Hydro Tasmania
The power of natural thinking

3 June 2016

Edward O'Connor
ABC Journalist
Tasmania

Dear Mr O'Connor,

Right to Information Request 6 April 2016

I refer to your request pursuant to the *Right to Information Act 2009* (RTI Act) received on 6 April 2016 by Hydro Tasmania.

I am authorised to make decisions on behalf of Hydro Tasmania in respect of applications for information under the RTI Act.

1. Your Request

As discussed and agreed your request is for:

"Correspondence, including to reports or briefings, under the following requirements:

- Mentioning any "detrimental, negative, harmful or damaging' impacts that decreasing water levels, at Arthurs Lake AND Great Lake, is having on animal and plant species that live in the lakes.
- Dated from January 1 to March 31, 2016.
- Not restricted to the words alone 'detrimental, negative, harmful or damaging,' just their general meaning."

Herein after referred to as "the Request".

2. Determination and Reasons for Determination of Request

I have determined the following are relevant in response to the Request.

Extracts from System Status Overviews for the period as follows:

Annexure A - page 1
Annexure B - page 1
Annexure C - page 1

Extracts from Reports to the Water Storage Advisory Committee (WSAC) for the period as follows:

Annexure D - page 1
Annexure E - page 1
Annexure F - pages 1 & 2
Annexure G - pages 1 & 2

4 Elizabeth Street Hobart TAS 7000 Australia • GPO Box 355 Hobart TAS 7001 Australia
t 1300 360 441 f +61 3 6230 5363 e contactus@hydro.com.au w www.hydro.com.au
Hydro-Electric Corporation ABN 48 072 377 158

Annexure H - pages 1 & 2
Annexure I - page 1
Annexure J - page 1

Extract from Hydro-Electric Corporation Board Paper for the period as follows:

Annexure K - pages 1 & 2

Extracts from Assets & Infrastructure Performance Report for the period as follows:

Annexure L - page 1
Annexure M - page 1
Annexure N - page 1

Extract from System Status Overview for the period as follows:

Annexure O - page 1

Extract from Great Lake High Environmental Risk Zone Internal Memo for the period as follows:

Annexure P - page 1, 2 & 3

Extract from Low Lake Levels Threatened Species Implications Internal Memo for the period as follows:

Annexure Q - page 1

Extract from Great Lake Extreme Environmental Risk Presentation for the period as follows:

Annexure R - pages 1, 2, & 3

Additional information can be found on the Hydro Tasmania website at http://www.hydro.com.au/environment/threatened-species

Please also see RTI request determinations on our website at http://www.hydro.com.au/about-us/governance/right-information-request-process/right-information-disclosures

3. Information withheld

I have made the decision to not release certain information:

- The names of officers and contact details have been redacted as that is not information relevant to the request and officer details are also protected by the Privacy Act. Hydro Tasmania has received verbal advice from the Ombudsman's Office that names and details of officers of Hydro Tasmania are not "information" under the RTI Act
- Information which is exempt under Sections 35, 37 and 38 of the RTI Act has been withheld;

As required under Section 33 of the RTI Act, I considered the Public Interest Test assessment criteria under the Schedule to the RTI Act in regards to the information ultimately withheld pursuant to

sections 35, 37 and 38 and have determined that it was not in the public interest as a whole to disclose the withheld information.

The reasons for the determination are:

- that the release of the information would not contribute to the debate on the matter
- the information would not inform the request about the reasons for a decision
- the disclosure would not provide the contextual information to aid in the understanding of Hydro Tasmania's decisions
- disclosure would harm the business and/or financial interests of Hydro Tasmania
- the information is related to the business affairs of Hydro Tasmania and if released would cause harm to the competitive position of the Corporation.

A copy of this determination will be placed on the Hydro Tasmania website for public information.

4. Review of Rights

You are entitled under Section 43 of the RTI Act to apply for a review of the decision made.

