Australian Capital Territory

Planning and Development (Environmental Impact Statement Assessment Report – Cravens Creek Water Quality Control Pond) Notice 2014

Notifiable Instrument NI2014–204

made under the

***Planning and Development Act 2007*, s 225A (EIS assessment report)**

---

1 Name of instrument

This instrument is the *Planning and Development (Environmental Impact Statement Assessment Report– Cravens Creek Water Quality Control Pond) Notice 2014.*

2 Commencement

This instrument commences on the day after notification.

3 Environmental Impact Statement Assessment Report

An environmental impact statement (EIS) assessment report has been prepared by the ACT Planning and Land Authority. The EIS assessment report was given to the Minister for the Environment and Sustainable Development and the Minister has decided to take no action in relation to the EIS.

The EIS assessment report is shown at Annexure A.

A copy of the EIS assessment report may be obtained from ESDD's website:

http://www.actpla.act.gov.au/topics/design_build/da_assessment/environmental_assessment/current_and_completed_eiss

4 Completion

The EIS assessment report expires 18 months after the day the notice is notified.

Simon Corbell MLA
Minister for the Environment and Sustainable Development
7 May 2014

Cravens Creek Water Quality Control Pond

Environmental Impact Statement
Assessment Report

MARCH 2014

ACT Government
Environment and Sustainable Development

Authorised by the ACT Parliamentary Counsel—also accessible at www.legislation.act.gov.au

Pursuant to section 222 of the *Planning and Development Act 2007*, this report evaluates the revised environmental impact statement for the following application:

Ref no: 201200083
Date lodged: 20/11/2013
Project: Cravens Creek Water Quality Control Pond
Street no. and name: N/A
Applicant: Shared Services Procumbent

The following information provides the certificate of approval for issue of this report.

Document no: A9108342
Revision: 2.0
Document status: FINAL
Date of issue:

	Position	Name	Signature	Date
Reviewed by	Manager	Jonathan Teasdale		6/3/14
	Executive Director– Planning Delivery	Jim Corrigan		7.3.14
Reviewed by	Deputy Director-General- Planning	Ben Ponton		11.3.14
Approved by	Director General	Dorte Ekelund		14/3/14

Table of contents

Figures

Tables

Glossary and definitions

ACT	Australian Capital Territory
Australian Government Department	The Australian Government Department administering the *Environment Protection and Biodiversity Conservation Act 1999*.
Australian Government Minister	The Australian Government Minister administering the *Environment Protection and Biodiversity Conservation Act 1999* and includes a delegate of the Minister.
ARI	average recurrence interval
BGW	White Box-Yellow Box-Blakely's Red Gum grassy woodland and derived native grassland
CEMP	construction environmental management plan
CPR	Conservation Planning and Research
DA	development application
EIA	environmental impact assessment: the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals before major decisions and commitments are made[1].
EIS	environmental impact statement: a document prepared to detail the expected environmental, social and economic effects of a development, and state commitments to avoid, mitigate or satisfactorily control and manage any potential adverse impacts of the development on the environment[2]. In the ACT, an EIS is required for proposals in the impact track as per section 123 of the *Planning and Development Act*.
ESA	environmentally sensitive areas
ESDD	Environment and Sustainable Development Directorate
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
GPT	Gross Pollutant Trap
MNES	Matters of national environmental significance
NC Act	*Nature Conservation Act 1980*
NES Plan	Molonglo Valley Plan for the Protection of Matters of National Environmental Significance – NES Plan (September 2011)
NTG	Natural Temperate Grassland
PTWL	Pink-tailed Worm-lizard, *Aprasia Parapulchella*
TAMSD	Territory and Municipal Services Directorate
The Act	*Planning and Development Act 2007*

[1] International Association for Impact Assessment in cooperation with Institute of Environmental Assessment, UK, 'Principles of Environmental Impact Assessment Best Practice', <http://www.iaia.org/modx/assets/files/Principles%20of%20IA_web.pdf>, viewed on 2 June 2009.

[2] Ceduna Marina Development Company, 2004, 'Guidelines for the preparation of an Environmental Impact Statement', <http://dataserver.planning.sa.gov.au/publications/1017p.pdf>, viewed on 5 June 2009

The authority	the planning and land authority within the Environment and Sustainable Development Directorate
WQCP	Water quality control pond
WSUD	Water sensitive urban design

Executive summary

This report is to the ACT Minister for Environment and Sustainable Development on the assessment of the Environmental Impact Statement for the proposed Cravens Creek Water Quality Control Pond. The project is to construct a water quality control pond, in close proximity to the Molonglo River to support the Molonglo Stage 2 urban development.

Project background

Molonglo Valley was originally identified for future urban development in the 2004 Canberra Spatial Plan and is planned to accommodate approximately 55,000 new residents as a three stage urban development. The Cravens Creek Water Quality Control Pond is an essential component of the first land release in the Molonglo Stage 2 development. It forms part of the stormwater management system to protect the Molonglo River from pollution associated with urban development and to provide a source of non-potable water for future irrigation of nearby playing fields.

Project description

The project is to be constructed within the existing drainage line known as Cravens Creek, which is located in the north-east section of Molonglo Stage 2 urban development on Molonglo Valley Blocks 17 and 18. The infrastructure associated with the project includes an embankment, primary and secondary spillways and gross pollutant traps. Section 2.1 includes a detailed project description.

The environmental impact assessment process

Under section 123(b) of the *Planning and Development Act 2007*, the development application for the Cravens Creek Water Quality Control Pond must include a completed Environmental Impact Statement as it falls in the activities, areas and process identified in Schedule 4 of the *Planning and Development Act 2007*.

The proposed development in the Molonglo Valley has been subject to a strategic assessment under the *Environment Protection and Biodiversity Conservation Act 1999*. The strategic assessment resulted in the endorsement of the *Molonglo Valley Plan for the Protection of Matters of National Environment Significance*. The *Molonglo Valley Plan for the Protection of Matters of National Environment Significance* covers the project area. A description of the strategic assessment process can be found in section 3.8 of this report.

On 6 March 2012 ACT Shared Services Procurement submitted a request for a scoping document. A final scoping document was issued by the planning and land authority within the Environment and Sustainable Development Directorate to the proponent on 2 May 2012. The draft Environmental Impact Statement was lodged by the proponent on 27 August 2013. Public notification of the draft Environmental Impact Statement occurred from 2 to 27 September 2013.

On 20 November 2013 the proponent submitted a revised Environmental Impact Statement taking into account the planning and land authority's preliminary review of the draft Environmental Impact Statement and comments from the public and the referral entities. After assessing the revised Environmental Impact Statement and discussions with mandatory referral entities, it was determined that there were a number of items that required further information. Therefore a further information request was issued to the proponent on 23 December 2013. The proponent provided a response to the planning and land authority on 17 February 2014.

After considering the documentation and information provided, the planning and land authority accepted the Environmental Impact Statement under section 222 of the *Planning and Development Act 2007*. This report is to inform the ACT Minister for the Environment and Sustainable Development of the environmental impact assessment process undertaken and provide recommendations on further actions to be taken on the Environmental Impact Statement.

Key findings

In preparing the Environmental Impact Statement, the proponent investigated the potential impacts of the project on the environment under the following aspects:

- traffic and transport;
- material and waste;
- landscape and visual;
- soils and geology;
- water quality and hydrology;
- climate change and air quality;
- terrestrial flora and fauna;
- aquatic flora and fauna;
- socio-economic and health (including recreational use);
- noise, vibration and lighting; and
- bushfire, hazard and risk.

The following aspects were not considered to have potentially significant impacts, as they had no identified risk scenarios of medium rating or above:

- planning and land status;
- utilities; and
- Aboriginal and European cultural heritage.

The Environmental Impact Statement proposed mitigation measures to the identified risk scenarios under these aspects. For those risks which had an assessed risk rating of medium or above the proponent conducted a residual risk assessment after the application of mitigation measures. It is the planning and land authority's assessment that the risk assessment methodology used by the proponent in considering the impacts of the project is acceptable.

Development assessment

Based on information provided in the Environmental Impact Statement as well as comments received from referral entities, any subsequent development application related to the completed Environmental Impact Statement will need to consider conditions for the matters listed below. Details of these possible conditions are outlined in section 5 of this report.

The key consideration is the requirement for a construction environmental management plan to be prepared to the satisfaction of relevant entities. This plan is to include several sub-plans to ensure all relevant aspects of the environment is protected. Required sub-plans to the construction environmental management plan are:

- erosion and sediment control plan;
- weed management plan;
- restoration works plan;
- contamination management plan; and
- unanticipated discovery protocol.

As part of the Molonglo Strategic Assessment, an offset package was prepared and approved to compensate for unavoidable impacts arising from the development of the Molonglo Valley on matters of national environment significance. The clearance of 7,450m^2 of Pink-tailed Worm-lizard habitat as a result of construction of the project is the only potential impact on the matters of national environment significance. It has already been addressed through the Molonglo Strategic Assessment and hence the requirements of the *Environment Protection and Biodiversity Conservation Act 1999* have already been met.

Recommendation

It is considered that the Environmental Impact Statement has provided sufficient information to allow informed assessment of the potential environmental impacts of the project. To reduce or avoid potential environmental impacts associated with the project, the proponent has identified and committed to implementing a range of mitigation measures. The planning and land authority considers that the implementation of offsets, mitigation measures and development assessment considerations can adequately address any adverse impacts.

With regards to matters of national environmental significance, the endorsed *Molonglo Valley Plan for the Protection of Matters of National Environment Significance* identifies and describes the required management, mitigation and offsetting requirements of the Australian Government Department of the Environment to adequately protect matters of national environmental significance. The proponent has committed to complying with the requirements of the *Molonglo Valley Plan for the Protection of Matters of National Environment Significance* to address potential impacts on matters of national environmental significance.

The assessment of the Environmental Impact Statement has identified three items where the requirements of the scoping document are only partially met. It is the

planning and land authority's assessment that this does not justify the establishment of a panel of inquiry.

The planning and land authority recommends that the ACT Minister for Environment and Sustainable Development take no further action in relation to the Environmental Impact Statement.

1 Introduction

The Cravens Creek Water Quality Control Pond (WQCP) is a proposal that meets section 123 of the *Planning and Development Act 2007* (the Act) as it involves a process or activity mentioned in schedule 4 of the Act, and therefore requires an Environmental Impact Statement (EIS). An EIS must be completed in accordance with the requirements of the Act before a development application can be lodged in the impact track.

A final scoping document was provided to the proponent on 2 May 2012 which specified what had to be assessed and considered in the EIS.

More information on representations received as part of the consultation process can be found in section 3 of this report. More information on the key findings of the proponent's assessment against the heads of consideration outlined in the final scoping document can be found in section 4.

The EIS is not an approval process. It ensures potential impacts and possible mitigation measures for certain development proposals have been fully investigated and documented in accordance with the requirements of a scoping document.

The EIS is then used as a key assessment tool for any development application lodged for the proposal.

1.1.1 Assessment and key findings

The key findings of the assessment are discussed in section 4 under the following headings:

- traffic and transport;
- material and waste;
- landscape and visual;
- soils and geology;
- water quality and hydrology;
- climate change and air quality;
- terrestrial flora and fauna;
- aquatic flora and fauna;
- socio-economic and health (including recreational use);
- noise, vibration and lighting; and
- bushfire, hazard and risk.

1.1.2 Development application considerations

Possible conditions of approval for the development application (DA) are in section 5 of this report. Conditions relate to mitigation measures and commitments based on the information provided in the EIS as well as comments received from entities who have seen and commented on the EIS. The DA may require further conditions to fulfil the planning intent of the proposal.

1.1.3 Recommendation to the Minister for the Environment and Sustainable Development

Once the planning and land authority (the authority) within the Environment and Sustainable Development Directorate (ESDD) accepts the EIS under section 222 of the Act, the authority must give the EIS to the ACT Minister for Environment and Sustainability Development. Once this has occurred the Minister may:

- choose no action on the EIS under section 226 of the Act;
- present the EIS to the Legislative Assembly under section 227 of the Act; and
- establish an inquiry panel to inquire about the EIS.

The requirements for establishing an inquiry panel are detailed under Part 8.3 of the Act.

If, under section 226, the Minister has decided to take no action, he must give the authority written notice that the Minister has decided to take no action in relation to the EIS.

ESDD's recommendation to the Minister can be found at section 6 of this report.

1.1.4 Impact track process

Once the final EIS has been completed, the proponent can lodge a DA in the Impact track. Any subsequent DA relating to the EIS must include the completed EIS.

