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**THE LEGISLATIVE ASSEMBLY FOR THE
AUSTRALIAN CAPITAL TERRITORY**

**GOVERNMENT RESPONSE TO THE COMMISSIONER FOR SUSTAINABILITY
AND THE ENVIRONMENT'S
INVESTIGATION INTO THE STATE OF THE WATERCOURSES AND
CATCHMENTS FOR LAKE BURLEY GRIFFIN**

**Presented by
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Response to the Report on the Investigation into the State of the Watercourses and Catchments for Lake Burley Griffin

Foreword to the Government Response

On 27 May 2011, the Minister for the Environment and Sustainable Development, Simon Corbell MLA, directed the Commissioner for Sustainability and the Environment (the Commissioner) to undertake an investigation into the state of watercourses and catchments for Lake Burley Griffin pursuant to section 12(1) (b) of the *Commissioner for Sustainability and the Environment Act 1993*, with the following Terms of Reference:

Investigate the state of the watercourses and catchments for Lake Burley Griffin, including:

- 1. possible improvements for managing water quality and the appropriateness of the current protocols for lake closures;*
- 2. identifying the causes of lower water quality, including possible resource implications of addressing them;*
- 3. jurisdictional implications for water quality management of the lake; and*
- 4. the implications of these findings for the ACT's other major recreational waterways, such as Lake Ginninderra and Lake Tuggeranong.*

The Commissioner's inquiry found that the key water quality issues for Lake Burley Griffin (assessed from 1978 to 2010) were:

- low dissolved oxygen levels caused by the decomposition of organic matter in urban stormwater flowing into the Lake;
- blue-green algae blooms caused by the release of phosphorous from sediments, when dissolved oxygen is low with a poor mixing of the water column, especially during dry periods; and
- the loss of submerged and fringing water plants caused by increasingly turbid Lake water which contributes to low dissolved oxygen levels.

The Commissioner also found that the main sources of faecal pollution in the Lake were urban run-off, wildlife, re-growth of bacteria already in the Lake and possible leakages from sewer pipes. The Commissioner further concluded that the Queanbeyan City Council Sewerage Treatment Plant is not a consistently significant source of faecal pollution but does present a significant health risk.

Similarly, rural catchments were not of themselves a significant source of nutrients or turbidity in the Lake. However, the condition of these catchments needs to continue to be improved as during periods of high rainfall they contribute to water quality issues in the Lake.

It should be noted that while the primary responsibility for the overall management of the Lake and the immediate foreshore rests with the Commonwealth, through the National Capital Authority (NCA), there are other cross jurisdictional contributions to the management of the Lake's catchment within the ACT, the Molonglo and Queanbeyan Rivers as well as Jerrabomberra Creek catchments into New South Wales. Territory and Municipal Services Directorate has responsibility for management of public land, the stormwater system and for road sweeping in the ACT.

Queanbeyan City and Palerang Councils have similar roles in their shire boundaries in NSW as well as responsibility for sewerage. ACTEW Water is responsible for management of the ACT sewer system. Health Directorate is responsible for health protection issues relating to sewerage (including water) and the Lake.

Completion of the Report

The Commissioner delivered the completed Report to the Minister for the Environment and Sustainable Development on 11 April 2012.

The complete Report and related documents may be viewed on the Commissioner's website at

http://www.envcomm.act.gov.au/investigations/lake_burley_griffin_investigation.

Tabling the Report

Pursuant to section 22 of the *Commissioner for Sustainability and the Environment Act 1993* the Minister, must within 6 sitting days of receiving a report under section 19 or 21, table the report in the Legislative Assembly. Simon Corbell MLA tabled the report on 10 May 2012.

The Recommendations and Government's Response

The Commissioner made 17 recommendations, each of which is listed below, followed by the Government's response.