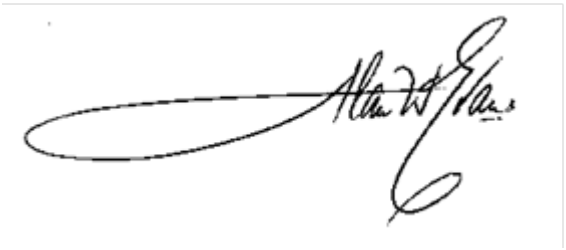
Any request for such a review should be made in writing within twenty (20) working days of receiving this letter and addressed to:

Mr S Davy
Chief Executive Officer
Hydro Tasmania
4 Elizabeth Street
HOBART TAS 7000

Should you have any questions on the information provided please contact the undersigned.

This request is now considered closed.

Yours sincerely



Alan W. Evans
Right to Information Officer & Corporation Secretary
Hydro Tasmania
t 03 6230 5300
e alan.evans@hydro.com.au
f 03 6231 4217

Annexure A

System Status Overview as at 11 January 2016

(Extract from report, page 1)

Environment

Great Lake

Great Lake entered the High Environmental Risk Zone (HERZ) on 11 January 2016. Threatened Species Unit (TSU) of DPIPWE has been notified. Entering the HERZ requires additional monitoring and a continued focus on reasonable actions to limit further draw-down and exit the HERZ as soon as reasonably practicable.

Annexure B

System Status Overview as at 18 January 2016

(Extract from report, page 1)

Environment

Great Lake

Great Lake remains in the High Environmental Risk Zone (HERZ). Additional monitoring is being conducted and planned. Monitoring will focus on threatened fish and invertebrates, charophytes (aquatic vegetation) and water quality. There is a continued focus on reasonable actions to limit further draw-down and exit the HERZ as soon as reasonably practicable.

Annexure C

System Status Overview as at 25 January 2016

(Extract from report, page 1)

Environment

Great Lake

Great Lake remains in the High Environmental Risk Zone (HERZ). The decision whether to access additional energy [redacted] below the HERZ is the focus for the remainder of this week.

Exempt under S 38(a)(ii) of the RTI Act 2009

Implications of lower storage levels

The following table (preliminary assessment) provides an initial view of potential implications at lower storage levels. There is a high level of uncertainty once storages decrease below 16.5% as there is little prior experience below this point.

Annexure D

Report to WSAC 3 February 2016

The following report is provided by Hydro Tasmania to WSAC.

(Extract from report, page 1)

Environment

Great Lake

Great Lake remains in the High Environmental Risk Zone (HERZ). Additional monitoring is being conducted and planned. There is a continued focus on reasonable actions to limit further draw-down and exit the HERZ as soon as reasonably practicable. Great Lake increased by 1.5% over the week.

Arthurs Lake

Arthurs Lake pump has not run since 28 November 2015

Water is being released from Arthurs Lake [redacted] for irrigation and also to Woods Lake to reduce environmental issues.

Exempt under S 37(1)(a) of the RTI Act 2009

Annexure E

Report to WSAC 10 February 2016

The following report is provided by Hydro Tasmania to WSAC.

(Extract from report, page 1)

Environment

Great Lake

Great Lake remains in the High Environmental Risk Zone (HERZ). Additional monitoring is being conducted and planned. There is a continued focus on reasonable actions to limit further draw-down and exit the HERZ as soon as reasonably practicable.

Arthurs Lake

Arthurs Lake pump has not run since 28 November 2015

Water is being released from Arthurs Lake [redacted] for irrigation and also to Woods Lake to reduce environmental issues.

Exempt under S 37(1)(a) of the RTI Act 2009

Annexure F

Report to WSAC 24 February 2016

The following report is provided by Hydro Tasmania to WSAC.

(Extract from report, pages 1 and 2)

Environmental – New Issues

Great Lake – Reports from field staff that localised elevated turbidity in response to strong winds has started to occur. This is not expected to have long term environmental impact, but may lead to stakeholder concerns from recreational users.

