

APPENDIX B: CONSULTATION AND CORRESPONDENCE

The following organisations or persons were contacted for consultation during the preparation of this EIS (alphabetic order):

- Awabakal Local Aboriginal Land Council (R.Gordon);
- Department of Land and Water Conservation (eg V.Leavy);
- Department of Primary Industries and Environment (Canberra);
- Department of Urban Affairs and Planning;
- Environment Protection Authority;
- Hewitt, J., local fisherman;
- Hunter Bird Observers Club;
- Hunter Water Corporation;
- Kooragang Wetland Rehabilitation Project;
- Landcom;
- Local Residential Communities;
- Local, State, and Federal Members of Parliament;
- National Parks and Wildlife Service;
- Newcastle Amateurs Anglers Association;
- Newcastle City Council;
- Newcastle Fishermans Cooperation;
- NSW Farmers Association;
- NSW Fisheries (e.g. S.Carter, P.Gibbs);
- Oceanwatch;
- Shortland Wetland Centre;
- Winning, G. (Hunter Wetlands Research and Management).



Environment
Protection
Authority
New South Wales

Mr Alan Robertson
Senior Environmental Scientist
PACRIM ENVIRONMENTAL PTY LTD
PO Box 103
THE JUNCTION NSW 2291

NSW Government Offices
117 Bull Street Newcastle West NSW 2302
PO Box 488G Newcastle NSW 2300
Tel 02 4926 9971 Fax 02 4929 6712

Our Reference: 271772A1

Your Reference:

4 MAY 1998

Contact: Mitch Bennett

Dear Mr Robertson

EIS FOR REHABILITATION OF HEXHAM SWAMP

I refer to your letter dated 20 April 1998 inviting the Environment Protection Authority (EPA) to identify matters that need to be addressed in the Environmental Impact Statement (EIS) for the proposed rehabilitation of Hexham Swamp.

A wide range of physical, chemical, biological, social and economic issues will need to be addressed in the EIS. As you have noted, it is the role of the Department of Urban Affairs and Planning to comprehensively identify these issues.

Issues of primary concern to the EPA include:

- changes to water quality within the wetland and adjacent waters,
- changes to the potential for the generation of acidic runoff, and
- impacts on aquatic ecosystems.

It may also be useful for any prospective consultants to be aware of the following information:

- As part of its Water Reform Package the NSW Government is establishing Water Quality and Flow Objectives for all NSW waterways. The EPA is coordinating a public consultation program which concludes on 1 May 1998. The results of this consultation program will be available soon and may be useful to the consultants in determining the community's expectations regarding the management of tidal flood gates.
- The EPA maintains a database containing monitoring data collected in the 1970s and 1980s in Ironbark Creek and Hexham swamp by the EPA's predecessor, the State Pollution Control Commission. The EPA cannot guarantee the accuracy or comprehensiveness of these data, but would be pleased to make this information available, provided it is used with caution. *Never published etc Never analyzed*

X

- The EPA regulates a number of premises adjacent to the wetland area. The EPA can supply details of licence conditions and monitoring data collected by these licensees.

I trust that this information will be useful to you in preparing the consultant's brief for the EIS. Please contact Mitch Bennett on (02) 49269977 if you have any enquiries regarding this matter.

Yours sincerely



PAM DEAN-JONES
Head Regional Programs Unit, Hunter
for Director-General

FAXED
15.5.98



**NSW
NATIONAL
PARKS AND
WILDLIFE
SERVICE**

Alan Robertson
Senior Environmental Scientist
PACRIM Environmental Pty Ltd
PO Box 103
The Junction NSW 2291

Our ref: 97/253

Dear Mr Robertson

RE: EIS for Proposed Rehabilitation of Hexham Swamp, Newcastle

Thank you for your letters dated 20 April and 1 May 1998 in which you seek comment from the National Parks and Wildlife Service on the above proposal.

The NPWS has a statutory responsibility for the protection and care of native flora, native fauna and Aboriginal sites, and for the management of NPWS estate. Accordingly the NPWS has an interest in ensuring that potential impacts to these attributes are appropriately assessed.

As Hexham Swamp is a SEPP 14 Coastal Wetland, it is understood that the proposed activity is a designated development, requiring the preparation of an Environmental Impact Statement (EIS), and concurrence of the Director-General of Urban Affairs and Planning.

The NPWS understands that the Hunter Catchment Management Trust has commissioned a data compilation study in order to collate available information, and identify information gaps. It is then the intention that the EIS will be used to fill any information gaps and meet the requirements of an environmental management plan. The NPWS notes that the purpose of an EIS is to identify and assess the potential impacts of a proposal on the environment, to enable the relevant approval authority, the public, government authorities and the proponent to fully consider the potential environmental consequences of a proposal, and to assist the decision-maker to arrive at an informed decision. As such, the major component of this EIS should be assessment of the impact of the proposal, not simply the filling of 'information gaps' and preparation of environmental management measures.

Sydney Zone
6th Floor
43 Bridge Street
Hurstville NSW
Australia
PO Box 1967
Hurstville 2220
Fax: (02) 9585 6442
Tel: (02) 9585 6678

As a general comment, the NPWS notes that the data compilation study is focused on data collection, and does not appear to include a comprehensive analysis of the data collected. As data analysis is a critical component of research and an assessment of environmental impact, the NPWS would expect that such analysis is contained within the EIS.

The NPWS's comments focus on those issues which it considers should be addressed in the EIS, rather than providing detailed comment on the data compilation study.

It is recommended that the matters referred to in the attached guidelines titled "*General Guidelines for Impact Assessment*" be addressed in the assessment where appropriate. These guidelines also provide information on any approvals that may be relevant under the National Parks and Wildlife Act and a summary of the NPWS' databases which may be of assistance to you in your assessment. In addition to these general matters, the NPWS considers that the following specific issues should be addressed in the EIS:

Permissibility

From the information provided, it is unclear to the NPWS whether any part of the activity is proposed to be undertaken within the boundary of Hexham Swamp Nature Reserve. As you would be aware, this reserve is managed by the NPWS under the provisions of the *National Parks and Wildlife (NPW) Act 1974*. All activities proposed to be undertaken in areas reserved or dedicated under the *NPW Act* are subject to assessment and the grant of an approval by the NPWS, pursuant to Part 5 of the *Environmental Planning and Assessment Act 1979*. For an activity to be permissible under the *NPW Act*, there needs to be a demonstrated nexus between the purpose of the proposed activity and the purpose for which the nature reserve was established.

The NPWS therefore requests that the location of the proposed works in relation to the boundaries of Hexham Swamp Nature Reserve be clarified. Should Part 5 approval from the NPWS be required, it will be necessary to lodge an Activity Application and prepare a Review of Environmental Factors or an Environmental Impact Statement, which specifically assesses the potential environmental impacts of those activities proposed within the nature reserve. The NPWS advises that while it supports "in-principle" the proposal to reinstate Hexham Swamp as an estuarine ecosystem, the strong nexus would need to be clearly demonstrated.

Aboriginal heritage

The NPWS notes that a number of Aboriginal sites have been recorded around the fringes of Hexham Swamp. The NPWS also understands that an Aboriginal burial site has been reported to be situated in the lower SW area of the swamp, possibly at Rocky Knob or Windy Hill (note that there is no record of this site in the NPWS Aboriginal Sites Register). The NPWS considers that an assessment of the potential impact of the proposal on Aboriginal heritage should include consideration of both direct and indirect impacts of inundation (eg: erosion, sedimentation, access etc) on Aboriginal sites. Such an assessment should be undertaken in consultation with the relevant Aboriginal community. The NPWS advises that as a general principle the flooding of Aboriginal sites is considered to be an impact which requires consent.

to destroy from the Director-General of NPWS, because of potential impacts as well as loss of access to the site.

Flora / Fauna / Threatened Species

The NPWS considers that the EIS should contain a comprehensive assessment of the potential impact of the proposal on native fauna, native flora and threatened species (refer *General Guidelines for Impact Assessment*). The following specific points are made:

- Areas of important habitat for rare and threatened species should be mapped in relation to areas proposed for inundation as part of the assessment of potential impact.
- The EIS should include an assessment of the potential impact on the Little and Australasian bittern and their habitat, in particular common reed habitat (phragmites), and the effects on Latham's snipe habitat.
- The EIS should consider the impact of opening the floodgates on the predominantly freshwater values of Hexham Swamp. For example, how would this affect habitat diversity within Hexham Swamp? What impact would this have on inland species which use the wetland system as a coastal drought refuge eg. Blacknecked Stork, Magpie Goose, Freckled Duck? The number of species found within the area is a function of the number of different types of habitat. At present eleven of the fourteen coastal wetland types in NSW are represented in Hexham Swamp, nine of which are freshwater communities.
- Following from this, the EIS should assess the value of saline wetland as opposed to freshwater wetland in terms of regional and national habitat provisions.
- The EIS should address the consistency of the proposal with the terms of international agreements JAMBA and CAMBA which have been ratified by the Australian Government.

Monitoring program

The NPWS considers that a critical component of the project would be a thorough understanding of the wetland ecosystem as it currently exists, and the development of a monitoring program to monitor the impact of estuarine inundation, should development consent be granted. As a freshwater wetland community has become established on Hexham Swamp, reinstating the tidal regime will lead to the loss of this community to some extent, dependent upon the degree of inundation during tides. Salt marsh and mangroves would be expected to colonise and become established. The NPWS strongly advocates a staged approach to the opening of the gates, to allow the impacts on ecological communities to be gauged.

Such a monitoring program is generally referred to as a BACI design (Before After Control Impact). Critical to the effectiveness of the monitoring program will be the location and number of samples, and the period of monitoring. Ideally monitoring would be undertaken over at least 12 months prior to any changes being made to the tidal regime. The NPWS considers that it may be worthwhile to include monitoring of sites that are not actually on Ironbark Creek, such as Kooragang Swamp or Seaham Swamp.

- Vegetation communities. The NPWS suggests that either fixed or random quadrats are set up, probably at various distances from the creek with some "control" sites that would not

be affected by changes. The monitoring should measure both estuarine and freshwater species.

- Waterbirds. This could involve surveying of discrete sites along the creek, as well as other sites away from the wetland.
- Frogs. As the proposed changes may impact on freshwater species, the frogs should be included in the monitoring program.

The NPWS would be able to provide some input into the development of an appropriate monitoring program for the project, if required. The appropriate contacts for this would be Richard Kingsford, Manager, Waterbird and River Ecology Unit, Biodiversity Survey and Research Division, NPWS on (02) 9585 6488, and Rob Gibbs, Sub-District Manager South, Hunter District NPWS on (02) 4981 9004.

Other general issues

In addition to the above, the NPWS suggests that the following issues are also addressed in the EIS:

- Mosquito management. How would the proposal impact on mosquito populations? What control methods should be introduced if the proposal results in an increase in mosquito breeding habitat. ?
- Weed control. What impact would the proposal have on alligator weed (*Alternanthera philoxeroides*) infestations in Hexham Swamp Nature Reserve ?
- Fire. Would there be any alteration to fire risk in the Hexham Swamp Nature Reserve as a result of the proposal, and if so how would this be managed ?
- Acid sulphate soil. What is the risk of acid sulphate soil contamination of waterways through proposed dredging and levee construction to protect floodprone properties, and how would this be managed.
- Levee bank construction. How would it be undertaken? Would on site material be used or would materials be transported in? What would the relative costs of the levee bank be ?

I trust that this is of assistance. Please contact Katharine Sale, Environmental Planning Officer on (02) 9585-6920 if you have any questions concerning this matter.

Yours sincerely,

R. Fowke 15/5/98.

Raymond Fowke
A/Manager, Environmental Planning Unit
SYDNEY ZONE



NSW NATIONAL PARKS AND WILDLIFE SERVICE

GENERAL GUIDELINES FOR IMPACT ASSESSMENT

The National Parks and Wildlife Service (NPWS) has an interest in the potential impacts of the proposal on the following:

- areas of native vegetation,
- areas of potential value as habitat for native fauna,
- sites and places of Aboriginal heritage, including areas of archaeological potential, and
- land dedicated under the National Parks and Wildlife Act (NP&W Act).

