



# Mersey-Forth Water Management Review

TECHNICAL AND SOCIAL STUDY

2013



## Wilmot River Condition Assessment

*We seek opportunities to enhance environmental and cultural values*

## Executive Summary

**The Wilmot River condition assessment has been completed as part of the Mersey-Forth Water Management Review. The study aimed at assessing the operational and economic feasibility of a downstream flow from Lake Gairdner and determining the environmental and social benefit(s) to the condition of the Wilmot River.**

In order to get an understanding of the current flow regime in the Wilmot River during both summer and winter, hydrological modelling was conducted for four locations along the river. This was compared to modelled natural flow conditions. The results show that the Wilmot River is a highly regulated river near the dam but the flow regime is not quite as modified further downstream due to catchment inflows.

To investigate the social benefit of a downstream flow, letters were sent to stakeholders asking them to provide any information that they believed important for consideration in the assessment. Although stakeholder response was limited to just four stakeholders, it did highlight some concerns around low or complete lack of flows during the summer months. The main issues raised were algal blooms, detrimental impacts of low flows on recreation such as swimming, fishing and canoeing, and the impacts to aesthetics and aquatic health.

In determining environmental benefits of a downstream flow a number of tasks were completed. Key stakeholder groups were sent letters requesting environmental information. To assess whether there are any unique environmental values in the Wilmot River that would benefit from an increased flow, the Conservation of Freshwater Ecosystem Values database and the Natural Values Atlas database were interrogated. The giant freshwater crayfish, *Astacopsis gouldi* were found to inhabit the Wilmot River and was identified as a unique environmental value. Research into the species suggested that unnatural variations in temperature, associated with cold water releases in summer, may affect its reproductive cycle and impact on the breeding success of *Astacopsis gouldi*.

Limited water quality data was available from the Wilmot River. Historic data indicated elevated nutrient levels in the river and intermittent high metal concentration directly below the dam.

Historic macroinvertebrate data from the Wilmot River suggested a reasonably healthy community in most of the river reaches. However, the Wilmot River just downstream of the Wilmot Dam was found to be significantly impaired for both biodiversity and community composition. In the mid and lower reaches condition scores indicated the sites were equivalent to reference sites for biodiversity and community composition.

The operational and economic feasibility of a flow release was investigated. An upgrade to existing infrastructure would be required to facilitate a downstream flow. The value of water released and loss to hydropower generation was also estimated.

In assessing the benefits of a flow release from the Wilmot Dam, the study has revealed that there is little call from the community for increasing flows in the Wilmot River. While there may be some environmental benefits in releasing water from the Wilmot Dam such as an improvement in water quality and macroinvertebrate health just below the dam and a potential reduction in filamentous algae through dilution of nutrients, there is uncertainty of how a flow release might impact the threatened Giant Crayfish. With limited environmental or social benefit, and costs associated with operational requirements and the loss in electricity generation, it is concluded that a downstream flow in the Wilmot River will not be pursued.

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Caroline Whalley (Hydro Tasmania) consolidated the findings.

Cover photograph: Lower Wilmot River

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## List of Abbreviations and Acronyms

|   |          |   |
|---|----------|---|
| 5 | ANZECC   | Australian and New Zealand Environment and Conservation Council |
| 5 | CFEV     | Conservation of Freshwater Ecosystem Values                     |
| 6 | Cumec    | Cubic metre per second  |
| 7 | DPIPWE   | Department of Primary Industries, Parks, Water and Environment  |
| 7 | EPBC Act | <i>Environment Protection and Biodiversity Conservation Act</i> |
| 8 | IUCN     | International Union for Conservation of Nature                  |
| 8 | NTU      | Nephelometric turbidity units                                   |
|   | NVA      | Natural Values Atlas  |
|   | RCV      | Representative Conservation Value                               |
| 1 | TSPA     | <i>Threatened Species Protection Act 1995</i>                   |

## 1. Introduction

The aim of the study was to assess the environmental and social benefits as well as the operational and economic feasibility of a downstream flow from Lake Gairdner for the Wilmot River.