Environmental

Lake	Current Level (22/2/16)	Level Last week (15/2/16)	Weekly change	Risk Zone LERZ	Risk Zone MERZ	Risk Zone HERZ	Risk Zone EERZ	Key risks
Great Lake [redacted]	[redacted] (12.3%)	[redacted] (13.3%)	[redacted] (-1.0%)	[redacted]	[redacted] (18.4%)	[redacted] (15.4%)	[redacted] (6.2%)	• Potential for significant cumulative ecosystem impacts below 13.25% (HERZ) • Increased environmental risks below 11.7% (pools form – risk of fish [redacted]) • Impact to threatened species if below 18.41% (MERZ) from mid-Oct to mid-Jan
Arthurs Lake [redacted]	[redacted] (55.3%)	[redacted] (56.1%)	[redacted] (-0.8%)	[redacted]	[redacted] (36.5%)	[redacted] (30.9%)	[redacted] (25.5%)	No concerns to report

Exempt under S 38(a)(i)(ii) of the RTI Act 2009

Annexure G

Report to WSAC 2 March 2016

The following report is provided by Hydro Tasmania to WSAC.

(Extract from report, pages 1 and 2)

Environmental – New Issues

Great Lake

- A high level of ecological impact has already been observed in Great Lake since November 2015:
    - Impact on native fish spawning (dewatered eggs and adult mortality)
    - Dead invertebrates under and around dewatered rocks along the rocky shores since December
    - Charophyte beds are being dewatered and beds still in the water are in poor condition
    - Dewatering of rocky habitat
- Pools are likely to start forming this week as bays become isolated from the main lake body. Little Lake Bay (north of Breona) is expected to be isolated this week and Elizabeth Bay is expected to be isolated next week.
- A scientific expert group has been convened to update the risk assessment for the Extreme Environmental Risk Zone in Great Lake and is currently working towards identifying the critical point of environmental risk escalation in Great Lake.

Environmental

Lake	Current Level (29/2/16)	Level last week (22/2/16)	Weekly change	Risk Zone LERZ	Risk Zone MERZ	Risk Zone HERZ	Risk Zone EERZ	Key risks
Great Lake [redacted]	[redacted] (11.7%)	[redacted] (12.3%)	[redacted] (-0.6%)	[redacted]	[redacted] (18.4%)	[redacted] (15.4%)	[redacted] (6.2%)	• Potential for significant cumulative ecosystem impacts below 13.25% (within the HERZ) • Increased environmental risks below 11.7% (pools form – risk of fish [redacted]) • Impact to threatened species if below 18.41% (MERZ) from mid-Oct to mid-Jan
Arthurs Lake [redacted]	[redacted] (54.5%)	[redacted] (55.3%)	[redacted] (-0.8%)	[redacted]	[redacted] (36.5%)	[redacted] (30.9%)	[redacted] (25.5%)	No concerns to report

Exempt under S 38(a)(i)(ii) of the RTI Act 2009

Annexure H

Report to WSAC 8 March 2016

The following report is provided by Hydro Tasmania to WSAC.

(Extract from report, pages 1 and 2)

Environmental – New Issues

Great Lake

- A high level of ecological impact has already been observed in Great Lake since November 2015
- On-going analysis of the Great Lake Extreme Environmental Risk Zone (EERZ) has identified heightened risks associated with entering that zone and has also raised the potential entry point for the zone [redacted].
- Validation of the Great Lake EERZ risks is continuing and Hydro Tasmania has convened a scientific reference panel to assist with this process. A report from the scientific reference panel is expected very shortly (within days).
- In the meantime a temporary limit on Great Lake draw downs (storage level not to go below [redacted]) has been imposed, to understand the consequence of this additional information and to avoid the possible new limit being breached while the implications are not fully understood.
- Depending on drawdown rates, pools are likely to start forming as bays become isolated from the main lake body. Little Lake Bay (north of Breona) and Elizabeth Bay are not yet disconnected.

Exempt under S 38(a)(i)(ii) of the RTI Act 2009

Environmental

Lake	Current Level (7/3/16)	Level last week (29/2/16)	Weekly change	Risk Zone LERZ	Risk Zone MERZ	Risk Zone HERZ	Risk Zone EERZ	Key risks
Great Lake [redacted]	[redacted] (11.4%)	[redacted] (11.7%)	[redacted] (-0.3%)	[redacted]	[redacted] (18.4%)	[redacted] (15.4%)	[redacted] (6.2%)	• Potential for significant cumulative ecosystem impacts below 13.25% (within the HERZ) • Increased environmental risks below 11.7% (pools form – risk of fish [redacted]) • Impact to threatened species if below 18.41% (MERZ) from mid-Oct to mid-Jan
Arthurs Lake [redacted]	[redacted] (53.6%)	[redacted] (54.5%)	[redacted] (-0.9%)	[redacted]	[redacted] (36.5%)	[redacted] (30.9%)	[redacted] (25.5%)	No concerns to report

Exempt under S 38(a)(i)(ii) of the RTI Act 2009

Annexure I

Report to WSAC meeting 15 March 2016

(Extract from report, page 1)

3. Environmental risks

Hydro Tasmania has revised its risk assessment of the potential environmental impact based on scientific advice and reduced the draw on Great Lake.

