Consistency Review

PROPOSED CHANGES TO THE EIS AND PER COMMITMENTS

MURRUMBIDGEE TO GOOGONG WATER TRANSFER PROJECT

OPERATIONS PHASE

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1 INTRODUCTION

1.1 BACKGROUND

ACTEW Corporation is operating and maintaining the Murrumbidgee to Googong Water Transfer Project (M2G). The M2G involves transferring up to 100 megalitres of water per day from the Murrumbidgee River through a 12 kilometre underground pipeline to Burra Creek in NSW. The water then flows approximately 13 kilometres along Burra Creek into Googong Reservoir. Prior to discharging into Burra Creek, the water passes through a mini hydroelectricity generating plant (mini hydro) which provides electricity back to the pump stations.

The project lies within both NSW and the ACT, and is subject to an approval under the Commonwealth EPBC Act. As such, three separate Planning Approvals have been obtained and the project construction and operation is subject to three separate Conditions of Approval.

This Approved Project broadly involves the following activities:

- Construction and operation of a low lift pump station and intake structure at the Murrumbidgee River
- Construction and operation of a high lift pump station
- Construction and operation of a 12km underground pipeline
- Construction and operation of an outlet structure at Burra Creek
- Construction and operation of a mini-hydro power station

Construction of the project was completed in the second half of 2012, and the project is now in the operational phase.

1.2 REQUIREMENT FOR CONSISTENCY REVIEW

Following the commencement of operation, a review was conducted of the commitments made in the Environmental Impact Statement (EIS) and the Public Environment Report (PER). The review highlighted a number of inconsistencies between what was committed to and what is achievable. As such, a number of changes are proposed to these commitments.

In NSW, under Section 75W (2) of the EP&A Act, the Minister's approval for a modification is not required if the project as modified will be consistent with the existing approval. This Consistency Review assesses whether the proposed modification is consistent with the Approved Project and aims to address the requirements of the EP&A Act.

It should be noted that under ACT legislation, Clause 35 of the ACT Planning and Development Regulation 2008 provides for exemptions to seeking re-approval of minor Amendments to an Approval. This consistency review also aims to determine whether the proposed changes are 'minor' and can be addressed by an exemption under Section 35(2).

It should further be noted that under the Commonwealth legislation, there is no threshold level for modifications to an Approval to occur without consultation or approval from the Department of the Environment DotE (formerly Sustainability, Environment, Water, Population and Communities). As such, DotE would require notification of the changes and potentially re-approval of the project.

1.3 APPROACH OF THIS CONSISTENCY REVIEW

This Consistency Review examines the environmental and planning issues that could be affected as a result of the proposed modifications, with reference to:

- NSW, ACT and Commonwealth Conditions of Approval
- The Environmental Impact Assessment and Public Environment Report

This review has been undertaken using the source documents above. Where additional assessment has been undertaken, this Consistency Review identifies and incorporates the findings of these assessments.

This Consistency Review determines:

- Whether the modified project is consistent with the overall project objectives and scope
- Whether the modified project is able to meet the requirements of all CoAs
- Whether any of the proposed changes to the commitments are not 'minor'
- Whether the modified project would have an equal or lesser environmental impact than that assessed within the EIS and PER

1.4 INDEPENDENT REVIEW OF CONSISTENCY OF MODIFICATION

ACTEW have appointed an independent Environmental Representative (ER) for the M2G project. The ER's specific roles are detailed in the NSW approval. Note, there is no formal role of ER under the ACT or Commonwealth Approvals for the operational phase of the project.

The NSW condition is as follows:

NSW (Condition 6.1) - *Prior to the commencement of any construction or operational activities or as otherwise agreed by the Director-General, the Proponent shall nominate for the approval of the Director General a suitably qualified and experienced Environmental Representative(s) independent o. the design, construction and operation personnel. The Proponent shall engage the Environmental Representative(s) during any construction activities, and throughout the life of the project, or as otherwise agreed by the Director-General. The Environmental Representative(s) shall:*

a) oversee the implementation of all environmental management plans and monitoring programs required under this approval, and advise the Proponent upon the achievement of these plans/programs;

b) consider and advise the Proponent on its compliance obligations against all matters specified in the conditions of this approval and the Statement of Commitments as referred to under condition 1.1 c) of this approval, permits and licences; and

c) have the authority and independence to recommend to the Proponent reasonable steps to be taken to avoid or minimise unintended or adverse environmental impacts, and, failing the effectiveness of such steps, to recommend to the Proponent that relevant activities are to be ceased as soon as reasonably practicable if there is a significant risk that an adverse impact on the environment will be likely to occur.

The broad role of the ER is to advise ACTEW on matters relating to compliance with the NSW Approval.

This report aims to provide an independent assessment of whether the proposed changes are consistent with the project's Conditions of Approval. It is not the role of the ER to assess environmental impacts of any proposed changes (only to advise on consistency matters), and therefore any consideration of impacts has been provided by ACTEW.

2 PROPOSED MODIFICATION

2.1 DESCRIPTION OF THE APPROVED PROJECT

In October 2007 the ACT Government, in response to recommendations from ACTEW aimed at securing the Territory and region's future water supply, announced a suite of new water infrastructure projects. The Murrumbidgee to Googong Water Transfer (the 'scheme') is one of those projects.