The objectives of the study were to:

- Determine the environmental and social benefits, operational feasibility and economic cost of establishing a downstream flow for the Wilmot River;
- If considered environmentally and socially beneficial, operationally feasible and economically acceptable to Hydro Tasmania, set specific downstream flow objectives from the environmental, social and economic values relevant to the Wilmot River; and
- Evaluate if the feasible flow release from the Wilmot Dam can meet the specific downstream flow objectives.

This report meets the first objective. Due to the findings determined in addressing the first objective the remaining two objectives will not be pursued.

## 2. Background

Hydro Tasmania’s Water Management Review Program aims to proactively, and in consultation with stakeholders, assess current land and water activities in the Mersey-Forth

catchments managed by Hydro Tasmania, in order to establish more sustainable management practices (Hydro Tasmania, 2011). The water management review process comprises four main stages: information review (Hydro Tasmania, 2011), stakeholder consultation (Hydro Tasmania, 2012), technical and social studies, and program development and implementation. The technical study to assess the Wilmot River forms part of the technical and social studies stage and is reported on in this document.

The Wilmot Dam on Lake Gairdner and the diversion of water from the upper Wilmot River into the Forth catchment (Figure 2.1) have resulted in reduced or no flows in the Wilmot River downstream of the dam. Only large, high flow events pass over the dam as spill about 7% of the time.

The Wilmot River immediately downstream of the dam is known to be significantly impacted, which is evident by poor biological condition and river health (Hydro Tasmania, 2011). River health improves further downstream where tributaries begin to influence the flow regime.

Stakeholder feedback during the Mersey-Forth Water Management Review stakeholder consultation process in 2011-12 highlighted concerns about the poor condition of the Wilmot River and low or no flows experienced during the summer months. Therefore an assessment of the environmental and social values and issues associated with the Wilmot River, and the economic and operational constraints of a flow release, was carried out.

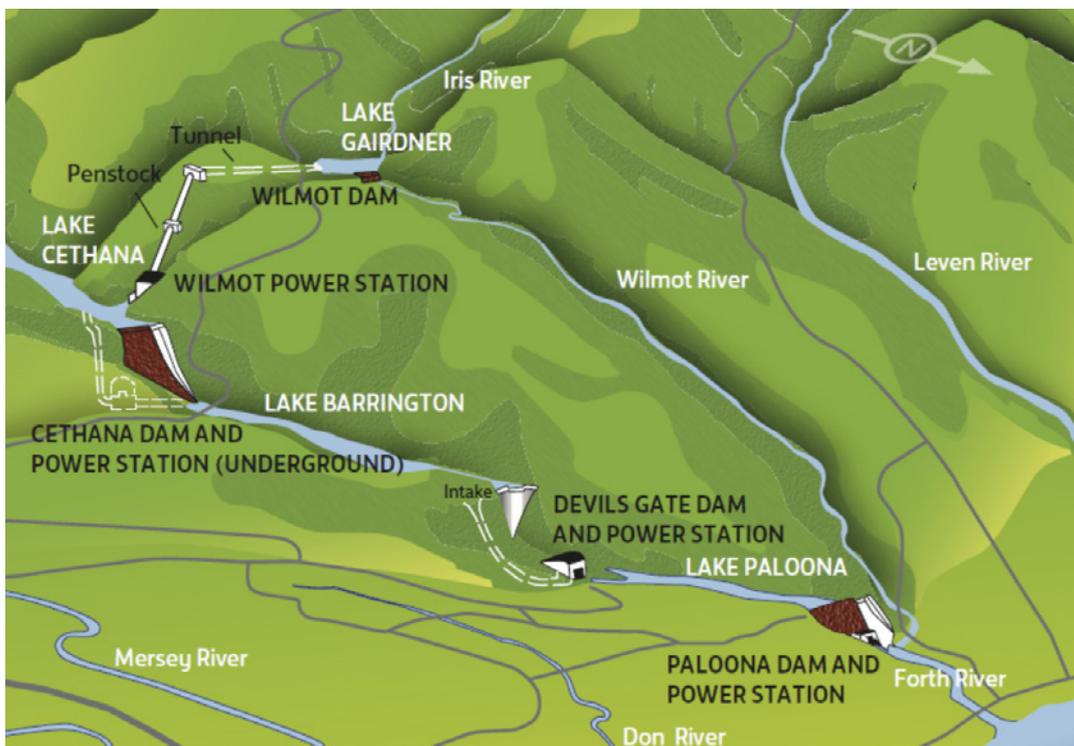


Figure 2.1: The Wilmot River within the Mersey-Forth Power Scheme

## 3. Process

### 3.1. Hydrological modelling

In order to get a better understanding of the current as well as the natural flow regime in the Wilmot River during both summer and winter, the hydrological characteristics of the Wilmot River were modelled using data from Lake Gairdner inflows and the Wilmot River above Forth for the period 1971 to 2012.