2 Project details

This section gives an overview of the Cravens Creek WQCP project including its background, scope, location, timeline, as well as all other alternative options and why the project was chosen to be developed.

2.1 The project

Molonglo Valley was identified as a three stage urban development, to accommodate approximately 55,000 new residents over the next 30 years. The Cravens Creek WQCP is an essential component of the first land release in the Molonglo Stage 2 development. The primary purpose of this pond is to protect the Molonglo River from pollution associated with urban development through retardation of stormwater flows. Other uses of this pond include an urban recreational facility and a future water storage asset for irrigation purposes. The proposed Cravens Creek WQCP is located on unleased Territory Land, the north-east of Molonglo Stage 2 urban development on Molonglo Valley Blocks 17 and 18. The site is upstream of the confluence of Cravens Creek with the Molonglo River (see Figure 1 for the location of the proposal).

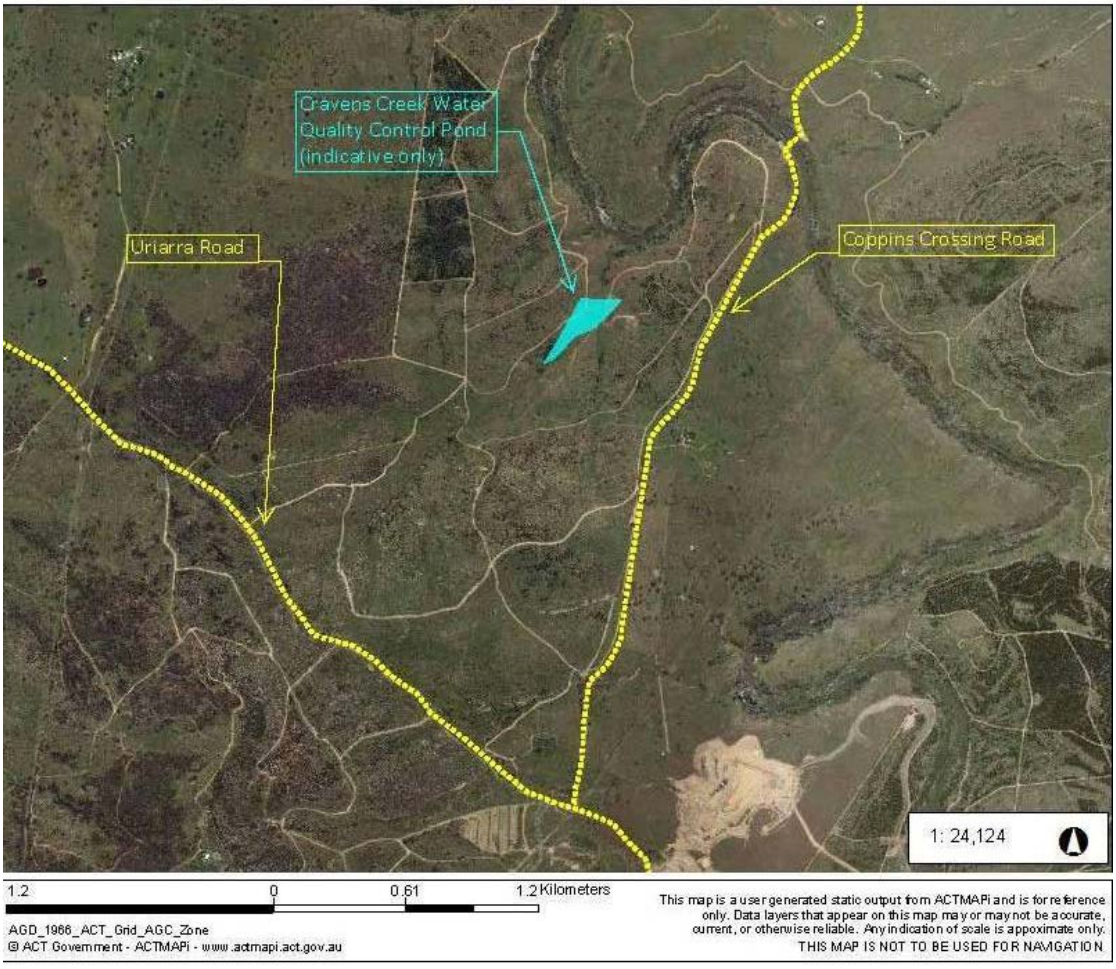


Figure 1 – Location of the proposed Cravens Creek WQCP

2.1.1 Project description

The EIS states that the proposed Cravens Creek WQCP includes:

- *an earthen embankment consisting of a clay core, together with upstream and downstream rock facing;*
- *a primary spillway consisting of three parallel pipes conveying flows beneath the pond embankment and discharging into a stilling basin. This basin comprises energy dissipation blocks and multiple drop structures to reduce the velocity of water discharged into the lower portion of Cravens Creek and subsequently the Molonglo River;*
- *a secondary spillway consisting of a shaped landform aimed at discharging to the east of the pond embankment back into Cravens Creek; and*
- *two minor GPTs and a major GPT located at the inflow points into the Cravens Creek WQCP.* [3]

The anticipated commencement of the construction will be in mid to late 2014 and the overall construction timeframe is estimated at approximately 12 months. The life of the dam and spillway is likely to be in excess of 100 years. The construction of the pond is expected to be staged as follows:

Pre-Construction Stage:

- finalise clay supply contract; and
- finalise arrangements for fire trail usage in conjunction with the preparation of a construction traffic management plan and Coppins Crossing Road dilapidation report together with minor upgrade works of fire trails.

Construction Stage:

- create construction pads;
- set up site office and install site fencing and signage;
- construct coffer dam;
- install temporary erosion and sediment controls; and
- undertake earthworks, including primary and secondary spillway structures.

Post-Construction Stage:

- revegetate disturbed areas; and
- remove temporary erosion and sediment controls.

[3] Pg. iv – Environmental Impact Statement – Cravens Creek Water Quality Control Pond Molonglo Valley Blocks 17&18, NGH Environmental, 15 November 2013

2.1.2 Project proponent

The proponent is ACT Shared Services Procurement.

2.1.3 Ecological Sustainable Development Principles and Statement of Strategic Directions

The EIS includes an assessment by the proponent as to how the ecological sustainable development principles listed under s.516A of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) have been considered in the preparation of the EIS. Section 3.3 of the Revised EIS provides a detailed discussion of the project in relation to the effective integration of economic and environmental factors into the decision making process. The proponent also states that the project is compliant with the statement of strategic directions in the Territory Plan.

2.1.4 Alternatives

The application for scoping document for the proposed Cravens Creek WQCP makes reference to pond N1, a smaller secondary pond located nearby. The proponent has decided to exclude pond N1 due to construction costs and potential environmental impacts. This represents a design alternative.

Pond location

An alternative pond location was considered by the proponent during the initial planning stage. The pond was proposed to be located further up the Cravens Creek catchment, away from the Molonglo River corridor (refer to Figure 2).

This option was discarded as it was decided that better water quality outcomes and more suitable geotechnical conditions could be expected if the WQCP was located partially within the Molonglo River corridor.

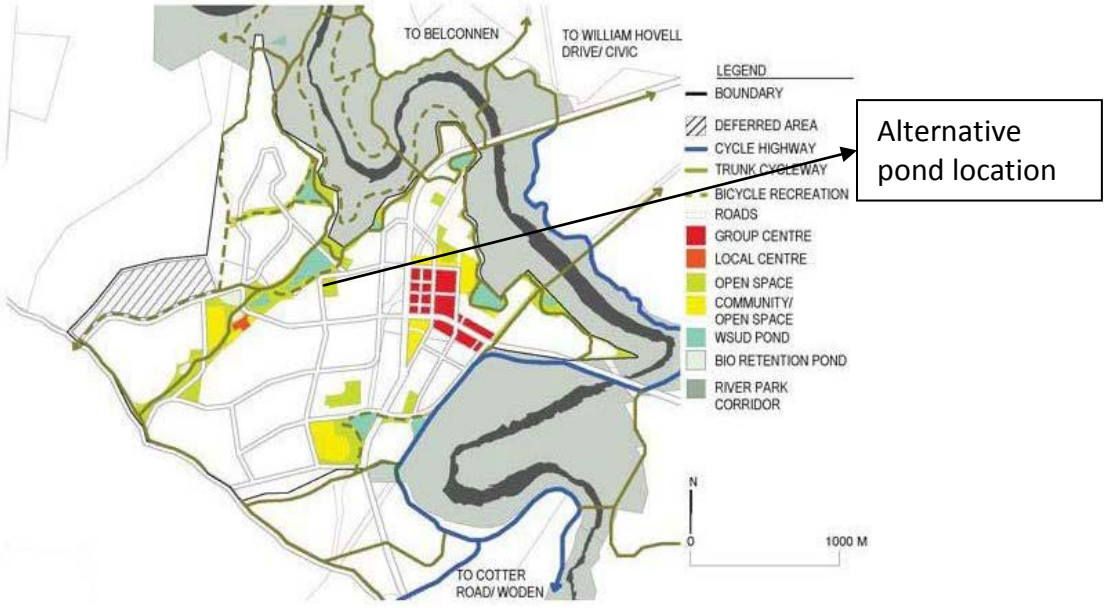


Figure 2 – Alternative pond location considered

Embankment

The following four possible embankment design options were considered:

- earth fill embankment with a spillway consisting of concrete armouring on the face of the embankment to protect the dam during overtopping;
- an earth fill embankment with an impermeable clay core;
- a rock fill embankment with a concrete face; and
- a roller compacted concrete dam wall.

The second embankment design option was adopted by the proponent. Section 2.2 of the revised EIS includes a detailed discussion of the positive and negative consequences of each option.

Spillways

The following three possible spillway design options were considered:

- a glory hole arrangement for flows up to the 100 year average recurrence interval (ARI) event and overtopping along the crest of the embankment for flows up to the 10,000 year ARI event;
- a glory hole arrangement with an inlet structure to convey flows beneath the embankment via a conduit; and
- a concrete lined side spillway around to the east of the embankment.

The second spillway design option was adopted by the proponent. Section 2.2 of the revised EIS includes a detailed discussion of the positive and negative consequences of each option.

Stratification

The following five possible stratification options were considered:

- fill the pond with earth material so the water depth between the base of the pond and the MOL is a maximum of 3m;
- pump water from the bottom of the pond for irrigation in other areas of the catchment;
- pump water from the bottom of the pond and circulate it within the pond;
- construct a large mixer within the pond; and
- reduce the depth of the pond.

The third option was adopted by the proponent. Section 2.2 of the revised EIS includes a detailed discussion of the positive and negative consequences of each option.

2.1.5 Timeframes

This section includes key dates associated with the Cravens Creek WQCP EIS process and a brief overview of the project staging and project timeframes.

- 16 September 2008 - the Australian Government Minister and the ACT Minister for the Environment and Sustainable Development announced that a Strategic Assessment of the proposed Molonglo and North Weston Structure Plan would be undertaken in accordance with s146 of the EPBC Act;
- 20 March 2012 - the request for scoping document was submitted pursuant to section 212(1) of the Act;
- 2 May 2012 – the authority issued the final scoping document pursuant to section 212(2) of the Act;
- 27 August 2013 the draft EIS was lodged pursuant to section 216(2) of the Act;
- 2 September 2013 to 27 September 2013 - the draft EIS was publicly notified pursuant to section 217 of the Act;
- 20 November 2013 - the revised EIS was submitted pursuant to section 221 of the Act; and
- 23 December 2013 – the authority issued a further information request to the proponent, which was responded to by the proponent on 17 February 2014.

This page has been left intentionally blank.

3 The environmental impact assessment process

The environmental impact assessment (EIA) process systematically identifies, predicts and evaluates the environmental effects of a proposed project. This process occurs before major decisions and development commitments are made. The main objective is to prevent, reduce and offset significant negative impacts on the environment.

The purpose of the process is to ensure the decision maker (i.e. the authority) is fully informed about environmental aspects and consequences before making a final decision on the DA.