Lake Closure Protocols

Recommendation 1

The ACT Government (Health Directorate) undertake periodic reviews of the ACT Guidelines for Recreational Water Quality at intervals of not less than five years and include consultation with relevant stakeholders. The review should consider:

- a) developments in use of *Enterococci* bacteria as an indicator of faecal contamination and research on the health risks associated with regrowth pathogens;**
- b) improvements in knowledge and technologies to determine whether toxin testing or blue green algal concentration and algal biovolume testing is most relevant for ACT lakes; and**
- c) the characteristics and regrowth challenges of the lake embayments.**

Government Response: Agree

A review of the ACT Guidelines for Recreational Water Quality will be undertaken every 5 years or more frequently as required.

Recommendation 2

The current Guidelines should be amended to recognise:

- a) the potential for Lake or part Lake closure on a case by case basis, based on unusually extreme levels of blue green algae; and**
- b) closure practices in relation to very high bacteria concentrations.**

Government Response: Agree

Consideration will be given to the potential for Lake or part-Lake closures on a case-by-case basis in response to extreme water contamination events and closure practices due to extreme bacterial concentrations during the review process for the guidelines.

It is also proposed that relevant ACT Government Directorates work with the National Capital Authority to document an agreed framework for assessing and managing increased levels of risk associated with extreme water contamination events (blue-green algae, bacteria, sewage or chemical).

Recommendation 3

In line with the current Guidelines, the ACT Government and the Queanbeyan City Council, should identify and map sources of faecal contamination entering urban stormwater systems, the significance of the sources, and long-term strategies for reducing loading. In addition, a rigorous and comprehensive procedure for rapid sanitary surveys in the event of elevated indicator concentrations should be established.

Government Response: Agree

ACTEW Water and the Queanbeyan City Council routinely monitor the condition of the Queanbeyan and Canberra sewerage systems through an on-going program of sanitary surveys of these sewerage systems, which guides refurbishment and repair programs. This includes identifying and mapping of the sources of faecal contamination which may enter urban stormwater systems.

Recommendation 4

The ACT Government and the National Capital Authority improve communication with Lake user groups and the general public in the following key areas:

- a) during prolonged Lake closures, so that Lake users are aware that the Lake is closed and why;**
- b) during closures or restrictions, Lake managers should undertake random checks on Lake use, and where necessary amend public notification methods to ensure lake users are aware of the alerts and management responses; and**
- c) when the Lake is reopened.**

Government Response: Agree

The ACT Government is continuing to work with the National Capital Authority (NCA) on ways of improving communications with Lake User Groups and the general public. The NCA, the organisation principally responsible for the management of the Lake as developed new on-line media applications that allow users to readily access to information on current Lake conditions and any closures of all or part of the Lake.

Options for in-Lake Management to improve water quality

Recommendation 5

The National Capital Authority and the ACT Government undertake a feasibility study including a triple-bottom-line analysis, of macrophyte restoration across the Lake Priorities for consideration should include:

- a) construction of a wetland in the Lake between Springbank Island and the mouth of Sullivan's Creek;**
- b) construction of a wetland in the Lake at East Basin; and**
- c) restoration of macrophyte beds in Lotus Bay, Orana Bay and at Weston Park East Beach.**

Government Response: Agree in principle

Through the work of the Task Force, the NCA and the ACT Government have already commenced exploration of these options, although testing of the full range of options will require commitment of additional funds by the Commonwealth Government who is directly responsible for the management of the Lake waters and immediate foreshores.

The NCA is trialing, with the assistance of Greening Australia Capital Region, the re-establishment of fringing and submerged water plants at a number of test sites around the Lake. A detailed assessment of a range of options to increase plant life in the Lake, including floating water plant beds, is being proposed.

The ACT Government is currently constructing a \$4.5 million shallow retrofitted wetland adjacent to Eastern Valley Way in Lake Ginninderra which will be assessed as to its performance in improving the water quality of Lake Ginninderra. This project will inform the suitability, efficacy and value for money of this kind of intervention for Lake Burley Griffin.