The scheme involves pumping water from the Murrumbidgee River within the ACT and transferring it via a 12km pipeline to Burra Creek (in NSW), from where it will flow approximately 13km to the Googong Reservoir. The scheme has received approval under the NSW *Environmental Planning and Assessment Act 1979* and been declared a critical infrastructure project. The ACT Minister for Planning has declared the project EIS adequate and the Development Application has been approved by the ACT Planning and Land Authority. At the Federal level, the scheme has been approved under the *Environment Protection and Biodiversity Conservation Act 1999*.

2.2 PROPOSED MODIFICATIONS - PER

2.2.1 Commonwealth PER Table 7.1 Item 3

Commonwealth PER Table 7.1 Item 3 reads:

> *"Implement and monitor (including monitoring at the outlet) practical fish egg screening equipment (filters) to prevent transfer of fish and eggs (including threatened and alien species) through the pipeline from the Murrumbidgee River to Burra Creek.*
>
> *Personnel with relevant experience will be consulted to review the screen design and approve the structure before construction commences to ensure efficiency of screen design and operation.*
>
> *Intake velocities at the intake structure will be below that which will hold fish against the screen.*
>
> *Investigate the known current presence of carp in the near vicinity of Googong Reservoir, within the Googong catchment."*

It is proposed to amend this commitment as follows:

> *"Carp component (last sentence) be removed from commitment as advice from ACT Parks and Conservation specify that carp are not present and that further investigation is not worthwhile."*

As such, the revised Table 7.1 Item 3 would be:

> *"Implement and monitor (including monitoring at the outlet) practical fish egg screening equipment (filters) to prevent transfer of fish and eggs (including threatened and alien species) through the pipeline from the Murrumbidgee River to Burra Creek.*
>
> *Personnel with relevant experience will be consulted to review the screen design and approve the structure before construction commences to ensure efficiency of screen design and operation.*

Intake velocities at the intake structure will be below that which will hold fish against the screen."

2.3 PROPOSED MODIFICATIONS - EIS

2.3.1 EIS Commitment 8 (Chapter 28)

EIS commitment 8 reads:

"Water abstracted from the Murrumbidgee River will be released into Burra Creek without delay to minimise deoxygenisation and cooling. Operational rules will be developed to acceptance levels of turbidity in the Murrumbidgee."

It is proposed to amend this commitment as follows:

"Remove first sentence as water will remain in pipeline during periods of non-operation and water quality could be altered."

As such, the revised commitment 8 would be:

"Operational rules will be developed to acceptance levels of turbidity in the Murrumbidgee."

2.3.2 EIS Commitment 11 (Chapter 28)

EIS commitment 11 reads:

"Maintenance of flow transfers where possible during the fish breeding season to protect any spawning populations of threatened fish species. If flows need to be altered, then the 48 hour step up/down operating regime will be utilised to allow fish to exit the creek."

It is proposed to amend this commitment as follows:

"Remove the 48 hour time period for step up/down operating regime and that the operating regime will be as per the OEMP subplan. Also add 'if present' in relation to threatened fish species as there is currently no native fish in Burra."

As such, the revised commitment 11 would be:

"Maintenance of flow transfers where possible during the fish breeding season to protect any spawning populations of threatened fish species (if present). If flows need to be altered, then the step up/down operating regime in the relevant OEMP subplan will be utilised to allow fish to exit the creek."

2.3.3 EIS Commitment 14 (Chapter 28)

EIS commitment 14 reads:

"Design measures into the scheme, to prevent the spread of invasive fish species including:

- *A proposed mesh size on the intake screen of 0.5 mm to prevent transfer of fish and eggs;*

- *Provide continuous filtering and monitoring of transfer flows at the outlet into Burra Creek;*
- *Use filters year round, rather than only during the spawning season; and*
- *Investigate the known current presence of carp in the near vicinity of Googong Reservoir, within the Googong catchment."*

It is proposed to amend this commitment as follows:

> *"Revise the EIS statement so that the word 'proposed' is removed from the first bullet point. Revise the second bullet point to read that the filtering is performed at the inlet to the pipeline, not the outlet into Burra Creek and remove the last bullet point regarding the presence of carp to be consistent with PER 7.3.3."*

As such, the revised commitment 14 would be:

> *"Design measures into the scheme, to prevent the spread of invasive fish species including:*
>
> - *0.5 mm aperture mesh on intake screen to prevent transfer of fish and eggs;*
> - *Provide continuous filtering at the inlet to the pipeline and monitor fish populations regularly within Burra Creek; and*
> - *Use filters year round, rather than only during the spawning season"*

2.4 PROPOSED MODIFICATIONS – NSW COA

2.4.1 NSW Planning Approval Condition 2.3

NSW Condition of Approval 2.3 reads:

> *"The Proponent shall design, construct, operate and maintain the project to avoid impacts on bank stability within the Burra Creek riverine corridor and Googong Reservoir outlet and does not increase local flooding risk."*

It is proposed to amend this Condition as follows:

> *"M2G operation does not relate to bank stability at the Googong reservoir outlet and the dam is not there to mitigate flood risk. Any operation of M2G will increase water level in Burra, that is its purpose; therefore, this would increase the risk of flooding."*

As such, the revised NSW Condition of Approval 2.3 would be:

> *" The Proponent shall design, construct, operate and maintain the project to avoid impacts on bank stability within the Burra Creek riverine corridor."*

2.5 PROPOSED MODIFICATIONS – ACTEW COMMITMENTS CONTAINED IN EIS

The following EIS commitments are located in the body text of the EIS (not in Chapter 28), and have not been numbered in the EIS document. For ease of reference, ACTEW has compiled a list of these

commitments and numbered them consecutively. The "ACTEW EIS commitment number" and the EIS section reference have been included below.