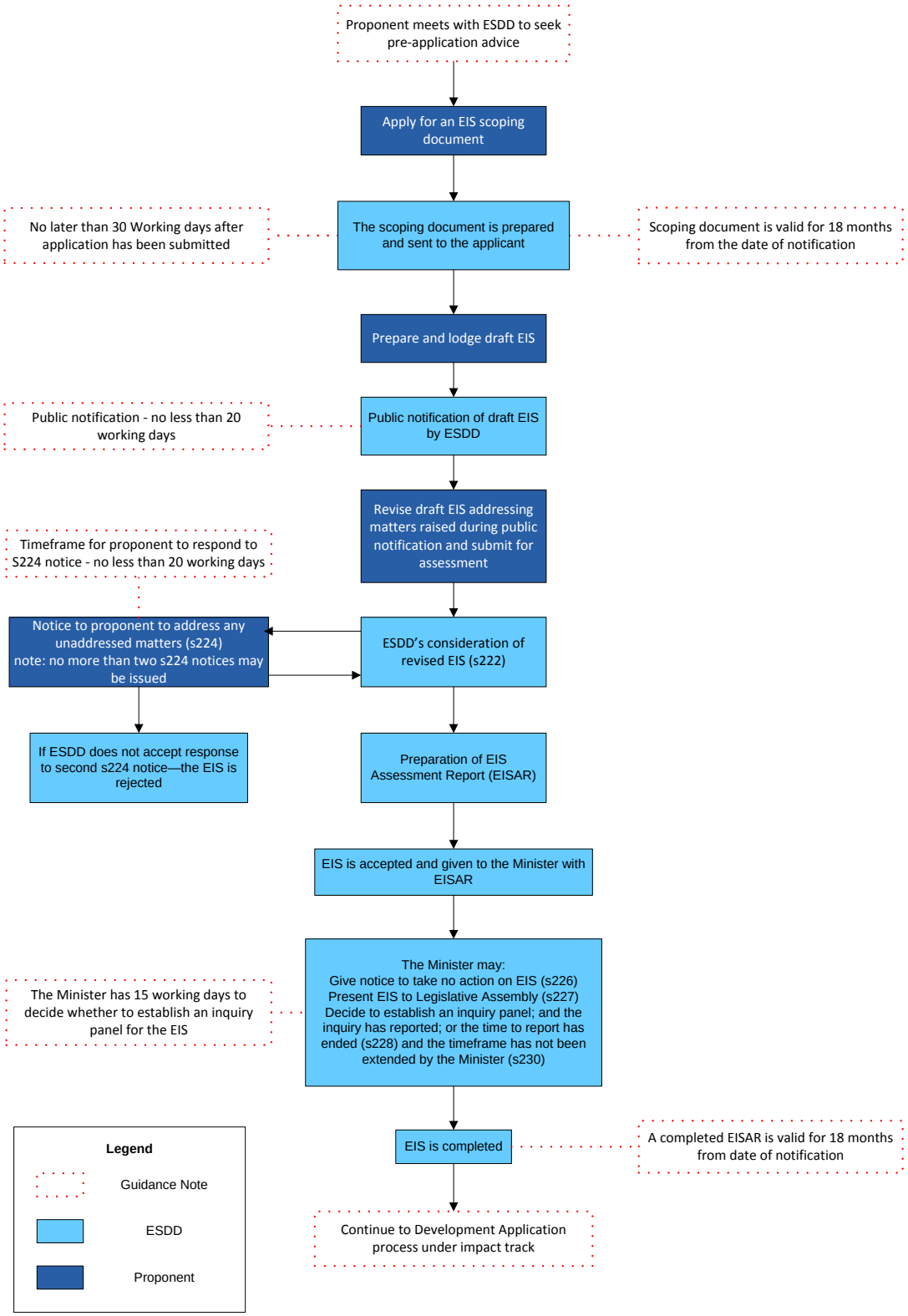


Figure 3 – The EIA process

3.1 Impact track

Under section 127 of the Act, a development application for a proposal in the impact track must include a completed EIS for the proposal unless the application is exempted by the ACT Minister for Environment and Sustainable Development under section 211. No request for exemption from an EIS has been made. Section 123 of the Act also states that the impact track provisions of the Territory Plan apply to any proposal listed in Schedule 4 of the Act.

The Cravens Creek WQCP includes proposals described in Schedule 4, as listed below, and therefore requires an EIS.

Table 1 – Activities, areas or processes from Schedule 4 of the P&D Act

Part - Item number	Activities, areas or processes met by proposal
Part 4.2 Item 3	*proposal for construction of a water storage dam—* *(a) that will be at least 15m high when measured from the lowest point of the general foundations to the crest of the dam; or* *(b) that will be at least 10m high when measured from the lowest point of the general foundations to the crest of the dam if—* *(i) the crest is not less than 500m in length; or* *(ii) the water storage capacity of the reservoir formed by the dam at normal operating level is at least 1 000 000m3; or* *(iii) the recommended design flood discharge dealt with by the dam is at least 2 000m3 per second; or* *(c) in the river corridor zone under the territory plan unless the conservator of flora and fauna produces an environmental significance opinion that the proposal is not likely to have a significant adverse environmental impact; or* *(d) on a continuously flowing river in a non-urban zone under the territory plan unless the conservator of flora and fauna produces an environmental significance opinion that the proposal is not likely to have a significant adverse environmental impact*
Part 4.3, Item 1	*proposal that is likely to have a significant adverse environmental impact on 1 or more of the following, unless the conservator of flora and fauna produces an environmental significance opinion that the proposal is not likely to have a significant adverse environmental impact:* *(a) a species or ecological community that is endangered;* *(b) a species that is vulnerable;* *(c) a species that is protected;* *(d) a species with special protection status;* *(e) a species or ecological community if a threatening process has been declared under the Nature Conservation Act 1980, s 38 (4) in relation to the species or community;* *(f) a species or ecological community if the flora and fauna committee has stated criteria for assessing whether the committee should recommend the making of a declaration under the Nature Conservation Act 1980, s 38*

	(Declaration of species, community or process) in relation to the species or community; *(g) an endangered species, an endangered population, an endangered ecological community, a critically endangered species, a critically endangered ecological community or species presumed extinct under the Threatened Species Conservation Act 1995 (NSW), if the potential impact of the proposal will be on the species or community in New South Wales*
Part 4.3, Item 3	*proposal for development on land reserved under s 315 for the purpose of a wilderness area, national park, nature reserve or special purpose reserve, unless the conservator of flora and fauna produces an environmental significance opinion that the proposal is not likely to have a significant adverse environmental impact*

3.1.1 EIS final scoping document

After receiving the request for a scoping document and in accordance with section 212(2) of the Act, the authority:

- identified matters to be addressed by an EIS in relation to the development proposal; and
- prepared a final scoping document of the matters.

A scoping document is used by the authority to outline matters to be investigated and documented in an EIS, and minimum requirements for analysis. The draft EIS must conform to the requirements of the final scoping document. Section 50.2 of the *Planning and Development Regulation 2008* outlines the list of information that must be included in an EIS for a development proposal.

In accordance with Regulation 26(1) and 51 of the *Planning and Development Regulation 2008* certain mandatory referrals are required by the authority. Regulation 51 also provides for community consultation where appropriate in addition to consultation with prescribed entities. The authority sought input from government advisory bodies for comments in relation to their areas of expertise and responsibility, including identifying potentially significant environmental impacts to be addressed in the EIS. The following entities were consulted in preparing the final scoping document:

- ACTEW Corporation Limited;
- ActewAGL Distribution;
- the conservator of flora and fauna;
- the emergency services commissioner;
- the environment protection authority;
- the heritage council;
- Health Directorate;
- Territory and Municipal Services Directorate (TAMSD);
- National Capital Authority;
- Conservation Planning and Research (CPR), ESDD;
- City Planning, ESDD; and

- Department of Sustainability, Environment, Water, Population and Communities (SEWPAC, now known as Department of the Environment).

A risk-based approach was used in developing the final scoping document so that the EIS could focus on those matters that potentially result in a significant environmental impact. The scoping document outlined issues to be considered in preparing the EIS and specified potentially significant impacts and other information required to be included. The authority issued the final scoping document to the proponent on 2 May 2012.

Under section 215 of the Act, the final scoping document is effective for 18 months from the day after the date on the final scoping document notice. After receiving the final scoping document and pursuant to section 216(2) of the Act, the proponent is required to:

- prepare a draft EIS that addresses each matter raised in the final scoping document for the proposal; and
- give the draft EIS to the authority for public notification (for further details see section 3.3.2).

The final scoping document is at Appendix 1 – Final Scoping Document.

If an EIS is submitted once the scoping document is no longer in effect, an assessment is undertaken to consider whether the project and the circumstances surrounding the project are still the same and that the scoping document is still relevant for the project. If this is not the case, the proponent would be requested to submit a new request for scoping document. The EIS for this project was submitted before the scoping document expires.

3.2 Submission of draft EIS

The purpose of the draft EIS is to identify and describe the potential positive and negative environmental, social, economic and cultural impacts of the project, including cumulative, regional, temporal and spatial considerations.

The draft EIS is required to:

- assist the proponent, public and regulatory agencies in understanding the environmental and socio-economic consequences of the projects' construction, operational and reclamation activities, and will assist the proponent in its decision making;
- address:
    - project impacts;
    - mitigation options; and
    - residual impacts relevant to the assessment of the project including, as appropriate, those related to other projects. Residual impacts should be discussed in terms of magnitude, frequency, duration, seasonal timing, reversibility and geographical extent.
- discuss possible measures, including possible improvements based on research and development to:

    - prevent or mitigate impacts;
    - assist in the monitoring of environmental protection measures; and
    - identify residual environmental impacts and their significance including cumulative and regional development considerations.
- include tables that cross-reference the draft EIS to the final scoping document; and
- include a glossary of terms and a list of abbreviations to assist the reader in understanding the material presented.

A completed EIS must form part of the proponent's subsequent development application to the authority. A summary of the completed EIS must also be included as part of the DA. NGH Environmental Pty Ltd, on behalf of the proponent prepared a draft EIS to address the requirements outlined in the final scoping document and submitted it to the authority on 27 August 2013.

3.2.1 Cross reference between the final scoping document and EIS

The draft EIS for the Cravens Creek WQCP did not precisely follow the structure required in the final scoping document. A scoping document reference table was included as an Appendix to the draft EIS to cross reference the contents of the EIS to the contents required in the final scoping document. There was no reason provided for this discrepancy. This table is also used to ensure that all of the statutory requirements have been met. For further information see Appendix 3 – Cross Reference Table Between EIS and the Final Scoping Document.

3.3 Public notification and consultation

The ACT Government engaged with the community during planning for the Molonglo Valley. The engagement involved consultation and the notification of various documents and plans, as well as the establishment of a community and industry reference group in 2010. For the Cravens Creek WQCP EIS, consultation was required with interested parties. The EIS was also made available to the public and representations were invited from the broader community.

3.3.1 Public consultation by the proponent

In addition to the public notification of the draft EIS, the proponent consulted with the recreational users and landscape management groups that have an interest in the proposal. This section lists all activities undertaken during the proponent's consultation process.

In preparation of the draft EIS, the proponent consulted with the following groups via mail and follow up phone calls:

- ACT Equestrian Association;
- ACT Gundog Society Inc;
- Orienteering ACT;
- Molonglo Catchment Group;
- Canberra Ornithologists Group;
- ACT Herpetological Association; and

- ACT Veterans Athletic Club.

3.3.2 Public notification

As required by the Act, the authority publicly notified the draft EIS by putting a notice in the Canberra Times on 31 August 2013, and placing a notification on ESDD's website from 2 to 27 September 2013. Copies of the draft EIS were available for inspection at ESDD's Customer Service Centre during the notification period. This process provided agencies, stakeholders and the community with the opportunity to make comments on the proposal or in relation to specific environmental issues of concern. Under section 218 of the Act, the public notification period for a draft EIS is not less than 20 working days. For the Cravens Creek WQCP project, the draft EIS was notified for 20 working days. While this period may be extended by the authority in accordance with section 218 (3) of the Act, an extension was not undertaken for this project.

As required by the Act, copies of all representations were made available on ESDD's website and these will remain on the website until either the EIS is completed, or the representations are withdrawn. No representations were received from the general public during the public notification period.

3.4 Review of Draft EIS

A preliminary review of the draft EIS was completed by the authority and sent to the proponent on 24 July 2013 with copies of comments from entities.

The following four issues were key concerns following the authority's review of the draft EIS:

- insufficient assessment of some potentially significant impacts with a risk rating of medium and above;
- some residual risk calculations were incorrect;
- further discussion was required for potential impacts on aquatic flora and fauna; and
- not all reports generated on specialist studies undertaken as part of the EIS were included as appendices.

The proponent was required to revise the draft EIS, to take into consideration all matters raised in representations made during public consultation and all comments from ESDD, and to demonstrate how the matters have been taken into account in the revised EIS.

3.5 Submission and review of revised EIS

The revised EIS was submitted to the authority on 20 November 2013 in accordance with section 221 of the Act. A brief adequacy review was then undertaken to confirm that all appropriate sections and appendices had been included. Following this, an assessment strategy was developed to guide the assessment of the EIS in accordance with section 222 of the Act, and a program developed to ensure the review was undertaken as efficiently as possible.