If these attributes are anticipated to be present in your study area and / or likely to be impacted, it is recommended that assessments by a suitably qualified person be undertaken to determine the extent of impact. Details of the qualifications and experience of the person undertaking the work should be provided. In addition, a detailed description of survey methodology including survey design, sampling methods, weather conditions, time and duration of surveys and location of survey sites and transect lines should also be provided as part of the consultant's report to council.

The matters recommended to be addressed in the assessment are as follows:

- description of the proposal and the way in which the environment will be modified;
- map(s) placing the proposal in a regional and local setting;
- applicability of Local Environmental Plans, Regional Environmental Plans and State Planning Policies (including SEPP 44 and SEPP 46) to the proposal should be discussed;
- information on the current and past land uses of the site and that of the surrounding area;
- detailed description and mapping of all vegetation communities in the study area;

- identification of any vegetation communities or plant species which are of local, regional or state conservation significance (including threatened communities, plant species or populations listed under the Threatened Species Conservation Act, 1995). The criteria for establishing significance should be documented;
- description of known or expected fauna assemblages within the study area;
- identification of fauna habitat likely to be of local, regional or state significance (including habitat of threatened fauna species or populations listed under the Threatened Species Conservation Act, 1995);
- identification of whether there are any sites or places of cultural significance to the Aboriginal community;
- mapping of the location of all Aboriginal sites (including archaeological sites and potential sites) within the study area and an assessment of the significance of these sites;
- identification of habitat corridors and linkages between areas of remnant native vegetation which may assist faunal movement through the area;
- prediction of the likely impact of the proposal on the above attributes (quantification of the extent of impact where practical);
- assessment of measures available to minimise the impact of the proposal on these attributes and monitoring program if appropriate, and
- prediction of the likely impact of the proposal on land dedicated under the NP&W Act.
- appropriately scaled maps which identify the location and extent of the areas of natural and cultural heritage value in relation to the area of proposed development.

Threatened Species legislation

You are also advised that the Threatened Species Conservation Act, 1995 (TSC Act) came into effect on the 1 January 1996. The TSC Act effectively replaces the legislative scheme introduced by the Endangered Fauna (Interim Protection) Act, 1991 and amends the way threatened species are considered under the Environmental Planning and Assessment Act, 1979 and the National Parks and Wildlife Act, 1974.

The provisions of the TSC Act should be considered when undertaking the assessment of a proposal. Information on the provisions of the TSC Act may be obtained from the Department of Urban Affairs and Planning Circular No. A13 (12 December 1995). The NPWS has also produced Information Circulars on the TSC Act which may be obtained by contacting the NPWS' Information Centre on (02) 9585 6528.

Aboriginal heritage and community consultation

It is recommended that an assessment be conducted of the Aboriginal cultural values of the study area if the proposal involves disturbance to substantially unmodified ground surfaces. If the study area is considered to have archaeological potential or cultural significance then it is recommended that a survey and assessment be undertaken in accordance with NPWS guidelines. These guidelines are contained in the NPWS' publication "Aboriginal Cultural Heritage: Standards and Guidelines", which may be purchased by contacting the NPWS' Cultural Heritage Conservation Division on (02) 9585 6571.

Should Aboriginal archaeological sites be present in the study area, you should consider the requirements of the NP&W Act with regard to Aboriginal relics. Under s90 of the NP&W Act it is an offence to knowingly damage or destroy relics without the prior permission of the Director-General of the NPWS.

In assessing Aboriginal heritage values, consideration should also be given to whether the study area is likely to contain places of cultural significance to the Aboriginal community. It should be noted that places of cultural significance to the Aboriginal community are not limited to archaeological sites. An assessment of cultural significance should involve consultation with community representatives and if necessary, documentary research to establish whether there are any places of traditional or historic significance to the Aboriginal community.

Databases

The NPWS has two GIS databases which may provide information of use to you if you proceed to undertake further assessment. These are:

- Atlas listing of fauna and flora records in NSW;
- Aboriginal Sites register.

The material from these databases is available upon written application and the receipt of the appropriate fee. If you are interested in obtaining access to the Atlas database, please contact the Data Licensing Officer, GIS Division, on (02) 9585-6684. Records from the Aboriginal Sites register may be obtained upon written application to the Registrar, Cultural Heritage Conservation Division, on (02) 9585-6471.



Environment
Protection
Authority
New South Wales

Mr Alan Robertson
Senior Environmental Scientist
PACRIM ENVIRONMENTAL PTY LTD
PO Box 103
THE JUNCTION NSW 2291

Our Reference: 271772A1

NSW Government Offices
117 Bull Street Newcastle West NSW 2302
PO Box 488G Newcastle NSW 2300
Tel 02 4926 9971 Fax 02 4929 6712

Your Reference:

14 MAY 1998

Contact: Mitch Bennett

Dear Mr Robertson

EIS FOR REHABILITATION OF HEXHAM SWAMP

I refer to your letter dated 1 May 1998 inviting the Environment Protection Authority (EPA) to comment on the *Hexham Swamp Draft Data Compilation Report and Consultancy Brief for Preparation of an Environmental Impact Statement*. The Draft Consultancy Brief addresses all of the issues identified by the EPA. The Draft Data Compilation Report appears to be comprehensive with two exceptions discussed below.

Water Quality Data

On page 24 of the Draft, reference is made to water quality data collected by the EPA from 1973 to 1991. A more accurate alternative statement is suggested below:

"The EPA maintains a database containing water quality monitoring data collected in the 1970s, 1980s and early 1990s in Ironbark Creek and Hexham Swamp by the EPA's predecessor, the State Pollution Control Commission. These data have been partially analysed in the Ecosystem Taskgroup Report of the Ironbark Creek TCM Strategy (HCMT 1995). The EPA also holds data on EPA-regulated premises adjacent to Hexham Swamp."

Assessment of Management Options

There are many options for the management of the Ironbark Creek Floodgate, ranging from permanent opening to permanent closure. Each option is likely to restore tidal inundation to a differing area of wetland for differing periods. The Environmental Impact Statement should examine the impact several operating regimes on the natural and socio-economic environment, so that the community, stakeholders and decision makers may be fully informed.

Please contact Mitch Bennett on (02) 49269977 if you have any enquiries regarding this matter.

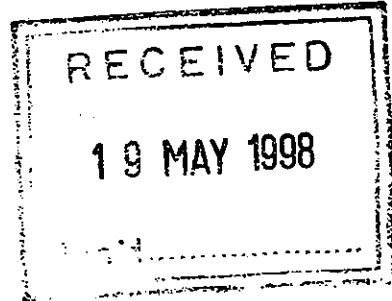
Yours sincerely

PAM DEAN-JONES
Head Regional Programs Unit, Hunter
for Director-General



NSW FISHERIES

Mr Alan Robertson
PACRIM Environmental
PO Box 103
The Junction 2291



Your Ref: 98/309

Dear Mr Robertson

Re: EIS for proposed rehabilitation of Hexham Swamp

Thank you for the opportunity to comment on the proposal.

In response to your request for additional requirements NSW Fisheries would like to point out the lack of a clear requirement for fish to be studied in the Fauna section. This would also include the enhancement of fish passage and potential changes in aquatic community structures.

For further information contact me on (02) 4982 1232

Yours faithfully

15/may/98

Scott Carter
Conservation Manager (Central)

Terry O'Brien

From: Lawson & Treloar <ltnsw@mail.ozemail.com.au>
To: Pacrim <pacrim@hunterlink.net.au>
Subject: Attn: Martin Connor
Date: Friday, 15 May 1998 13:42

re: EIS for the Proposed Rehabilitation of Hexham Swamp, Newcastle -
comments
Hi Martin,

We have a few minor comments on the flooding/modelling sections of your document.

pg8 reference should read Carr, R.S. for Robert not K.S (this also applies on pg 22)

p22 first paragraph ...using a flooding model based on a topographic base developed from a 100m photogrammetric survey, a technique which has a significant limit of accuracy...

The topography for this study was updated with 800 ground surveyed spot levels. With this information the next sentence should possibly be reworded.

p22 Limitations,
Items 1 and 2 could possibly be classified as limitations, though you both percentages of accuracy are within the generally accepted tolerances for the respective processes.

P23
Public Works Report No. 91077 was compiled by Lawson and Treloar P/L.
Limitations
Item 3 Hexham Swamp local inflows used were the 48 hour duration storm critical for the Hunter River.

P23
Ironbark Creek TCM Report was compiled by Lawson and Treloar

P23
Gaps/Opportunities
Item 3. Check with NCC. I think that they now have this information

Regards,
Grantley

level 2
104 Mount Street
North Sydney 2060

PO Box 515
North Sydney 2059
Australia

telephone (02) 9957 1619
facsimile (02) 9957 1291
ACN. 003 220 228

**Patterson Britton
& Partners Pty Ltd**
consulting engineers

FACSIMILE TRANSMISSION

Attention: MARTIN CONNER
Organisation: PACRIM
Fax No.: 02 9926 5125

Transmitted By: DAVID M CONNELL
Date: Job No.:
Page 1 of

Subject: COMMENTS ON HEXHAM SWAMP ER PROPOSAL

Message / Instruction To Receiver: MY COMMENTS RELATE TO THE WATER
MANAGEMENT ASPECTS

IT WOULD APPEAR THERE IS AN INADEQUATE QUANTIFICATION OF THE EFFECTS OF OPENING THE GATES TO VARIOUS DEGREES ON THE WATER REGIME AND SALINITY INTRUSION INTO THE DENDRITIC CHANNEL NETWORK WITHIN THE SWAMP AND OUT TO THE DRAINED WETLAND AREAS. SINCE MANY OF THE DESIRED FLORA & FAUNA CHANGES ARE DEPENDENT ON THE RESULTING WATER REGIME, IT WOULD BE APPROPRIATE TO QUANTIFY THE RESULTING WATER & SALINITY REGIME FOR NORMAL TIDAL VARIATION (SPRING, MEAN & NEAP TIDES), FOR TIDAL VARIATION WITH LOCAL RUNOFF, FOR TIDAL VARIATION WITH A RIVER FRESH AND WITH OCEAN STORM SURGE EFFECTS. RARE EVENTS (SAY < 20% AEP) WILL HAVE LITTLE EFFECT ON LONG TERM OUTCOMES AND ARE THUS PROBABLY NOT RELEVANT EXCEPT FOR ANY CHANGE TO RIVER GENERATED FLOOD LEVELS THAT WOULD RESULT FROM PARTIAL GATE OPENING, i.e. UP TO THE LEVEL THE HIGHWAY (RAILWAY OVERTOP) WHEN GATE OPENING BECOMES IRRELEVANT.

If This Message Is Incomplete Or Illegible Please
Telephone (02) 9957 1619

Form 2.002.1(v2)



HUNTER WATER CORPORATION LIMITED ACN 053 102 837

PO BOX 5171B, Newcastle West 2302 Australia
Telephone 049-267267 DX7858



F A C S I M I L E

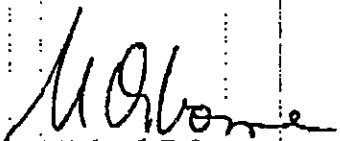
TO:	PACRIM ENVIRONMENTAL
FAX NO:	02-4926 5125
FOR ATTENTION:	KERRY BOYDEN
FROM:	MICHAEL OSBORNE
TELEPHONE NO:	02-4979 9446
FAX NO:	02-4979 9471
DATE:	Wednesday, 20 May 1998

Page 1 of 1 pages

MESSAGE:

Confirming our recent conversation, the EIS should consider the effect of the proposal on the Corporation's assets.