2.5.1 ACTEW EIS Commitment 146, from EIS section 12.5.3

ACTEW EIS commitment 146 partly reads:

> *"When the project is in standby mode, the pumps will be exercised on a monthly basis, which will result in a progressive turnover of water in the pipeline."*

It is proposed to amend this part of the commitment as follows:

> *"Revise EIS statement to allow alternative frequency of exercising based on resolution of standby strategy."*

As such, the revised part of ACTEW EIS commitment 146 would be:

> *"When the project is in standby mode, the pumps will be exercised as necessary for maintenance purposes, which will result in a progressive turnover of water in the pipeline."*

2.5.2 ACTEW EIS Commitment 212, from EIS section 13.6.1

ACTEW EIS commitment 212 partly reads:

> *"A flora and fauna management sub-plan, will be prepared as part of the construction environmental management plan, outlining the procedures to manage and minimise the potential for impact to terrestrial ecology.*
>
> *The plan will also include measures to minimise the potential for impacts to terrestrial flora and fauna, including the following:*
>
> - *Measures to ensure the clearance or exclusion of wombats from burrows that will be inundated during level discharge. This may require repeated management actions during the life of the project."*

It is proposed to amend this part of the commitment as follows:

> *"Remove the requirement to ensure the clearance or exclusion of wombats from burrows."*

As such, the revised ACTEW EIS commitment 212 would not include the dot point quoted above.

2.5.3 ACTEW EIS Commitment 248, from EIS section 16.3.2

ACTEW EIS commitment 248 reads:

> *"Routine pipeline maintenance will require the pipeline to be purged, resulting in pipeline water being released. Scour water will be collected directly by tankers and not released onto the ground."*

It is proposed to amend this commitment as follows:

> *"Revise EIS statement to allow for landowners to capture/retain scour water in dams for use."*

As such, the revised ACTEW EIS commitment 248 would be:

> *"Routine pipeline management will require the pipeline to be purged, resulting in pipeline water being released. Scour water will be collected directly by tankers and not released onto the ground, with the exception of the provision of this water to landowners for capture in property dams or alternative discharge methods in accordance with NSW regulations, as requested by the landholders and agreed by ACTEW."*

2.5.4 ACTEW EIS Commitment 258, from EIS section 9.6

ACTEW EIS commitment 258 partly reads:

> *"A soils management sub-plan will be prepared as part of the operation environmental management plan, including the following measures…"*

It is proposed to amend this part of the commitment as follows:

> *"Revise EIS statement to enable the obligation to be executed either through such a plan or equivalent alternate processes to prevent unnecessary administration and duplication of effort."*

As such, the revised part of ACTEW EIS commitment 258 would be:

> *"A soils management sub-plan or equivalent alternate plan will be prepared as part of the operation environmental management plan, including the following measures…"*

2.5.5 ACTEW EIS Commitment 259, from EIS section 24.3.1

ACTEW EIS commitment 259 reads:

> *"Erosion and sedimentation has the potential to impact water quality in downstream waterways through increased turbidity, siltation and degradation of aquatic habitats. These impacts will be managed through rigorous implementation, monitoring and auditing of the soils management sub-plan and measures listed in Chapters 9, 10, 11 and 16."*

It is proposed to amend this commitment as follows:

> *"Revise EIS statement to enable the obligation to be executed through such a plan or equivalent alternate processes to prevent unnecessary administration and duplication of effort."*

As such, the revised ACTEW EIS commitment 259 would be:

> *"Erosion and sedimentation has the potential to impact water quality in downstream waterways through increased turbidity, siltation and degradation of aquatic habitats. These impacts will be managed through rigorous implementation, monitoring and auditing of the soils management sub-plan or equivalent alternate plan and measures listed in Chapters 9, 10, 11 and 16."*

2.5.6 ACTEW EIS Commitment 293, from EIS section 24.3.2

ACTEW EIS commitment 293 reads:

"Monitoring at both the intake/low lift pump station and the Googong water treatment plant will include measurements of pathogens, cyanotoxins and other chemicals."

It is proposed to amend this commitment as follows:

"Revise EIS statement to include monitoring of algal blooms instead of cyanotoxins and change the monitoring locations to Angle Crossing (MUR213) and the Googong raw waters"

As such, the revised ACTEW EIS commitment 259 would be:

"Monitoring at both Angle Crossing (MUR213) and the Googong raw waters will include measurements of pathogens, algae and other physiochemical parameters."

2.5.7 ACTEW EIS Commitment 345, from EIS section 27.4.1

ACTEW EIS commitment 345 partly reads:

"Annual reporting will include an executive summary, details on methodologies, results and analyses with statistical interpretations, and discussion, based on the monitoring components and indices used in the monitoring program. The proposed reporting arrangements for the program are given below;

- *Spring (e.g. 2009) macroinvertebrate report (Angle Crossing Report & Burra Creek Report) - due annually the following March (e.g. March 2010);*
- *Autumn (e.g. 2010) macroinvertebrate report (Angle Crossing Report & Burra Creek Report) - due annually the following September (e.g. September 2010);*
- *Annual Integrated Report (Angle Crossing AIR & Burra Creek AIR) reporting on all Spring (e.g. 2009) and Autumn (e.g. 2010) indicator results - due annually in September (e.g.2010); and*
- *Upper Murrumbidgee Overview Report (incorporating Angle Crossing and all other sub-reaches) - due annually in October."*

It is proposed to amend this part of the commitment as follows:

"Revise the reporting arrangements to be Spring and Autumn Murrumbidgee Ecological Monitoring Program (MEMP) Reports. The annual trends are included in the seasonal reporting, therefore negating the need for an additional annual report with associated administrative overheads. The Upper Murrumbidgee trends are also included in the seasonal reports."