The assessment strategy outlined the process for reviewing the EIS and included a review of the revised EIS for:

- adherence to the final scoping document and legislation;
- consideration and incorporation of the authority's comments provided on the draft EIS; and
- consideration and response to representations received during notification of the draft and other consultation processes.

3.5.1 Further information request

During the assessment of the revised EIS, some items were identified as not fully addressing the requirements of the scoping document. A request for further information was made to the proponent giving them a chance to address these matters. If the proponent provided further information which did not sufficiently address the request, then a formal request under s224 may have been made.

It is also the function of this report to identify any information deficiencies and describe them. If the knowledge gaps are not significant and still allow for a

satisfactory understanding of the impacts of the proposal then the authority may not request further information.

On 17 February 2014 the proponent provided information to address the request. It is considered that the information sufficiently addressed the request.

3.6 Giving the EIS to the Minister for the Environment and Sustainable Development

Following the proponent's response to the further information request, the authority has accepted the EIS under section 222 of the Act. The findings and outcomes of the review of the EIS are included in this report, which is provided to the Minister with the EIS in accordance with section 225. Once the Minister has received the EIS he may:

- under section 226, choose to take no action on the EIS;
- under section 227, present the EIS to the Legislative Assembly; and
- under section 288, establish an inquiry panel to inquire about the EIS. The Minister must make this decision within 15 workings day of receiving the EIS from the authority. The requirements for establishing an inquiry panel are detailed under Part 8.3 of the Act.

Under section 209 of the Act, an EIS is completed if the Minister:

- gives ESDD a notice of no action under section 226;
- has not decided to establish an inquiry panel to inquire about the EIS; and
- has established an inquiry panel for the EIS and:
    - the Panel has reported the results of the inquiry; or
    - the time for reporting under section 230 has ended.

3.7 Lodging a development application

Once or if the final EIS is completed the proponent can lodge a DA in the impact track. Any subsequent DA related to the EIS must include the completed EIS.

3.8 Commonwealth environmental impact assessment requirements

Under the EPBC Act a person must not take an action that has, will have, or is likely to have a significant impact on any matters of national environmental significance (MNES) without approval from the Australian Government Minister for the Environment. The key MNES associated with the proposal is Pink-tailed Worm-lizard (PTWL).

3.8.1 EPBC Act Strategic Assessment

Under section 146 of the EPBC Act, the Australian Government Minister may agree to assess the impacts of actions under a policy, plan or program as a strategic assessment, this may include (but is not limited to):

- regional-scale development plans and policies;
- large-scale industrial development and associated infrastructure;
- fire, vegetation/resource or pest management policies, plans or programs;

- water extraction/use policies;
- infrastructure plans and policies; and
- industry sector policies.

Within this context a strategic assessment normally applies to multiple natured projects which may otherwise be assessed on a case-by-case basis under the EPBC Act.

Preliminary environmental investigations in the Molonglo and North Weston area identified several MNES. These included the PTWL (listed under the EPBC Act as vulnerable), White Box-Yellow Box-Blakely's Red Gum grassy woodland and derived native grassland (BGW, listed under the EPBC Act as critically endangered), and Natural Temperate Grasslands of the Southern Tablelands of NSW and the ACT (NTG, listed under the EPBC Act as endangered).

On 16 September 2008 the Australian Government Minister and the ACT Minister for the Environment and Sustainable Development, announced that a Strategic Assessment of the proposed Molonglo and North Weston Structure Plan (the Structure Plan) would be undertaken in accordance with section 146 of the EPBC Act. Figure 4 shows that the Cravens Creek WQCP development site was covered by the strategic assessment.

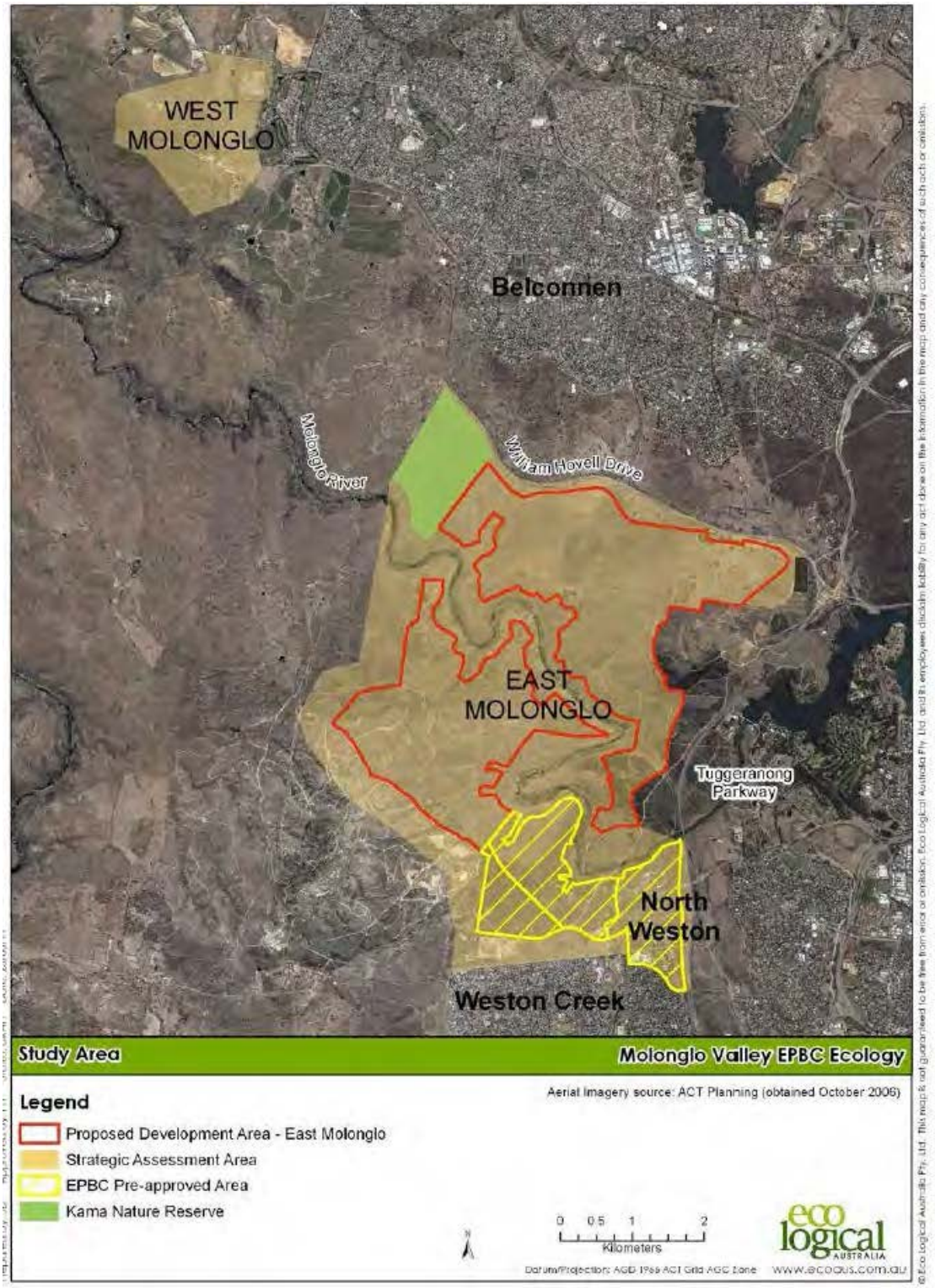


Figure 4 -- Area of Molonglo Valley covered by the Strategic Assessment

The Structure Plan is part of the Territory Plan and it sets out the planning and development guidelines and principles for urban development and associated infrastructure at Molonglo and North Weston. It guides urban and commercial development in the Molonglo Valley, including associated infrastructure. The Structure Plan considers a broad range of environmental, social and economic planning issues. It addresses many issues which are unlikely to have an impact on

nationally protected matters, and may require adjustment during the life of the Structure Plan.

To protect MNES without unduly constraining the Structure Plan's implementation, the Australian Government Minister amended the decision to include a strategic assessment of the ACT Government's *Molonglo Valley Plan for the Protection of Matters of National Environmental Significance* (the NES Plan). The NES Plan identifies nationally protected matters in the Molonglo Valley likely to be affected by implementing the Structure Plan, and sets out protection and conservation strategies to avoid unacceptable impacts. The strategic assessment ensures that development taken in the Molonglo Valley avoids unacceptable impacts on matters protected under national environment law.

On 7 October 2011, the Australian Government Minister endorsed the NES Plan. This was the third strategic assessment in Australia to reach the endorsement stage. The endorsement of the NES Plan allows the Australian Government Minister to consider giving approval to actions or class of actions that are taken in accordance with the endorsed NES Plan.

On 20 December 2011, the Australian Government Minister approved actions associated with urban development in East Molonglo as described in the endorsed NES Plan. A copy of the signed approval instrument is at Appendix 4 – Approval of Strategic Assessment.

4 Key findings

This section summarises issues identified in the scoping document that had to be assessed in the EIS. For each set of issues, the results of the proponent's assessment are summarised under the following six headings:

1. **Key findings**

Summarises the proponents key findings associated in assessing the potential environmental impacts of the project.

2. **Public notification**

Indicates the number and types of responses received during public notification of the project, and summarises the proponent's response.

3. **Impacts**

Details potential impacts of the project as identified by the proponent. These may differ from the impacts raised in the final scoping document as additional impacts may have arisen during the EIA.

4. **Commitments**

Lists the proponent's commitments relating to the environmental management of the project.

5. **Mitigation**

Lists mitigation measures the proponent will implement to manage the level of risk to an acceptable level.

6. **Scoping document requirements**

The scoping document required that the proponent use a risk assessment based approach to addressing the potential impacts of the proposal. The risks identified in the final scoping document were considered by the proponent in the preparation of the EIS. The proponent refined, combined and in some instances identified additional risk scenarios.

This section identifies the risk scenarios presented in the revised EIS, the likelihood of the scenario occurring and potential consequence. A risk rating is then assigned to each risk based on the methodology outlined at part 4.1 of the revised EIS. A residual risk assessment was conducted to assess the risk after the expected mitigation measures are applied for all risk scenarios which had an initial rating of medium or above.

It is the authority's assessment that the risk assessment methodology used by the proponent in considering the impacts of the proposal is acceptable.

Where the Revised EIS lacked sufficient information to address the requirements of the scoping document and demonstrate the potential impacts of the proposal are

fully understood, further information was requested. If further information was requested for a risk scenario, the nature of the request is outlined in this section along with any further information received.

4.1 Traffic and transport

The proposed Cravens Creek WQCP is likely to have impacts on surrounding traffic and transport services during the construction phase. As Coppins Crossing Road is currently the only sealed road providing access to the site, the project will likely have its greatest impact on Coppins Crossing Road and the existing access route joining Coppins Crossing Road.

The EIS was accompanied by a preliminary construction traffic management plan prepared by Cardno in 2012 which reviewed the existing traffic conditions and identified the traffic impacts associated with the proposal during the construction.

4.1.1 Key findings

The existing road network surrounding the proposed Cravens Creek WQCP comprises Coppins Crossing Road, William Hovel Drive and Uriarra Road. Coppins Crossing Road, a two lane undivided carriageway with marked edge lines, is approximately 500m east of the proposal and provides the only sealed road access to the subject site. William Hovel Drive is the main arterial road to the north of the proposed site, providing a link to the city to the east and Gungahlin to the north. Uriarra Road is the main road to the south of the proposed site, providing a link to the south suburbs.

Cardno's 2012 investigation was based on the assumption that the construction of the WQCP includes both importation of clay and construction of the pond, however, it has since been decided that clay will be sourced from the approved stockpile for Molonglo Valley Stage 2 infrastructure which is located near the proposal. Therefore, the actual traffic movements associated with the construction activities should be less than Cardno's assessment result. The investigation states that the total vehicle movements during construction will be 9 per hour. Traffic modelling of the Uriarra Road and Coppins Crossing Road intersections indicated that there would be sufficient capacity to accommodate the additional levels of traffic caused by the proposal. Congestion on surrounding intersections associated with the construction is expected to be variable.

Due to the severe nature of the consequences of road accidents, the EIS has considered site personnel safety as having a risk rating of high.

The proponent states that access for emergency service and construction traffic to the site will be limited as Coppins Crossing Road is the only sealed road access to the site. In addition, all construction vehicles will enter and exit the site via existing fire trails which consist of single lane dirt fire trails and are not suitable for heavy vehicles.