Regards


Michael Osborne
Rel Planning Engineer



NSW Farmers' Association

A.C.N. 000 004 651

1 Bligh Street, Sydney, NSW 2000
GPO Box 1068, Sydney, NSW 1041

Telephone: (02) 9251 1700
Facsimile: (02) 9221 6913
E-mail: emailus@nswfarmers.org.au

19 May 1998

Mr Alan M. Robertson
Senior Environmental Scientist
Pacrim Environmental
PO Box 103
NEWCASTLE NSW 2300

Dear Mr Robertson

Re: Hexam Swamp Data Compilation Report and Consultancy Brief for preparation of an Environmental Impact Statement

Thank you for the opportunity to comment on the Hexam Swamp Data Compilation Report and Consultancy Brief for preparation of an Environmental Impact Statement (EIS).

After careful consideration the NSW Farmers' Association would like to make the following comments regarding the above listed documents.

- (1) The Association is pleased that the documentation notes that there will need to be compensation for any land that is acquired.
- (2) The Association recommends that the EIS takes into consideration that farmers are not only likely to lose highly productive land, they will also be socially dislocated from the community in which some have lived for over 30 years.

Once again thank you for the opportunity to comment. The Association looks forward to being involved in the process as it continues and to the release of the EIS.

Yours sincerely

Simon Carson
RESEARCH ASSISTANT/SECRETARY
CONSERVATION AND RESOURCE MANAGEMENT

cc: Mr Brett Peterkin

RECEIVED

21 MAY 1998

sc9805032.doc
H.C.M.T.

	TO	INITIALS	DATE	AGENDA
GEO				
CM F&C				
CM L&V				
W.Q.C.				
P.A.O.				

your ref: 98/309
our ref: ER 784

MANAGER
PACRIM ENVIRONMENTAL
P.O. BOX 103,
THE JUNCTION, 2291



Thursday, 28 May, 1998

ATTENTION: Mr. A. Robertson

Dear Sir

EIS FOR REHABILITATION OF HEXHAM SWAMP

I refer to your letters dated 20/4/98 and 1/5/98 requesting this department's comments in regard to the above proposal. I apologise for the delay, but the department has now reviewed this matter and provides the following information addressing the principle issues:

FLOODING ASPECTS

The catchment lies within an area which is subject to the Hunter Valley Flood Mitigation Act, 1956. This Act provides a degree of flood protection to local landholders through a system of levees, drainage canals and floodgates. Activities or proposals which may impact on these flood mitigation structures may need approval from the Department.

The principal objectives of the State Government's Flood Policy are to reduce the impact of flooding and flood liability on individual owners and occupiers and to reduce private and public losses due to flooding. Under the Flood Policy, proponents of development in floodprone areas are required to demonstrate that local flooding will not be exacerbated as a result of their development and that their development is designed in expectation of flooding.

As indicated in the Floodplain Development Manual, the local Council is responsible for setting the flood standard and development control conditions for the area.

Further, the proponent will need to liaise with DLWC with regard to the strategy for flood gate operation on Ironbark Creek, and any possible impact on this proposal.

ESTUARY MANAGEMENT ISSUES

The Department of Land and Water Conservation has statutory responsibilities under the Rivers and Foreshores Improvement Act 1948 to ensure the hydraulic stability of estuaries. As such, the Department is primarily interested in any proposal affecting Hexham Swamp.

The following issues closely relate to the objectives of the Estuary Management Program and should be addressed in the preparation of an Environmental Impact Statement for the proposed rehabilitation:

- A full project description, including details of all proposed clearing, draining, excavation and filling and discussion of the environmental implications of these activities.
- The location of the components of the proposal should be clearly identified.
- A full description of the existing environment likely to be affected by the proposal.
- A description of expected alteration of sediment movement patterns as a result of the proposal, that is, what changes will occur to the natural erosion and accretion rates.

- A full description of the methods of excavation, construction and material placement should be given.

When preparing the EIS, it is recommended that you consult and comply with the following documents:

- Estuary Management Manual, (1992) NSW Government.
- NSW Wetlands Management Policy, (1996) NSW Government.

ACID SULFATE SOILS

The EIS will need to determine the possibility of any development activity excavating or draining potentially acid sulfate soils and if so, provide a management plan to deal with the spoil material.

VEGETATION - Protected Lands

The EIS should assess whether prior approval will be required to remove any vegetation on Ironbark Creek or on steep slopes under the Native Vegetation Conservation Act (1997).

GROUNDWATER ISSUES

All excavation below the groundwater level need to have a licence from DLWC, under Part 5 of the Water Act, 1912, prior to the commencement of construction. If groundwater is to be used as a source of water supply (temporary or long term) an application for a licence will also be required to be lodged with the department.

Potential impacts on the groundwater resource as a result of the development need to be addressed in the EIS. Impacts on groundwater should include all aspects of quality, quantity and groundwater dependent ecosystems.

CROWN LAND ISSUES

Land Status

The EIS should identify the location and status of any Crown land involved or directly affected in the rehabilitation proposal.

Potential Impacts

The EIS needs to consider any potential impacts the proposal may have on the current/future use, management or amenity of any Crown lands, as defined by the Crown Lands Act, 1989 that are included or are directly affected. The issue of compensation may require consideration in the event that the lands use, amenity and future development potential is adversely affected.

Restoration of Crown Land

The rehabilitation proposal should address disturbances to Crown land during any proposed construction/installation activity. The Department prefers rehabilitation to be adaptive, progressive and designed into the course of the activity rather than being a post activity process.

Protection of Natural Values

Should the rehabilitation proposal involve or directly affect Crown land which has recognised natural recreation, conservation and environmental protection values, the Department requests that the EIS acknowledge and include strategies that protect these values.

Native Title

The introduction of the Commonwealth Native Title Act in 1993 has had far reaching ramifications for the administration and management of Crown land. Generally, any dealing in Crown land cannot proceed unless native title in respect of that land has been extinguished or it is established that Native Title does not exist.

At this time the Department has not conducted searches to determine whether or not native title has been extinguished over any Crown lands involved in the proposal. Should Crown land be involved, the EIS will need to address any native title interest/ implications.

Aboriginal Land Claims

Vacant Crown land (ie land that is not being lawfully used or occupied) can be subject to a claim by an Aboriginal Land Council in terms of the Aboriginal Land Rights Act, 1983. Where such a claim has been made the Department is not in a position to enter into any dealings in respect of that land until such time as the claim has been determined by the Minister.

A status search should be undertaken to determine as to whether or not a claim has been lodged as at a specified date.

I trust the above information is of assistance in regard to your consideration of this proposal. Should there be any further enquiry in this matter, please contact Mr Jeff Hunt, Catchment Planning Manager, at our Newcastle Office on 02 4929 4346.

Yours Faithfully



Jeff Hunt, CATCHMENT PLANNING MANAGER
for MANAGER, RESOURCE ASSESSMENT AND PLANNING
HUNTER REGION

60/11/1-05
DE: F COSGROVE JD
Phone (02) 49299319

28 May 1998

Alan Robertson
Senior Environmental Scientist
Pacrim Environmental
P O Box 103
THE JUNCTION NSW 2291



PO Box 489, Newcastle
NSW 2300 Australia
Phone 049 29 9111
Facsimile 049 29 6157
DX 7872 Newcastle

Dear Alan

EIS FOR THE PROPOSED REHABILITATION OF HEXHAM SWAMP NEWCASTLE

Reference is made to your letter dated 1 May 1998 seeking Councils comment on issues to be covered in a proposed consultancy brief to complete an Environmental Impact Statement for the rehabilitation of Hexham Swamp.


Council regrets the delay in responding to your request however the following matters are raised for consideration in the brief:

- Pg 3 LEP-28 Hexham Swamp was repealed by current planning instrument, the Newcastle LEP, 1987.
- The DA should be prepared in accordance with the requirements of Councils DA Guide as well as DUAP requirements.
- Mosquitos - The EIS should consider current best practice control techniques including an integrated Management approach particularly in light of current Department of Health Arbo Virus data for the Hunter.
- Pg 19 Fauna - The proposal to consider fauna could include impacts on current freshwater ecosystems with regard to Threatened Species Act requirements.
- Pg 20 Flora - The EIS could consider the flora rehabilitation issues post grazing and with increased salinity to focus riparian plantings and habitat reinstatement.
- Consideration could be given to ongoing management requirements particularly community based opportunities. This aspect may relate more to Management aspects within the catchment and as such the existing TCM strategy. It may be a case of the value in demonstrating this linkage from a funding/partnerships point of view.
- Flood Management Strategies enunciated in the TCM overall strategy should be incorporated into the EIS.
- To enable specific area to be assessed in the EIS, land based accurate survey should be carried out around the perimeter of Hexham Swamp from lowest tide to 1m above Probable Maximum Flood estimates. The survey should be in a format that will support integration to a GIS System to enable spatial analysis.

I hope this information has been of assistance in your design of the brief.

If you have any further enquiries please contact David Gibbons on 49299249 or Geoff Mansfield on 49299219.

Yours faithfully


Frank Cosgrove
ACTING MANAGER
ENVIRONMENTAL SERVICES
DEVELOPMENT & ENVIRONMENT

Newcastle - so good
the world would be happy here

Date [23/09/03]

Hexham Swamp Rehabilitation Project Environment Protection and Biodiversity Conservation Act 1999

Referral Form

Freehills

MLC Centre Martin Place Sydney NSW 2000 Australia
Telephone 61 2 9225 5000 Facsimile 61 2 9322 4000
www.freehills.com.au DX361 Sydney

SYDNEY MELBOURNE PERTH CANBERRA BRISBANE HANOI HO CHI MINH CITY SINGAPORE
Correspondent Offices JAKARTA KUALA LUMPUR

Liability limited by the Solicitors' Limitation of Liability Scheme, approved under the
Professional Standards Act 1994 (NSW)

Table of contents

<i>Clause</i>	<i>Page</i>	
1	Contacts and proponent	1
1.1	Organisation making the referral	1
1.2	Authority proposing to take the action	1
1.3	Proponent for the action	1
2	Description of the proposal	1
2.1	Summary description	1
2.2	Location of the Project Area	1
	(a) Location	1
	(b) Physical description of the Project Area	3
2.3	Timeframe of the Project	3
2.4	Description of the Project	3
2.5	Context of the Project	6
2.6	Relationship to other proposed actions	7
3	Description of the Project Area	8
3.1	Project Area	8
3.2	Features of the Project Area	10
	(a) Soil and vegetation characteristics	10
	(b) Water flows	10
	(c) Natural features	10
	(d) Gradient	10
	(e) Buildings and infrastructure	10
	(f) Marine areas	10
	(g) Fauna	11
	(h) Current state of the environment	11
3.3	Tenure of the Project Area	11
3.4	Current and proposed land uses for the Project Area	14
4	Nature and extent of the likely impacts of the action	16
4.1	Likely impacts of the Project on World Heritage values	16
4.2	Likely impacts of the Project on the ecological character of a declared Ramsar wetland	16
4.3	Likely impacts of the Project on the members of a listed threatened species	16
4.4	Likely impacts of the Project on the members of a listed migratory species or their habitat	16
4.5	Likely impacts of the Project on the environment in part of the Commonwealth marine area	16
4.6	Likely impacts of the Project on the environment of Commonwealth land	16
4.7	Indicate if your action is a nuclear action or involves a Commonwealth agency, marine area or land	16

5	Information sources	17
5.1	Source of the information	17
5.2	Currency	17
5.3	Reliability	17
5.4	Uncertainties	17
6	Ministerial declaration	18
6.1	Ministerial declaration	18
6.2	Assessment by an accredited assessment process	18
7	Signatures and Declarations	19
7.1	Signature of person making the referral	19
7.2	Declaration of Proponent	19
7.3	Statement that the referred action may be a controlled action	19

Schedule 1

Proposed construction of protective works

Schedule 2

Species that may occur within the Project Area

Schedule 3

The Floodgates

Schedule 4

Properties in the Project Area and the proprietary interests to be obtained by the Hunter Catchment Management Trust

Schedule 5

Vegetation characteristics

Schedule 6

Fauna characteristics

1 Contacts and proponent

1.1 Organisation making the referral

Freehills

Solicitors

Contact: John Taberner

Address: GPO Box 4227
Sydney NSW 2000

Telephone: (02) 9225 5427

Facsimile: (02) 9322 4000

Email: john.taberner@freehills.com

1.2 Authority proposing to take the action

Hunter Catchment Management Trust

Contact: Glenn Evans

Address: Private Bag 2010
Paterson, NSW, 2421

Telephone: (02) 4930 1030

Facsimile: (02) 4930 1013

Email: g.evans@hcmt.org.au

1.3 Proponent for the action

See section 1.2 above.