As such, the revised part of ACTEW EIS commitment 345 would be:

"Annual reporting will include an executive summary, details on methodologies, results and analyses with statistical interpretations, and discussion, based on the monitoring components and indices used in the monitoring program. The proposed reporting would be included in the Spring and Autumn Murrumbidgee Ecological Monitoring Program (MEMP) reports."

3 CONSISTENCY REVIEW

The proposed modifications below would not affect the objectives of the development, which remain to operate the water pipeline to transfer up to 100ML of water per day from the Murrumbidgee River at Angle Crossing to Burra Creek approximately 10km south of Googong Reservoir.

The NSW Approval contains a set of conditions under seven categories, as set out below (Refer to **Table 3-1**). The scope of the conditions is set out below and the applicability to the modifications noted, with regard to their consistency.

In relation to NSW CoA 1, clearly as the proposed modifications are to EIS/PER commitments as well as a Condition of Approval, the changes would result in an inconsistency with the original commitments in the EIS/PER.

Table 3-1: Consistency with conditions of approval

Condition scope (and relevant source documents)	Issues of relevance to the modifications
Commonwealth PER Table 7.1 Item 3	
Administrative conditions (NSW CoA)	NSW CoA 1 – The Project must be carried out in accordance with the EIS.
Specific environmental conditions (NSW CoA, Cth CoA)	NSW CoA 2.11 – Aquatic ecological management measures must include design measures to prevent spread of invasive fish and regular review of aquatic ecology monitoring results
	NSW CoA 3.3 – The approved Ecological Monitoring Subplan outlines fish such as Carp will be monitored by catching and tagging to assist in future monitoring of fish movement in the ACT
EIS Commitment 8 (Chapter 28)	
Administrative conditions (NSW CoA)	NSW CoA 1 – The Project must be carried out in accordance with the EIS.
Specific environmental conditions (NSW CoA, Cth CoA)	Cth CoA 4 – The Project must implement a Burra Creek Environmental Management Plan that establishes an ecological monitoring program to detect and mange any environmental harm to the ecological elements of Burrak Creek.
EIS Commitment 11 (Chapter 28)	
Administrative conditions (NSW CoA)	NSW CoA 1 – The Project must be carried out in accordance with the EIS.
Specific environmental conditions (NSW CoA, Cth CoA)	NSW CoA 6.5 – The Project must implement a Flow Management Plan that identifies the quantity, timing, duration and velocity of water transfers flows to Burra Creek.
EIS Commitment 14 (Chapter 28)	
Administrative conditions (NSW CoA)	NSW CoA 1 – The Project must be carried out in accordance with the EIS.

Condition scope (and relevant source documents)	Issues of relevance to the modifications
Specific environmental conditions (NSW CoA, Cth CoA)	NSW CoA 2.11 – Aquatic ecological management measures must include design measures to prevent spread of invasive fish and regular review of aquatic ecology monitoring results
	NSW CoA 3.3 – The approved Ecological Monitoring Subplan outlines fish such as Carp will be monitored by catching and tagging to assist in future monitoring of fish movement in the ACT
NSW Condition of Approval 2.3	
Administrative conditions (NSW CoA)	NSW CoA 1 – The Project must be carried out in accordance with the EIS.
Specific environmental conditions (NSW CoA, Cth CoA)	NSW CoA 2.3 – The Proponent shall design, construct, operate and maintain the project to avoid impacts on bank stability within the Burra Creek riverine corridor and Googong Reservoir outlet and does not increase local flooding risk.
ACTEW EIS Commitment 146 (EIS section 12.5.3)	
Administrative conditions (NSW CoA)	NSW CoA 1 – The Project must be carried out in accordance with the EIS.
Specific environmental conditions (NSW CoA, Cth CoA)	NSW CoA 6.5 – The Project must implement a Flow Management Plan that identifies the quantity, timing, duration and velocity of water transfers flows to Burra Creek.
ACTEW EIS Commitment 212 (EIS section 13.6.1)	
Administrative conditions (NSW CoA)	NSW CoA 1 – The Project must be carried out in accordance with the EIS.
ACTEW EIS Commitment 248 (EIS section 16.3.2)	
Administrative conditions (NSW CoA)	NSW CoA 1 – The Project must be carried out in accordance with the EIS.
Specific environmental conditions (NSW CoA, Cth CoA)	NSW CoA 2.1 – The Project must comply with Section 120 of the *Protection of the Environment Operations 1997* which prohibits pollution of water.
ACTEW EIS Commitment 258 & 259 (EIS sections 9.6 & 24.3.1)	
Administrative conditions (NSW CoA)	NSW CoA 1 – The Project must be carried out in accordance with the EIS.
ACTEW EIS Commitment 293 (EIS section 24.3.2)	
Administrative conditions (NSW CoA)	NSW CoA 1 – The Project must be carried out in accordance with the EIS.
ACTEW EIS Commitment 345 (EIS section 27.4.1)	

Condition scope (and relevant source documents)	Issues of relevance to the modifications
Administrative conditions (NSW CoA)	NSW CoA 1 – The Project must be carried out in accordance with the EIS.