4.1.2 Impacts

The following potential impacts were identified:

- inadequate access for emergency services and construction traffic;
- congestion on surrounding roads;
- accidents involving construction traffic; and
- roads surrounding the pond site becoming degraded because of construction vehicles.

4.1.3 Commitments

The following key commitment identified from the EIS has been included in the assessment as follows:

- establish access for emergency services and construction traffic as per TAMS Standards.

4.1.4 Mitigation

Mitigation measures against impacts of the proposal have been detailed in the EIS. The table below details the mitigation measures associated with traffic and transport as proposed in the EIS.

Identified impacts	Proposed mitigation measures	Stage of implementation
Inadequate access for emergency services and construction traffic.	• maintain access for emergency vehicles by upgrading surrounding fire trails and ensuring ACT Emergency Services are aware of road closures and have keys to gates; • upgrade access points to the site; • erect traffic control signs on Coppins Crossing Road and other relevant roads in accordance with Australian Standards to alert motorists; and • upgrade the existing internal fire trail network to accommodate heavy vehicles.	Prior to and during construction
Congestion on surrounding roads.	• construction traffic movement to be outside of peak times.	During construction
Accidents involving construction traffic.	• prepare and seek approval for a temporary traffic management plan prior to commencement of site works; • first aid kits to be available on site; • a qualified first aid officer to be on site at all times; • general WH&S procedures, such as site speed limits and traffic control signs to be enforced; • UHF radios to be installed in site vehicles to allow communication between drivers; and • improve fire trails within construction site.	Prior to and during construction
Roads surrounding site become degraded because of construction vehicles.	• maintain and where required, repair damage to roads caused by construction traffic.	During and after construction

The Construction Environmental Management Plan (CEMP) proposed for this project sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the proposal. Refer to 5.2 Construction Environmental Management Plan for further information. The agencies responsible for endorsing or approving each mitigation measure or monitoring program are included in Table 3 of this report.

4.1.5 Scoping Document Requirements

Assessment of significance and residual risk

The table below details the risks associated with traffic and transport as defined in the EIS.

Potential Impact EIS	Risk Assessment			
	Likelihood (after mitigation)	Consequence (after mitigation)	Risk	Residual risk
Inadequate access for emergency services and construction traffic.	Almost certain (Remote)	Major	Significant	Low
Congestion on surrounding roads.	Possible (Remote)	Major	High	Low
Accidents involving construction traffic.	Possible (Remote)	Major	High	Low
Roads surrounding site become degraded because of construction vehicles.	Almost certain (Unlikely)	Major (Minor)	Significant	Very low

4.2 Materials and waste

The construction of the proposed Cravens Creek WQCP has the potential to generate waste and surplus materials that may have an impact on the surrounding environment. The impacts are likely to be associated with the storage of materials, including clay and excavated rock material, accumulation of waste and general litter on the site.

4.2.1 Key findings

Illegal rubbish dumps have been found in the surrounding development area and it is possible that as construction proceeds, contaminated material will be unearthed. The proponent states that much of the waste associated with clearing burnt pine forests on the development site has been removed, however stands of pines, weeds and grass are present within the pond footprint and will need to be cleared prior to construction.

Much of the rock material that is excavated for the construction of the pond will be stockpiled for re-use to construct the embankment. Cement and flocculants[4] associated with dewatering of areas will also be stored on the site. Stockpiling of those materials will potentially cause negative impacts on fauna habitat and air and water quality.

[4] A substance which promotes the clumping of particles, especially one used in treating waste water.

Waste expected to be generated include vegetation and landscaping materials, construction materials, general waste from site personnel, paints and solvents and wastewater and sewage. Although most generated waste is proposed to be reused and recycled, some waste may need to be sent to landfill.

4.2.2 Impacts

The following potential impacts were identified:

- impacts on nearby sensitive areas including habitat for threatened fauna species, native vegetation and the Molonglo River corridor from handling, storage and stockpiling of material; and
- contribute to landfill from waste generated during construction.

4.2.3 Commitments

Key commitments identified in the EIS have been included in the assessment as follows:

- all stockpiles will be located outside the river park and potential PTWL habitat; and
- sediment control plans will be prepared as part of the CEMP.

4.2.4 Mitigation

Mitigation measures against impacts of the proposal have been detailed in the EIS. The table below details the mitigation measures associated with materials and waste as proposed in the EIS.

Identified impacts	Proposed mitigation measures	Stage of implementation
Impacts of handling, storage and stockpiling of material on nearby sensitive areas, including habitat for threatened fauna species, native vegetation and the Molonglo River corridor.	• site stockpiles to avoid potential PTWL habitat; • erosion and sediment control plans to be developed in accordance with EPA guidelines and approved by the EPA prior to commencement of works; • controls to be established prior to stockpiling of material; • erosion and sediment control structures to be monitored and adjusted as required during construction; • water quality monitoring schedule to be established in accordance with specifications outlined in waterway works licence for the life of the project; and • spill kits to be accessible in all heavy vehicles.	Prior to, during and after construction

The Construction Environmental Management Plan proposed for this project sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the proposal. Refer to 5.2 Construction Environmental Management Plan for further information. The agencies responsible for endorsing or approving each mitigation measure or monitoring program are included in Table 3 of this report.

4.2.5 Scoping document requirements

Assessment of significance and residual risk

The table below details the risks associated with materials and waste as defined in the EIS.

Potential Impact EIS	Risk Assessment			
	Likelihood (after mitigation)	Consequence (after mitigation)	Risk	Residual risk
Impacts of handling, storage and stockpiling of material on surrounding sensitive areas.	Possible (Remote)	Major	High	Low

4.3 Landscape and visual impact

The subject site is currently open grassland with rocky outcrops and scattered pine trees. Existing views of the proposed pond site are limited due to local topographical constraints and existing vegetation around the site. The proposal will change the visual character of the area as it will be inundated with water after construction. It is anticipated in the EIS that the pond development will have a positive visual impact after construction, offsetting the hard urban interface of the future urban development.

Although the EIS does not provide detailed discussion about visual impacts caused by construction activities, it is considered that the visual impact during construction will only be short term.

4.3.1 Key findings

A visual assessment was carried out to explore the potential impacts the proposal will have on the visual character of the area. The assessment concluded that the proposal as a whole is expected to have a positive visual impact, offsetting the hard interface of the urban development. The assessment further states that the rock armoured embankment will have a negative impact but the expanse of surrounding buildings will be more visually obvious.

During construction, impacts from the proposal on landscape characteristics are almost certain due to the nature of the development. Vegetation will be cleared, leaving a bare earth surface. However, it has been considered that the impacts during construction are only for a short time.

After construction, views from the south will observe the embankment as a thin line above the water level. View impacts on future development on the north of the Molonglo River will be minimal as existing vegetation and ridgelines will obscure the majority of the site. The distance further diminishes the impact that the proposal will have.

It is expected that the greatest visual impact after construction will be immediately below the embankment. Recreational paths/fire trails are expected to be located

within this area, so visual impact to pedestrians moving through the area is expected to be for a short to moderate period.

The pond site as a whole is anticipated to be visible only from the first building interface that fronts the open space. However the proponent states that views of the pond will be attractive and presumably sought after, and potentially have an overall positive impact.

4.3.2 Impacts

The following potential impacts were identified:

- changes to the value of the existing landscape;
- visual impact on surrounding landscape from construction activities; and
- visual impact on surrounding landscape post construction.

4.3.3 Commitments

A key commitment identified in the EIS included in the assessment is that landscaping work is to consist of plantings to integrate the site with the Molonglo River Corridor.

4.3.4 Mitigation

Mitigation measures against impacts of the proposal have been detailed in the EIS. The table below details the mitigation measures associated with landscape and visual impacts as proposed in the EIS.

Identified impacts	Proposed mitigation measures	Stage of implementation
Changes to the value of the existing landscape.	Landscaping plan to be prepared to satisfy TAMSD's requirements.	Prior to construction

The Construction Environmental Management Plan proposed for this project sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the proposal. Refer to 5.2 Construction Environmental Management Plan for further information. The agencies responsible for endorsing or approving each mitigation measure or monitoring program are included in Table 3 of this report.

4.3.5 Scoping document requirements

Assessment of significance and residual risk

The table below details the risks associated with landscape and visual impacts as defined in the EIS.

Potential Impact EIS	Risk Assessment			
	Likelihood (after mitigation)	Consequence (after mitigation)	Risk	Residual risk
Changes to the value of the existing landscape.	Almost certain	Moderate (Minor)	Very high	High

4.4 Soils and geology

The proposed site is predominantly heavily vegetated with grass, shrubs and small trees, with numerous rock outcrops and a series of fire trails. Subsurface conditions generally comprise topsoil and natural soil to depths as shallow as 0.1m on ridgelines and to as deep as 4.1m in gullies. Bedrock exposed in the base of the creeks appeared to be of at least high strength to extremely high strength. The topsoil and underlying silty/sand layer are not considered to be suitable for engineering purposes. Stockpiling of the unsuitable topsoil and other materials increases the potential impacts of the proposal.

The general use of and refuelling of vehicles and machinery on site introduces the risk of a fuel or oil spill potentially contaminating soil or water which has been discussed in section 4.11 of this report.

4.4.1 Key findings

The Molonglo Valley was subject to several geotechnical assessments and Douglas Partners (2012) prepared a preliminary geotechnical assessment for the proposed Cravens Creek WQCP considering the topography, subsurface, geological and groundwater conditions.

A substantial amount of material, up to a depth of 12m surrounding the creek line, will need to be blasted and/or excavated to allow for construction of the proposed pond. Douglas Partners' assessment confirmed that most of the top soils and underlying silty/sand layer are not suitable for engineering purposes. The excavation and clearance of vegetation has the potential to generate erosion and cause sediment to enter the Molonglo River. Although most of the construction material will be sourced on site, importation of material may be required. The proponent states that potential loss of stockpiled top-soil could cause adverse impacts on nearby sensitive areas.

4.4.2 Impacts

The following potential impact was identified:

- potential loss of stockpiled top-soil impacting nearby environmentally sensitive areas.

4.4.3 Commitments

Key commitments identified from the EIS have been included in the assessment as follows:

- erosion and sediment control plans to be prepared and implemented;
- disturbed areas to be revegetated as soon as practical to reduce erosion; and
- stockpiles to be located outside environmentally sensitive areas.

4.4.4 Mitigation

Mitigation measures against impacts of the proposal have been detailed in the EIS. The table below details the mitigation measures associated with soils and geology as proposed in the EIS.

Identified impacts	Proposed mitigation measures	Stage of implementation
Potential loss of stockpiled top-soil impacting nearby sensitive areas.	• erosion and sediment control plans to be provided to the EPA for approval prior to commencement of works; • erosion and sediment control plans will be utilised to control runoff from the site; • stock piles to be located so as to avoid environmentally sensitive areas; • disturbed ground to be regularly monitored to ensure erosion and sediment control structures are compliant; • turbidity levels in Cravens Creek to be checked as per waterway works licence; • environmentally sensitive areas will be checked weekly and after rain events to ensure that there is no accumulation of sediment; • disturbed areas, i.e. embankments, will be vegetated as soon as practical to reduce erosion; and • consideration will be given to the establishment of low-growing native grasses and groundcovers which are drought hardy and would require minimal mowing.	Prior to, during and post construction

The Construction Environmental Management Plan proposed for this project sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the proposal. Refer to 5.2 Construction Environmental Management Plan for further information. The agencies responsible for endorsing or approving each mitigation measure or monitoring program are included in Table 3 of this report.

4.4.5 Scoping document requirements

Assessment of significance and residual risk

The table below details the risks associated with soils and geology as defined in the EIS.

Potential Impact EIS	Risk Assessment			
	Likelihood (after mitigation)	Consequence (after mitigation)	Risk	Residual risk
Potential loss of stockpiled top-soil impacting nearby sensitive areas.	Likely (Remote)	Moderate	High	Very low

4.5 Water quality and hydrology

The proposed Cravens Creek WQCP will be located approximately 300m upstream of the confluence of Cravens Creek with the Molonglo River. The confluence is located approximately 1km downstream of where Coppins Crossing Road crosses over the Molonglo River. The pond will be constructed on Cravens Creek, an ephemeral

drainage line. An overview of the water courses in the vicinity of the proposal is shown in Figure 1.

4.5.1 Key findings

Flood flows

The construction of the Cravens Creek WQCP will change local morphology and hydrology, reducing flows from Cravens Creek into the Molonglo River.