2 Description of the proposal

2.1 Summary description

The proposed action (“the Project”) involves the rehabilitation of the Hexham Swamp, New South Wales (“the Project Area”) by the Hunter Catchment Management Trust (“the Proponent”) through:

- (a) the increased opening of floodgates currently located on Ironbark Creek; and
- (b) the reinstatement thereby of tidal inundation and natural saline water-flows to the wetland.

2.2 Location of the Project Area

(a) Location

The Project Area is located in New South Wales on the outskirts of the City of Newcastle within the Newcastle City Council local government area. See Map 1 below.

Map 1
Location of the Project Area

[refer Figure 1.1, EIS Volume 1]

The approximate geographical co-ordinates of the boundary of the Project Area can be seen in Table 1 below.

Table 1
Co-ordinates of the Project Area

Latitude	Longitude
151.675	-32.82
151.711	-32.87
151.670	-32.90
151.628	-32.86

(b) Physical description of the Project Area

The Project Area is made up of the Hexham Swamp, consisting of approximately 2000 hectares of wetland surrounding Ironbark Creek and Fishery Creek, tributaries of the Hunter River.

The Project Area is bounded by the New England Highway, the Pacific Highway and the Great Northern Railway to the east, by the abandoned Hexham Richmond Main Railway to the west, and by urban development to the south.

See section 3 for further information.

2.3 Timeframe of the Project

The commencement date of the Project will be approximately June 2004 (“the Commencement Date”). From the Commencement Date completion of the Project is expected to occur in approximately three years.

2.4 Description of the Project

The object of the Project is to reinstate the natural hydrologic (tidal) and saline regime of the wetland, which existed prior to construction of flood gates at the mouth of Ironbark Creek in the early 1970’s. It is proposed that the Project will involve the following activities:

- (c) construction of protective works;¹
- (d) opening the floodgates located across Ironbark Creek (“the Floodgates”);² and
- (e) inundation of the Project Area.

Prior to the Commencement Date the Proponent is acquiring proprietary interests, including freehold title, easements for inundation and restrictions on the use of land, over the Project Area.³

¹ Note: Further information is provided in Schedule 1.

² Note: Further information is provided in Schedule 3.

³ **Note: Further information is provided in Schedule 4**

Properties in the Project Area and the proprietary interests to be obtained by the Hunter Catchment Management Trust

Property	Registered Proprietor	Interest to be acquired
1/126319	HCMT	Freehold title
1/742036	HCMT	Freehold title
2/742036	HCMT	Freehold title
1/199322	HCMT	Freehold title
2/199322	HCMT	Freehold title
3/199322	HCMT	Freehold title
4/199322	HCMT	Freehold title
5/199322	HCMT	Freehold title
2/584500	HCMT	Freehold title
12/1037030	HCMT	Freehold title
1/1048213	HCMT	Freehold title
10/1044935	HCMT	Freehold title
302/1023342	HCMT	Freehold title
2/1024376	HCMT	Freehold title
21/1024373	HCMT	Freehold title
455/998893	HCMT	Freehold title
21/836450	HCMT	Freehold title
1/90465	The State of New South Wales	None*
129/725084	The State of New South Wales	None*
1/611441	Hunter District Water Board	Easement for inundation
2/611518	Hunter District Water Board	Easement for inundation
A/339943	Hunter District Water Board	Easement for inundation
1/608814	Hunter District Water Board	Easement for inundation
1/408005	Hunter District Water Board	Easement for inundation
Book 2432 No 699	Hunter District Water Board	Easement for inundation
210/832198	Hunter District Water Board	Easement for inundation
B/339943	Hunter District Water Board	Easement for inundation
A/400052	Hunter District Water Board	Easement for inundation
1/805274	Hunter District Water Board	Easement for inundation
2/535220	Hunter District Water Board	Easement for inundation
24/599877	The Council of the City of Newcastle	Freehold title
3/1043133	The Council of the City of Newcastle	Freehold title
107/593379	The Council of the City of Newcastle	Transfer of Community land
54/755232	The Council of the City of Newcastle	Transfer of Community land
45/218633	The Council of the City of Newcastle	Easement for inundation
12/246123	The Council of the City of Newcastle	Easement for inundation
B/340105	The Council of the City of Newcastle	Easement for inundation
11/594894	The Council of the City of Newcastle	Easement for inundation

28/253998	The Council of the City of Newcastle	Easement for inundation
34/1049894	Willi Marmulla (as to part) Bernie Marmulla (as to remainder).	Freehold title and easement for inundation
28/864756	Samuel Thomas Watts	Freehold title and easement for inundation
211/517366	Christopher David Morris & Susan Margaret Morris	Freehold title and easement for inundation
25/599877	Newcastle Wallsend Coal Company Pty Limited	Freehold title
Conveyancing Book 319 No 833	Newcastle Wallsend Coal Company Pty Limited	Freehold title
58/755232	Broadcast Australia Pty Limited	Freehold title
59/755232	Broadcast Australia Pty Limited	Freehold title
60/755232	Broadcast Australia Pty Limited	Freehold title
61/755232	Broadcast Australia Pty Limited	Freehold title
62/755232	Broadcast Australia Pty Limited	Freehold title
63/755232	Broadcast Australia Pty Limited	Freehold title
64/755232	Broadcast Australia Pty Limited	Freehold title
71/755232	Broadcast Australia Pty Limited	Freehold title
66/755232	Broadcast Australia Pty Limited	Easement for inundation
67/755232	Broadcast Australia Pty Limited	Easement for inundation
68/755232	Broadcast Australia Pty Limited	Easement for inundation
127/755232	Broadcast Australia Pty Limited	Easement for inundation
94/184589	Broadcast Australia Pty Limited	Easement for inundation
95/887471	Broadcast Australia Pty Limited	Easement for inundation
96/887471	Broadcast Australia Pty Limited	Easement for inundation
97/887471	Broadcast Australia Pty Limited	Easement for inundation
1/584500	Metalcorp Limited	Easement for inundation
421/998816	Metalcorp Limited	Easement for inundation
52/593732	Ian Robert Tacon & Robyn Beverley Tacon	Easement for inundation
102/606506	Frank Clifford Williams, Warren O'Rourke & Lesley Young	Easement for inundation
2/716666	John Edward Johnston & Suzanne Johnston	Easement for inundation
30/16703	Reginald Hartley Flannery & Pattie Margaret Flannery	Easement for inundation
29/16703	Edward Palmer & Dorothy Rose Palmer	Easement for inundation
27/16703	Elfriede Hollube	Easement for inundation
2/529512	Noel Maxwell Hughes & Denise Alice Hughes	Easement for inundation
1/529512	Damir Horacek & Kim Horacek	Easement for inundation
23/16703	Kevin William Cook & Elvy Vera Cook	Easement for inundation
262/517002	David James McFadyen & Petrina Lee Muxlow	Easement for inundation
25/659461	Lena June Denton	Easement for inundation
441/524581	George Docherty & Imelda Docherty	Easement for inundation
74/573628	Ronald George Bradley & Kathryn Bradley	Easement for inundation
1/500143	Colyn Brian Dunn & Barbara Gail Dunn	Easement for inundation

62/590003	Adam Joshua Waugh, Damien Garry Waugh, Ashleigh Jane Waugh & Andrew McLauchlan Waugh	Easement for inundation
1/502669	Leone Enid Whittaker	Easement for inundation
325/709247	Norman Denise Shields & Kathleen Joyce Shields	Freehold title and easement for inundation
322/592513	Gwenda Elizabeth Bartlett	Easement for inundation
35/663814	David John Murray & Katherine Elizabeth Murray	Easement for inundation
A/350274	Sosefo Puliuvea	Easement for inundation
B/350274	Stacey Lambkin	Easement for inundation
20/16703	Daphne Ruth Cook	Easement for inundation
D/407614	Philip Richard Hancock & Lynn Maree Hancock	Easement for inundation
2412/708599	Glenn Lawrence Powell	Easement for inundation
28/16703	Warren Joseph Carpenter & Rosemary Kim Carpenter	Easement for inundation
9/561496	Shortland Wetlands Centre Limited	Easement for inundation
5/233520	Shortland Wetlands Centre Limited	Easement for inundation
200/867471	Unimin Australia Limited Pty Limited	Easement for inundation
22/627724	Sierra Sun (NSW) Pty Limited and Russ MacFarlane.	'None'
12/625053	Sierra Sun (NSW) Pty Limited and Russ MacFarlane	'None'
1101/570856	Tania Maree Rhodes	Easement for inundation
1100/570856	The Trustees of the Roman Catholic Church for the Diocese of Maitland	Easement for inundation
99/184589	The Trustees of the Roman Catholic Church for the Diocese of Maitland	Easement for inundation
98/184589	The Trustees of the Roman Catholic Church for the Diocese of Maitland	Easement for inundation
22/836450	John Robert Searles & Frank Warren Searles	Easement for inundation
2/1048213	Peter John Comerford & Peter Michael Yore	Easement for inundation
11/1044935	Patricia Dan	Easement for inundation
11/1037030	Toyera Pty Limited	Easement for inundation
51/593732	Totalizator Agency Board of NSW	Informal agreement

2.5 Context of the Project

The Project is being carried out by the Proponent pursuant to power vested in it by the *Catchment Management Act 1989 (NSW)*.

Federal and New South Wales legislation relevant to the Project is listed in Table 2.

Approval for the Project is to be obtained from the Minister for Infrastructure, Planning and Natural Resources pursuant to the *Environmental Planning and Assessment Act 1979 (NSW)*.

Table 2
Applicable Legislation

Commonwealth	New South Wales
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	<i>Catchment Management Act 1989</i> <i>Environmental Planning and Assessment Act 1979</i> <i>Fisheries Management Act 1994</i> <i>Land Acquisition (Just Terms Compensation) Act 1991</i> <i>National Parks and Wildlife Act 1974</i> <i>Protection of the Environment Operations Act 1997</i> <i>Water Management Act 2001</i> <i>Threatened Species Conservation Act 1995</i>

2.6 Relationship to other proposed actions

At this stage there is no relationship between the Project and any other proposed actions in the region.

3 Description of the Project Area

3.1 Project Area

The nature of the Project Area is identified in attached Schedule 5 and Schedule 6.

The Project Area is not:

- (a) a World Heritage property;
- (b) a Commonwealth marine area; or
- (c) Commonwealth land.

The Project Area is:

- (a) within 10km of the Kooragang Nature Reserve and the Shortland Wetlands.

The Kooragang Nature Reserve and the Shortland Wetlands are part of the Ramsar wetland known as the Hunter Estuary Wetlands Ramsar site. (*Shortland Wetlands is within the catchment of the Project.*)

8 threatened species, 20 migratory species and 20 marine protected species may be present within the Project Area (see Schedule 2). No threatened ecological communities occur within the Project Area.

We note that the above information was compiled using the Environment Australia interactive online database. The geographical co-ordinates in section 2.2 were used with a buffer of 1km.

Schedule 2 also lists Threatened Species, as listed under the NSW Threatened Species Conservation Act 1995, that have been identified during preparation of an environmental impact statement for the Project.

