



# Mersey-Forth Water Management Review

TECHNICAL AND SOCIAL STUDY

2013



## Lake Gairdner Water Level Management

*We seek opportunities to enhance environmental and cultural values*

## Executive Summary

**The Mersey-Forth Water Management Review technical study at Lake Gairdner investigated opportunities to address stakeholder concerns relating to water level management, especially low lake levels during the summer holiday period, which impacts on recreational use of the lake.**

Forty Lake Gairdner stakeholders were phoned and invited to complete a one on one survey. Twenty nine stakeholders (73%) completed surveys. The most popular recreational activity that stakeholders undertake at Lake Gairdner is fishing, followed by boating and camping. The times of the year most favourable for stakeholders to undertake recreational activities are December to February and the Easter holidays. During these times stakeholders indicated they would prefer higher water levels to undertake their activities.

The key issues relating to water level management raised by stakeholders during the study were:

- Accessing the lake from the campsite and other lake entry points to fish, walk and launch watercraft becomes difficult and unsafe during low lake levels due to the extensive mud flats;
- Negative impacts to lake aesthetics when drawn down, especially during peak visiting times in summer;
- The lake is sometimes kept too low for too long; and
- Low and oscillating lake levels result in poor fishing, stunted fish growth and impacts to vegetation.

In addition, many stakeholders raised the issue about the lack of signage, at the public campsite and private and public areas around the lake, encouraging people to remove their rubbish and toilet waste. To address this issue, the Mersey-Forth Recreation Management Committee has developed a Mersey-Forth Signage Strategy to upgrade and replace signs in the Mersey-Forth catchments in the near future.

To raise awareness about Hydro Tasmania's operations, and describe multiple use values at Lake Gairdner, stakeholders were sent a factsheet. Hydro Tasmania website links to Gairdner lake levels and Iris River inflows were also sent to stakeholders.

As a result of the investigations into stakeholder concerns some improvements to water level management have been made. To support local stakeholder requests for raising and maintaining water levels over major holiday periods Hydro Tasmania has refined its Storage Operating Rules. Hydro Tasmania will, if practicable, avoid drawing down Lake Gairdner by more than 3 metres below Full Supply Level (FSL) during December to February and the Easter holidays. A notification email will be sent to local stakeholders if the lake is drawn down more than 7 metres below FSL during December to February and the Easter holidays.

## Acknowledgements

Lake Gairdner Stakeholders are thanked for their willing feedback in addressing issues of concern.

Contributions to the resolution of issues, and this report, were received from Craig Emmett, Rob Wilson, Gerard Flack and Alison Howman (Hydro Tasmania) and Neil Morrow (Inland Fisheries Service).

Cover photograph:  
Lake Gairdner with public boat ramp at bottom of page

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## List of Abbreviations and Acronyms

5	FSL	Full Supply Level
6	mASL	Metres above sea level

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## 1. Introduction

Hydro Tasmania has undertaken a review of its land and water management practises in the Mersey-Forth catchments with the aim of achieving more sustainable management practises (Hydro Tasmania, 2011). To address stakeholder concerns raised during the Mersey-Forth Water Management Review 14 technical and social studies were identified. This study focused on addressing stakeholder concerns regarding water level management at Lake Gairdner.

The objectives of the study were to:

1. Conduct a survey with stakeholders to determine their recreational requirements and to raise awareness of Hydro Tasmania's operational requirements, limitations and risks associated with water level management in Lake Gairdner;
2. Discuss and respond to issues raised by stakeholders relating to water level management; and
3. Determine and implement management actions to address stakeholder concerns where appropriate.

## 2. Background

Lake Gairdner was created by the construction of the Wilmot Dam across the Wilmot River, which is a tributary of the Forth River. The lake receives water from the Iris and Lea rivers. With an operating range of 11.7 metres Lake Gairdner is a run of river storage which means lake levels tend to fluctuate over periods of hours or days depending on the amount of rainfall and generation at Wilmot Power Station.

During the stakeholder consultation process of the Mersey-Forth Water Management Review, stakeholders highlighted concern regarding water level management at Lake Gairdner especially low lake levels during the summer holiday period (Hydro Tasmania, 2012).