The EIS states that the construction works are subject to potential overflow runoff of surface and ground water from the creek due to the existing landscape and drainage patterns. In addition, excavation works and the creation of adjacent borrow pits will decrease the natural ground surface level and is likely to bring ground water to the surface, affecting the construction site.

The potential impacts of overflow on the construction site have been taken into consideration in the WQCP design stage and several coffer dams which include overflow structures have been proposed as part of the development. The coffer dams will be installed on tributaries above the worksite to stop the flow of water through the existing Cravens Creek channel to the construction site. The spillway structure and diversion drains will also allow for division of water.

Water quality

The water quality in the Molonglo River between Scrivener dam and Coppins Crossing is considered to be of the poorest quality in the rivers reach through the ACT. Downstream of Coppins Crossing the riparian environment is of higher quality but water quality remains poor. The EIS states that there is no data on water quality available for Cravens Creek.

Construction of the proposed Cravens Creek WQCP involves site preparation works including the clearing of vegetation, bulk earthworks, stockpiling of materials and diversion of Cravens Creek. These kinds of activities have the potential to impact the water quality and aquatic ecology of Cravens Creek and the Molonglo River. Stormwater runoff from the construction area has the potential to reduce water quality through erosion of unstable surfaces and deposition of sediment into the Molonglo River. Runoff containing oils and fuels from access roads and other hardstand areas into the Molonglo River is also a possibility due to the topography and the proximity of the river. However, the proponent states that without construction of the pond, it is expected that the water quality in the Molonglo River would be far worse as a result of the future urban development.

The proponent further states that there is a potential for declining water quality within the pond after construction and during the operational phase, due to future upstream urban development. However, the EIS assumes that this can be addressed

by water quality control measures that will be implemented for any future urban development.

4.5.2 Impacts

The following potential impacts were identified:

- ingress of water from creek into the construction site from upstream resulting in decreased water quality, flooded worksite or eroded pond base;
- surface water enters the construction site from rain events resulting in delays to construction work and potentially eroding the pond base;
- ingress of ground water from creek into the construction site from surrounds;
- changes to channel morphology within Cravens Creek between the pond embankment and river;
- river flood event affecting the construction site;
- creation of adjacent borrow pits bring groundwater to the surface, creating the potential for localised flooding within works area;
- pond design changes local morphology and hydrology, reducing some flows from Cravens Creek into the Molonglo River; and
- changes to water quality in the Molonglo River during construction through runoff.

4.5.3 Commitments

Key commitments identified from the EIS have been included in the assessment as follows:

- gross pollutant traps (GPTs) located at the inflow points into the Cravens Creek WQCP will conform to TAMS Standards;
- erosion and sediment control plans to be developed for endorsement by the EPA and to be implemented; and
- water quality (turbidity) in the Cravens Creek drainage line both upstream and downstream of the works area will be monitored, in order to determine if water quality is being compromised by construction works.

4.5.4 Mitigation

Mitigation measures against impacts of the proposal have been detailed in the EIS. The table below details the mitigation measures associated with water quality and hydrology as proposed in the EIS.

Identified impacts	Proposed mitigation measures	Stage of implementation
Ingress of water from creek into the construction site from upstream resulting in decreased water quality, flooded worksite or eroded pond base.	• water will be dammed, or diverted around the construction site, to avoid impacts on the existing creek; • clean water flowing into the site will be kept separate from dirty water leaving the site; • diversion drains will be monitored to ensure that they are keeping water away from the site; and • water slowing structures will be incorporated into erosion and sediment control plans.	During construction

Surface water enters the construction site from rain events resulting delays to construction work or eroded pond base.	• pump water out of the construction site; and • ensure that diversion drains keep water away from site.	During construction
Ingress of ground water from creek into the construction site from surrounds.	• water will be diverted, preferably by pipe, to avoid the existing creek; • clean water flowing into the site will be kept separate from dirty water leaving the site; • diversion drains will be monitored; and • water will be pumped out of the construction site.	During construction
Creation of adjacent borrow pits bring groundwater to the surface, creating potential for localised flooding within works area.	• use temporary diversion drains to channel water away from the construction site; • works to cease if work site becomes saturated/unsafe; • water will be diverted, preferably by pipe, to avoid the existing creek; • clean and dirty water will be kept separate within the construction site; and • diversion drains will be monitored.	During construction
Pond design changes local morphology and hydrology, reducing some visible flow of Cravens Creek into Molonglo River.	• the pond is designed to retain stormwater flows. After filling, it is anticipated that environmental flows will be in accordance with Draft Environmental Flow Guidelines (2011); • some seepage is expected and ground water will continue to flow from adjacent areas; and • installation and monitoring of piezometers to ascertain groundwater quantity and quality as required.	Prior to, during and after construction
Changes to water quality of Molonglo River during construction through runoff.	• erosion and sediment control plans will be developed for approval by the EPA as part of the CEMP; • dirty water will be diverted to sediment ponds. Sediment fences and straw bales will be utilised during construction; and • water quality will be monitored in Cravens Creek both upstream and downstream of the works area to determine if water quality is compromised by construction works.	Prior to, during and after construction

The Construction Environmental Management Plan proposed for this project sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the proposal. Refer to 5.2 Construction Environmental Management Plan for further information. The agencies responsible for endorsing or approving each mitigation measure or monitoring program are included in Table 3 of this report.

4.5.5 Scoping document requirements

Assessment of significance and residual risk

The table below details the risks associated with water quality and hydrology as defined in the EIS.

Potential Impact EIS	Risk Assessment			
	Likelihood (after mitigation)	Consequence (after mitigation)	Risk	Residual risk
Ingress of surface water within creek into construction site from upstream.	Almost certain (Unlikely)	Major	Significant	Medium
Surface water enters construction site from rain events.	Almost certain (Unlikely)	Minor	High	Very low
Ingress of ground water within creek into construction site from surrounds.	Almost certain (Possible)	Major	Significant	Medium
Creation of adjacent borrow pits bring groundwater to the surface, creating potential for localised flooding within works area.	Almost certain (Unlikely)	Moderate	Very high	Low
Pond design changes local morphology and hydrology, reducing some visible flow of Cravens Creek into Molonglo River.	Possible (Remote)	Moderate	Medium	Low
Changes to water quality of Molonglo River during construction through runoff.	Likely (Unlikely)	Minor	Medium	Very low

Further information request

Further information was requested on the following items within Appendix 5 – Further Information Request:

- *section 5.4 of the revised EIS should be expanded to clearly explain all risks that have a medium or above rating identified in Table 6.*

After considering the proponent's further information submission, the assessment is that all items have satisfactorily addressed the heads of consideration of the scoping document.

4.6 Climate change and air quality

The proposed Cravens Creek WQCP has the potential to affect air quality through motor vehicle emissions and dust from construction activities.

4.6.1 Key findings

The main impact from the proposed Cravens Creek WQCP on climate change is from vehicle emissions during the construction phase of the project. The ACT Climate Change Strategy 2007-2025 refers to the ACT as being a very small contributor to

global greenhouse gas emissions and therefore climate change, yet being highly susceptible to the impacts of climate change. Considering the Construction Traffic Management Plan prepared by Cardno, the potential for the construction works to contribute to broader climate change is unlikely.

Dust emissions from the disturbance of land, wind erosion of soils and exhaust emissions are likely to impact on air quality during the construction phase. The generation of dust during construction activities results from mobilisation of particulate matter, particularly on disturbed sites. Construction vehicle movements and wind gusts may decrease air quality in the local area; however the impact will be short term. Mitigation measures to minimise impacts on air quality are outlined in section 5 and will be managed through implementation of a CEMP.

4.6.2 Impacts

The following potential impacts were identified:

- dust generated during construction of dams adversely impacts air quality;
- emissions associated with construction vehicles and machinery adversely impacts air quality; and
- reduced air quality during construction impacts on fauna, including threatened bird species.

4.6.3 Commitments

A key commitment identified in the EIS that has been included in the assessment is:

- the implementation of dust suppression techniques.

4.6.4 Mitigation

Mitigation measures against impacts of the proposal have been detailed in the EIS. The table below details the mitigation measures associated with climate change and air quality as proposed in the EIS.

Identified impacts	Proposed mitigation measures	Stage of implementation
Dust generated during construction of dam adversely impacts air quality.	• dust suppression techniques including the use of water carts will be used to avoid dust generation; • access will be limited to formed trails; and • stockpiles to be in accordance with specifications as outlined in EPA (2011) i.e., under 2m high.	During and after construction

The Construction Environmental Management Plan proposed for this project sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the proposal. Refer to 5.2 Construction Environmental Management Plan for further information. The agencies responsible for endorsing or approving each mitigation measure or monitoring program are included in Table 3 of this report.

4.6.5 Scoping document requirements

Assessment of significance and residual risk

The table below details the risks associated with climate change and air quality.

Potential Impact EIS	Risk Assessment			
	Likelihood (after mitigation)	Consequence (after mitigation)	Risk	Residual risk
Dust generated during construction of dam adversely impacts air quality.	Almost certain (Unlikely)	Minor	High	Very low

4.7 Terrestrial flora and fauna

Numerous ecological and environmental assessments have been undertaken for the Molonglo Valley and the Molonglo River Corridor to ascertain the environmental conditions on site and determine what environmental approvals would be required under Commonwealth and Territory legislation.

A number of ecological communities and species listed under the EPBC Act or *Nature Conservation Act 1980* (NC Act) were identified for the Molonglo Stage 2 development area. The Cravens Creek WQCP site has been described by the proponent as containing mainly exotic species. Some native trees and shrubs are located along the creek line along with a variety of woody weeds.

Moderate and high quality PTWL habitat is located within the limit of the works and the pond footprint area (see Figure 6). Figure 6 shows that BGW and NTG are located near the proposed site.