Map 2
The Project Area

[refer Figure 3.1, EIS Volume 1]

3.2 Features of the Project Area

(a) Soil and vegetation characteristics

Studies of the soil characteristics of the Project Area indicate that soil profiles within the swamp range from loam to clay. Peat and layers of organic matter can also be seen in the soil profile. It is possible that potential acid sulphate soils may be present in the Project Area. To date no significant soil erosion has occurred in the Project Area.

A number of vegetation communities have been identified in the Project Area including mangroves, degraded salt marsh, common reed, ephemeral ponds and channels, freshwater swamp, broad-leaved Cumbungi, semi-permanent and permanent ponds, and swamp She-Oak.

Further information is provided in Schedule 5.

(b) Water flows

At present, the Project Area is a major flood storage on the south bank of the Hunter River.

Natural water-flow in the Project Area was affected by the construction of the Floodgates in 1970-1971. Prior to their construction, the Project Area was an estuarine wetland and daily tidal impacts would have penetrated well into the wetland.

(c) Natural features

The wetlands are the only natural feature that occur in the Project Area.

(d) Gradient

The Project Area is low-lying land occurring below 1.5m AHD. The gradient of the land in the Project Area is essentially flat.

(e) Buildings and infrastructure

Due to the flood-prone nature of the Project Area limited development has occurred in the area. Residential land is located on the higher lands that abut the Project Area.

A number of infrastructure services traverse the Project Area including:

- (1) a major railway line controlled and operated by the State Rail Authority;
- (2) a water pipeline controlled and operated by the Hunter Water Corporation;
- (3) electricity transmission lines controlled and operated either by Transgrid, Energy Australia or Pacific Power.

(f) Marine areas

The Project Area surrounds tributaries of the Hunter River and is a wetland area. Marine species, including listed protected species, are present in the area.

Natural tidal inundation in the Project Area has been affected by the construction of the Floodgates.

(g) Fauna

The habitats of a variety of species are present within the Project Area including those of various species of mammals, birds, reptiles and amphibians, and fish.

Further information is provided in Schedule 6.

(h) Current state of the environment

The natural environment of the Project Area has been significantly altered by the construction of the Floodgates and impact from urban encroachment. The Project will assist in the rehabilitation of the Project Area by restoring tidal water-flow and returning the wetlands to a more natural system.

3.3 Tenure of the Project Area

The Project Area consists of a number of freehold properties which are identified in Schedule 4

Properties in the Project Area and the proprietary interests to be obtained by the Hunter Catchment Management Trust

Property	Registered Proprietor	Interest to be acquired
1/126319	HCMT	Freehold title
1/742036	HCMT	Freehold title
2/742036	HCMT	Freehold title
1/199322	HCMT	Freehold title
2/199322	HCMT	Freehold title
3/199322	HCMT	Freehold title
4/199322	HCMT	Freehold title
5/199322	HCMT	Freehold title
2/584500	HCMT	Freehold title
12/1037030	HCMT	Freehold title
1/1048213	HCMT	Freehold title
10/1044935	HCMT	Freehold title
302/1023342	HCMT	Freehold title
2/1024376	HCMT	Freehold title
21/1024373	HCMT	Freehold title
455/998893	HCMT	Freehold title
21/836450	HCMT	Freehold title
1/90465	The State of New South Wales	None*
129/725084	The State of New South Wales	None*
1/611441	Hunter District Water Board	Easement for inundation
2/611518	Hunter District Water Board	Easement for inundation
A/339943	Hunter District Water Board	Easement for inundation
1/608814	Hunter District Water Board	Easement for inundation
1/408005	Hunter District Water Board	Easement for inundation
Book 2432 No 699	Hunter District Water Board	Easement for inundation
210/832198	Hunter District Water Board	Easement for inundation

B/339943	Hunter District Water Board	Easement for inundation
A/400052	Hunter District Water Board	Easement for inundation
1/805274	Hunter District Water Board	Easement for inundation
2/535220	Hunter District Water Board	Easement for inundation
24/599877	The Council of the City of Newcastle	Freehold title
3/1043133	The Council of the City of Newcastle	Freehold title
107/593379	The Council of the City of Newcastle	Transfer of Community land
54/755232	The Council of the City of Newcastle	Transfer of Community land
45/218633	The Council of the City of Newcastle	Easement for inundation
12/246123	The Council of the City of Newcastle	Easement for inundation
B/340105	The Council of the City of Newcastle	Easement for inundation
11/594894	The Council of the City of Newcastle	Easement for inundation
28/253998	The Council of the City of Newcastle	Easement for inundation
34/1049894	Willi Marmulla (as to part) Bernie Marmulla (as to remainder).	Freehold title and easement for inundation
28/864756	Samuel Thomas Watts	Freehold title and easement for inundation
211/517366	Christopher David Morris & Susan Margaret Morris	Freehold title and easement for inundation
25/599877	Newcastle Wallsend Coal Company Pty Limited	Freehold title
Conveyancing Book 319 No 833	Newcastle Wallsend Coal Company Pty Limited	Freehold title
58/755232	Broadcast Australia Pty Limited	Freehold title
59/755232	Broadcast Australia Pty Limited	Freehold title
60/755232	Broadcast Australia Pty Limited	Freehold title
61/755232	Broadcast Australia Pty Limited	Freehold title
62/755232	Broadcast Australia Pty Limited	Freehold title
63/755232	Broadcast Australia Pty Limited	Freehold title
64/755232	Broadcast Australia Pty Limited	Freehold title
71/755232	Broadcast Australia Pty Limited	Freehold title
66/755232	Broadcast Australia Pty Limited	Easement for inundation
67/755232	Broadcast Australia Pty Limited	Easement for inundation
68/755232	Broadcast Australia Pty Limited	Easement for inundation
127/755232	Broadcast Australia Pty Limited	Easement for inundation
94/184589	Broadcast Australia Pty Limited	Easement for inundation
95/887471	Broadcast Australia Pty Limited	Easement for inundation
96/887471	Broadcast Australia Pty Limited	Easement for inundation
97/887471	Broadcast Australia Pty Limited	Easement for inundation
1/584500	Metalcorp Limited	Easement for inundation
421/998816	Metalcorp Limited	Easement for inundation
52/593732	Ian Robert Tacon & Robyn Beverley Tacon	Easement for inundation
102/606506	Frank Clifford Williams, Warren O'Rourke & Lesley Young	Easement for inundation
2/716666	John Edward Johnston & Suzanne Johnston	Easement for inundation
30/16703	Reginald Hartley Flannery & Pattie Margaret Flannery	Easement for inundation

29/16703	Edward Palmer & Dorothy Rose Palmer	Easement for inundation
27/16703	Elfriede Hollube	Easement for inundation
2/529512	Noel Maxwell Hughes & Denise Alice Hughes	Easement for inundation
1/529512	Damir Horacek & Kim Horacek	Easement for inundation
23/16703	Kevin William Cook & Elvy Vera Cook	Easement for inundation
262/517002	David James McFadyen & Petrina Lee Muxlow	Easement for inundation
25/659461	Lena June Denton	Easement for inundation
441/524581	George Docherty & Imelda Docherty	Easement for inundation
74/573628	Ronald George Bradley & Kathryn Bradley	Easement for inundation
1/500143	Colyn Brian Dunn & Barbara Gail Dunn	Easement for inundation
62/590003	Adam Joshua Waugh, Damien Garry Waugh, Ashleigh Jane Waugh & Andrew McLauchlan Waugh	Easement for inundation
1/502669	Leone Enid Whittaker	Easement for inundation
325/709247	Norman Denise Shields & Kathleen Joyce Shields	Freehold title and easement for inundation
322/592513	Gwenda Elizabeth Bartlett	Easement for inundation
35/663814	David John Murray & Katherine Elizabeth Murray	Easement for inundation
A/350274	Sosefo Puliueva	Easement for inundation
B/350274	Stacey Lambkin	Easement for inundation
20/16703	Daphne Ruth Cook	Easement for inundation
D/407614	Philip Richard Hancock & Lynn Maree Hancock	Easement for inundation
2412/708599	Glenn Lawrence Powell	Easement for inundation
28/16703	Warren Joseph Carpenter & Rosemary Kim Carpenter	Easement for inundation
9/561496	Shortland Wetlands Centre Limited	Easement for inundation
5/233520	Shortland Wetlands Centre Limited	Easement for inundation
200/867471	Unimin Australia Limited Pty Limited	Easement for inundation
22/627724	Sierra Sun (NSW) Pty Limited and Russ MacFarlane.	'None'
12/625053	Sierra Sun (NSW) Pty Limited and Russ MacFarlane	'None'
1101/570856	Tania Maree Rhodes	Easement for inundation
1100/570856	The Trustees of the Roman Catholic Church for the Diocese of Maitland	Easement for inundation
99/184589	The Trustees of the Roman Catholic Church for the Diocese of Maitland	Easement for inundation
98/184589	The Trustees of the Roman Catholic Church for the Diocese of Maitland	Easement for inundation
22/836450	John Robert Searles & Frank Warren Searles	Easement for inundation
2/1048213	Peter John Comerford & Peter Michael Yore	Easement for inundation
11/1044935	Patricia Dan	Easement for inundation
11/1037030	Toyera Pty Limited	Easement for inundation
51/593732	Totalizator Agency Board of NSW	Informal agreement

3.4 Current and proposed land uses for the Project Area

The Project Area includes land which is already declared to be a nature reserve and which is primarily used for environmental conservation, environmental tourism. Some cattle grazing has occurred in the area but this is decreasing in frequency as the property acquisitions by the Proponent are progressing. The various land-use zones existing in the Project Area are identified in Map 3 attached.

Residential land is located in the region adjacent to the Project Area. The Project is not predicted to affect the existing flood risks experienced by residential dwellings, however, earthworks will be constructed, in places, to prevent saline intrusion of freehold properties. On the assumption that approval for the Project is granted, once the Project has occurred the Project Area will be used for environmental protection and environmental tourism.

**Map 3
Land Use Zones**

[refer Figure 2.21, EIS Volume 1]

4 Nature and extent of the likely impacts of the action

4.1 Likely impacts of the Project on World Heritage values

There are no World Heritage areas in the vicinity of the Project Area.

4.2 Likely impacts of the Project on the ecological character of a declared Ramsar wetland

As the purpose of the project is wetland conservation, the Project will assist in the environmental protection and rehabilitation of the Ramsar wetland located at Kooragang Nature Reserve and Shortland Wetlands.

4.3 Likely impacts of the Project on the members of a listed threatened species

The environmental rehabilitation of the Project Area will assist in the regeneration and protection of the current habitats utilised by most of the listed threatened species. The Project will thus benefit the various communities of listed threatened species and improve the environmental amenity of the Project Area.

4.4 Likely impacts of the Project on the members of a listed migratory species or their habitat

The environmental rehabilitation of the Project Area will assist in the regeneration and protection of the current habitats utilised by listed migratory species. The Project will thus benefit the various communities of listed migratory species and improve the environmental amenity of the Project Area.

4.5 Likely impacts of the Project on the environment in part of the Commonwealth marine area

There are no classified Commonwealth Marine Protected Areas within the Project Area.

4.6 Likely impacts of the Project on the environment of Commonwealth land

There is no Commonwealth land within the Project Area.

4.7 Indicate if your action is a nuclear action or involves a Commonwealth agency, marine area or land

- (a) The Project is not a nuclear action.
- (b) The Project is not being carried out by a Commonwealth agency.
- (c) The Project does not involve a Commonwealth marine area.
- (d) The Project does not involve any Commonwealth land.

5 Information sources

5.1 Source of the information

The Proponent assisted in the compilation and confirmation of the information contained in this referral.

Information has also been compiled from other sources including:

- (a) Land Property Information NSW;
- (b) Draft Environmental Impact Statement for the Rehabilitation of Hexham Swamp prepared by WBM Oceanics Australia dated July 1999 (“Draft EIS”);
- (c) Environment Australia Online Database; and
- (d) Environment Australia Directory of Important Wetlands in Australia – Hexham Swamp NSW138 dated September 1998.