Key issues raised regarding Lake Gairdner through the consultation process and detailed in the Stakeholder Consultation Report (Hydro Tasmania, 2012), included: water level management, access to water, boat ramps, safety and signage and rubbish management. Stakeholders suggested that the lake be kept at a constant high or reasonable level over the summer period (particularly at Christmas), the Easter holidays, Australia Day weekend and the start of the fishing season in early August.

## 3. Survey

### 3.1 Process

Forty stakeholders were identified as having a potential interest in Lake Gairdner by including properties adjacent to Lake Gairdner and properties from towns in close proximity to Lake Gairdner.

The 40 Lake Gairdner stakeholders were phoned and invited to complete a one on one survey (Appendix A). The objectives of the survey were to find out more about the times of the year stakeholders undertake recreational activities in Lake Gairdner, determine stakeholder preferences for water levels to undertake recreational activities, and discuss issues relating to water level management. The surveys were conducted between February and April 2013.

A factsheet (Appendix B) providing information about how Lake Gairdner is operated and managed, water level data, its multiple use values and water quality information was sent to stakeholders. Web links to Gairdner lake levels and Iris River inflows, providing the opportunity to assess lake levels and inflows when planning a trip to the lake, were also sent to stakeholders (Appendix C).

### 3.2 Results of the stakeholder survey

Twenty nine of the forty stakeholders (73%) completed the surveys. Twenty eight stakeholders completed the survey over the phone and one stakeholder returned a survey by mail. The remaining eleven stakeholders (27%) were unavailable.

Recreational activities that stakeholders undertake during each month of the year are presented in Figure 3.1. Fishing is the most popular activity followed by boating then camping. The warmer months especially December to February, are the most favoured to undertake recreational activities. However, activities are undertaken throughout the year.

Stakeholders were asked to indicate the times of the year they would like higher water levels to undertake recreational activities at Lake Gairdner. They were given the opportunity to provide multiple responses.

In order of priority responses were as follows:

- The summer period (December to February) was selected by 59 % of stakeholders;
- The Christmas holidays (23-31 December) were selected by 28 % of stakeholders;
- The Easter break received responses from 21 % of stakeholders;
- Start of the fishing season was chosen by 10 % of stakeholders; and
- 28 % of stakeholders were unconcerned and did not indicate a specific time of the year to undertake a recreational activity.

In addition, a number of stakeholders indicated they would like to be notified by email when water levels are planned to be drawn down for outages and maintenance requirements especially during the summer period.

Stakeholders were pleased with how the lake was managed in the summer of 2012-13. Lake levels did not fall by more than 3 metres below Full Supply Level (FSL) from mid-November 2012 to mid-March 2013 (Appendix C). In the top 3 metres of Lake Gairdner's operating capacity it was considered there should be no difficulty accessing the lake to undertake most recreational activities (Photograph 3.1).