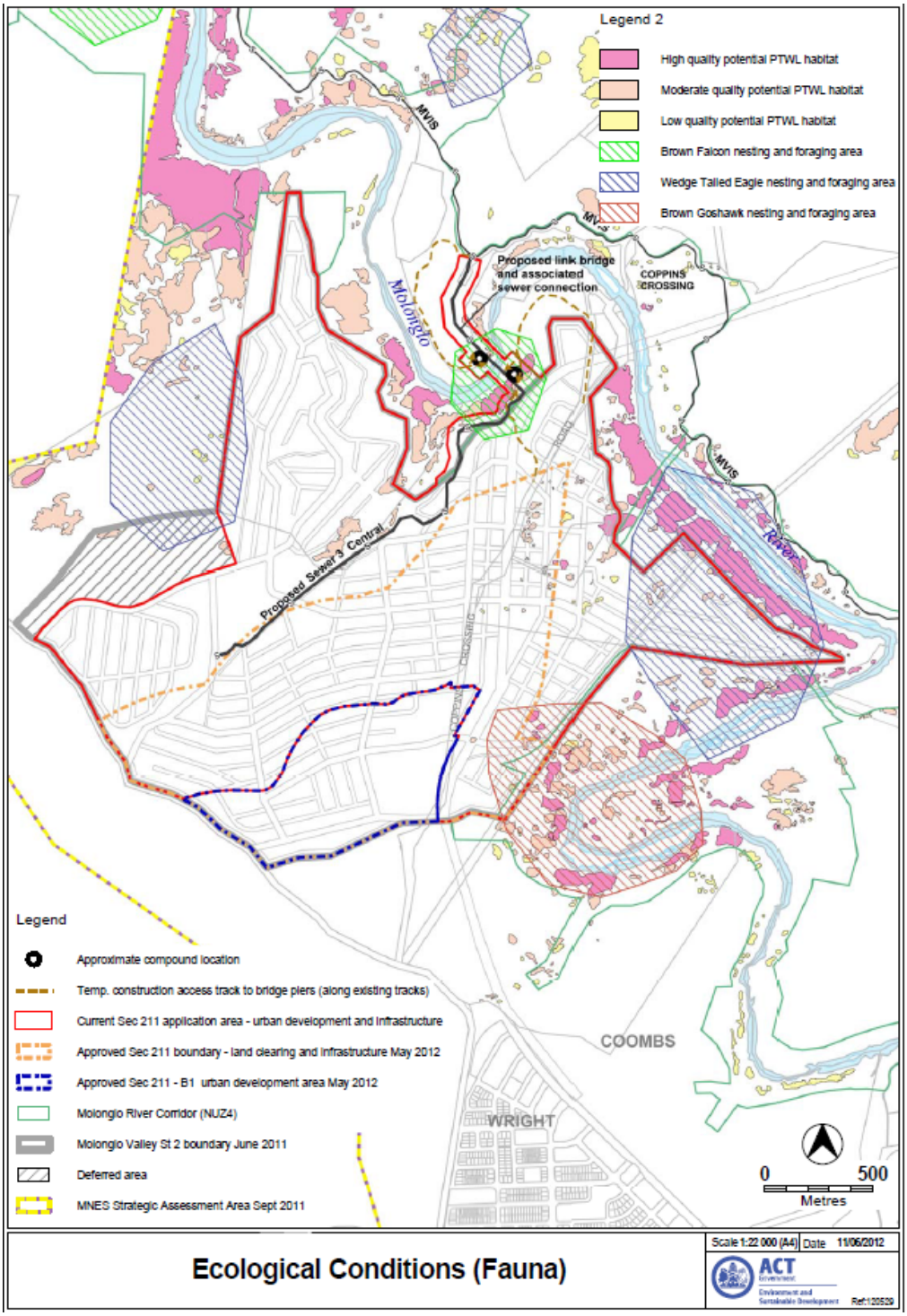


Figure 5 – PTWL habitat

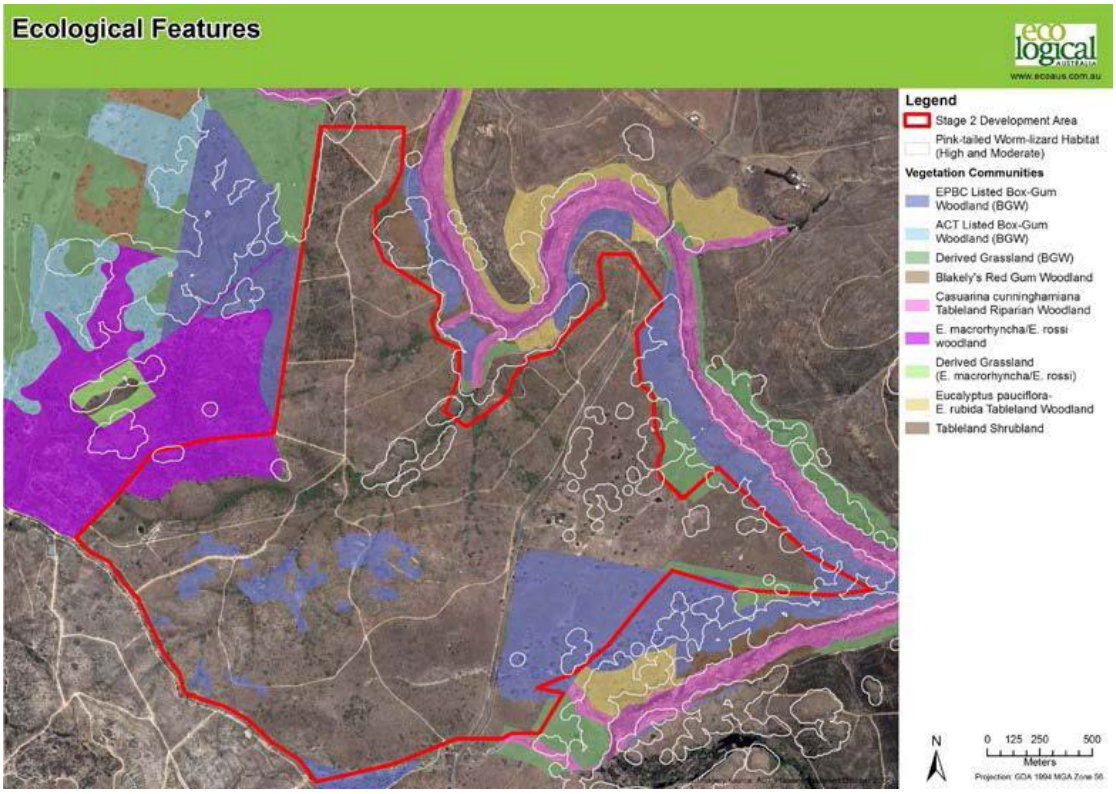


Figure 6 – EPBC and ACT listed habitat and vegetation communities

The proposal is located within the Molonglo River Corridor, a major corridor for wildlife movement. It provides important habitat connectivity at the regional landscape scale and is important for bird movements. It provides habitat to at least five species of reptile that are geographically uncommon in the region. The corridor is also home to several frog species.

4.7.1 Key findings

Matters of National Environmental Significance (MNES)

The proposal includes a number of impacts on MNES which are discussed below.

PTWL - It is expected that a 7450m^2 area of potential PTWL habitat will be impacted during construction. Construction of the pond will result in direct loss of habitat as well as the creation of long term fragmentation issues within this gully given the inundation of the existing drainage gully. PTWL habitat surrounding the proposal site may also be affected from construction noise, stockpiling of materials, erosion and sedimentation as well as changes in soil moisture content, and landscaping surrounding the pond. The EIS also discusses potential indirect impacts to PTWL and its habitat from weed introduction, topsoil and subsoil disturbance and increased recreational use of the site after construction.

BGW - EPBC Act listed BGW is located approximately 120 metres downstream of the site in the Molonglo River corridor (see Figure 6). The EIS states that the development is unlikely to cause any direct impact on this ecological community and

the potential indirect impacts to this ecological community are from weed invasion and disturbance from people.

NTG - The majority of existing vegetation within the construction site is severely modified. The assessment of the EIS has identified inconsistent statements in the EIS in regard to the potential impacts on NTG. The risk assessment table identifies a significant impact on NTG but the EIS and subsequent further information states that there will be no likely impact on NTG. In response to these inconsistent statements, this issue has been referred to CPR who confirmed that regardless of the inconsistent statements, the proposed mitigation measures are sufficient to address any potential impacts on NTG.

Other threatened species

The proposal has also considered the likelihood of impacts on other threatened species that have the potential to occur on the proposed site. Based on the ecological investigations lodged with the EIS, the impacts on the following species were also considered:

Perunga Grasshopper - this species has not been observed on the subject site. However, this species was found in Molonglo in two locations upstream of the proposed WQCP and it is known to have similar habitat requirements to the PTWL. The construction of the WQCP is likely to have adverse impacts on the habitat of this species. Investigation for the presence of this species would have to be confirmed prior to construction by a qualified and experienced environmental professional. CPR's comments in relation to this matter state that it is unlikely that this species occurs within the development footprint but if it is found, CPR must be notified and the individuals should be moved to an area of high quality grassland either adjacent to the site or very nearby in the Molonglo River Corridor.

Painted honeyeater – the Molonglo River Corridor has been assessed as having suitable habitat for this species. However, no suitable habitat was found on the development site. Therefore, the EIS states that the development is unlikely to have an impact on this species.

Brown Treecreeper – this species was identified as an uncommon resident of the woodland close to the development site. Therefore the EIS concludes that the proposal is unlikely to have adverse impacts on this species.

White-Winged Triller, Varied Sittella and the Little Eagle – these species have been identified in the Molonglo Valley. However, the EIS considers that these species are unlikely to be located on site due to previous land use practices and a lack of suitable habitat.

Superb Parrot, Swift Parrot, Rainbow Bee-eater – these species were identified in Molonglo Valley but are not thought to utilise the area of the proposed WQCP due to a lack of suitable habitat.

The EIS further states that the landscaping works associated with the pond development are anticipated to provide more suitable and diverse habitat for fauna species, thereby enticing species to inhabit the area. The potential impacts to fauna from construction traffic will be short term.

4.7.2 Impacts

The following potential impacts were identified:

- direct impact on PTWL and its habitat;
- loss of potential habitat that could be used by the Perunga grasshopper;
- loss of local native fauna habitat due to removal and/or damage to fallen timber, thick grassy patches and/or rocks;
- potential death or injury to fauna from construction traffic;
- PTWL habitat fragmentation from construction;
- an area potentially containing some herb and forb species that are known to be present in the NTG community will be cleared for development; and
- indirect impacts on BGW and surrounding areas from the introduction and/or spread of weeds.

4.7.3 Commitments

Key commitments identified from the EIS have been included in the assessment as follows:

- CEMP to be prepared in accordance with ACT Guidelines and endorsed by relevant authorities prior to commencement of works;
- excess rocks and salvaged tree logs to be stockpiled where feasible and used for future restoration works in the Molonglo River Park;
- sufficient weed control measures to be undertaken during and after construction;
- investigation for the presence of Perunga Grasshopper to be undertaken by a qualified and experienced environmental professional prior to construction;
- a landscape plan to be prepared to satisfy relevant entities;
- the limit of works to be clearly defined on a site plan and on the ground and environmentally sensitive areas (ESAs) to be marked and fenced to ensure no unnecessary disturbance; and
- all stockpiles to be located outside of the River Park.

4.7.4 Mitigation

Mitigation measures against impacts of the proposal have been detailed in the EIS. The table below details the mitigation measures associated with terrestrial flora and fauna as proposed in the EIS.

Identified impacts	Proposed mitigation measures	Stage of implementation
Direct impact on PTWL and its habitat.	• pond and supporting infrastructure has been aligned to avoid potential PTWL habitat areas; • potential PTWL habitat that forms part of the ESAs will be mitigated by the use of fencing located at a distance	During design, prior to construction, during

	of 20m from the edge of the potential habitat and marked to avoid unnecessary disturbance; • PTWL ecology to be discussed during induction to ensure site personnel are aware of construction site limits; • ecologist to survey potential habitat areas prior to and during initial clearing works to undertake fauna rescue; • stockpiles to be installed and monitored to prevent loss of material into habitat areas; • habitat features to be retained for reinstatement adjacent to closest identified potential PTWL outside of the construction area; • weed growth to be monitored during construction works, particularly in stockpiles to ensure infestations do not occur; and • weed control to be undertaken as appropriate after construction works.	construction and after construction
Loss of potential habitat that could be used by the Perunga grasshopper.	• investigation for the presence of the Perunga Grasshopper prior to construction.	Prior to construction
Loss of local native fauna habitat due to remove and/or damage to fallen timber, thick grassy patches and/or rocks.	• a limit of works boundary will be defined; • vehicles to remain on access tracks to prevent unnecessary disturbance; • revegetation works associated with completion of the pond are anticipated to provide better quality habitat for a more diverse range of species than the existing environment; and • excess rocks and salvaged tree logs will be stockpiled where feasible and used for future restoration works.	Prior to construction, during construction and after construction
Potential death or injury to fauna from construction traffic.	• vehicles to remain on access tracks; • speed limits to be adhered to; and • construction area is expected to be monitored.	During construction
An area potentially containing some native flora species including NTG herb and forb species will be cleared for development.	• inspection for threatened plants (herbs and forbs) to be undertaken by ecologist prior to clearing. The presence of any NTG herbs or forbs must be reported to CPR, ESDD; • weed outbreaks will be managed; • erosion and sediment control plans will be developed for approval by the EPA as part of the CEMP; and • clearing will be minimised.	During construction and post construction
Indirect impacts on BGW and surrounding areas from the introduction of and/or spread of one or more exotic species and weeds.	• weed control measures to be included in sub-plans of the CEMP and to be the subject of a defects and liability period agreed to by the construction contractor; • cravens Creek pond will be included in the Plan of Management for Urban Lakes and Ponds after construction; and • once operational, the pond will be managed by TAMS who will be responsible for weed control after construction.	Prior to construction, during construction and after construction

The Construction Environmental Management Plan proposed for this project sets out the framework for continuing management, mitigation and monitoring programs for

the relevant impacts of the proposal. Refer to 5.2 Construction Environmental Management Plan for further information. The agencies responsible for endorsing or approving each mitigation measure or monitoring program are included in Table 3 of this report.

4.7.5 Offset

As part of the Molonglo Strategic Assessment, an offset package was prepared and approved to compensate for unavoidable impacts arising from the development of the Molonglo Valley on MNES. The potential impacts on 7,450m^2 of potential PTWL habitat as a result of construction of the Cravens Creek WQCP have already been addressed through the Molonglo Strategic Assessment and hence the EPBC Act requirements have already been met.

4.7.6 Scoping document requirement

Assessment of significance and residual risk

The table below details the risks associated with terrestrial flora and fauna as defined in the EIS.

