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## **Submission of Objection**

### **Macquarie River to Orange Pipeline Project Ref No: 10\_0235**

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## Introduction

The Inland Rivers Network ("IRN") is a coalition of environment groups and individuals concerned about the degradation of the rivers, wetlands and groundwaters of the Murray-Darling Basin. It has been advocating for the conservation of rivers, wetlands and groundwater in the Murray-Darling Basin since 1991. Member groups include the Australian Conservation Foundation; the Nature Conservation Council of NSW; the National Parks Association of NSW; Friends of the Earth; Central West Environment Council; and the Coast and Wetlands Society.

IRN wishes to submit an objection to the Macquarie River to Orange Pipeline proposal ('the proposal') because it does not meet the principles of Ecologically Sustainable Development. The proposal has major environmental, social and economic impacts that have not been adequately addressed in the Environmental Assessment Report (EAR) placed on exhibition for public comment.

IRN wishes to address a number of key issues with the proposal and with the poor assessment conducted to identify environmental impacts.

These issues include:

1. The significance of the Upper Macquarie Unregulated River as habitat for endangered native fish and impacts of the proposal.
2. The inadequate survey conducted to identify fish species present in the Upper Macquarie River
3. Inadequacies in the hydrological assessment and identification of impacts of the proposal on endangered fish habitat requirements
4. The failure of the EA to meet the Director Generals Requirements including the additional requirements as a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
5. Significance of proposal on Macquarie Marshes in times of extreme drought
6. Inadequacy of the environmental assessment report

## Recommendations:

1. **An independent hydrological assessment be undertaken.**
2. **All requirements under the EPBC Act to be met through additional assessment of downstream aquatic habitat.**
3. **A more extensive fish survey be conducted using the correct methodologies.**

## Issues

### 1. Endangered Native Fish

The Upper Macquarie Unregulated River is recognised as an important habitat for endangered native fish.

Three fish species listed as matters of national environmental significance (NES) under the EPBC Act have been historically recorded in this river reach:

Murray Cod (*Maccullochella peelii*), Trout Cod (*Maccullochella macquariensis*) and Macquarie Perch (*Macquaria australasica*).

This river reach is one of three areas left in Australia where Trout Cod populations are surviving and is an important site for the success of the national Trout Cod recovery plan. A significant amount of effort has been undertaken to restock this reach with Trout Cod fingerlings to ensure that the species will recover.

The site for water extraction in the proposal, Gardiners Hole, is a site of recent Trout Cod release under the national recovery plan for this NES. Trout Cod habitat requirements are specific rather than general. The Gardiners Hole area of the Macquarie River has been selected under the national recovery plan for its abundant and specific Trout Cod habitat.

#### 1.1 Impacts on river flow

IRN is greatly concerned that impacts identified in the EAR have not been adequately reported in the conclusions relating to significant impact, as required by the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC).

These include the impacts on low flows, the timing of the impacts on low flows; the drop in flow heights across rock bars and riffles; less sediment, leaf litter, woody debris and plankton being transported downstream and a decline in the amount of available dissolved oxygen.<sup>1</sup>

The hydrology assessment indicates that flow heights begin dropping during the spawning period for endangered fish species.<sup>2</sup>

These periods are outlined in Chapter 13 of the EA<sup>3</sup> as being between September and December.

The proposal is assessed to extract up to a maximum of 3,804 ML/yr (although the IQQM indicates a maximum extraction of 3,876 ML/yr<sup>4</sup>).

This includes an extraction of up to 31.5% of daily flows<sup>5</sup>. The EA indicates that on average, low flows will be reduced by between 5ML/d and 8ML/d.<sup>6</sup> However, the proposal is to extract 12ML/day, therefore this information appears to be somewhat misleading. The use of long term annual averages in modelling water flow scenarios has no relationship to the habitat impacts of daily flow reductions.