3.1 COMMONWEALTH PER TABLE 7.1 ITEM 3

The modification to the PER Table 7.1 Item 3 is supported by advice provided by ACT Parks and Conservation that carp are not present and that further investigation is not worthwhile.

However, monitoring will be undertaken at the end of 2013 to confirm there has been no transfer of carp and native fish eggs/larvae (this is their spawning season). This monitoring is expected to take approximately three days. Movement of fish (native and invasive) will be monitored through the relevant OEMP subplan, however at this stage, catching and tagging fish will not form part of this program (it may occur if fish are seen to be moving up into Burra Creek).

Matt Beitzel from the ACT Government advises that biannual fish surveys will continue to take place in the Googong Reservoir. It is considered that that these surveys cover ACTEW's requirement to *"investigate the known current presence of carp..."* as per condition 7.3.

Based on the screening design, ex situ testing, followed by in situ testing at the end of this year the risk of transfer/introduction of carp would be low and the objectives of the development would not be impacted.

3.2 EIS COMMITMENT 8 (CHAPTER 28)

The modification to the EIS Commitment 8 (Chapter 28) represents a minor change to the time that water is retained in the pipeline during periods of non-activity. Although this change impacts the objectives of the development, mitigation measures have been implemented to ensure water quality parameters can be met.

Mitigation measures include the use of a CO_2 dosing facility at the outlet to correct potentially elevated pH levels resulting from periods of non-operation. The Consistency Assessment of Impact titled *Murrumbidgee to Googong (M2G) CO_2 Dosing System at Mini-Hydro Infrastructure (2011)* states that it is unlikely that the CO_2 dosing would lead to deoxygenation of Burra Creek.

3.3 EIS COMMITMENT 11 (CHAPTER 28)

The modification to the EIS Commitment 11 (Chapter 28) represents a minor changes in wording and does not affect the objectives of the project.

Proposed changes to the requirement to maintain flow transfers during breeding season will not trigger a significant change and is supported by Section 12.5.3 of the EIS which states '*if threatened fish species were found to be spawning in Burra Creek, flow transfers will be maintained where possible during the breeding season to protect the spawning populations'*. The step up/down operating regime will be utilised as detailed in the relevant OEMP subplan. The step up/down operating regime relates to similar changes proposed to ACTEW EIS commitment 146 (EIS section 12.5.3) .

The relevant OEMP subplan will be updated to reflect these changes, however the changes will not affect the objectives or purpose of the plan and the plan will continue to be implemented.

3.4 EIS COMMITMENT 14 (CHAPTER 28)

Continuous filtering is performed at the inlet to the pipeline, not at the outlet into Burra Creek. Transfer flows are regularly monitored for invasive and native fish species; however these occur in Burra Creek (not at the outlet itself).

An additional fish monitoring program is planned for the end of 2013. This program will analyse the eductor discharge for evidence that fish biota movements can be influenced by the abstraction and to what extent. The water at the discharge structure will also be sampled to ascertain if any fish biota have been transferred by the pipeline. Although the continuous filtering and fish monitoring has been undertaken different to the EIS Commitment 14 (Chapter 28), the objective of the development has not been compromised.

The proposed changes also remove the requirement to investigate the known current presence of carp in the near vicinity of Googong Reservoir, within the Googong catchment. Refer to Section 2.2.1 for further review of consistency.

3.5 NSW CONDITION OF APPROVAL 2.3

The modification to the NSW Condition of Approval 2.3 represents a minor changes to wording, however the removal of the wording '*does not increase local flooding risk*' takes away the obligation to operate the pipeline in such a manner that it does not exacerbate local flooding risk. The removal of this obligation could result in local flooding events caused by the transfer of water, and is therefore not consistent with the objectives and purpose of the EIS.

The removal of the wording '*Googong Reservoir outlet*' removes the obligation to operate and maintain the project to avoid bank stability impacts at Googong Reservoir outlet.

Given this, and given that this proposed changed represents a change to a Condition of Approval resulting in the original Condition of Approval not being able to be met, the proposed change is considered inconsistent with the Approved Project.

3.6 ACTEW EIS COMMITMENT 146 (EIS SECTION 12.5.3)

The modification to the EIS Commitment 146 represents a minor change in wording to the frequency at which the pumps are exercised.

Under the proposed change in maintenance pumping frequency the step up/down requirements, as detailed in the relevant OEMP subplan, will still be adhered to. It is not expected that hydrology impacts will arise from a change in maintenance pumping frequency, as the relatively small amount of water released during a maintenance run will not alter the hydrology of Burra Creek outside the levels of natural variation in the creek.

This change does not affect the objectives of the development.

3.7 ACTEW EIS COMMITMENT 212 (EIS SECTION 13.6.1)

The modification to the ACTEW EIS Commitment 212 represents a minor change to the measures to minimise the potential for impacts to terrestrial flora and flora detailed in the flora and fauna management subplan.

The EIS provides no context as to why exclusion or removal methods should be employed for wombats. It is surmised that this was recommended on the basis that the M2G flows would impact upon the ability of wombats to vacate a burrow. This by inference would relate to the time taken for inundation to occur, as the height of flows in Burra Creek during M2G flows is much less than that experienced during high rainfall or flood events which, despite this, wombats still burrow and reside along Burra Creek. It is thus concluded that the EIS expected the M2G project to decrease the time taken for water levels to reach inundation levels as compared with natural flows, reducing the time wombats have to vacate their burrows to a period which is likely to cause them to become trapped and drown. Exclusion and/or removal methods were therefore recommended in order to minimise this impact.