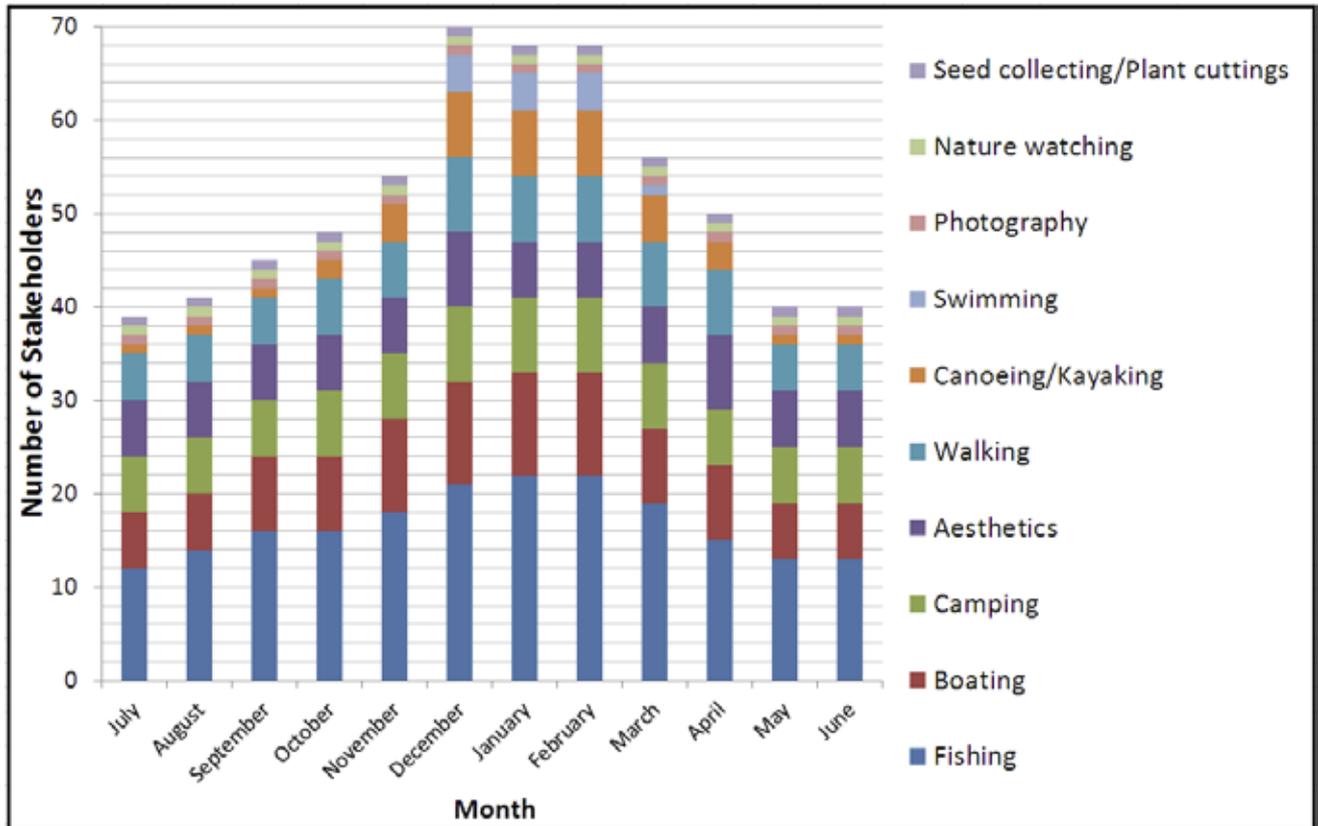


Figure 3.1: Number of stakeholders undertaking recreational activities during the year at Lake Gairdner



Photograph 3.1: Different aspects of the lake level at Lake Gairdner at 469.5 metres Above Sea Level (mASL) which is 3 metres below Full Supply Level (472.4 mASL). Clockwise from top left: campground and Iris River inflow; view of lake from dam wall; view towards western shore with campground on left and public boat ramp

Many of the issues raised by stakeholders during the survey were similar to those provided during the consultation stage of the Mersey-Forth Water Management Review (Hydro Tasmania, 2012).

Key issues relating to water level management, raised by stakeholders during the survey, were as follows:

- Accessing the lake from the campsite and other lake entry points to fish, walk and launch watercraft becomes difficult and unsafe during low lake levels due to the extensive mud flats;

- Negative impacts to lake aesthetics when drawn down, especially during peak visiting times in summer;
- The lake is sometimes kept too low for too long; and
- Low and oscillating lake levels result in poor fishing, stunted fish growth and impacts to vegetation.

In addition, many stakeholders raised the issue about the lack of signage, at the public campsite and private and public areas around the lake, encouraging people to remove their rubbish and toilet waste.



Photograph 4.1: Lake Gairdner from the dam wall with water level at 464.8 metres Above Sea Level (mASL) which is approximately 7.5 metres below Full Supply Level (472.4 mASL)

## 4. Outcomes

Hydro Tasmania has considered Lake Gairdner stakeholder requests and recommendations. Some improvements in water level management have been made and some actions are planned.