Flow statistics for both unregulated conditions (pre-dam) and current regulated conditions (post-dam) were modelled for the following four sites on the Wilmot River: 500 m downstream of the Wilmot Dam, downstream of Castra Rivulet, downstream of Bradden Creek and above the Forth River.

### 3.2. Stakeholder engagement

The Mersey-Forth Water Management Review Stakeholder Consultation Report (2012) highlighted a number of values and issues associated with the Wilmot River. To obtain further information from stakeholders, letters were sent to two different stakeholder groups; one asking for further details on environmental information associated with the Wilmot River and the second group were asked to consider the social benefits of a downstream flow release.

In January 2013, letters seeking environmental information were sent to the Parks and Wildlife Service, Inland Fisheries Service, Water Assessment Branch and Conservation Assessment at Department of Primary Industries, Parks, Water and Environment (DPIPWE), Tasmanian Conservation Trust and Forestry Tasmania.

In January 2013, forty-three stakeholders were sent a letter to allow us to determine what the social benefits might be from releasing a downstream flow as well as to find out in more detail the values and issues associated with the Wilmot River. These stakeholders included landholders adjacent to the river, local Councils, Sport and Recreation Tasmania, Tasmanian Aboriginal Land and Sea Council, Anglers Alliance Tasmania and stakeholders who had previously identified low flows in the Wilmot River as an issue in the 2011 Mersey-Forth Water Management Review stakeholder survey (Hydro Tasmania, 2012).

### 3.3. Environmental considerations

Using information from the Mersey-Forth Water Management Review (Hydro Tasmania, 2011), the Conservation of Freshwater Ecosystem Values (CFEV) database, the Natural Values Atlas (NVA) database and prior field surveys, important environmental factors were considered.

#### 3.3.1. Conservation value and threatened species

In determining whether there were any unique values in the Wilmot River that would benefit from an increased flow, the CFEV database (DPIW, 2008) and the NVA database were assessed.

The Conservation of Freshwater Ecosystem Values (CFEV) project is a Tasmanian Government initiative to establish a system for identifying and evaluating the conservation value and management priorities for Tasmania's freshwater ecosystems. The outputs of the CFEV assessment provide information about the character and condition of all freshwater-dependent ecosystems. The CFEV assessment framework is driven by three main components, Naturalness (N), Representativeness (R) and Distinctiveness (D). Combining these values means that when ecosystems of similar Representativeness are considered, the more natural example will receive a higher conservation evaluation. For the purposes of this report, the Representative Conservation Value (RCV) is considered to be the most useful as it represents the conservation value of a river reach when compared to the rest of Tasmania, based on the important biophysical values of the reach and the current condition.

Using the NVA database, which provides authoritative and comprehensive information on Tasmania's natural values, a search of threatened species and their status for the Wilmot River was undertaken. All species that have been identified are either riparian vegetation or aquatic species which have the potential to be affected by a change in flow regime.

#### 3.3.2. Macroinvertebrates

Macroinvertebrate data collected between 1994/95 and 2010/11 for the Wilmot River was assessed in the review report by Hydro Tasmania (2011). Macroinvertebrates are widely used as biological indicators of river health, as macroinvertebrate assemblages can be altered by the type of habitat present and water quality. They are briefly discussed in this report.

#### 3.3.3. Water quality

Limited water quality monitoring in the Wilmot River has been conducted by Hydro Tasmania. The data is summarised in the Study Findings section below. DPIPWE have sampled the Wilmot River at Alma Bridge for a variety of water quality parameters in the spring and autumn months from 2004 to 2012. These results are also presented.

Water quality results were compared to ANZECC (2000) guidelines. The guidelines provide regional default low-risk trigger values for a range of physical and chemical water quality parameters in slightly to moderately disturbed ecosystems.