Great Lake entered its High Environmental Risk Zone (HERZ) on 11 January following the Basslink fault and remains in the HERZ currently. Since the Lake entered the HERZ, Hydro Tasmania has undertaken a number of activities to better understand impacts and apply mitigation measures.

A scientific experts group was formed in November 2015 in response to low spring inflows with experts from UTAS, independent researchers, Hydro Tasmania and Entura to update the risk assessment for Great Lake, and to design monitoring and mitigation measures.

Based on expert scientific advice, the business has raised the Extreme Environmental Risk Zone (EERZ) [redacted] of storage capacity [redacted]. The current draw on Great Lake is designed to ensure it does not go below that level. [redacted]

Exempt under S 38(a)(i)(ii) of the RTI Act 2009

[redacted]

Exempt under S 35(1)(a) of the RTI Act 2009

As of today, the current level of Great Lake is 11.4 per cent, with current level being sustained through pumping of water from Arthurs Lake.

Annexure J

Report to WSAC meeting 23 March 2016

(Extract from report, page 1)

7. Environmental risks

Hydro Tasmania has revised its risk assessment of the potential environmental impact based on scientific advice and reduced the draw on Great Lake.

Based on expert scientific advice, the business has completed a risk assessment and as a result raised the Extreme Environmental Risk Zone (EERZ) [redacted] of storage capacity [redacted]. The current draw on Great Lake is designed to ensure it does not go below that level. [redacted].

Exempt under S 38(a)(i)(ii) of the RTI Act 2009

Monitoring continues in the lake and turbidity levels are increasing in response to wind events. Further biological monitoring is being planned for early next month to assess impacts to Commonwealth listed paragalaxias species.

Annexure K

(Pages 1, 2, 3 and 4)

Hydro-Electric Corporation Board Paper

Corporation Meeting – 2 February 2016

(Extract from report, pages 1 and 2)

Not relevant to request

Background

Great Lake, [redacted] either currently in or predicted to enter Environmental Risk Zones over the next couple of months. The environmental impact of low lake levels includes impacts on lake ecosystems including threatened fish species, threatened invertebrates, aquatic vegetation and water quality. The regulatory risks are linked to the impact on threatened species which occurs in Great Lake.

Identified Risk	Probability	Consequence	Strategies to Manage Risk
Environmental risks			
Impact on threatened galaxiid populations	Possible	Dewatering of eggs in Great Lake can lead to impact on recruitment which then can lead to impact to the resilience of the population. Extinction is the worst case scenario.	Monitoring to improve our understanding of impact and focus on strategies to avoid or reduce impacts to the 16/17 spawning season by limiting the time in the environmental risk zones as much as practicable as impact two years in a row is likely to have greater impact on population as galaxiids are short lived. Planning a trial of artificial spawning habitat in Great Lake as mitigation in case water levels don't rise sufficiently to provide sufficient spawning habitat during the next spawning seasons. Releasing water from Arthurs
Impact on threatened invertebrate populations	Possible	Dewatered invertebrates can lead to impact on the populations, however uncertainty is high.	Very little is known about the threatened invertebrates in Great Lake and an inventory survey is planned to better understand distribution in the lake. This will increase our understanding of our impact and assist in developing mitigation measures. Limit the time in the environmental risk zones as much as practicable.
Loss of aquatic vegetation	Almost certain	Dewatered charophyte beds (aquatic vegetation) in Great Lake are possibly used as habitat for a number of species. However,	Conduct charophyte surveys in Great Lake to improve understanding of how the charophyte beds are changing in size during low lake levels. Limit the time in the environmental risk zones as much as practicable.