To support local stakeholder requests for maintaining high lake levels, for aesthetic reasons and to have safe access to the lake during peak visiting times in summer (December to February) and the Easter holidays, Hydro Tasmania has refined its Lake Gairdner Storage Operating Rules. The refined storage operating rule now states:

*At the request of local stakeholders drawing down Lake Gairdner by more than 3 metres below Full Supply Level should, if practicable, be avoided during the summer period (December to February) and over the Easter period.*

In addition, Lake Gairdner stakeholders will be notified by email when lake levels are drawn down for planned outages and maintenance requirements. The following warning and notification has been incorporated into the Lake Gairdner Storage Operating Rules:

*While there is no formal requirement, a number of local stakeholders have asked to be notified if the lake level of Lake Gairdner is to be drawn down to low levels. Should the lake need to be drawn down more than 7 metres below Full Supply Level (FSL) in the summer period (December to February) or over the Easter period, where more than two weeks' notice can be given, a public notice should be published stating the timing, duration and level of the drawdown. An email should also be sent to the Forth Notifications distribution list.*

While stakeholders have the concern that the lake can be kept too low for too long when drawn down in anticipation of rain events that do not eventuate, there is little that can be done to alter this. Drawdowns during the start of the fishing season (early August) cannot be avoided as this is the wettest time of the year and, under normal operation from May to October, the lake can be expected to be drawn down and filled multiple times to capture as much energy as possible from frequent rainfall events (Photograph 4.1). Drawdowns to capture rainfall are done in the wetter months when the lake is not likely to be low for an extended period of time. Extended drawdowns usually occur for outage/maintenance requirements or national electricity market opportunities in the drier months.

Stakeholders were concerned that low and oscillating lake levels can impact the numbers and quality of resident fish by restricting available habitat and food supply. As mentioned above, lake levels may fluctuate on several occasions in winter to maximise generation, which will impact the quality of the fishery. Nevertheless, natural recruitment of brown trout and blackfish maintain a small fishery for anglers (Inland Fisheries Service, pers.comm, 2013) (Photograph 4.2). During the 2011-12 summer stakeholders commented that the lake fished well.

Dumping of rubbish and waste at the campsite and on private property was identified as an issue of ongoing concern. Stakeholders recommended that rubbish management signs should be installed at the campsite and other areas around the lake to encourage people to remove their rubbish and waste. Rubbish management is an issue that has been identified for all waterways in the Mersey-Forth catchments. To address this, a whole of catchment approach is proposed in the Mersey-Forth Signage Strategy that is described in the Mersey-Forth Recreation Development and Management Plan (go to [www.hydro.com.au/MFWMR](http://www.hydro.com.au/MFWMR) to view the plan). The signage strategy has been prepared by the Mersey-Forth Recreation Management Committee<sup>1</sup> that proposes the installation of rubbish management signs at Gairdner and other waterways in the Mersey-Forth catchments in the near future.

To help stakeholders better understand Hydro Tasmania's operations and multiple use values at Lake Gairdner, a fact sheet has been developed. A copy of the factsheet was sent to all Lake Gairdner stakeholders (go to [www.hydro.com.au/MFWMR](http://www.hydro.com.au/MFWMR) to view the factsheet).

Hydro Tasmania plots on lake levels, river flows and rainfall are now available and will assist stakeholders when planning a trip to the lake (go to [www.hydro.com.au/water](http://www.hydro.com.au/water) to view the plots).

For questions related to operations and water level management stakeholders are encouraged to contact the Aquatic Environment Program Manager at:

Hydro Tasmania  
 Post: GPO Box 355, Hobart, Tasmania, 7001  
 Email: [contactus@hydro.com.au](mailto:contactus@hydro.com.au)  
 Call: 1300 360 441 (Local call cost Australia-wide)

<sup>1</sup> Mersey-Forth Recreation Management Committee is made up of representatives from the Inland Fisheries Service, Tasmanian Parks and Wildlife Service, Forestry Tasmania, Hydro Tasmania, Tasmanian Rowing Council, Kentish Council, Sport and Recreation Tasmania, Marine and Safety Tasmania, Horsehead Ski Club and Anglers Alliance Tasmania, and representatives from other recreation groups. Formerly the committee was known as the Lake Barrington Recreational Management Committee.