Recommendation 6

The National Capital Authority and the ACT Government jointly explore initiatives for in-lake interventions aiming to control blue-green algae in Lake Burley Griffin and other Canberra lakes. Desktop research, physical trials and cost benefit analyses could examine (but not be limited to) systems for:

- a) re-aerating sediments;**
- b) stirring the water column;**
- c) absorbing and removing phosphorus from the water via additions of clay or chemical based substances; and/or**
- d) treating lake sediments to reduce phosphorus release, including by addition of nitrates or iron chloride to the water.**

Government Response: Agree in principle

The ACT Government will continue to work with the NCA through the Lake Burley Griffin Task Force to pursue a range of in-Lake options to mitigate the frequency and extent of blue-green algae blooms. These options will be assessed as part of a comprehensive program that addresses the Lake in its catchment setting.

The NCA is continuing to trial solar powered water column mixers at several locations in the Lake to establish the feasibility and effectiveness of this method in terms of costs and environmental impact. The National Capital Authority is also understood to be conducting a desktop review of chemical treatment methods.

Continuing close cooperation through the Task Force will readily allow for the exchange of information and experience about the management of Lake Burley Griffin with ACT Government officers managing other Canberra urban lakes and ponds.

Urban Catchment Management

Recommendation 7

The ACT Government should develop a strategic approach to Water Sensitive Urban Design (WSUD). This should include:

- a) identifying sites where installing catchment intervention, such as wetlands and pollution control ponds, would improve water quality entering Lake Burley Griffin. This should include:**
 - i. initial feasibility studies into the construction of pollution control ponds or wetlands on the Yarralumla drainage line and Jerrabomberra Creek should be undertaken. Any installations should be designed to be of an appropriate size to treat the catchment area they service**
 - ii. identifying WSUD that complement current programs of installing wetlands and water control ponds in both new urban areas and retrofitting in existing suburbs where applicable.**
- b) ensuring that WSUD requirements are enforced in particular;**
 - i. ensuring that wetlands and ponds are of appropriate sizes to service their catchments; and**
 - ii. undertaking auditing/compliance arrangements to ensure that temporary pollution control ponds for sediment control during the construction phase in new estates are maintained and functioning effectively.**
- c) monitoring the effectiveness of WSUD through improved monitoring following urban developments to determine whether water quality meets WSUD general code targets. Results should be used to inform improvements in WSUD standards.**
- d) comparison of ACT approaches to WSUD with those of other Australian urban areas to help ours remain consistent with developing technology and best practice.**
- e) reviewing the efficacy of existing GPTs. The review should include:**
 - i. effectiveness in pollutant reduction;**
 - ii. effectiveness of current maintenance of pollution control measures;**
 - iii. capital costs;**
 - iv. ongoing maintenance costs to ensure the current drainage infrastructure remains high-standard and is in line with current best practice, protecting downstream environments;**
 - v. reduction of polluted leachate water; and**
 - vi. the capacity to manage requirements of future urban growth and development.**
- f) working with the NCA and NSW Councils in the catchment to coordinate a strategic approach across the catchment.**

Government Response: Agree in principle

The ACT Government is currently reviewing the ACT water resources strategy *Think Water; Act Water*. A comprehensive review of the Water Sensitive Urban Design guidelines is being considered as part of the review to ensure compliance with national best practice standards or better and that the water quality outcomes achieved are at the most economical cost. The key issues for consideration include:

appropriate siting, design (including size), construction costs, co-benefits (such as for non-potable water irrigation, stormwater detention and amenity) as well as maintenance.

It is understood that the NCA is undertaking a feasibility study in relation to the construction of a pollution control pond or wetland in Yarralumla drainage line at Yarralumla Bay. The recently released draft Master Plan for Jerrabomberra Wetland proposes enhanced management of stormwater entering the Lake through the Wetlands from Jerrabomberra Creek.