A maximum reduction in water level of 23mm is expected when pumping at 38ML/d reduces the flow to 22.8ML/day.<sup>7</sup> The significance of this reduction on habitat requirements for endangered fish species has not been assessed.

The relationship of these changes to hydrology in an unregulated water source with impact on habitat have not been adequately identified in the EA

Conclusions on significant impact on threatened native fish species are not based on concrete evidence. The EA identifies a major lack of information on important aspects of aquatic ecology.

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<sup>1</sup> Cardno Ecology Lab, July 2012, Appendix G, p 72

<sup>2</sup> Geolyse, July 2012, Appendix D, Figure 29 p45

<sup>3</sup> GHD Pty Ltd, August 2012, Volume 1, Table 13.3 p13.21

<sup>4</sup> Geolyse, July 2012, Appendix D, p93

<sup>5</sup> Cardno Ecology Lab, July 2012, Appendix G, p 47

<sup>6</sup> Cardno Ecology Lab, July 2012, Appendix G, p 72

<sup>7</sup> Cardno Ecology Lab, July 2012, Appendix G, p 45

## 1.2 The potential impact on threatened species:

The Aquatic Ecology impact assessment by Cardno Ecology Lab (Cardno Report) (Appendix G p72) identifies that *'The reduction in these flows would lead to decreases in wetted perimeter, depth of water and rate of flow over riffles and cascade habitats in the section of the river between the offtake site and Burrendong Dam and hence reduce the availability of habitat for threatened fish species.'*

And *'Reductions in depth and velocity of water over riffles and cascades during low flows could also impede the movement of threatened fish species, particularly in shallow areas of the river.'*

The Cardno Report (p72) also states that *'The cumulative effect of extraction over a number of consecutive days is difficult to assess, because of the lack of information on aquatic habitats in the river downstream of the extraction site and the uncertainty about when and for how long extraction would take place and the magnitude of flows likely to prevail at that time.'*

This statement is followed by: *'The geographic extent of the reductions in these characteristics would depend on inflows from downstream tributaries.'* However, there is no information provided about the tributaries below the proposed offtake. These are Boshes Creek, Bundi Creek, Pyramul Creek and Triamble Creek. These creeks are ephemeral and would rarely add flow in the summer months, being winter flowing creeks.

This statement indicates that the EA has not provided information as required by SEWPaC in the Director General's requirements 3 (h):

*'any technical data and other information used or needed to make a detailed assessment of the relevant impacts.'*<sup>8</sup>

The Cardno Report has not assessed the downstream habitats for the endangered Trout Cod and vulnerable Murray Cod, or the inflow characteristics of downstream tributaries

There has been no identification of the loss of migration opportunities during the mating and spawning season.

## 1.3 Impact on natural variability of flows

The EA does not provide any information relating to the variability of daily flows and the long term impact a reduction in these flows.

For example a rainfall event in January 2009 measured at the Bruinbun gauge resulted in a rapid rise and fall of the river flow:

Jan 21	daily flow	9.2ML
Jan 22		437ML
Jan 23		20.3ML

Under the proposed rules for pumping it would be very difficult in the above circumstances to identify when the flow reached 38ML and dropped back below 22.8ML. Any water extraction will impact on a fresh that moves rapidly through the river system in important endangered fish species habitat.

The variability of flows in the Upper Macquarie River has not been adequately identified because the use of annual averages disguises variability.

The statement that *'The changes in aquatic ecology associated with the decreased volumes of low to moderate, and moderate to high flows, are expected to be within the range of natural variability and much*

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<sup>8</sup> GHD Pty Ltd, August 2012, Appendix A

*smaller than those that would occur periodically during droughts.*<sup>9</sup> ignores the fact that the proposal will extend the drier or lower flow scenario. The impact of this has not been identified or assessed.

None of the hydrological assessment or aquatic ecology assessment adequately identifies the changes in habitat and loss of opportunities for large fish movement caused by the lowering of flows in this important river reach.