### 3.4. Operational and economic constraints

Discussions were held with employees within the Technical and Operations and Commercial groups within Hydro Tasmania to determine the operational and economic considerations associated with the release of a downstream flow from the Wilmot Dam.

## 4. Outcomes

### 4.1. Hydrological modelling

Summary flow statistics were modelled for summer, winter and annual periods (Table 4.1). As the main concerns about low flows relate to summer conditions, the main focus here will be on summer flows.

Table 4.1: Hydrological summary statistics for the Wilmot River modelled for natural and current conditions

| Type of                                   | Year  |           |        | Summer |           |       | Winter |           |        |
|---|-------|-----------|--------|--------|-----------|-------|--------|-----------|--------|
| Percentile exceedance                     | 90    | 50 median | 10     | 90     | 50 median | 10    | 90     | 50 median | 10     |
| <b>500 m downstream of the Wilmot Dam</b> |       |           |        |        |           |       |        |           |        |
| Natural                                   | 0.536 | 3.912     | 19.598 | 0.221  | 1.078     | 6.908 | 2.841  | 10.290    | 27.411 |
| Current                                   | 0.003 | 0.017     | 0.180  | 0.002  | 0.006     | 0.027 | 0.014  | 0.044     | 6.401  |
| <b>Downstream of Castra Rivulet</b>       |       |           |        |        |           |       |        |           |        |
| Natural                                   | 0.722 | 4.942     | 23.499 | 0.377  | 1.403     | 8.025 | 3.918  | 12.831    | 33.251 |
| Current                                   | 0.145 | 0.873     | 5.463  | 0.093  | 0.301     | 1.344 | 0.727  | 2.240     | 12.859 |
| <b>Downstream of Bradden Creek</b>        |       |           |        |        |           |       |        |           |        |
| Natural                                   | 0.761 | 5.149     | 24.435 | 0.407  | 1.466     | 8.299 | 4.165  | 13.349    | 34.478 |
| Current                                   | 0.176 | 1.056     | 6.458  | 0.112  | 0.364     | 1.624 | 0.880  | 2.705     | 14.420 |
| <b>Above the Forth River</b>              |       |           |        |        |           |       |        |           |        |
| Natural                                   | 0.815 | 5.454     | 25.542 | 0.447  | 1.561     | 8.666 | 4.445  | 14.087    | 36.362 |
| Current                                   | 0.220 | 1.321     | 7.888  | 0.140  | 0.455     | 2.025 | 1.101  | 3.383     | 16.662 |

Results from the hydrological modelling revealed that under natural conditions, the summer median flow 500 metres downstream of the Wilmot Dam would be approximately 1 cumec. Currently median summer flows are less than 0.01 cumecs and increase to 0.04 cumecs in winter. Results for the Wilmot River above Forth revealed that under natural conditions, the median summer flow was approximately 1.5 cumecs. Currently, median summer flows above Forth are 0.5 cumecs during the summer.

At the low flow level (which is here determined as the flow that is exceeded 90% of the time) 500 metres downstream of the dam, natural flows were 0.2 cumecs or less. This corresponds to a flow of 0.2 cumecs or less for about 9 days each summer. Currently the flow is 0.002 cumecs or less for 9 days each summer. Results for the Wilmot River above Forth show that natural low flows would be 0.44 cumecs. Currently the low flow is 0.14 cumecs or less for 9 days each summer.

These results show that the Wilmot River is a highly regulated river near the dam but the flow regime is not quite as modified further downstream due to catchment inflows mainly from the two main tributaries, Castra Rivulet and Bradden Creek.

Photograph 4.1 shows the Wilmot River at Alma Reserve and Alma Bridge and Photograph 4.2 shows the flow in the Wilmot River downstream of Alma Bridge in early March 2013 following a long dry summer. This section of the river is close to the confluence with the Forth River.



Photograph 4.1: The Wilmot River at (top) Alma Reserve and (bottom) Alma Bridge



Photograph 4.2: The Wilmot River downstream of Alma Bridge

## 4.2. Stakeholder engagement

In the 2011 stakeholder survey (Hydro Tasmania, 2012) fishing and land conservation came out as the most important values for the Wilmot River. The main issues highlighted were water flow and water quality.