Photograph 4.2: Lake Gairdner information sign located at public boat ramp. Photograph courtesy of the Inland Fisheries Service

## 5. Commitment and Way Forward

Lake Gairdner is a small, run of river hydro power storage, in a high rainfall area. Where practicable, Hydro Tasmania will maintain higher water levels from December to February and the Easter holidays to provide for multiple use activities. Hydro Tasmania will also notify Lake Gairdner stakeholders when the lake is to be drawn down to low levels (below 7 metres) during major operational events from December to February and the Easter holidays.

## 6. 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).

## 7. References

Hydro Tasmania 2011. *Mersey-Forth Water Management Review*. Hydro Tasmania, Hobart, Tasmania.

Hydro Tasmania 2012. *Mersey-Forth Water Management Review: Stakeholder Consultation Report*. Hydro Tasmania, Hobart, Tasmania.

## Appendices

### A Lake Gairdner Survey

1. What activities do you undertake at Lake Gairdner? Please tick those that apply in the table below and, if applicable, indicate the specific day/s of the month when the activities are undertaken. For *Other* please specify the activity and day/s of the month.

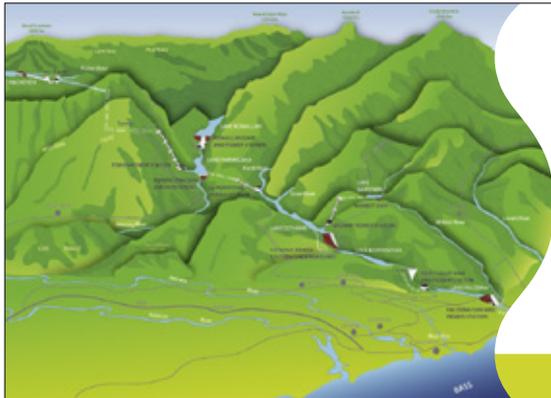
Month	Recreational activities undertaken at Lake Gairdner					
	Fishing	Canoeing	Walking	Camping	Boating	Other
January						
February						
March						
April						
May						
June						
July						
August						
September						
October						
November						
December						