#### 1.4 Inadequate Conclusion

IRN does not support the statement: *'The assessment concludes that the project would be unlikely to result in a significant impact on any threatened aquatic flora and fauna or their habitats.'*<sup>10</sup>

The summary of assessment of significance – EPBC Act matters (Table 13.3) has incorrectly identified that there would be no long term decrease in local or regional populations, no reduced area of occupancy, no fragmentation of populations and no impact on habitat critical to the survival of this species.<sup>11</sup>

The Cardno Report as quoted above has outlined the lack of information available to verify that there will be no significant impact on fish species listed as NES.

#### 1.5 Inadequate Fish Survey

The Cardno Report is based on the survey of nine sites during four days in December 2011. The EA identifies that methodologies used in the survey *'were not necessarily the best method for the species of interest (DSEWPAC 2011).'*<sup>12</sup> It is also identified that because of restricted access the surveys were not taken at dawn, dusk and night – the most appropriate times for fish survey work.

This is an indication that the proponent, Orange City Council, does not have the full support of the community, particularly affected landholders, for the proposal.

The fish survey was not conducted in a range of seasons or at the appropriate time of day, therefore the conclusions regarding abundance of native species in the area of impact are not based on adequate information.

#### 1.6 Assessment of the Potential for Significant Impact (EPBC)

##### Trout Cod (*Maccullochella macquariensis*)

The consideration of the impacts of the proposal on Trout Cod fails to recognise that breeding age fish have been caught and released in the area of impact. The establishment of a local population at Gardiners Hole needs to be fully understood before the proposal can be properly assessed by the required criteria.

Adequate consideration of long-term decrease in the size of local and regional populations of Trout Cod has not been made because the fish survey results are based on poor methodology.

The consideration of the reduced area of occupancy criteria states that the *'most likely response to disturbance from noise, loss of habitat and increased sediment load would be to move to suitable habitat elsewhere in the river.'*<sup>13</sup>

This statement ignores both the migration impacts of reduction in low flows and the fact that the Gardiners Hole area of the Macquarie River has been selected under the national recovery plan for its abundant and specific Trout Cod habitat.

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<sup>9</sup> GHD Pty Ltd, August 2012, Volume 1, 13.5 Summary of impacts, p13.23

<sup>10</sup> GHD Pty Ltd, August 2012, Volume 1, 13.5 Summary of impacts, p13.23

<sup>11</sup> GHD Pty Ltd, August 2012, Volume 1, 13.4.5 EPBC matters, p13.21

<sup>12</sup> Cardno Ecology Lab, July 2012, Appendix G, p 69

<sup>13</sup> Cardno Ecology Lab, July 2012, Appendix G, Table 14 p76

The Cardno Report states that *'Information on habitat that is critical to the survival of this species is limited.'*<sup>14</sup> This statement ignores the reasons for Gardiners Hole being selected as specific and abundant habitat for the Trout Cod under the national recovery plan.

The consideration of disruption to the breeding cycle of a population does not take into account fish migration needs. The statement *'the environmental conditions favouring successful recruitment are not known'*<sup>15</sup> is an indication of the inadequacy of the conclusion that the proposal is unlikely to disrupt the breeding cycle of a Trout Cod population.

The Cardno Report incorrectly questions the presence of a Trout Cod population based on the poor fish survey results.

It is identified that activities associated with the proposal could pose a threat to the recovery of the species:

- removal of habitat including large woody debris from the vicinity of the offtake structure
- reduction in water quality and increased sediment load associated with construction works
- construction of barriers to movement (eg coffer dams)
- extraction of water

Water extraction could have a cumulative effect on local populations, particularly if it results in periodic impingement and entrainment of eggs and larvae fish.

The Cardno Report concludes that there is a possibility of the local Trout Cod population being impacted during construction and operation of the pumping equipment.

IRN maintains that the proposal will have a significant impact on the Trout Cod population in the Macquarie River, that is only just becoming re-established under the national recovery plan.