Subject to available funding, the ACT Government supports a review of the condition and effectiveness of all gross pollutant traps (GPTs) flowing into the Lake. The review would include the suitability of their location, their efficiency, impact and maintenance requirements and frequency.

Under the provisions of the *Environment Protection Act 1997*, major land development or construction activities (on sites of 0.3 hectares or greater) are required to have an Environment Protection Agreement or hold an Environmental Authorisation with the Environment Protection Authority and to date developers have chosen to enter into Environment Protection Agreements

Environment Protection Agreements operate for three years from the date of signing and covers all sites developed by the Agreement holder. The Authority holds approx 98 current Agreements for land development.

The conditions in the Agreements detail the measures required to minimise impacts on our waterways. These measures include staging of works, the provision of sediment retention dams, stabilised access points and silt, erosion and diversion controls. The Agreement holder is required to submit a sediment and erosion control plan to the Authority for approval outlining these measures prior to works commencing. There are also conditions which require the measures to be maintained throughout the life of the development. In addition, for sites greater than 1ha pollution control ponds are required to be installed.

Authority officers routinely inspect sites ensuring compliance with the approved Plan and the controls are maintained.

Recommendation 8

The ACT Government, Queanbeyan City Council and National Capital Authority work collaboratively to raise awareness of the impact of organic matter, and other household or commercial materials (e.g. garden and lawn fertilisers) on the Lake Burley Griffin catchment. Information should include the contribution that all sectors of the community can make to improve water quality by appropriately using and disposing of such materials.

Government Response: Agree in principle

The ACT Government will work with the NCA and Queanbeyan City Council to develop a comprehensive community awareness education and behaviour change program. This will include ongoing development of an enhanced web presence for Lake information, awareness raising and education.

The ACT Government will continue to work with the catchment community through the Molonglo Catchment Group to achieve increased community awareness and engagement.

Current volunteer environmental activities (both on-ground and in raising awareness) will continue to be supported by both the ACT Government and the NCA.

Recommendation 9

The ACT Government and Queanbeyan City Council evaluate their street sweeping practices and schedules to minimise leaf litter and other organic matter from having adverse impacts on Lake Burley Griffin's water quality.

Government Response: Agree

The ACT Government agrees that leaves and other organic matter entering the stormwater system and then into the Lake are a key contributor to increasing nutrient availability. This is especially evident in autumn when deciduous trees drop leaves and in wetter periods when plant growth is more vigorous. The ACT Government will seek to identify additional resources to increase the frequency of street sweeping with a focus on suburbs with autumn leaf fall affecting the Lake.

The ACT Government will review existing street sweeping practices and investigate opportunities to increase the effectiveness of street sweeping and landscape maintenance programs to capture material before it enters drains.

Management of public land and roads needs to complement efforts to inform landholders in the Lake catchment about the potential impact of their own behaviour in managing their leased land.

The ACT Government will also consider opportunities within the urban tree replacement policy, to replace deciduous trees along waterways with evergreen species.

The potential for market driven mechanisms, for using organic matter collected from streets and verges for commercial purposes, will also be explored, as will community based options, including local composting facilities.

The ACT Government supports a review of the condition and effectiveness of all GPTs in stormwater channels flowing into the Lake. The review should include their location, efficiency, impact and maintenance requirements. Funding will be sought to review the efficacy of existing GPTs. The ACT Government will introduce revised guidelines on design and installation of GPTs if warranted by the review.

The ACT Government is revising its water quality monitoring strategy, consistent with national best practice. This system will complement the NCA monitoring of in-Lake water quality. Monitoring sites will be located to inform on-ground actions to improve catchment health. Monitoring data will continue to be shared between jurisdictions and with community stakeholders.

Rural-Catchment Management

Recommendation 10

The ACT and NSW Governments and the National Capital Authority support planning and implementation of on-ground actions to reduce the potential for soil erosion in the upper Queanbeyan River, upper Molonglo River and Jerrabomberra Creek. In doing so active involvement of Palerang Council, the Molonglo Catchment Management Group, ACTEW and other NRM groups should continue to be strongly encouraged and supported.