Identified Risk	Probability	Consequence	Strategies to Manage Risk
		the role these beds play in the ecosystem is poorly understood.	
Pool formations in Great Lake	Likely	Some of the bays in Great Lake will become isolated from the main body of water below [redacted], referred to as 'pool formation'. When pool formation occurs, there could be further impacts on the threatened macroinvertebrate and fish species as well as water quality in the.	Water quality will be monitored in the pools. Translocation of fish may be required to avoid stranding due to low levels or fish kills due to poor water quality.

Exempt under S 38(a)(i)(ii) of the RTI Act 2009

Annexure L

ASSETS & INFRASTRUCTURE

PERFORMANCE REPORT	
REPORTING PERIOD:	**JANUARY 2016**
[redacted]	[redacted]

(Extract from report, page 1)

1. SUSTAINABLE RESOURCES MANAGEMENT

Environmental impact monitoring continues to increase with preparations underway to build and install water quality monitoring rafts at four bays in Great Lake. Planning is underway to manage potential increasing risks associated with the possibility of entering the Extreme Environmental Risk Zone at Great Lake should the low inflows and the Basslink outage persist.

Names have been removed under Privacy Act

Annexure M

ASSETS & INFRASTRUCTURE

PERFORMANCE REPORT	
REPORTING PERIOD:	**FEBRUARY 2016**
[redacted]	[redacted]

(Extract from report, page 1)

2. SUSTAINABLE RESOURCES MANAGEMENT

Great Lake is now at unprecedented low lake levels in the High Environmental Risk Zone and significant environmental impacts continue to be observed. An update to the risk assessment to determine the threshold level for the Extreme Environmental Risk Zone was conducted in February, with the assistance of an external scientific experts group and is currently being finalised. The risk assessment has resulted in a preliminary recommendation to revise the Extreme Environmental Risk Zone threshold [redacted] storage in Great Lake.

Exempt under S 38(a)(i)(ii) of the RTI Act 2009

Names have been removed under Privacy Act

Annexure N

ASSETS & INFRASTRUCTURE

PERFORMANCE REPORT	
REPORTING PERIOD:	**MARCH 2016**
[redacted]	[redacted]

(Extract from report, page 1)

3. SUSTAINABLE RESOURCES MANAGEMENT

The focus in March has been low lake level environmental impacts [redacted] considerations. Environmental impacts that have been observed in the Great Lake risk zones include impacts to Commonwealth listed spawning of paragalaxias species, invertebrate mortality, habitat dewatering and general ecosystem pressures. Monitoring programmes scheduled for May will assess the impact of low lake levels on Commonwealth-listed native fish species recruitment. A number of mitigation measures are currently in place to address impacts in Great Lake and these include:

Exempt under S 38(a)(i)(ii) of the RTI Act 2009

- trials for artificial spawning habitat for threatened native fish species
- reducing the rate of drawdown in Great Lake since early March
- limiting the level of drawdown in Great Lake to remain above the revised EERZ level [redacted]
- a focus on ensuring suitable water levels for the next spawning season in Spring 2016, and
- removal of trout from spawning runs to reduce pressure on native fish and aquatic animals.

Exempt under S 38(a)(i)(ii) of the RTI Act 2009

Names have been removed under Privacy Act

Annexure O

System Status Overview as at 11 January 2016

(Extract from Overview, page 1)

Environment

Great Lake

Great Lake entered the High Environmental Risk Zone (HERZ) on 11 January 2016. Threatened Species Unit (TSU) of DPIPWE has been notified. Entering the HERZ requires additional monitoring and a continued focus on reasonable actions to limit further draw-down and exit the HERZ as soon as reasonably practicable.

Annexure P

Internal memo

Private and confidential

To:	[redacted]			
From:	[redacted]			
cc:	[redacted]			
Date:	11 January 2016	Pages:	7	(includes cover sheet)
Subject:	Great Lake High Environmental Risk Zone			
Status:	**Request for Approval**			

(Extract from Internal Memo, page 1,2 and 3)