## **2 Impacts on flows to the Macquarie Marshes**

IRN does not support the EAR conclusion that the proposal is not likely to have a significant impact on the Macquarie Marshes.<sup>16</sup>

The key source for environmental water allocations to the Macquarie Marshes is the storage in Burrendong Dam. Additional downstream tributary flows can contribute to inflows to the Marshes, but these flows are subject to supplying water orders and supplementary licence extractions.

The main source of inflows to Burrendong Dam is from the Upper Macquarie Unregulated River catchment. Secondary flows come from the Cudgegong River through rainfall activity and bulk water transfers from Windamere Dam. These transfers are subject to a release protocol to protect water supply for users upstream of Burrendong Dam.

The EAR has identified that there is some flow in the Upper Macquarie Unregulated River at least 99% of the time.<sup>17</sup> Therefore, flows from this source into Burrendong Dam are critical for the allocation of environmental water to the Macquarie Marshes.

The modelling carried out by Geolyse for dry periods includes the period of 2002 – 2003 to demonstrate that the project has little impact on the annual average flows in the Upper Macquarie Unregulated River.

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<sup>14</sup> Cardno Ecology Lab, July 2012, Appendix G, Table 14 p77

<sup>15</sup> Cardno Ecology Lab, July 2012, Appendix G, Table 14 p77

<sup>16</sup> GHD Pty Ltd, August 2012, Volume 1, 25.4.5 EPBC matters, p25.9

<sup>17</sup> Geolyse, July 2012, Appendix D, Figure 29 p45

However, there were periods of time in that year when minimum inflows to Burrendong were minus values because of low stream flows and high evaporation rates in the storage.

For example<sup>18</sup>:

August 02	minimum inflow	- 1,648 ML
October 02		- 1,940 ML
January 03		- 3,464 ML

In 2002/03 there were 0% allocations to general security licence holders in the Macquarie-Cudgegong Valley, including environmental water allocation to the Macquarie Marshes.

Subsequent years during the millennium drought had similar low inflow values, to the extent that the drought of record was broken and new modelling had to be implemented for future water use planning in the catchment.

In July 2007, the Macquarie-Cudgegong Water Sharing Plan was turned off and environmental water was not available until Burrendong reached a level of 19%. The hydrological assessment in the EAR does not extend considerations to the severity of the drought of record or the impact of the proposal on the catchment in future severe drought scenarios.

The EA identifies that with the proposal in operation during the 2000 to 2010 drought most water would be transferred from the Upper Macquarie Unregulated River to Suma Park Dam between April 2007 and July 2010<sup>19</sup>. This was the period of time that the availability of environmental water for the Macquarie Marshes was restricted. Inflows to Burrendong Dam were critical during the period identified in that EA that extraction above the Dam would have increased.

The EA does not identify the impact the proposal has on inflows and subsequent allocation announcements from Burrendong Dam during dry periods.

The use of long term annual average modelling does not give a real time indication of the environmental impacts of water extraction in real time situations.

The volume of water available for maintaining the health of the Macquarie Marshes during the drought was not adequate to maintain the ecological character of the Ramsar wetland. There was no environmental water available in 2004 with no releases made for two years between October 2003 and late 2005.

The environmental allocation was suspended in 2007 to supply critical human needs during. The proposal is providing water security to the population of Orange at the expense of all downstream water users including the Macquarie Marshes.

## **Conclusion**

IRN has made a number of recommendations to improve the information available to assist in a decision regarding the proposal.

However, IRN believes that the proposal is not sustainable and should be rejected on the basis of its ecological, social and economic impacts on downstream water users, including the Ramsar listed Macquarie Marshes and on the recovery of the nationally endangered Trout Cod.

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<sup>18</sup> State Water Corporation, December 2011, Macquarie-Cudgegong Customer Service Committee minutes

<sup>19</sup> Geolyse, July 2012, Appendix D, Figure 62 p77