Government of **Western Australia**
Department of **Environment and Conservation**

Your ref: BS103
Our ref: 2006/004442
Enquiries: Mr J Lane
Phone: 08 9752 5555
Fax: 08 9752 1432
Email: blackwood@dec.wa.gov.au

Mr R Flowers
GeoCatch Chair
PO Box 269
BUSSELTON WA 6280

FILE COPY

BW 24774

Dear Mr Flowers

ALTERATION OF SUMMER WATER LEVELS IN VASSE LAGOON

I refer to your letter of 11 May 2009 to DEC Principal Research Scientist Jim Lane, in which you advised that, at the March 2009 GeoCatch meeting, members resolved to investigate the processes required to consider a change in the summer water levels upstream of the Vasse floodgates and to approach the Department of Environment and Conservation for formal comment on this matter.

Mr Lane has recently had an opportunity to discuss your request with me and it has been agreed that it would be most appropriate in this instance for formal Departmental comment to be provided by my office.

The current summer water level maximum of –0.1 mAHD was set in 1990 by the then Water Authority (now Water Corporation), following consultation with adjoining landholders, government stakeholders and the wider Busselton community and following two and a half years of trialling higher levels. This level (–0.1 mAHD), which is approximately 0.3 m higher than previous summer levels since 1908 (when the Vasse estuary floodgates were first installed), has been shown by experience to be the highest level of saline water that can be maintained in the lagoon without adversely impacting on adjoining property. For information I attach an extract (Section 10.3) from Lane et al. (1997) *Management of the Vasse-Wonnerup Wetland System in Relation to Sudden, Mass Fish Deaths*, in which recorded impacts of higher water levels on fringing vegetation and agricultural pastures are documented.

In light of the above, and taking into account other related issues, it is DEC's view that future alteration, particularly an increase, to the maximum summer level of –0.1 mAHD should require formal agreement of the Water Corporation (as owner and principal operator of the floodgates), of potentially-affected adjoining landholders including the Conservation Commission of Western Australia (in whom the adjoining Nature Reserves and National Park are

vested), other government stakeholders such as the Shire of Busselton and Health Department (regarding mosquito and Ross River virus issues), this Department (as custodian of the State's flora and fauna), the Commonwealth Department of the Environment, Water, Heritage and the Arts (for approval under the Environment Protection and Biodiversity Conservation Act, as Vasse Lagoon is a component of the Vasse- Wonnerup Wetlands Ramsar Site and therefore a 'matter of national environmental significance' under that Act), and possibly other parties.

Additionally, it is this Department's view that the most appropriate opportunity for review, if needed, of the summer water level maximum of –0.1 mAHD for Vasse lagoon would be during the public consultation phase of preparation of a statutory management plan for Vasse-Wonnerup, following reservation of the Vasse and Wonnerup Lagoons (currently Unallocated Crown Land) as a conservation reserve under the Land Administration Act. This Department is actively pursuing such reservation and anticipates that after this is achieved, funding to support preparation of a formal management plan for this Wetland Of International Importance will become available.

Preparation of a statutory management plan will provide a formal, structured, resourced process for consideration of this and other Vasse-Wonnerup management issues in an integrated manner and a legislatively-supported opportunity for formalised input by all interested and potentially affected parties. It is therefore the Department's preferred course of action.

Yours sincerely

Greg Mair
Manager
Blackwood District

1 December 2009

Attachment:

EXTRACT FROM: Lane, J., Hardcastle, K., Tregonning, R. & Holtfreter, G. (1997). *Management of the Vasse-Wonnerup Wetland System in Relation to Sudden, Mass Fish Deaths.* Unpublished report for the Vasse Estuary Technical Working Group. Department of Conservation & Land Management, Busselton.

10.3 Opening of the Vasse estuary floodgates

Since 1988 the Vasse estuary floodgates have been opened for varying periods during summer-autumn in
attempts to reduce the incidence and severity of fish kills. Openings for extended periods have allowed large volumes of seawater to enter what has been, for the past ninety years, a predominantly fresh-brackish ecosystem. These inflows have dramatically increased the area covered by saline to hypersaline waters during summer and autumn and have impacted upon agricultural pastures, fringing vegetation and use of the estuary by waterbirds.

10.3.1 Impacts on agricultural pastures

One of the principal reasons for installation of the floodgates in 1908 was to prevent seawater incursion during summer-autumn from destroying pastures and crops (see section 4.4). Since January 1988 the Vasse estuary floodgates have been opened for extended periods during several summers. These extended openings appear to have damaged pastures that the floodgates were designed to protect.