Environmental issues

- There are two fauna species in Great Lake listed under federal threatened species legislation (Great Lake paragalaxias, *Paragalaxias eleotroides* and Shannon paragalaxias, *Paragalaxias dissimilis*). Ten fauna species are listed under State threatened species legislation and five of these species are also recognised on the International Union for Conservation of Nature (IUCN) Red List.
- Extensive beds of aquatic vegetation (charophytes) exist in Great Lake. These have started becoming dewatered through the medium environmental risk zone, and some beds can become totally exposed in the high environmental risk zone. It is not well understood if these beds play an important role in the ecosystem, and whether they provide significant habitat for a number of species in the lake, including threatened species.
- Fish monitoring to date has identified mortality of threatened native fish eggs and adults in Great Lake due to dewatering over the 2015/16 spawning season.
- A site visit to Muddy Bay (Great Lake) by [redacted] (Senior Zoologist, Threatened Species Unit (TSU), Department of Primary Industries, Parks, Water and Environment - DPIPWE) on 18 December 2015 identified that the freshwater limpet, *Ancylastrum irvinae*, is being impacted by water level management, with dead specimens found along the shoreline. Although not listed, Threatened Species Unit is interested in this species.
- Entura staff found dead macroinvertebrate along the shoreline on 23 December 2015. [redacted]

Exempt under S 35(1)(a) of the RTI Act 2009

Exempt under S 38(a)(i)(ii) of the RTI Act 2009

Great Lake High Environmental Risk Zone and Monitoring

The lowest recorded water level in Great Lake in almost fifty years was [redacted] in 2007. Below this level the impacts on environmental values are not well known. [redacted]

Exempt under S 35(1)(a) of the RTI Act 2009

Macroinvertebrates

Observations during galaxiid monitoring and site visits by Entura and TSU show that the low water levels are adversely impacting on macroinvertebrates in Great Lake. [redacted].

Exempt under S 35(1)(a) of the RTI Act 2009

Water quality

At the upper end of the HERZ, localised turbidity driven by strong winds should be expected within the shallow regions of the lake. It is expected that the turbidity will settle out when the winds reduce, therefore this should not have a long-term impact on the ecosystem. [redacted]. Turbidity impacts will become more substantial in the lower half of the HERZ and is likely to take longer to recover when level increases again. Nutrient concentrations and algal biomass may increase while levels are low but are not expected to remain an issue when water levels increase again.

Exempt under S 35(1)(a) of the RTI Act 2009

Charophyte beds

Charophyte beds started to become dewatered when the water level entered the MERZ at [redacted]. Continuing draw down will result in more of the charophyte beds being dewatered. It is expected that the charophyte beds will recover as Great Lake refills. In areas where beds are completely dewatered, recovery may be slower (over a few years) as the growth will rely on germination from seed and sprouting from below-ground vegetative parts. The impact that dewatering the charophyte beds will have on the ecosystem is unknown as the role of the charophyte beds in the ecosystem is poorly understood. No feasible mitigation measures have been identified.

Exempt under S 38(a)(i)(ii) of the RTI Act 2009

Threatened fish

Water level management in Great Lake throughout the 2015/16 galaxias spawning season has caused mortality of eggs and adults of threatened native fish species. A combination of high draw down rates and low lake levels has caused this impact.

Pool formation

Some of the bays in Great Lake will become isolated from the main body of water below the level [redacted] recorded in 2007 [redacted] referred to as 'pool formation'. If pool formation occurs, there could be further impacts on the threatened macroinvertebrate and fish species as well as water quality in the pool in Great Lake.

Exempt under S 38(a)(i)(ii) of the RTI Act 2009

Environmental Monitoring

A water quality raft will be maintained in Reynolds Bay while in the HERZ to assess the impact on turbidity. Nutrient and algal monitoring is not required as it is believed to be a short term impact.

Macroinvertebrate surveys will be conducted to confirm distribution of macroinvertebrate species and to identify any impacts.

Galaxias monitoring is planned as part of exceeding the Exceptional Circumstance threshold. This monitoring is also suitable to assess the impact of entry into the HERZ on galaxiids spawning and recruitment.

Charophyte mapping will be undertaken to map the extent and changes of charophyte distribution while in the HERZ.

If pools form, additional fish, macroinvertebrate, water quality and water level monitoring will also be required in the pools.

Environmental Mitigation

[redacted]

Exempt under S 35(1)(a) of the RTI Act 2009

Hydro Tasmania should aim to refill Great Lake sufficiently to ensure availability of sufficient spawning habitat for the 2016/17 spawning season [redacted] if reasonable and feasible to do so.

