ecosystem with in an area of high conservation significance and partly within a National Park. Any effect will be exacerbated by climate change and drought – at the very time that competition for water resources will exert pressure to over-ride environmental constraints.

The state referral (p37) notes that *‘the numerical modeling and hydrogeological conceptualization both contain many assumptions based upon limited data which affect the level of confidence in the impact assessment’*. Because it is intended that the system be in place for some 100 years or more, this proposal represents a permanent change for the area and must be properly examined and not done in haste.

Considering the *‘likelihood of adverse effects, uncertainty of available predictions, and the range and complexity of potential adverse effects’* (see Ministerial Guidelines for Assessment of environmental effects under the Environment Effect Act, p15), a full Environment Effects Statement should be required involving extensive public participation and a panel hearing in which other water resources for the region, including the use of household water tanks, are also examined. More should be done for water conservation in households and businesses before hastening into water supply options that are environmentally damaging..