In March 1988 a landowner on the south side of Vasse estuary, between the mouths of the Abba and Sabina Rivers, contacted the WA Water Authority to express concern about seawater spreading across his land. The water level at the time was -0.01 m AHD. Concerns about seawater being allowed back into the estuary were also raised by adjoining landowners in February of the following year. On this occasion the water level had risen to -0.11 m AHD.

In April 1990 a farmer with land at the western end of Vasse estuary wrote to the Authority expressing serious concern about seawater having been present along the entire length of her property since the end of February of that year. The possibility of landowners suing for damage was raised. Gauge readings indicate that the water level on 3 March 1990 was +0.05 m AHD.

In August 1990 the Water Authority revised its guidelines for operation of the floodgates and control of water levels in the estuaries, taking into account the preceding two and a half years of experience with summer-autumn openings and the results of a survey of landowner and agency views conducted during 1988. The revised guidelines (see Appendix 2) established -0.10 m AHD as the maximum permissible level in the Vasse estuary during summer-autumn. Relevant extracts are as follows.

"The level of -0.1 m AHD has been found to be acceptable by farmers in the area ...". "Under no circumstances should salt water be allowed to come back behind the gates to allow the levels to become higher than -0.1 m AHD".

Since August 1990 summer-autumn water levels have, on occasions, exceeded -0.1 m AHD. Damage to pastures appears to have resulted. In January 1997 another landowner approached the Water Corporation about salt appearing in his paddocks and the hay crop not being as heavy as in previous years.

10.3.2 Impacts on fringing vegetation

The Vasse estuary is fringed by native samphires, sedges, melaleucas and eucalypts. These plant communities add to the aesthetic appeal of the estuary and provide important habitat for wildlife as well as having significant inherent nature conservation value. During the past two decades efforts have been made to conserve these communities by acquiring and declaring parts of them to be nature reserves when opportunities to do so have arisen.

Fringing plant communities are, by definition, living at or near their environmental tolerance limits. They are sensitive to small increases in the level and duration of inundation and waterlogging, particularly when combined with increases in salinity. It is not surprising, therefore, that the fringing vegetation of Vasse estuary has suffered in recent years.

In April 1990 the landowner who wrote to the Water Corporation expressing concern about seawater reaching the western end of Vasse estuary (see section 10.3.1) stated that "Salt water is already killing off the sedge grasses and a magnificent stand of Melaleuca".

In November 1996 the conservation group "Friends of the Tuart Forest" expressed concern to the Busselton Shire Council's environment forum that increasing numbers of melaleucas and Flooded Gums Eucalyptus rudis were dying around the estuary. It was suggested that increased soil salinity due to seawater being allowed into the estuary during summer could be responsible. Following an inspection of sites where deaths had occurred, the forum wrote to the Water Corporation and Water & Rivers Commission seeking information on water and salinity levels in the estuary and to CALM seeking an investigation into the cause of the deaths. CALM has since conducted some soil sampling beneath healthy, dying and dead trees at several locations around the margins of the estuary. The results of this work are not yet available, however the distribution of dead and dying trees is consistent with the cause being raised water levels.

The potential for seawater allowed back into the Vasse estuary to kill fringing vegetation has previously been recognised. In April 1987 the President of the Busselton Naturalists Club wrote to the WA Environmental

Protection Authority concerning management of flows. A relevant extract is as follows.

> "... by controlling sea water levels in the estuaries accurately, it should not be difficult to ensure that sea water does not encroach onto existing fringing vegetation and instead only cover(s) the mudflats".

10.3.3 Impacts on use by waterbirds

During the mid 1980s more than 15 000 waterbirds made use of the Vasse estuary each year. More than 30 000 used the Vasse and Wonnerup estuaries combined. On this basis Vasse-Wonnerup was listed in June 1990 as a Wetland of International Importance under the Ramsar Convention. Most of the birds using Vasse estuary in the mid 1980s did so during summer and autumn as waters receded and vast food resources became available for a wide variety of species (Lane 1990).

Raising water levels in the Vasse estuary during summer-autumn by allowing seawater to enter has the potential to adversely affect at least some species of waterbirds both directly -by preventing access to and destroying food resources -and indirectly by destroying fringing vegetation that provides habitat for feeding, nesting and roosting.

A survey conducted by Ninox Wildlife Consulting in February 1989 revealed 10 470 waterbirds throughout the Vasse and Wonnerup estuaries. This was substantially lower than a count of 26 000 waterbirds by the Royal Australasian Ornithologists Union three weeks earlier. Ninox suggested that the difference might be linked to the Vasse estuary floodgates having been opened during the intervening period (Ninox 1989).

There have not been sufficient surveys since 1988 to determine the impact of floodgate openings on waterbird numbers. Given the significance of the site it is important that counts be conducted. A more detailed analysis of results of previous surveys is also needed, for comparative purposes.