If pool formation occurs some effort may be required to mitigate the impacts on adult galaxias. In the event that water quality within the pools deteriorates significantly, there is the potential of increased mortality of threatened galaxiids. If this occurs, fish translocation may be required to protect these fish. An additional [redacted] request will be made if translocation is required.

Exempt under S 38(a)(ii) of the RTI Act 2009

If water level in the pools reduces such that the pools may dry out, additional measures (eg pumping water from main lake body) may be required to protect threatened macroinvertebrate species.

Names removed under Privacy Act

Annexure Q

Internal memo

Confidential and Privileged

To:	[redacted]		
From:	[redacted]	**Ext no:**	5235
cc:	[redacted]		
Date:	29 January 2016	Pages:	12 (including appendices)
Subject:	**Low Lake Levels Threatened Species Implications**		
Status:	**For Endorsement**		

(Extract from Internal Memo, page 1)

There are also threatened invertebrate species in Great Lake that might be impacted by the low lake level. More work is in progress to better understand environmental implications of this.

As the 2015/16 spawning season approaches its conclusion, there is a focus on strategies to avoid or reduce impacts to the 2016/17 spawning season if dry conditions continue. The environmental risk is likely to increase considerably if the same impact on spawning we have seen in 2015 (large proportion of dewatered eggs) occurs in consecutive years. [redacted]

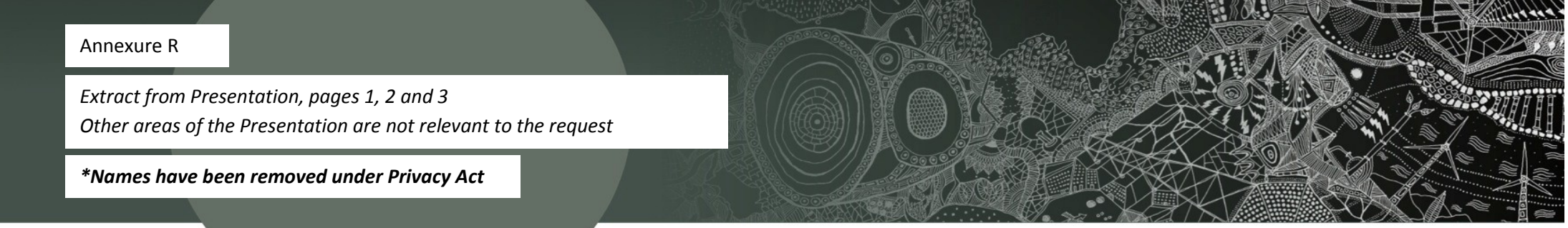
Exempt under S 38(a)(i)(ii) of the RTI Act 2009

Names have been removed under the Privacy Act

Annexure R

Extract from Presentation, pages 1, 2 and 3
Other areas of the Presentation are not relevant to the request

Names have been removed under Privacy Act



Great Lake Extreme Environmental Risk

Presented by: [redacted], 29 Feb 2016

The power of natural thinking

What are we seeing in the Lake currently?

- Impacts to components of the ecosystem observed to date in the HERZ include the following:
  - High proportion of dewatered galaxiid eggs during the spawning season
  - Stranded adult galaxiids while protecting eggs
  - A high number of dead invertebrates under and around dewatered rocks along the rocky shores since Dec
  - Dewatered charophyte beds – dewatered and poor condition.
  - No charophyte beds left below [redacted] (camera /snorkel survey)
  - Dewatering of rocky habitat

Exempt under S 38(a)(ii) of the RTI Act 2009

Mitigation measures – galaxiids

Galaxiids

- Avoid risk of ecosystem collapse

Mitigating **HERZ** impacts

- Return water level to [redacted]22%[redacted] by mid Oct and avoid drawdown

Exempt under S 38(a)(ii) of the RTI Act 2009

- Install artificial habitat trial (small scale and experimental only)
- Monitor population impact in Autumn
- Remove trout from the isolated Bays to reduce ecosystem impact
- Minimise time in HERZ [redacted] and avoid the EERZ [redacted]

Exempt under S 38(a)(ii) of the RTI Act 2009