Of the stakeholders who had been asked for additional environmental data, the Water Assessment Branch at DPIPWE provided water quality and macroinvertebrate data for the Wilmot River. This data is included in the macroinvertebrate section below. Remaining respondents indicated that they had no further environmental information or concerns to provide.

A total of four responses came from stakeholders living close to the Wilmot River providing social information. They raised concerns focused around recreational, aesthetic and aquatic health values impacted by low or no flows during the summer months in the Wilmot River. These are as follows:

- From two respondents, it was stated that due to low flows, canoeing and swimming are currently not possible in the river during the summer months. Fishing has been affected through the decline in fish numbers that come up the river during the summer;
- It was stated by one stakeholder that the river provided aesthetic value while walking along the river. However, the quality and quantity of water has declined over the last 25 years;

- Two stakeholders highlighted the issues of low flows and filamentous algal growth in the lower part of the Wilmot River during the summer months (Photograph 4.3). It was also stated that the algae end up in the water troughs that are used for irrigation. The issue was believed to have become more prolific over the years;



Photograph 4.3: Algal growth in the Wilmot River

- One respondent was concerned about the stretch of river directly below the Wilmot Dam and the presence of intermittent blue pools which are characteristic of elevated metal concentrations (Photograph 4.4 and Photograph 4.5); and



Photograph 4.4: The Wilmot River below the Wilmot Dam

- It was stated by one stakeholder that a flow release would improve the whole river. In addition, it was noted that catchment inflows are decreasing with an increase in plantation trees in the catchment and climatic conditions. It was also believed that Hydro Tasmania's water management has changed to minimise spill.

One stakeholder included a management suggestion in their response: to maintain a minimum flow during dry weather to protect the freshwater ecosystem and the riparian environment as well as for basic recreational requirements.

## 4.3 Environmental Considerations

This section presents the environmental findings of the technical study.

### 4.3.1. Conservation value

Part of the upper stretch of the Wilmot River received the highest CFEV representative conservation value 'A'. This high value is influenced by geomorphic features which are not affected by the flow regime (Dr John Gooderham, *pers. comm.*). The geomorphic feature of significance in the Wilmot River is the Central Plateau Terrain and is not an aspect that would have a major determination on a downstream environmental flow. When a resulting 'high' CFEV value is driven by a geomorphic feature it is difficult to determine an appropriate management strategy unless there is an issue of erosion and we are not aware of any erosion issues in the Wilmot River. The remainder of the Wilmot River has been given conservation values of 'B' and 'C' which suggest these areas have reduced biodiversity and a lower 'rarity' value. See page 44 of the *Mersey-Forth Water Management Review* (Hydro Tasmania, 2011) for further details.

### 4.3.2. Threatened species

The NVA search revealed the presence of four threatened species listed on the Tasmania's *Threatened Species Protection Act 1995* (TSPA, 1995); two Hydrobiid snail species *Beddomeia wilmotensis* and *B. forthensis*, the Australian grayling (*Prototroctes maraena*) and the giant freshwater



Photograph 4.5: A 'blue pool' at the base of the Wilmot Dam

crayfish (*Astacopsis gouldi*). The distribution of these species was then investigated further.

It was identified that there are no actual records of *Beddomeia wilmotensis* or *B. forthensis* occurring in the main channel of the Wilmot River. All records of these species are from small headwater streams in the catchment, and one site in the Castra Rivulet where *B. wilmotensis* only occurs in low numbers (Dr Karen Richard, *pers. comm.*, DPIPWE). There have been no sightings of the Australian grayling in the Wilmot River since the 1980s (John Diggle, *pers. comm.*, Inland Fisheries Service and Dr Scott Hardie, *pers. comm.*).

*Astacopsis gouldi* inhabits the lower parts of the Wilmot River. It is listed as 'Vulnerable' under the Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*, 'Vulnerable' under Tasmania's TSPA, 1995, as a 'protected fish' under the *Inland Fisheries Act 1995* and as 'Endangered' on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species. Following consultation with a crayfish researcher, Todd Walsh of Kanunnah Pty Ltd, it was deemed necessary to consider the impacts of a downstream flow on the species and a literature review was conducted by Todd Walsh to provide a greater understanding of how a flow release might impact *Astacopsis gouldi*.