Government Response: Agree in principle

Rural catchment protection will require the cooperation of the NSW Government and Palerang Council to address erosion and other land management issues at their source. It is proposed to build on existing cross-border cooperation in both catchment management undertaken by ACTEW Water and natural resource management to develop a comprehensive catchment protection program. The Googong Foreshores Plan of Management has been finalised and is with the Minister for Territory and Municipal Services for approval prior to publishing. The ACT Government released the Jerrabomberra Wetlands Plan of Management in 2010.

In August 2012, TAMSD released a draft master plan for the Jerrabomberra Wetlands for public comment that addresses the Commissioner's recommendations in relation to the Wetlands.

A proposed catchment protection program would build on the work of the ACT Government and community (through the Molonglo Catchment Group) to identify and address erosion hotspots and promote good land practices, especially around maintenance of vegetation cover.

Recommendation 11

The ACT Government finalise and implement the Googong Foreshore Draft Plan of Management. The plan should include adequate monitoring, reporting and review, and mechanisms to ensure effective cooperation between ACTEW, NSW and ACT in the management of the Googong Foreshores.

Government Response: Agree in principle

The Googong Foreshores Draft Plan of Management is being finalised and proposed additional monitoring of recreational use and grazing pressure to protect water quality. Implementation of the Plan will depend on the availability of on-going funding.

Recommendation 12

That the Jerrabomberra Wetlands Board of Management, ACT Government and NCA investigate management of the Jerrabomberra Wetlands watercourses in improving water quality in Lake Burley Griffin. This should include:

- a) advancing identification and implementation of cattle exclusion zones in the Jerrabomberra wetlands; and**
- b) investigating improving the way the Wetlands currently function through alteration of the watercourses. However any changes should not**

detrimentally impact the environment, cultural, recreational, scientific and educational values of the Wetlands.

Government Response: Agree

On 4 August 2012, the ACT Chief Minister and Minister for Territory and Municipal Services invited community feedback on a draft master plan which will guide the future development of the Jerrabomberra Wetlands. The Jerrabomberra Wetlands Board of Management has overseen the development of the draft plan. The draft plan addresses the management of cattle on the wetlands and proposes a number of exclusion zones to limit access to the sensitive areas as well as investigating ways of improving the functioning of the wetlands, consistent with its values.

Sewage Management

Recommendation 13

The ACT Environment Protection Authority review and update the Environmental Authorisation number 0417 for sewage treatment within the Queanbeyan City Council Sewage Treatment Plant to ensure that the treatment process results in discharge quality that matches contemporary best practise for a modern, urban sewerage treatment plant. In line with this, the QCCSTWP should continually review and improve its mitigation practises for inundation and washout events at the treatment plant.

Government Response: Agree

All authorisations are reviewed as required by the *Environmental Protection Act 1997*. Authorisations are updated based on changes to facility operations, changes to standards and in response to incidents.

Recommendation 14

The ACT Government require ACTEW to report regularly on the condition of the sewer system in urban areas in the Lake Burley Griffith catchment and identify priorities for upgrading to reduce sewer blockages and possible leakages from the system, and reduce the risk of system failures.

Government Response: Agree

The Health Directorate continues to monitor sewerage based pollution in the Lake.

ACTEW Water is a signatory to an Environment Protection Agreement with the Environment Protection Authority for the ACT Sewerage Network (excluding sewerage treatment facilities and effluent reuse projects). This Agreement sets out reporting and notification frameworks. The Agreement is currently under review and the Commissioner's recommendations will be taken into consideration in this review. Further the Environment Protection Authority investigates sewerage pollution in the catchment.