2. What times of the year would you prefer higher water levels to undertake recreational activities at Lake Gairdner?

3. Indicate any issues associated with water level management at Lake Gairdner? For other issues please specify?

4. Please provide your name and contact detail below.

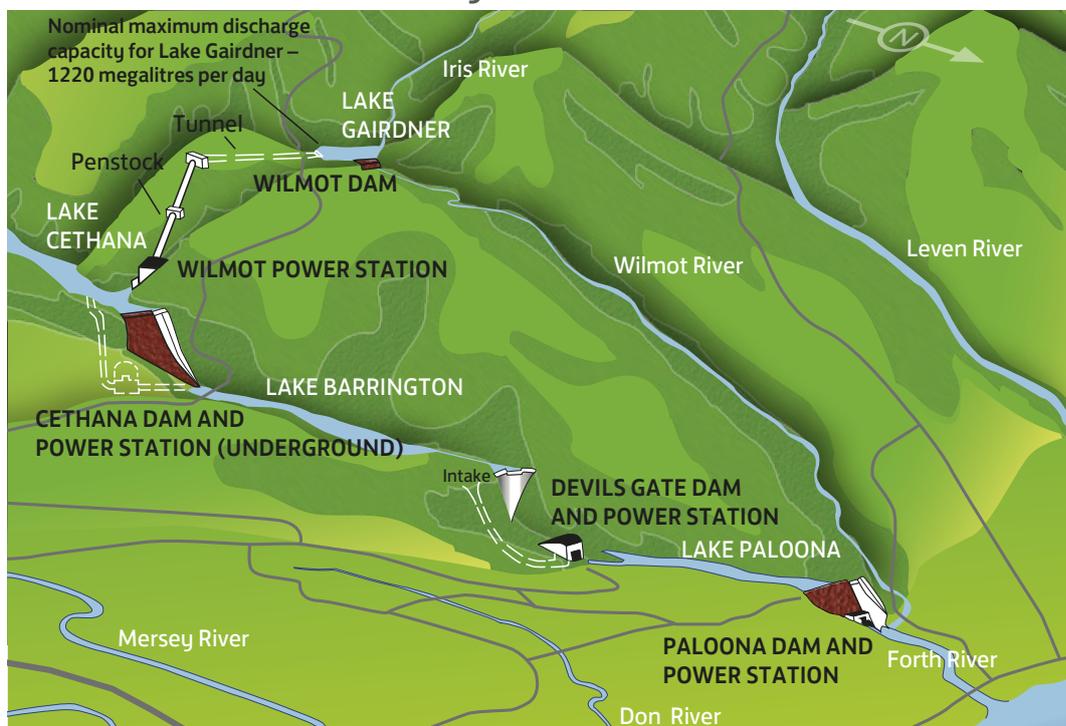
## B Lake Gairdner Fact Sheet



# Lake Gairdner Fact Sheet

Mersey-Forth Water Management Review

## Lake Gairdner within the Mersey-Forth Power Scheme



Lake Gairdner was commissioned in 1971 as part of the Mersey-Forth Power Development Scheme. The lake was created by the construction of the Wilmot Dam across the Wilmot River, which is a tributary of the Forth River. The lake receives water from the catchments of the Iris and Lea rivers.

The main outflow from the lake is via a tunnel then large pipe, called a penstock, which takes water to the Wilmot Power Station and discharges into Lake Cethana.

The energy generation from Wilmot Power Station represents approximately 1% of the total output of the hydro-generation system in Tasmania. Spills from Lake Gairdner, over the dam wall, enter the upper Wilmot River which then flows into the Forth River.

The water diverted through the Wilmot Power Station passes through three more power stations on the Forth River at Cethana, Devils Gate and Paloona Power Stations.

## How are water levels managed?

There are a couple of factors which place constraints on how the water level at Lake Gairdner is managed. The lake is small and the Wilmot Power Station can only discharge a small amount of water, when compared with bigger hydropower stations in Tasmania.

As a 'run-of-river' storage lake levels tend to fluctuate over periods of hours or days depending on the amount of rainfall and generation at Wilmot Power Station. This is different to bigger water storages which fluctuate over days or even months.

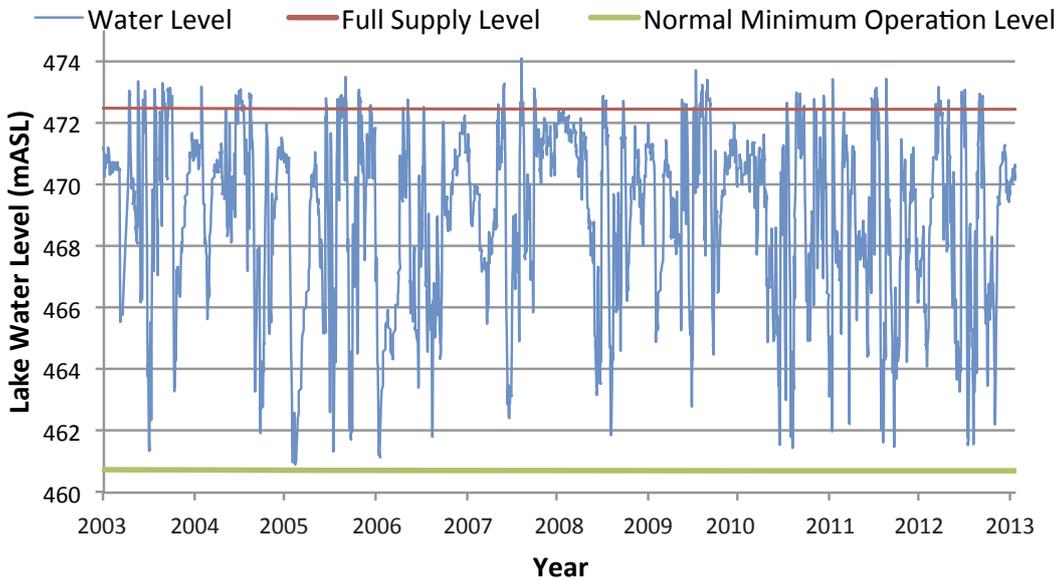
During the summer months the water level is maintained, as much as possible, within the top 1-3 metres of the operating range.