In the report by Walsh (2013), it stated that it would be prudent to suggest that "interruptions and sudden variations in temperature during the summer months may affect the seasonal sexual development of *Astacopsis gouldi*". This species of crayfish reaches reproductive maturity later in life. Males reach maturity at about 9 years and females do not reach maturity until about 14 years. Even after they reach maturity, females only breed every two years. They mate and spawn in the autumn and the eggs will hatch the next summer. Long term cold water releases have the potential to interrupt seasonal sexual development to such a point where mating no longer occurs.

Cold water releases are recognised as having significant impacts on aquatic ecosystems (Lugg, 1999; Phillips, 2001; Preece, 2002; Astles *et al.*, 2003; Ryan *et al.*, 2003). Cold water releases occur when cold-water from the bottom layers of large reservoirs is released to streams. The water stored in large reservoirs tends to stratify between spring and autumn,

with a warm surface layer overlying cold bottom layers. The water released from a dam is usually from the bottom, or close to the bottom, of the water body. This results in cold water that is devoid of oxygen being released during periods of stratification. This can cause a two-fold effect: oxygen depletion downstream and a sudden drop in the water temperature for many kilometres downstream (Walsh, 2013). This cold water can have severe effects on growth, activity, survival and reproduction of aquatic organisms. It is known to delay the occurrence of critical thermal cues to initiate spawning, resulting in a reduced growing season for larval and juvenile fish before the onset of winter. To combat these effects, Walsh (2013) recommended that if a downstream flow was to be released it should be a surface water release as the riparian valve in Lake Gairdner sits 20-30 metres below the surface of the dam, and the temperature of the water should

be monitored to minimise altering the temperature in the downstream waterway.

#### 4.3.3. Macroinvertebrates

Historic macroinvertebrate data from the Wilmot River, as reported on in the Mersey-Forth Water Management Review report (Hydro Tasmania, 2011), suggests a reasonably healthy community in most of the river reaches. However, the Wilmot River site downstream of the Wilmot Dam (Photograph 4.6) was found to be significantly impaired for both biodiversity and community composition but its condition improved downstream. This is probably due to the low flows directly below the dam before the influence of catchment inflows further downstream (Photograph 4.7). In the mid and lower reaches condition scores indicated the sites were equivalent to reference for biodiversity and community composition (Hydro Tasmania, 2011).



Photograph 4.6: The Wilmot River 500 m downstream of Wilmot Dam (L) looking upstream; (R) looking downstream



Photograph 4.7: The Wilmot River at Spellmans Bridge

#### 4.3.4. Water quality

Overall little data has been collected by Hydro Tasmania from the Wilmot River with just six samples collected at Spellmans Bridge between 1999 and 2012. These results showed that nitrate, nitrite and conductivity exceeded ANZECC (2000) guidelines on four out of six sampling occasions. Ammonia exceeded the guidelines on one occasion.

Remaining parameters were within ANZECC (2000) guidelines on the sampling occasions. It is difficult to draw any conclusions due to the limited data collected.

DPIPWE has collected twenty-five samples during the spring and autumn between 2004 and 2012 at Alma Bridge. Results were all within recommended ANZECC (2000) guidelines and are shown in Table 4.2.

Table 4.2: Results of water quality monitoring by DPIPWE during the spring and autumn months at Alma Bridge on the Wilmot River

| Average | Temperature (T°C) | Conductivity (uS/cm) | Turbidity (NTU) | Dissolved O2 (mg/L) | pH   | Alkalinity (CO3) |
|---------|-------------------|----------------------|-----------------|---------------------|------|------------------|
| Spring  | 15.55             | 110.31               | 1.67            | 9.25                | 6.99 | 31.33            |
| Autumn  | 12.41             | 79.23                | 1.97            | 10.78               | 7.07 | 16.42            |

At the base of the Wilmot Dam, the water quality was assessed in 2013 as part of an investigation into acid drainage immediately downstream of Wilmot Dam (Hydro Tasmania, 2013). The Wilmot Dam is a concrete faced, rock fill dam and spillway which was constructed during the late 1960's using local material sourced from Moina sandstone (Hydro Tasmania, 2013). Units within the Moina sandstone contain acid forming sulphide minerals, and it is theorised that this is the source of the acid drainage. Water quality results show that metal concentrations at this site are intermittently elevated downstream of the dam and that fluctuations in water quality results are likely to be linked to fluctuations in Lake Gairdner water level. Based on the water quality results there was a 10 to 20-fold dilution of metal concentrations within the first 500 m downstream of the dam (Hydro Tasmania, 2013). Findings from the investigation suggest that acid drainage at the toe of the dam is not considered to pose a significant threat to the environment and is also considered low risk to migratory fish as the volumes are low and rapidly diluted in the Wilmot River. It is however likely that low dissolved oxygen levels, rather than acidic water, would pose the greatest risk to fish.