5.2 Currency

The property information was collected between November 2001 and September 2003. No substantial variations between the information provided and the records held by the Registrar-General of the Land and Property Information NSW is expected.

The Draft EIS was initially prepared in 1999 using the resources of a number of field studies that have occurred in the Project Area.

The information contained in the Draft EIS has been reviewed by consultants, WBM Oceanics Australia, and updated to more properly reflect the expected impact of the Project. No substantial variations to this information are expected.

5.3 Reliability

The information collected is based on desktop and field studies prepared by reputable environmental consultants who have had a long and continuing connection with the Project.

5.4 Uncertainties

As a number of desktop and field studies and surveys have been undertaken and significant data on the Project Area and the likely impact of the Project has been collected, it is unlikely that any substantial or significant variations exist between the Project Area and the information provided in this referral.

6 Ministerial declaration

6.1 Ministerial declaration

If the Minister finds that the action described in this referral is a controlled action, the Proponent is seeks a declaration by the Minister that the action does not require assessment under Part 8 of the EPBC Act.

6.2 Assessment by an accredited assessment process

The Proponent seeks a Ministerial decision for the action to be assessed by an accredited assessment process, namely by the processes applicable under the *Environmental Planning and Assessment Act 1979 (NSW)*.

7 Signatures and Declarations

7.1 Signature of person making the referral

I, **JOHN GILBERT TABERNER**, declare that the information contained in this form is, to my knowledge, true and not misleading.

Signature _____

Date 22/09/2003

7.2 Declaration of Proponent

I, **GLENN ALBERT HUNTER EVANS**, being (or agent acting on behalf of) the person nominated in Section 1.2 of this referral form as the nominated proponent agree to be designated as the proponent for the action described above if it is decided that the action requires approval under Part 9 of the *Environment Protection and Biodiversity Conservation Act 1999*.

Signature _____

Date

7.3 Statement that the referred action may be a controlled action

I, **John Taberner**, being the person making this referral and the agent action on behalf of the person proposing to take the action believe that the action described in this referral **may be a controlled action**

This project is an action that concerns a declared Ramsar wetland and 8 listed threatened species.

However, the Project has been developed to facilitate the environmental remediation of the Hexham Swamp. The purpose of the Project is to rehabilitate the wetlands area to ensure the permanent environmental protection of the Project Area.

The environmental remediation of the Project Area will not significantly affect the environment in any adverse manner, but rather the habitats and communities present in the Project Area will be provided with proper environmental protection and the opportunity to expand whilst being more comprehensively protected from adverse anthropogenic impacts.

Signature _____

Date

Schedule 1

Proposed construction of protective works

A number of government utilities and private organisations owns infrastructure within Hexham Swamp. The Project may have adverse impacts on these facilities and on some freehold land. Protective works are required, as follows:

1. Low bunds (approximately 0.6 metres high) to protect some freehold lands from saline inundation.
2. Raising of access tracks to water supply pipeline, power lines and radio masts.
3. Low bunds around the base of 330kV transmission line towers to protect them from tidal inundation.
4. Low bund around two radio masts to protect them from tidal inundation.
5. Raising of runway of small private airstrip and localised lowering of access road to provide local runoff flood relief to aircraft hangers.
6. Raising of access tracks and associated drainage at The Wetlands Centre.
7. Minor fill on private freehold residential land to protect from saline inundation.

Schedule 2

Species that may occur within the Project Area

Threatened species

	Scientific Name	Common Name	Status
Amphibia	<i>Litoria aurea</i>	Green and Golden Bell Frog	Vulnerable
Aves	<i>Lathamus discolor</i>	Swift Parrot	Endangered
Aves	<i>Xanthomyza phrygia</i>	Regent Honeyeater	Endangered
Mammalia	<i>Chalinolobus dwyeri</i>	Large-eared Piet Bat Large Pied Bat	Vulnerable
Mammalia	<i>Dasyurus maculatus maculatus</i>	Spot-tailed Quoll Spotted-tail Quoll Tiger Quoll	Vulnerable
Mammalia	<i>Potorous tridactylus tridactylus</i>	Long-nosed Potoroo	Vulnerable
Mammalia	<i>Pteropus poliocephalus</i>	Grey-headed Flying Fox	Vulnerable
Plant	<i>Tetraloche juncea</i>	-	Vulnerable

Migratory species - terrestrial

	Scientific Name	Common Name	Type of presence
Aves	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Species or species habitat likely to occur within the area
Aves	<i>Hirundapus caudacutus</i>	White-throated Needletail	Species or species habitat likely to occur within the area
Aves	<i>Monarcha melanopsis</i>	Black-faced Monarch	Breeding or breeding habitat likely to occur in the area
Aves	<i>Myiagra cyanoleuca</i>	Satin Flycatcher	Breeding or breeding habitat likely to occur in the area
Aves	<i>Rhipidura rufifrons</i>	Rufous Fantail	Breeding or breeding habitat likely to occur in the area
Aves	<i>Xanthomyza phrygia</i>	Regent Honeyeater	Species or species habitat likely to occur within the area

Migratory species - marine

	Scientific Name	Common Name	Type of presence
Aves	<i>Arenaria interpres</i>	Ruddy Turnstone	Species or species habitat likely to occur within the area
Aves	<i>Calidris ferruginea</i>	Curlew Sandpiper	Species or species habitat likely to occur within the area
Aves	<i>Charadrius mongolus</i>	Lesser Sand Plover Mongolian Plover	Species or species habitat likely to occur within the area
Aves	<i>Gallinago hardwickii</i>	Latham's Snipe Japanese Snipe	Species or species habitat likely to occur within the area
Aves	<i>Limicola falcinellus</i>	Broad-billed Sandpiper	Species or species habitat likely to occur within the area
Aves	<i>Limosa lapponica</i>	Bar-tailed Godwit	Species or species habitat likely to occur within the area
Aves	<i>Limosa limosa</i>	Black-tailed Godwit	Species or species habitat likely to occur within the area
Aves	<i>Numenius madagascariensis</i>	Eastern Curlew	Species or species habitat likely to occur within the area
Aves	<i>Numenius phaeopus</i>	Whimbrel	Species or species habitat likely to occur within the area
Aves	<i>Pluvialis fulva</i>	Pacific Golden Plover	Species or species habitat likely to occur within the area
Aves	<i>Rostratula benghalensis</i>	Painted Snipe	Species or species habitat likely to occur within the area
Aves	<i>Tringa nebularia</i>	Common Greenshank Greenshank	Species or species habitat likely to occur within the area
Aves	<i>Tringa stagnatilis</i>	Marsh Sandpiper Little Greenshank	Species or species habitat likely to occur within the area
Aves	<i>Xenus cinereus</i>	Terek Sandpiper	Species or species habitat likely to occur within the area

Marine protected species

	Scientific Name	Common Name	Type of Presence	Status
Aves	<i>Arenaria interpres</i>	Ruddy Turnstone	Species or species habitat likely to occur within the area	Listed
Aves	<i>Calidris ferruginea</i>	Curlew Sandpiper	Species or species habitat likely to occur within the area	Overfly
Aves	<i>Charadrius</i>	Lesser Sand Plover	Species or species habitat	Listed

	<i>mongolus</i>	Mongolian Plover	likely to occur within the area	
Aves	<i>Gallinago hardwickii</i>	Latham's Snipe Japanese Snipe	Species or species habitat likely to occur within the area	Overfly
Aves	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Species or species habitat likely to occur within the area	Listed
Aves	<i>Hirundapus caudacutus</i>	White-throated Needletail	Species or species habitat likely to occur within the area	Overfly
Aves	<i>Lathamus discolor</i>	Swift Parrot	Species or species habitat likely to occur within the area	Overfly
Aves	<i>Limicola falcinellus</i>	Broad-billed Sandpiper	Species or species habitat likely to occur within the area	Overfly
Aves	<i>Limosa lapponica</i>	Bar-tailed Godwit	Species or species habitat likely to occur within the area	Listed
Aves	<i>Limosa limosa</i>	Black-tailed Godwit	Species or species habitat likely to occur within the area	Overfly
Aves	<i>Monarcha melanopsis</i>	Black-faced Monarch	Breeding or breeding habitat likely to occur in the area	Overfly
Aves	<i>Myiagra cyanoleuca</i>	Satin Flycatcher	Breeding or breeding habitat likely to occur in the area	Overfly
Aves	<i>Numenius madagascariensis</i>	Eastern Curlew	Species or species habitat likely to occur within the area	Listed
Aves	<i>Numenius phaeopus</i>	Whimbrel	Species or species habitat likely to occur within the area	Listed
Aves	<i>Pluvialis fulva</i>	Pacific Golden Plover	Species or species habitat likely to occur within the area	Listed
Aves	<i>Phipidura rufifrons</i>	Rufous Fantail	Breeding or breeding habitat likely to occur in the area	Overfly
Aves	<i>Rostratula benghalensis</i>	Painted Snipe	Species or species habitat likely to occur within the area	Overfly
Aves	<i>Tringa nebularia</i>	Common Greenshank Greenshank	Species or species habitat likely to occur within the area	Overfly
Aves	<i>Tringa stagnatilis</i>	Marsh Sandpiper Little Greenshank	Species or species habitat likely to occur within the area	Overfly
Aves	<i>Xenus cinereus</i>	Terek Sandpiper	Species or species habitat likely to occur within the area	Overfly

The above information was compiled using the Environment Australia interactive online database. The co-ordinates in section 2.2 were used with a buffer of 1km.

Schedule 3

The Floodgates

Floodgates and levee banks were constructed at the mouth of Ironbark Creek during 1970-1071 to mitigate the effects of floods in the Hexham Swamp area by the exclusion of small and medium floods. Since that time, the Floodgates have been virtually closed to tidal inundation.

(a) Description of the Floodgates

The Floodgates consist of eight 2.13 x 2.13 metre box culverts (invert level of -1.0 metre AHD) each with a heavy, hinged flap gate on the Hunter River side. The hinged Floodgates allow flow to pass through the culverts out of the swamp. When water levels rise on the swamp side of the gates to a level higher than the water level in the Hunter River, the water level difference across the gates forces the gates open and water flows out of the swamp. If the Hunter River water level is higher than the swamp water level, the gates close, preventing flow from entering Hexham Swamp from the Hunter River.

The hinge point of each individual gate may be raised to open a gap at the base of the flap which then permits flow from the Hunter River to the swamp. Seven of the eight gates are presently closed to tidal flows, while one is raised approximately 0.30 metres. This opening allows a small amount of tidal flow to enter the swamp area when Hunter River water levels exceed Ironbark Creek levels. This flow is insufficient to inundate any land adjacent to the Creek.

Under low flow conditions, when the system is tidally dominated, the present gate configuration allows much more outflow from the swamp than inflow. Outflow can occur through all of the Floodgates whilst inflow can only occur through the one partially lifted gate. Under these low inflow conditions, the average water level in the swamp is lower than the mean water level of the Hunter River by about 0.2 metres.

During flood conditions, floodwaters from the Hunter River are prevented from entering Hexham Swamp. Similarly, if Hunter river levels are higher than those in Hexham Swamp, then flood waters are prevented from flowing from the swamp into the Hunter River. Floodwaters from the Hunter River will overtop the levee system when flood levels are above approximately 1.8 metre AHD.

(b) Changed Operation of the Floodgates

The Project proposes to change the operation of the Floodgates, resulting in increased tidal inundation of Hexham Swamp.

Extensive modelling of tidal inundation has been undertaken using a two-dimensional computer model to predict the extent of tidal inflow. This model cannot be calibrated until the Floodgates are increasingly opened.

The Project involves staged opening of the Floodgates, commencing with fully opening one gate, monitoring of tidal inundation, and calibration of the model. The Floodgates will then be progressively opened to achieve the desired extent of tidal intrusion whilst retaining some areas of Hexham Swamp as freshwater wetland.

In the interest of managing mosquito breeding, the Project proposes to restrict the highest (king tides) from flowing into Hexham Swamp, thereby ensuring that mosquito breeding habitat is not provided in pools left by retreating tides. This will be achieved by a range of options, including opening fewer than eight floodgates, or opening some or all gates for some of the time.