This enables Hydro Tasmania to manage changes in the energy market and the risk of low water inflows.

Over winter the lake level is normally drawn lower to capture as much energy as possible from frequent rainfall.

Variations around typical operation take into account factors including current and expected inflows, maintenance requirements and storage levels across the entire hydro-generation system, as well as electricity demand and risks and opportunities in the National Electricity Market. All of these aspects are considered in order to maximise the returns to the State of Tasmania.

Lake Gairdner Fact Sheet – Mersey-Forth Water Management Review



Lake Gairdner water levels for the last 10 years - metres Above Sea Level (mASL)

### Multiple use values at Lake Gairdner

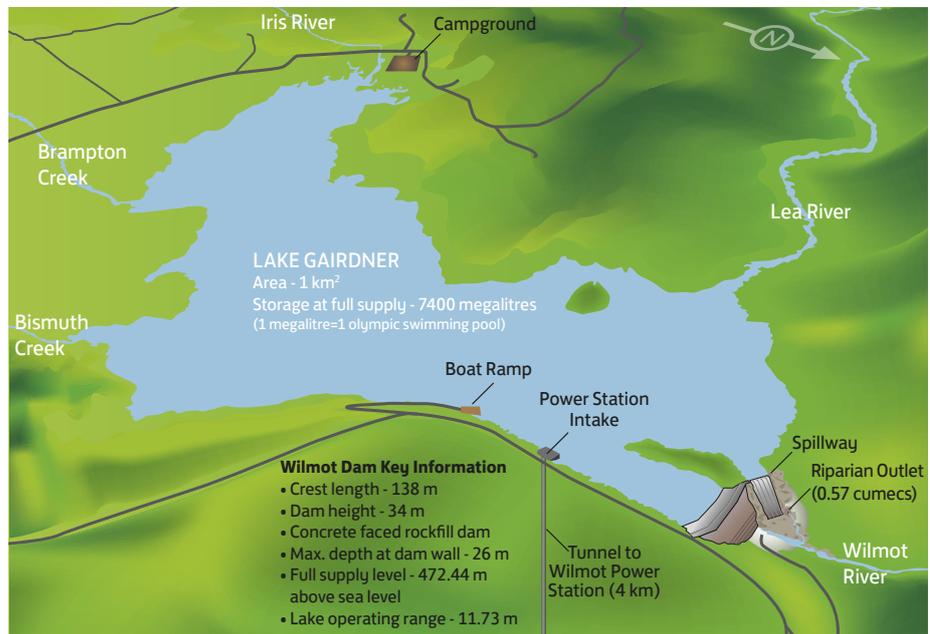
Lake Gairdner is not a high use recreational lake, however, boating, camping and fishing are conducted here. The lake lies high in the catchment adjacent to the Tasmanian Wilderness World Heritage Area and is a favoured walking and canoeing area.

Hydro Tasmania thinks about the future in everything that we do and, as Australia's largest water manager, endeavours to manage its land and water resources for multiple use, provided activities can be conducted safely and do not conflict with the ability to generate electricity.

### Water quality at Lake Gairdner

The water flowing into the lake is predominantly from the World Heritage Area. Similar to other lakes in the highland wilderness regions, the water is clear and fresh, with low turbidity and low concentrations of nutrients.

### Lake Gairdner at a glance



Aluminium concentrations are naturally high in Lake Gairdner which is a common occurrence for waterways of the region. It is unlikely that aluminium presents an environmental or social risk in Lake Gairdner.