#### 4.4. Operational and economic constraints

The operational feasibility of a flow release from Wilmot Dam was investigated. Issues associated with the condition of the riparian valve and pipework inside the dam, as well as difficulties getting access to this infrastructure, were identified. The riparian valve itself would need replacing to ensure it would be operational in the long-term. Upgrades to existing infrastructure to facilitate a downstream flow would raise some safety concerns for operators getting access to open and close the valves. A walkway would also need to be installed to allow safe access to the valves.

From an economic hydropower generation perspective the value of Lake Gairdner water is considered high as the water passes through four power stations before reaching the ocean.

## 5. Summary of Outcomes

This study has incorporated a review of existing literature, a desk-top assessment of *Astacopsis gouldi*, stakeholder consultation, hydrological analysis and the investigation into operational and economic constraints. From the literature search and engagement with relevant stakeholders it has been possible to evaluate the values and issues associated with the Wilmot River.

Stakeholder consultation to investigate social benefits of a downstream flow was limited to just four responses, but did highlight the concerns around low or complete lack of flows during the summer months. The main issues were algal growth in the water, impacts on recreation such as swimming, fishing and canoeing and the impacts to aesthetics and aquatic health. A downstream flow release over the summer months may address these issues.

The main area of poor water quality and poor macroinvertebrate health was at the Wilmot River site downstream of the Wilmot Dam which was found to be significantly impaired for both macroinvertebrate biodiversity and community composition. This site also has intermittently elevated metal concentrations. However conditions improved downstream. Any flow release would therefore appear to have the most benefit in the part of the river directly below that dam wall. Results from the hydrological modelling also revealed that regulation effects are muted further downstream from the dam site due to the influence of catchment inflows.

Interrogation of the NVA database revealed the presence of the threatened species, *Astacopsis gouldi* in the Wilmot River. There is currently a lack of available knowledge on the impacts that a downstream flow would have on its breeding cycle, with the potential for it to be more detrimental to the species than beneficial. The uncertainty surrounding how a flow release might impact the population of *Astacopsis gouldi* poses too great a risk to pursue options, at this stage, for a downstream flow in the Wilmot River.

The study suggests that there might be some environmental benefits from a flow release, such as improved macroinvertebrate diversity, reduced metal concentrations and nutrient levels and that the greatest benefit may be seen in the Wilmot River immediately below the dam. However, it is expected that the benefits to macroinvertebrates and metal concentrations would only be measurable for a short stretch of river.

The social benefits would possibly be limited as the stakeholder survey did not indicate extensive use of the river by a lot of stakeholders. It is also uncertain how much the aesthetics and recreational values would improve by an operationally and economically feasible flow release.

## 6. Commitment and Way Forward

In assessing the feasibility of a flow release from the Wilmot Dam the study has revealed that there is little call from the community for increasing flows in the Wilmot River. While there may be some environmental benefits in releasing water from the Wilmot Dam, such as an improvement in water quality and macroinvertebrate health below the dam and a potential reduction in filamentous algae through dilution of nutrients, there is uncertainty of how a flow release might impact the threatened Giant Crayfish. With limited environmental or social benefit, capital works requirements and the loss in electricity generation, it is concluded that a downstream flow in the Wilmot River will not be pursued.

## 7. For More Information

The fact sheet for this study is available at [www.hydro.com.au/MFWMR-studies](http://www.hydro.com.au/MFWMR-studies)

To see all the Mersey-Forth Water Management Review technical and social studies go to [www.hydro.com.au/MFWMR-studies](http://www.hydro.com.au/MFWMR-studies)

Find out more about the Mersey-Forth Water Management Review at [www.hydro.com.au/MFWMR](http://www.hydro.com.au/MFWMR)

## 8. References

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