ACTEW sought ecological advice in relation to the likelihood of impacts occurring to wombats should exclusion and/or removal not be undertaken. The ecological advice (Appendix A) concludes that it is reasonable to change the commitment on the basis that:

1. The operation of the M2G will result in flows up to 100ML/d which are well below the maximum flow that has been recorded in Burra Creek from natural rainfall events between 2004-2013.
2. Wombats will not preferentially utilise burrows that are inundated or dampened during natural rainfall events, and as such are unlikely to require clearance from these burrow systems.
3. The 100ML/d discharge height is below the average burrow height along Burra Creek.
4. M2G flow rates are being modified to better reflect the flows of natural rainfall events including time to peak flows which would allow any individuals utilising burrows within the inundation range to evacuate or move to higher ground.

Furthermore, the advice stated that the proposed changes to the step-up step-down procedures would result in the time taken to increase flow heights from M2G better mimicking natural flow events.

The advice indicates that if M2G flows can mimic natural flows in the time taken to inundate burrows, wombats would have enough time be vacate their burrows and hence an increase in mortality is not likely to occur.

On the provision that the step up / step down times reflect the natural flow events in the time taken to reach creek heights were burrows are likely to be inundated, it is concluded that exclusion/removal measures would have no benefit to wombats residing along Burra Creek. On this basis, the proposed change would be consistent with the Approved Project.

3.8 ACTEW EIS COMMITMENT 248 (EIS CHAPTER 16.3.2)

The modification to the ACTEW EIS Commitment 248 represents a minor change in wording to reflect pipeline maintenance described in section 16.3.2 of the EIS. This minor change relates to directing discharged waters from pipeline maintenance to farm and does not affect the objectives of the development.

Mitigation measures to manage water quality impacts and overtopping of dams would be implemented to ensure additional impacts from the change do not occur and that Section 120 POEO Act is complied with.

3.9 ACTEW EIS COMMITMENTS 258 & 259 (EIS SECTIONS 9.6 & 24.3.1)

The modification to ACTEW EIS Commitments 258 & 259 represents a minor change to how erosion and sediment (ERSED) impacts are managed from an administrative point of view. ACTEW commitments 258 and 259 require ERSED impacts to be managed through a 'Soils Management Sub-Plan'; however the modification allows flexibility in the documentation prepared to manage these impacts whilst still addressing the required mitigation measures detailed in section 16.5 of the EIS. This modification would prevent unnecessary administration and duplication of effort.

3.10 ACTEW EIS COMMITMENT 293 (EIS SECTION 24.3.2)

It is understood that Cyanotoxins are produced when the cells of some species of Cyanobacteria burst or die, which generally coincides with a bloom. It is understood that ACTEW monitor Cyanobacteria levels (as well as total algae levels) at Angle Crossing (MUR213) routinely. ACTEW maintain that there is no need to monitor for Cyanotoxins unless there is an established bloom. The Australian Drinking Water Guidelines recommends testing for Cyanotoxins at a target limit of 1,000cells/mL and a critical limit of 6,500cells/mL.

ACTEW have advised that if water is to be abstracted from Googong Reservoir (Googong raw waters) to treat at Googong Water Treatment Plant, and there is a Cyanobacteria bloom, then monitoring for Cyanotoxins in both the Googong Reservoir and at the WTP would occur.

Hence, monitoring for algae within the Googong reservoir would provide a better indicator as to whether monitoring for Cyanotoxins is required and provide a more cost effective safeguard against water pollution issues.

It is considered that the proposed change in ACTEW Commitment 293 would better meet the EIS objectives and hence is consistent with the Approved Project.

3.11 ACTEW EIS COMMITMENT 345 (EIS SECTION 27.4.1)

The modification to the ACTEW EIS Commitment 345 represents a minor change in the method that annual reporting is delivered. This modification would reduce duplication of reporting and does not affect the implementation of this commitment.

4 ENVIRONMENTAL ISSUES AFFECTED BY THE MODIFICATION

The EIS was undertaken to identify and assess all potential environmental impacts. An evaluation was undertaken in which environmental impact areas were considered in relation to the proposed condition modification. The evaluation considered the method of assessment and mitigation strategy. Four areas were identified as potentially being inconsistent:

- Soil and water quality impacts
- Hydrology impacts
- Aquatic ecology impacts
- Terrestrial ecology impacts

4.1.1 Soil & Water Quality Impacts

The proposed modification to release scour water onto the ground to allow provisioning of water to landowners for capture in property dams or alternative discharge methods has the potential to result in erosion, sedimentation and water quality impacts.

Release of scour water on to the ground into farm dam catchments increases the risk of erosion at the inlet and spillway of the dam and also increases probability of the dam overtopping. This increases the chance of potential negative impacts on the water quality of the receiving environment.

The current OEMP has the capacity to adequately manage these risk, however it is recommended that additional monitoring of the inlets and outlets of the farm dam and outlet of the pipeline is undertaken during scour water release. This additional monitoring will ensure that associated impacts are identified in a timely manner and mitigation measures are implemented.

The proposed modification to allow the flexibility to address erosion and sedimentation impacts through a soils management plan or equivalent process does not affect the implementation of operational controls detailed in Section 16 of the EIS. Ensure that all mitigation measures outlined in Section 16 of the EIS are addressed by a soils management sub-plan or equivalent to prevent any increase in impacts to topography soils or groundwater.