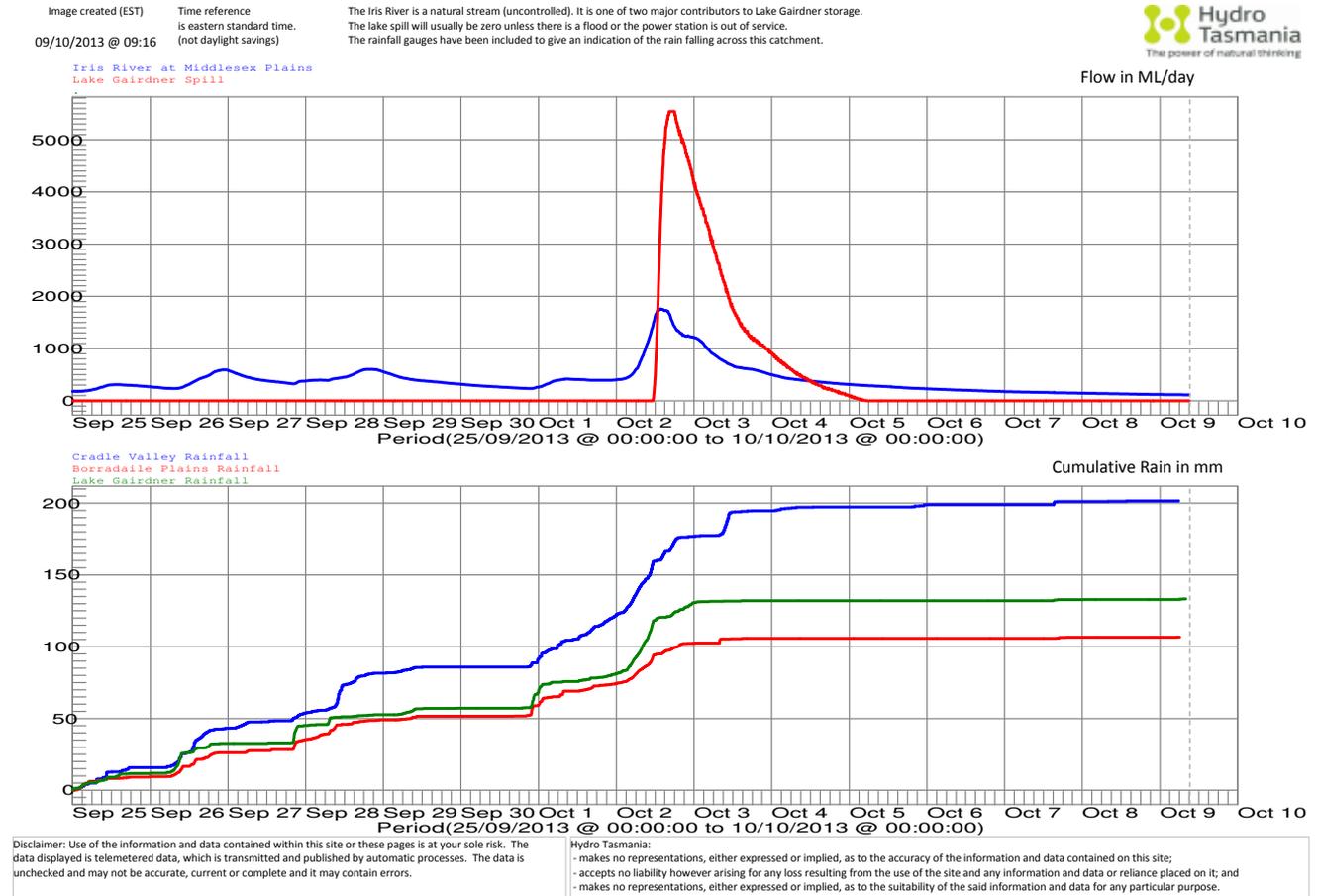
### Find out more

Further information about Lake Gairdner and the Mersey-Forth Water Management Review can be accessed by going online at [hydro.com.au/MFWMR](http://hydro.com.au/MFWMR).



### C River Flow, Lake Gairdner Spill and Rainfall Plot

Example of plots from Hydro Tasmania's website showing Iris River flow, Lake Gairdner spill and local rainfall for last 14 days (top graph) and last 12 months (bottom graph) (accessed on 9 October 2013). As part of the Mersey-Forth Dissemination of Flow and Water Level Information technical study, more water level and flow plots can be viewed on the website (go to [www.hydro.com.au/water](http://www.hydro.com.au/water)) for the Mersey-Forth catchments and other Hydro catchments.





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