Schedule 4

Properties in the Project Area and the proprietary interests to be obtained by the Hunter Catchment Management Trust

Property	Registered Proprietor	Interest to be acquired
1/126319	HCMT	Freehold title
1/742036	HCMT	Freehold title
2/742036	HCMT	Freehold title
1/199322	HCMT	Freehold title
2/199322	HCMT	Freehold title
3/199322	HCMT	Freehold title
4/199322	HCMT	Freehold title
5/199322	HCMT	Freehold title
2/584500	HCMT	Freehold title
12/1037030	HCMT	Freehold title
1/1048213	HCMT	Freehold title
10/1044935	HCMT	Freehold title
302/1023342	HCMT	Freehold title
2/1024376	HCMT	Freehold title
21/1024373	HCMT	Freehold title
455/998893	HCMT	Freehold title
21/836450	HCMT	Freehold title
1/90465	The State of New South Wales	None*
129/725084	The State of New South Wales	None*
1/611441	Hunter District Water Board	Easement for inundation
2/611518	Hunter District Water Board	Easement for inundation
A/339943	Hunter District Water Board	Easement for inundation
1/608814	Hunter District Water Board	Easement for inundation
1/408005	Hunter District Water Board	Easement for inundation
Book 2432 No 699	Hunter District Water Board	Easement for inundation
210/832198	Hunter District Water Board	Easement for inundation
B/339943	Hunter District Water Board	Easement for inundation
A/400052	Hunter District Water Board	Easement for inundation
1/805274	Hunter District Water Board	Easement for inundation
2/535220	Hunter District Water Board	Easement for inundation
24/599877	The Council of the City of Newcastle	Freehold title
3/1043133	The Council of the City of Newcastle	Freehold title
107/593379	The Council of the City of Newcastle	Transfer of Community land
54/755232	The Council of the City of Newcastle	Transfer of Community land
45/218633	The Council of the City of Newcastle	Easement for inundation
12/246123	The Council of the City of Newcastle	Easement for inundation
B/340105	The Council of the City of Newcastle	Easement for inundation
11/594894	The Council of the City of Newcastle	Easement for inundation
28/253998	The Council of the City of Newcastle	Easement for inundation

34/1049894	Willi Marmulla (as to part) Bernie Marmulla (as to remainder).	Freehold title and easement for inundation
28/864756	Samuel Thomas Watts	Freehold title and easement for inundation
211/517366	Christopher David Morris & Susan Margaret Morris	Freehold title and easement for inundation
25/599877	Newcastle Wallsend Coal Company Pty Limited	Freehold title
Conveyancing Book 319 No 833	Newcastle Wallsend Coal Company Pty Limited	Freehold title
58/755232	Broadcast Australia Pty Limited	Freehold title
59/755232	Broadcast Australia Pty Limited	Freehold title
60/755232	Broadcast Australia Pty Limited	Freehold title
61/755232	Broadcast Australia Pty Limited	Freehold title
62/755232	Broadcast Australia Pty Limited	Freehold title
63/755232	Broadcast Australia Pty Limited	Freehold title
64/755232	Broadcast Australia Pty Limited	Freehold title
71/755232	Broadcast Australia Pty Limited	Freehold title
66/755232	Broadcast Australia Pty Limited	Easement for inundation
67/755232	Broadcast Australia Pty Limited	Easement for inundation
68/755232	Broadcast Australia Pty Limited	Easement for inundation
127/755232	Broadcast Australia Pty Limited	Easement for inundation
94/184589	Broadcast Australia Pty Limited	Easement for inundation
95/887471	Broadcast Australia Pty Limited	Easement for inundation
96/887471	Broadcast Australia Pty Limited	Easement for inundation
97/887471	Broadcast Australia Pty Limited	Easement for inundation
1/584500	Metalcorp Limited	Easement for inundation
421/998816	Metalcorp Limited	Easement for inundation
52/593732	Ian Robert Tacon & Robyn Beverley Tacon	Easement for inundation
102/606506	Frank Clifford Williams, Warren O'Rourke & Lesley Young	Easement for inundation
2/716666	John Edward Johnston & Suzanne Johnston	Easement for inundation
30/16703	Reginald Hartley Flannery & Pattie Margaret Flannery	Easement for inundation
29/16703	Edward Palmer & Dorothy Rose Palmer	Easement for inundation
27/16703	Elfriede Hollube	Easement for inundation
2/529512	Noel Maxwell Hughes & Denise Alice Hughes	Easement for inundation
1/529512	Damir Horacek & Kim Horacek	Easement for inundation
23/16703	Kevin William Cook & Elvy Vera Cook	Easement for inundation
262/517002	David James McFadyen & Petrina Lee Muxlow	Easement for inundation
25/659461	Lena June Denton	Easement for inundation
441/524581	George Docherty & Imelda Docherty	Easement for inundation
74/573628	Ronald George Bradley & Kathryn Bradley	Easement for inundation
1/500143	Colyn Brian Dunn & Barbara Gail Dunn	Easement for inundation
62/590003	Adam Joshua Waugh, Damien Garry Waugh, Ashleigh Jane Waugh & Andrew McLauchlan Waugh	Easement for inundation

1/502669	Leone Enid Whittaker	Easement for inundation
325/709247	Norman Denise Shields & Kathleen Joyce Shields	Freehold title and easement for inundation
322/592513	Gwenda Elizabeth Bartlett	Easement for inundation
35/663814	David John Murray & Katherine Elizabeth Murray	Easement for inundation
A/350274	Sosefo Puliuvea	Easement for inundation
B/350274	Stacey Lambkin	Easement for inundation
20/16703	Daphne Ruth Cook	Easement for inundation
D/407614	Philip Richard Hancock & Lynn Maree Hancock	Easement for inundation
2412/708599	Glenn Lawrence Powell	Easement for inundation
28/16703	Warren Joseph Carpenter & Rosemary Kim Carpenter	Easement for inundation
9/561496	Shortland Wetlands Centre Limited	Easement for inundation
5/233520	Shortland Wetlands Centre Limited	Easement for inundation
200/867471	Unimin Australia Limited Pty Limited	Easement for inundation
22/627724	Sierra Sun (NSW) Pty Limited and Russ MacFarlane.	'None'
12/625053	Sierra Sun (NSW) Pty Limited and Russ MacFarlane	'None'
1101/570856	Tania Maree Rhodes	Easement for inundation
1100/570856	The Trustees of the Roman Catholic Church for the Diocese of Maitland	Easement for inundation
99/184589	The Trustees of the Roman Catholic Church for the Diocese of Maitland	Easement for inundation
98/184589	The Trustees of the Roman Catholic Church for the Diocese of Maitland	Easement for inundation
22/836450	John Robert Searles & Frank Warren Searles	Easement for inundation
2/1048213	Peter John Comerford & Peter Michael Yore	Easement for inundation
11/1044935	Patricia Dan	Easement for inundation
11/1037030	Toyera Pty Limited	Easement for inundation
51/593732	Totalizator Agency Board of NSW	Informal agreement

Schedule 5

Vegetation characteristics

(a) Vegetation Communities

A total of eight communities have been delineated in Hexham Swamp. A brief description of each community is presented below.

- (1) **Mangroves:** Small stands of mangroves occur in the south-eastern part of the swamp. The predominant species is grey mangrove (*Avicennia marina*) with some river mangrove (*Aegiceras corniculatum*). Mangroves along the drainage lines are apparently healthy, however those away from the drainage lines are dead or senescent as a result of restricted tidal inflow.
- (2) **Degraded Saltmarsh:** This community occurs most to the east of the water supply pipeline, around the lower reaches of Ironbark Creek and along the southern edge of the swamp. Typical saltmarsh species such as marine couch (*Sporobolus virginicus*) and samphire (*Sarcocornia quinqueflora*) are still present in many areas, however species better adapted to lower salinities such as water buttons (*Cotula coronopifolia*), couch (*Cynodon dactylon*), sea rush (*Juncus krausii*) and water couch (*Paspalum distichum*) are more prominent.
- (3) **Common Reed (*Phragmites australis*):** Most of the central part of Hexham Swamp is occupied by common reed of approximately 1-2 metres height. This is the most widespread vegetation community encountered in the Project Area. It has expanded considerably in the recent past at the expense of communities dominated by species such as bulrush (*Typha orientalis*), *Schoenoplectus littoralis*, *Bolboschoenus caldwellii* and *Fimbristylis ferruginea*. In the absence of any limiting factors (eg tidal inundation, clearing, repeated burning) it can be expected that this expansion will continue.
- (4) **Ephemeral Ponds and Channels:** These occur among the common reed throughout the north-eastern part of the swamp. The most prominent species is *Bolboschoenus caldwellii*, with water couch, *Schoenoplectus littoralis* and water ribbons (*Triglochin procerum*). It appears that the boundary between this vegetation community and the common reed land is very dynamic, shifting back and forth in response to variation in ground and surface water levels from year to year.
- (5) **Freshwater Swamp:** This vegetation community occurs in the upper part of the swamp, towards Minmi. It comprises species typical of areas which are periodically inundated by fresh water. Common species include water couch, water buttons, kikuyu (*Pennisetum clandestinum*), water ribbons and water primrose (*Ludwigia peploides*).
- (6) **Broad-leaved Cumbungi (*Typha orientalis*):** This vegetation community occurs in clearly defined wetlands in narrow drainage depressions in the southern part of the swamp. It also occurs ephemerally in extensive stands among the common reed land.
- (7) **Semi-Permanent and Permanent Ponds:** This community occurs in small inundated areas in the southern part of the swamp. Aquatic plant species include *Myriophyllum aquaticum* and water ribbons.
- (8) **Swamp She-Oak (*Casuarina glauca*):** Small stands of swamp she-oak occur throughout the edges of Hexham Swamp, particularly along the banks of Ironbark,

Fishery and Shelley Creeks. A large stand occurs adjacent to the Great Northern Railway line on the southern bank of Ironbark Creek. Individual juvenile trees are widely dispersed among the common reed land in the southern parts of the swamp, suggesting the commencement of a new serial stage. Canopy species occurring within this community, other than swamp she-oak, include grey mangrove, prickly-leaved paperbark (*Melaleuca styphelioides*), and riparian rainforest species such as rusty fig (*Ficus rubiginosa*) and boobialla (*Myoporum acuminatum*).

(b) Current Status of Vegetation

There is presently no comprehensive regional assessment of the conservation significance of vegetation communities within Hexham Swamp. However, none of the vegetation communities presently encountered can be considered to be rare or threatened.

Hexham Swamp is, nevertheless, large in area by regional standards. It represents approximately 37% of the total non-tidal wetland area within the lower Hunter River floodplain. As a result, several of the vegetation communities occurring within the Swamp are significant by virtue of the area covered relative to areas of equivalent communities elsewhere within the region.

The area covered by mangroves is currently, and has always been, small by regional standards. Historically, the proportion of the Lower Hunter's saltmarsh contained within Hexham Swamp has been much higher than that of its mangroves. Of a total of 2450 ha of saltmarsh in the Lower Hunter in 1996, 647 ha (26%) was located within Hexham Swamp. The loss of virtually all saltmarsh in Hexham Swamp since then has therefore contributed considerably to the loss of saltmarsh in the Lower Hunter.

One plant species found in Hexham Swamp, *Zannichellia palustris*, is listed as Endangered (Schedule 1) under the NSW Threatened Species Conservation Act 1995. The species is a submerged monoecious, weakly rhizomatous aquatic plant occurring in fresh to brackish and still to slowly moving waters. Although the species has a cosmopolitan distribution, in Australia it has only been found near the Murray River estuary (South Australia) and in the lower Hunter region (New South Wales). It has been recorded in the Canoe Channel (which connects Ironbark Creek to the Wetland Centre), as well as near the Minmi Road bridge across Ironbark Creek.