4.1.2 Hydrology Impacts

The proposed modifications would alter, to a small extent, the process of releasing water during maintenance pumping. Maintenance pumping will continue to adhere to the step up/down requirements detailed in the relevant OEMP sub-plan and is not expected to increase hydrology impacts.

The changes proposed to NSW Condition of Approval 2.3 could lead to changes in flooding and bank stability issues.

4.1.3 Aquatic Ecology Impacts

The proposed modifications to remove the requirement of investigating the known presence of carp may increase the risk of carp being introduced unknowingly due to lack of monitoring. Due to the continuation of biannual fish surveys in the Googong Reservoir by the ACT Government, presence of carp will continue to be monitored and as a result it is unlikely that unnoticed introduction of carp would occur.

Proposed changes to the requirement of maintenance of flow transfers during breeding season will not trigger a significant change and is supported by Section 12.5.3 if the EIS which states '*if threatened fish species were found to be spawning in Burra Creek, flow transfers will be maintained where possible during the breeding season to protect the spawning populations'.*

The proposed changes in maintenance pumping frequency is not expected to substantially impact hydrology, as the relatively small amount of water released during a maintenance run will not alter the hydrology of Burra Creek outside the levels of natural variation in the creek. These minor changes are therefore not expected to substantially impact on aquatic flora or fauna.

Modifications to continuous filtering at the inlet to the pipeline instead of the outlet into Burra Creek does not impact the objectives or purpose of the EIS. Transfer flow will still be regularly monitored for invasive and native fish species.

The proposed modifications detailed above are not expected to increase risk or impact on aquatic ecology and continue to meet the objectives and purpose of the EIS and the associated Project Approvals.

4.1.4 Terrestrial Ecology Impacts

Based on the advice received by ACTEW from Eco Logical Australia in relation to potential changes to impacts on Wombats from the proposed change to ACTEW EIS Commitment 212, it is concluded that Wombats are unlikely to be more effected than they would otherwise be should exclusion and removal of animals from burrows not occur prior to a flow. This is due to the following:

1. The ramp up / ramp down times better reflect the rate of water level changes in Burra Creek from natural storm events.
2. The Wombat's natural ability to evacuate burrows prior to rain events.
3. The Wombat's preference for dry burrows.

The proposed modifications detailed above are not expected to increase risk or impact on terrestrial ecology and continue to meet the objectives and purpose of the EIS and the associated Project Approvals.

4.2 CONSISTENCY REVIEW SUMMARY

A summary of each proposed change's consistency with the Approved Project is presented in the table below.

Table 4-1: Statement of consistency for each proposed change

Condition scope (and relevant source documents)	Statement of Consistency (Commonwealth)	Statement of Consistency (NSW)	Statement of Scale of Change(ACT)*
Commonwealth PER Table 7.1 Item 3	Consistent		
EIS Commitment 8 (Chapter 28)		Consistent	Minor
EIS Commitment 11 (Chapter 28)		Consistent	Minor

Condition scope (and relevant source documents)	Statement of Consistency (Commonwealth)	Statement of Consistency (NSW)	Statement of Scale of Change(ACT)*
EIS Commitment 14 (Chapter 28)		Consistent	Minor
NSW Condition of Approval 2.3		**Inconsistent**	
ACTEW EIS Commitment 146		Consistent	Minor
ACTEW EIS Commitment 212		Consistent	Minor
ACTEW EIS Commitment 248		Consistent	Minor
ACTEW EIS Commitments 258 & 259		Consistent	Minor
ACTEW EIS Commitment 293		Consistent	Minor
ACTEW EIS Commitment 345		Consistent	Minor

* Note, advice in relation to the ACT Planning and Development Act and Regulations is provided to the best of the author's knowledge and, if in doubt, ACTEW should seek advice from a recognised expert in ACT planning law.

5 CONCLUSION AND RECOMMENDATIONS

This consistency review has found that all of the proposed changes to the EIS Commitments are considered to be consistent with the Approved Project. None of these proposed changes would lead to any Conditions of Approval (except CoA 1) not being met. When considered both alone and together, they do not represent a substantial change to the project.

This review has found that the proposed changes to NSW Condition of Approval 2.3 would not be consistent with the Approved Project. An application to modify the Approved Project would be required in order to change this Condition.

Recommendations are:

1. An Application to Modify the Approved Project should be made to the NSW Department of Planning and Infrastructure in relation to the proposed change to NSW Condition of Approval 2.3
2. An Application to Modify a Controlled Action should be made to the Commonwealth Department of the Environment (formerly SEWPAC) in relation to the changes proposed to the PER commitment.
3. Monitoring of farm dam inlets and outlets would be undertaken to determine the effect of scour valve releases where such releases are occurring over land.
4. ACTEW should notify, in writing, the NSW DoPI and ACTPLA of the proposed changes to the project's commitments.