ACTEW Water and NSW Councils undertake regular reviews of the conditions of their sewer systems in the Lakes catchments and they report on these reviews and identify priorities for upgrading to reduce sewer blockages and possible leakages from the system and to reduce the risk of system failures.

River Flow Management

Recommendation 15

The National Capital Authority should investigate the feasibility, costs and benefits of providing water releases, for example increased flow over the summer months as part of Googong Dam's multi-objective role. This should be undertaken in consultation with the ACT and NSW Governments, relevant local government and community stake holders.

Government Response: Agree in principle

The NCA has commenced discussions with ACTEW Water about the feasibility of managed water releases from Googong Dam with the objective of manipulating temperature gradients in the Lake.

Management of the ACT's other major recreational waterways

Recommendation 16

A comprehensive assessment of the environment, social and economic value of key-lakes in the ACT be undertaken and take into account current and predicted challenges to water quality. This assessment should inform:

- a) a review and update of Canberra's Urban Lakes and Ponds Plan of Management involving extensive community consultation and taking into account the long term challenges to water quality in the urban catchments;**
- b) the need for government investment in water quality;**
- c) decisions regarding trials of appropriate in-lake and catchment management measures, with the results assessed from scientific (environmental), social and economic perspectives; and**
- d) decisions regarding implementation of lake and catchment management options.**

Government Response: Agree in principle

The findings of the Lake Burley Griffin enquiry can be extended to other key waterways, with priority given to Lake Tuggeranong and Woden catchments.

The 2009 CSIRO study commissioned by Canberra Integrated Urban Waterways Program identifies potential locations, applicability and construction for wetlands throughout Canberra's urban catchments. The locations will be reviewed in the context of revised catchment management and associated programs designed to address issues as close to the source as possible.

To improve coordination of catchment management

Recommendation 17

The ACT, Australian, NSW and local governments establish a Burley Griffin-Molonglo-Queanbeyan catchment management agreement. Such an agreement should outline:

- a) strategic objectives for the integrated and coordinated management of the Lake and catchments, to encompass water quality, environmental flows,**

potable water, land use, wastewater, and future urban and climate change impacts on the catchment;

- b) each party's responsibilities for water quality in the Lake and its catchments;
- c) a long term catchment planning framework; and
- d) an evidence-based, adaptive, management workplan.

To avoid past challenges of multi-jurisdictional catchment management coordination, such an agreement should include a dedicated governance group with representation from all jurisdictions, a consistent and persistent mechanism to ensure implementation and accountability, and reporting requirements.

The National Capital Authority, as Lake manager, should in the first instance convene a meeting of relevant jurisdictional representatives to guide the above recommendations.

Government Response: Agree

The ACT Government is committed to seeking the ratification of a formal cross border agreement relating to the management of Lake Burley Griffin and its catchment. A formal document would demonstrate a commitment of Governments to improve the health of the Lake and enhance collaboration/communication between agencies.

The ACT Government is exploring the option of creating a statutory office responsible for coordination of the range of actions recommended by the Commissioner and the Task Force. The ACT Government will invite the other participating jurisdictions in the Lake Burley Griffin Task Force to continue the operation of the Task Force as a coordination mechanism. The Chief Minister has written to the Australian Government Minister for Regional Australia, Regional Development and Local Government, Simon Crean MP, the NSW Minister for Primary Industry, Katrina Hodgkinson MP, the Mayor of Queanbeyan City Council, Councillor Tim Overall and the Mayor of Palerang Council, then Councillor Walter Raynolds seeking their cooperation in implementing the recommended actions in the Lake Burley Griffin Action Plan.

A priority will be the preparation of a catchment management strategy to guide restoration and protection work. Additionally, such a strategy will need to address the apparent inadequacies of the existing ACT Integrated Catchment Management Framework which was produced in 2000.

The ACT Government will support convening an annual forum on the water quality issues affecting the Lake as a means of taking stock of progress and sharing of knowledge on approaches to managing water quality in the Lake and its catchments.