(c) Expected Changes in Vegetation Communities

When tidal inflow is reinstated in Hexham Swamp, it is expected that the existing freshwater vegetation communities in the eastern and southern parts of the swamp will progressively die back and be replaced by more salt-tolerant species such as mangroves and saltmarsh.

The impact of increased tidal inundation on the predominant vegetation community, common reed land, is not fully known. As the common reed (*Phragmites australis*) is tolerant of some salinity, the extent and rapidity of its replacement with a species mix similar to that which existed prior to construction of the Floodgates cannot be precisely estimated.

The Floodgates will be managed to prevent salt water impacting on freshwater swamp communities in the south-western part of the swamp.

One species, Horned Pondweed (*Zannichellia palustris*), is listed as Endangered under the NSW Threatened Species Conservation Act 1995. Its habitat will be affected by Floodgate opening.

All vegetation communities have been monitored for the past two years. This monitoring will continue in the future so that changes can be plotted and management decisions made that will achieve a diversity of vegetation communities within the Project Area.

Schedule 6

Fauna characteristics

(a) Current Habitats

There are currently two broad habitat types (containing a range of micro-habitat types) within the catchment of Hexham Swamp:

1. Channel habitat, comprised of Ironbark Creek and its major tributaries; and
2. Wetland habitat, comprised of the shallow, seasonally inundated freshwater wetland areas of Hexham Swamp, bordered by dry land.

The current absence of tidal inundation in shallow wetland areas precludes the use of these areas by estuarine macroinvertebrates and fish. Consequently, these groups are limited to (predominantly deep) channel habitats. Overall, the Ironbark Creek catchment can be considered to have low habitat values for estuarine fauna at local to regional scales as:

- Heavy siltation, *Phragmites* infestation and lack of tidal inundation has resulted in a reduction in the area of shallow brackish waters;
- All creeks have steep banks and are relatively deep (except the Canoe Channel), and therefore have limited structural diversity and habitat value;
- The presence of a narrow fringe of mangrove pneumatophores along some banks would provide a suitable habitat to some macroinvertebrates. However, the small area and poor condition of these mangroves limits their use by estuarine fauna;
- The channel habitat is well represented elsewhere in the Hunter River (eg. Moscheto Creek, Throsby Creek, areas around Fullerton Cove);
- Poor water quality (due to occasionally excessive nutrient levels) limits the value of Ironbark Creek as a viable estuarine habitat.

The Ironbark Creek catchment can be considered to have moderate habitat value for freshwater macroinvertebrate and fish fauna at local to regional scales as:

- Habitat diversity can be considered as moderate, as both channel and wetland habitats are available to these groups;
- Structural diversity of the channel habitat is relatively low, comprised almost entirely of only a single micro-habitat (ie deep channels with a thin mangrove fringe). None of the creeks contains shallow protected areas, aquatic vegetation or riffle sequences, reducing their habitat value. Some upstream sections of Ironbark Creek contains hallow waters, although these areas are degraded and suffer from high levels of weed infestation, litter and urban run-off;
- Structural habitat diversity of the wetland habitat is relatively low, comprised almost entirely of grasslands and reeds;
- The available habitat types are well represented elsewhere in the Hunter region, but to a far lesser extent than those in the Ironbark Creek catchment;
- The available wetland areas are in relatively good condition; and
- Poor water quality (due to occasionally excessive nutrient levels) limits the value of Ironbark Creek channel as a freshwater habitat.

(b) Expected Changes to Fauna Habitat

The floodgates currently restrict tidal exchange and flushing of Ironbark Creek. As a consequence, water quality is generally poor and the diversity and abundance of aquatic fauna (fish, crustaceans, macroinvertebrates) is severely reduced. The opening of the Floodgates should improve water quality conditions and available habitat for aquatic fauna thereby making these ecological communities more viable and improving fisheries resources.

The opening of the Floodgates will improve the quality and extent of habitat for a range of common and threatened bird species, including migratory waders and wetland birds. However, species typically associated with freshwater environments (including species such as the Vulnerable listed Australasian Bittern) will have their habitat (common reed community) markedly reduced in the opening of all eight floodgates.

The opening of the Floodgates would result in a reduction in habitat for reptiles and frogs. The Green and Golden Bell Frog (listed as Vulnerable) has not been recorded within the Project Area since 1984.

Few mammals, with the exception of microbat species which forage over the swamp, as well as the water rat and swamp rat, will be directly affected by the opening of the Floodgates.

Rehabilitation of the Hexham Swamp project area also involves the removal of cattle and other domestic stock from the swamp in order to allow the regeneration of natural vegetation. Removal of grazing pressure may increase the incidence of weeds. Grazing regimes using cattle or other stock may, therefore, need to be employed to control weed infestations in selected areas.



Department of the Environment and Heritage

Mr Glenn Evans
Hunter Catchment Management Trust
Private Bag 2010
PATERSON NSW 2421

Dear Mr Evans

Hunter Catchment Management Trust – Rehabilitation of Hexham Swamp
(EPBC Reference: 2003/1244)

The above action was referred by Freehills on behalf of the Hunter Catchment Management Trust, and received on 8 October 2003, for decision whether or not approval is needed under Chapter 4 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The referral documentation nominated the Hunter Catchment Management Trust as the person proposing to undertake the action.

The Department sought additional information regarding the likely impacts of the proposed action on 7 November 2003 and this was received on 20 November.

The referral has now been considered under the EPBC Act and I have decided that the action is a not a controlled action provided it is taken in accordance with the manner described in the attached decision document.

You should notify the Department immediately if the proposal cannot be taken in accordance with the measures described. Penalty provisions may apply if the referred proposal is not undertaken in accordance with these measures. Implementation of the specified manner may be audited by this Department at a future date.

I would appreciate your written advice confirming your intention to implement the specified manner. We would also appreciate your separate advice on progress in implementing the manner within three months of the date of this letter.

Thank you for your assistance on this matter. Please do not hesitate to contact Steve Mercer (02 6274 1861) if you require further information.

Yours sincerely

Mark Flanigan
Assistant Secretary
Policy & Compliance Branch

20 November 2003





Department of the Environment and Heritage

Mr John Taberner
Frechills
GPO Box 4227
SYDNEY NSW 2000

Dear Mr Taberner

**Hunter Catchment Management Trust – Rehabilitation of Hexham Swamp
(EPBC Reference: 2003/1244)**

The above action was referred by Frechills on behalf of the Hunter Catchment Management Trust, and received on 8 October 2003, for decision whether or not approval is needed under Chapter 4 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The referral has now been considered under the EPBC Act and I have decided that the action is a not a controlled action provided it is taken in accordance with the manner described in the attached decision document.

I have written separately to the Hunter Catchment Management Trust to advise of my decision and follow-up actions required in regard to the specified manner (copy of letter attached).

Yours sincerely



Mark Flanigan
Assistant Secretary
Policy & Compliance Branch

23 November 2003



AUSTRALIAN GOVERNMENT

ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

DECISION THAT ACTION IS NOT A CONTROLLED ACTION

Pursuant to section 75 of the *Environment Protection and Biodiversity Conservation Act 1999*, I, MARK FLANIGAN, Assistant Secretary, Policy and Compliance Branch, Department of the Environment and Heritage, decide that the proposed action, set out in the Schedule, is not a controlled action. Provided that the proposed action is taken in the manner described in the Schedule, the provisions of Part 3 of the EPBC Act set out in the Schedule are not controlling provisions.

SCHEDULE

The proposed action to undertake rehabilitation of the Hexham Swamp, New South Wales, and as described in the referral under the Act received on 8 October 2003 and additional information received 20 November 2003 (EPBC 2003/1244).

Provisions of Part 3

The relevant provisions of Part 3 are:

- sections 18 and 18A (Listed threatened species and communities).

Manner in which the proposed action is to be taken:

1. Monitoring of water levels and salinity will occur in the vicinity of the '2HD swamp' during the staged opening of the flood gates to determine the likelihood of inundation affecting salinity within the swamp.
2. In the event that modelling indicates a credible risk to the hydrology or water quality of the 2HD swamp during king tide or other extreme tidal events (eg combined high tide and storm surge), such that the swamp's habitat and breeding values for the listed vulnerable Green and Golden Bell Frog may be adversely affected, flood gates will be installed within the channel draining from the 2HD swamp to Hexham Swamp to ensure that saline intrusion does not occur.
3. Frog populations within the 2HD swamp will be monitored during the three year inundation project to ensure that management regimes, including manipulation of tidal regimes, do not adversely affect frog populations.

Dated this 28 day of October 2003


.....
ASSISTANT SECRETARY
POLICY AND COMPLIANCE BRANCH
DEPARTMENT OF THE ENVIRONMENT AND HERITAGE



Australian Government

Department of the Environment and Heritage

Mr Brett Peterkin
Hunter-Central Rivers Catchment Management Authority
Private Bag 2010
PATERSON NSW 2421

Dear Mr Peterkin

**HEXHAM SWAMP REHABILITATION PROJECT (EPBC 2003/1244)
Variation under the EPBC Act**

Thank you for your email, dated 23 March 2005, concerning the above matter.

As you are aware, the proposal to undertake rehabilitation at Hexham Swamp, Newcastle, NSW, was referred by the then Hunter Catchment Management Trust under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in September/October 2003.

A decision was made on 25 November 2003 that the proposal is not a controlled action, and therefore does not require formal assessment and approval under the EPBC Act, subject to certain specified measures for protection of the listed Green and Golden Bell Frog. We understand that these measures have been, or will be, implemented.

We note your advice that, since the decision, Hexham Swamp has been listed on the Register of the National Estate (RNE) maintained under the EPBC Act, and that the project boundary has altered slightly. We consider that neither of these changes have any implications in terms of the likely significance of the referred action on matters protected under the EPBC Act. We therefore confirm that the original decision stands and that no additional or further considerations are required under the EPBC Act.

In particular, and setting aside the question of retrospectivity, places listed on the RNE are not recognised as a 'matter of national environmental significance' pursuant to Part 3 (Division 1) of the EPBC Act. While section 391A of the EPBC Act requires the Minister to have regard to RNE information in making decisions, this will normally only be relevant when the 'protected matter' relates to the general environment (eg Commonwealth actions or actions on Commonwealth land).

The original decision found that there is not likely to be a significant impact on the ecological character of a Ramsar wetland. The Hexham Swamp system is directly adjacent to the Shortlands Wetland Centre, and 2km from Kooragang Nature Reserve, which together form the Hunter Estuary Ramsar site, designated under the Convention on Wetlands on 21 February 1984. The listing documentation notes significant linkages between the Ramsar listed sites. Hexham Swamp is within the Ironbark Creek Catchment that is a sub-catchment of the Hunter Estuary. These are linked hydrologically and by a wildlife corridor comprising Ironbark Creek, the Hunter River and Ash Island.

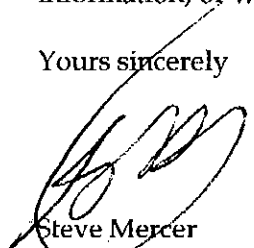
The decision-maker found that the proposed action is not likely to result in significant adverse impacts on either the Kooragang Nature Reserve or the Shortland Wetland Centre. The Department considered that the action is likely to restore areas of brackish-saline tidal habitat across the lower floodplain and increase connectivity between the Ramsar sites.

While there will be changes in species composition as a result of the inundation, with dieback of less salt tolerant species and rebalancing of predominantly freshwater to saline species, the decision-maker considered it unlikely that the volume of freshwater entering the Ramsar area will substantially alter or that significant adverse impacts on the ecological character of the Ramsar area will result.

We do not consider that the change in boundary has any implications for the above conclusions. There is therefore no need for any additional consideration of potential impacts on the ecological character of a Ramsar site.

Please do not hesitate to contact undersigned (ph 02 6274 1861) if you need further information, or wish to discuss this matter further.

Yours sincerely



Steve Mercer
EPBC Act Referrals Section
Approvals and Legislation Division

23 March 2005