6 REFERENCES

ACTEWAGL Distribution, *Murrumbidgee Ecological Monitoring Program*, *Annual Report, 2010-2011*

ACTEWAGL, *Murrumbidgee to Googong Environmental Impact Statement*, December 2009

Bulk Water Alliance, *Murrumbidgee to Googong (M2G) CO_2 Dosing System at Mini-Hydro Infrastructure, Consistency Assessment of Impact*, October 2011

APPENDIX A ECOLOGICAL ADVICE RELATING TO WOMBAT BURROWS

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TO	Craig Hardge
FROM	Andrew Palmer-Brodie
DATE	14th October 2013
SUBJECT	Alterations to EIS commitment 212

Eco Logical Australia understands that ACTEW Water wish to vary Commitment 212 outlined in the Environmental Impact Statement (EIS) prepared for the Murrumbidgee to Googong Water Transfer Project (M2G). Commitment 212 of the EIS states that:

> *A flora and fauna management sub-plan will be prepared as part of the construction environmental management plan, outlining the procedures to manage and minimise the potential for impact to terrestrial ecology.*
>
> *The plan will also include measures to minimise the potential for impacts to terrestrial flora and fauna, including the following:*
> - *Measures to ensure the clearance or exclusion of wombats from burrows that will be inundated during level discharge. This may require repeated management action during the life of the project;*

It is understood that ACTEW Water wish to modify the above commitment to remove the requirement to clear or exclude wombats from their burrows. It is understood that the flows resulting from the discharge of the M2G will not be dissimilar to those that would be routinely experienced by Burra Creek, and will be much less than flows experienced during a significant rain event.

Common Wombat (*Vombatus ursinus*) are known to occur in high densities within pastoral landscapes such as around Burra Creek, NSW. Wombats predominantly construct their burrows within a narrow 20 m corridor around riparian vegetation, and burrows are typically used by multiple wombats staying for durations of around 4 nights each (Skerratt et al, 2004). The Common Wombat has more than one entrance on around 1/3 of burrows constructed (Dr Murray Evans, pers. comm.). Burrows can typically extend for a length of 20 m, with large active burrows sometimes containing multiple entrances over that distance.

Burra Creek is characterised by an average base flow of around 2-3 ML/d running at an estimated height of less than 0.5 m on average. The release of ~100 ML/d results in a height change of approximately 0.15 – 0.30 m depending on the topography of the creek. Observations provided by ACTEW Water staff indicate that the majority of wombat burrows along Burra Creek occur above the 100ML/d water level tending to be around 0.50 – 0.75 m above the Creek bed. During the course of hydrological monitoring for the M2G, ACTEW Water staff recorded observations of flows greater than 37,000ML/d (interpolated) within Burra Creek from a natural rainfall event in December 2010, flooding the creek to a height greater than 5.0 m, as recorded at the gauging station. The average discharge height is considerably less than the highest recorded, and is well below the average burrow height along Burra Creek. ACTEW Water staff commented that following the large flood events, no drowned wombats were observed.

Given the species propensity to build and utilise burrows in areas subject to natural flood events, the species is unlikely to be adversely impacted by discharge associated with flow releases that mimic natural flood events in duration and time to peak flows (Dr Murray Evans, pers. comm.). The M2G discharge will result in flows of greater than normal duration, however, Burra Creek has a highly variable flow rate and height as a result of natural events, and as such, the alterations to the duration of floods are considered unlikely to have an adverse impact in the context of the current hydrological regime that the creek experiences. In addition, Wombats do not preferentially utilise burrows that get damp, preferring those burrows which remain dry (Dr Murray Evans, pers. comm.). As such, wombats are considered less likely to construct and utilise burrows at a height that becomes inundated or is affected during rain events or ongoing discharge from the M2G. Burrow heights within Burra Creek have been estimated at around 0 -0.75 m above the creek bed.

In order to reflect natural flow events, the M2G is in the process of developing and implementing a step-up and step-down process to mimic natural flow events, particularly for use around maintenance flows where the pumps are required to operate at full capacity (~100 ML/d). Based on data from the Burra Creek weir, natural events generally take a minimum of 1 hour to peak with the median being approximately 2 – 3 hours for M2G discharge flows (letter from Norm Mueller to ACTEW Water, July 2013).

Based on the information above, it is considered reasonable to vary the commitment to exclude or clear wombats from burrows likely to be inundated for the following reasons:

- The operation of the M2G will result in discharge flows of approximately 100 ML/d which are well below the maximum flow that has been recorded in Burra Creek from natural rainfall events between 2004-2013.;
- Wombats will not preferentially utilise burrows that are inundated or dampened during natural rainfall events, and as such are unlikely to require clearance from these burrow systems;
- The 100ML/d discharge height is below the average burrow height along Burra Creek; and
- M2G flow rates are being modified to better reflect the flows of natural rainfall events including time to peak flows which would allow any individuals utilising burrows within the inundation range to evacuate or move to higher ground.

Although ACTEW is not intending to actively monitor wombats burrows or exclude wombats during discharge, based on the information above, if required the burrows can be made temporarily unsuitable and subsequently cleared by using the following method (Dr Murray Evans, pers. comm.).

1. Apply dynamic lifter to the outside of the burrow and throw large handfuls of dynamic lifter into the burrow as far as possible.
2. Place three sticks dug slightly into the ground at the burrow entrance so that any wombat moving in or out must move the sticks
3. Check the burrow daily and if after a minimum of 4 days, but ideally 10 days the sticks have not been disturbed, the burrow can be carefully excavated to ensure no animals are still within and then backfilled.
4. If the sticks are disturbed, apply more dynamic lifter and replace sticks. Check the burrow daily until no disturbance is noted for 10 days.

References

- Skerratt L.F., Skerratt J.H.L., Banks S., Martin R., Handasyde K. 2004, *Aspects of the ecology of common wombats (Vombatus ursinus) at high density on pastoral land in victoria,* Australian Journal of Zoology, 52(3) 303-330.
- Dr Murray Evans, 2013, personal communication, 16th September, 2013 .
- Norm Mueller, July 2013, Letter to ACTEW Water, *M2G Pump Step-up and Step-down times for maintenance runs.*
- ACTEW Water, Personal communication, 16th September, 2013