Potential Impact EIS	Risk Assessment			
	Likelihood (after mitigation)	Consequence (after mitigation)	Risk	Residual risk
Direct impact on PTWL and its habitat.	Almost certain	Major (Moderate)	Significant	Very high
Loss of potential habitat that could be used by the Perunga grasshopper.	Almost certain	Major	Significant	Significant
Loss of local native fauna habitat due to remove and/or damage to fallen timber, thick grassy patches and/or rocks.	Almost certain	Major (Moderate)	Significant	Very high
Potential death or injury to fauna from construction traffic.	Possible (unlikely)	Moderate	Medium	Low
An area potentially containing some NTG herb and forb species that are known to be present in the NTG community will be cleared for development.[5]	Likely	Minimal (Moderate)	High	Low
Indirect impacts on BGW and surrounding areas from the introduction of and / or spread of one or more exotic species and weeds.[6]	Unlikely (Likely)	Minor (Moderate)	High	Very low

[5] The proponent revised the description of this risk from "an area potentially containing some NTG species will be cleared for development" to the current one in the further information submitted on 17 February 2014.
[6] The further information submitted includes this risk to combine the two risks "potential impacts for BGW" and "weed introduction into this one" that were identified in the revised EIS.

Further information request

Further information was requested on the following items within Appendix 5 – Further Information Request:

- *further explanation is required as to why the risk of "habitat fragmentation from construction" is very low;*
- *please clearly state whether the proposal will have impact on natural temperate grassland and how a potential impact may occur if there is no NTG identified on the subject site;*
- *mitigation measures need to be provided for the new risk of "indirect impact on BGW";*
- *the risk relevant to "introduction of weeds" should be clearly defined; and*
- *the reasons provided for residual risk for "an area potentially containing some natural temperate grassland species will be cleared for development" on page 117 needs to be revised to provide an adequate explanation of risk reduction.*

After considering the proponent's further information submission, the assessment is that the statements in relation to the potential impacts on NTG are inconsistent and the reasons provided for residual risks are not sufficient. However, the issue has been referred to CPR and the following comment was received:

> "*CPR has inspected the vegetation that will be directly impacted by the Craven's Creek Dam and found that it was highly weed invaded and of low native plant diversity. A few small patches of a couple of square metres of low quality native grassland occur in the area, but the vegetation down slope of the site is Box – Gum Woodland and Snow Gum Woodland. The condition of the native grassland at Cravens Creek would most likely not meet the criteria of being NTG.*"

4.8 Aquatic flora and fauna

The proposal has the potential to impact on the aquatic ecology of Cravens Creek and the Molonglo River. The proponent's assessment of the potential impacts on aquatic flora and fauna was based on existing studies and observations during a site inspection. No specific aquatic flora and fauna study was undertaken as part of the EIS given the ephemeral nature of the creek, degraded condition of the site and lack of native aquatic flora and fauna.

4.8.1 Key findings

Cravens Creek

The proponent states that the site inspection and previous studies confirmed that Cravens Creek is a disturbed ecosystem and continues to show the signs of degradation with minimal aquatic flora and no aquatic vertebrates of known significance. Regenerated pine trees, blackberry and other introduced species were observed along the creek.

Riparian vegetation within the proposed development footprint along Cravens Creek will be removed to allow for preparation of the construction site. It will result in the disturbance of the aquatic ecosystem within the construction footprint, possible short term hydrological disturbance below the pond embankment due to diversion of the existing creek, and loss of upstream habitat due to inundation.

Molonglo River

A higher density of native trees and shrubs are located along the Molonglo River but no vegetation will be cleared along the river corridor. The construction of the pond will modify existing stream flows and change the frequency of inundation which will potentially alter vegetation composition and impede growth of riparian plants. Aquatic fauna within the Molonglo River primarily consists of alien species. No threatened fauna species were identified, but water rats and platypus have been recorded in the river. It is believed that construction of the pond will have indirect impacts on these species due to declined water quality in the short term. However the proponent states that construction of the pond will not impact on either of these species in the long term.

The EIS further discusses that the proposed pond, once constructed, will increase food availability and habitat quality for some species therefore is likely to benefit aquatic flora and fauna and improve the overall biodiversity of the locality in the long term.

4.8.2 Impacts

The following potential impacts were identified:

- changes to the aquatic ecosystem of Cravens Creek; and
- changes to water flows altering existing conditions and habitats, thereby affecting aquatic species.

4.8.3 Commitments

Key commitments identified from the EIS have been included in the assessment as follows:

- on-going water quality monitoring of Molonglo River; and
- revegetation work to be undertaken after construction.

4.8.4 Mitigation

Mitigation measures against impacts of the proposal have been detailed in the EIS. The table below details the mitigation measures associated with aquatic flora and fauna as proposed in the EIS.

Identified impacts	Proposed mitigation measures	Stage of implementation
Changes to the ecosystem of Cravens Creek.	• water way works licence to be obtained prior to commencement of works; • revegetation works around the constructed pond to provide more diverse habitat and refuge for fauna; and	Prior to and after construction

	• plants to be inspected periodically to control pest species and to promote the desired mix of plants for conservation and landscaping purposes.	
Changes to water flows alter existing conditions and habitats, thereby affecting aquatic species.	• after construction and filling of the pond, water will be released via the primary spill way. Only peak flows will be attenuated; • WSUD elements to be applied to design; and • on-going water quality monitoring by EPA.	Design and after construction

The Construction Environmental Management Plan proposed for this project sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the proposal. Refer to 5.2 Construction Environmental Management Plan for further information. The agencies responsible for endorsing or approving each mitigation measure or monitoring program are included in Table 3 of this report.

4.8.5 Scoping document requirements

Assessment of significance and residual risk

The table below details the risks associated aquatic flora and fauna as defined in the EIS.

Potential Impact EIS	Risk Assessment			
	Likelihood (after mitigation)	Consequence (after mitigation)	Risk	Residual risk
Changes to the ecosystem of Cravens Creek.	Almost certain	Major (Moderate)	Significant	Very high
Changes to water flows alter existing conditions and habitats, thereby affecting aquatic species.	Almost certain (unlikely in long term)	Major	Significant	Medium

4.9 Socio-economic and health (including recreational use)

The proposed Cravens Creek WQCP has been identified as early works infrastructure to be constructed to support the Molonglo Stage 2 urban development. The primary purpose of the WQCP is to protect the Molonglo River from pollution associated with urban development through retardation of stormwater flows. The WQCP is also seen as a possible non potable water source for irrigation of surrounding green space and a vital component of the bushfire asset protection zone. The proposal will be incorporated into the proposed urban open space to facilitate recreational use for future residents. Therefore, the proponent states that the proposal will have positive impacts on recreational use.

The proponent states that the dust generated during construction may cause impacts to human health.

4.9.1 Key findings

In preparing the final sketch plan, a cost estimate for construction has been undertaken in accordance with relevant guidelines. The final sketch plan report demonstrates that the proposed design has considered potential risks of embankment failure and has provided suitable measures to address the concern. The proponent also states that the development will be provided and managed in a cost effective manner taking into account whole of life and whole of system costs. The project also has the capacity to provide various employment opportunities during both construction and operation.

The proposed Cravens Creek WQCP location is currently used for occasional recreation by various community groups. Once constructed, the WQCP will be incorporated into the proposed urban open space to facilitate recreational use for future residents. In addition, the proponent has committed that the pond will be designed and landscaped to ensure it is 'natural looking' to enhance aesthetic and recreational values and ecological benefits.

During construction, the proposal is likely to have impacts on human health associated with dust generation, due to the nature of the development. The EIS also mentions that adverse impacts on human health during the operational stage are expected from potential toxic contamination events.

4.9.2 Impacts

The following potential impacts were identified:

- detrimental impacts to human health;
- potential positive economic impacts associated with the pond; and
- potential positive social and recreational impacts associated with the pond.

4.9.3 Commitments

Key commitments identified from the EIS have been included in the assessment as follows:

- work will be undertaken in accordance with the approved CEMP; and
- WSUD features to be installed.

4.9.4 Mitigation

Mitigation measures against impacts of the proposal have been detailed in the EIS. The table below details the mitigation measures associated with social, economic and health impacts as proposed in the EIS.

Identified impacts	Proposed mitigation measures	Stage of implementation
Detrimental impacts to human health.	• water cart to be used for dust suppression; • stop works on days of high winds where visibility is low; and • WSUD features to be installed.	During construction
Potential economic impacts associated	• the development to be managed in a cost effective manner taking into account whole of	Prior to, during and after construction

with the pond.	life and whole of system costs.	
Potential social and recreation impacts associated with the pond.	• the pond will be designed and landscaped to ensure it is 'natural looking' to enhance aesthetic and recreational values and ecological benefits; and • the landscape plan to be prepared as per TAMS requirements.	Prior to construction

The Construction Environmental Management Plan proposed for this project sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the proposal. Refer to 5.2 Construction Environmental Management Plan for further information. The agencies responsible for endorsing or approving each mitigation measure or monitoring program are included in Table 3 of this report.

4.9.5 Scoping document requirements

Assessment of significance and residual risk

The table below details the risks associated with social, economic and health impacts as defined in the EIS.

Potential Impact EIS	Risk Assessment			
	Likelihood (after mitigation)	Consequence (after mitigation)	Risk	Residual risk
Detrimental impacts to human health.	Possible	Moderate (Minor)	Medium	Low
Potential economic impacts associated with the pond.	Possible	Moderate (Minor)	Medium	Low
Potential social and recreation impacts associated with the pond.	Almost certain	Major (Minor)	Significant	Low[7]

Further information request

Further information was requested on the following items within Appendix 5 – Further Information Request:

- *please provide residual risk assessment for all medium and above risk rating in relation to "social-economic and health".*

After considering the proponent's further information submission, the assessment is that the residual risk calculation for the risk of "potential social and recreation impacts associated with the pond" was incorrect. However the assessment confirmed that the proposed WQCP is likely to encourage more recreational use of the site once it is constructed. In addition, the proponent has provided mitigation measures to address this issue.

4.10 Noise, vibration and lighting

As the pond is expected to be constructed prior to construction of residential buildings and the existing nearest house is located approximately 2.5km to the west, the only sensitive receivers for noise vibration and lighting identified in the EIS are

[7] The calculation of residual risk is incorrect. The residual risk should be "High".

some local bird species. Noise associated with construction is expected to last 8-10 months. The EIS further states that noise associated with operation of the pond is uncertain at this stage.

4.10.1 Key findings

The construction of the Cravens Creek WQCP involves blasting and excavation of rocks. Noise associated with blasting and excavation is thought to have major consequences however the proponent states that duration and frequency is expected to be temporary, for up to two weeks.

Construction noise is expected to impact on nearby residents and local bird species. However, the impacts of noise and vibration are expected to have minor consequences on human communities considering the relatively isolated nature of the site. The potential impacts on local bird species is considered to be short term as the construction period will be approximately 12 months.

The pond is expected to be operational prior to construction of residential buildings. Although noise associated with operation of the pond and water reticulation schemes are difficult to ascertain at this stage, the proponent has made a commitment that the pumps will be operated within legislative requirements if any pumps are required.

4.10.2 Impacts

The following potential impact was identified:

- fauna is deterred from site due to impacts of noise from construction activities.

4.10.3 Commitments

A key commitment identified in the EIS which has been included in the assessment is:

- a noise and vibration management sub plan to be prepared and adhered to.

4.10.4 Mitigation

Mitigation measures against impacts of the proposal have been detailed in the EIS. The table below details the mitigation measures associated with noise, vibration and lighting as proposed in the EIS.

Identified impacts	Proposed mitigation measures	Stage of implementation
Fauna is deterred from site due to impacts of noise from construction activities.	• a noise and vibration management sub-plan to be prepared as part of the CEMP to minimise potential noise impacts; and • noise prevention measures will be adhered to.	During construction

The Construction Environmental Management Plan proposed for this project sets out the framework for continuing management, mitigation and monitoring programs for

the relevant impacts of the proposal. Refer to 5.2 Construction Environmental Management Plan for further information. The agencies responsible for endorsing or approving each mitigation measure or monitoring program are included in Table 3 of this report.

4.10.5 Scoping document requirements

Assessment of significance and residual risk

The table below details the risks associated with noise, vibration and lighting as defined in the EIS.

Potential Impact EIS	Risk Assessment			
	Likelihood (after mitigation)	Consequence (after mitigation)	Risk	Residual risk
Fauna is deterred from site due to impacts of noise from construction activities.	Almost certain (likely)	Major (minor)	Significant	Medium

4.11 Bushfire, hazard and risk

The EIS has identified several different hazards and risks associated with the construction of the Cravens Creek WQCP. Most of the potential hazards and risks associated with the proposal were related to public and worker health and safety during construction.

4.11.1 Key findings

The proponent briefly mentions that a number of studies were undertaken to investigate bushfire risks in the Molonglo Valley and these studies provide important guidance about how the threat of bushfire will need to be managed. However, the EIS does not discuss any potential bushfire risks associated with the proposed development. Nevertheless, it is unlikely that bushfire will have potential significant impacts on the proposed infrastructure, considering its character as a pond and location approximate to water courses.

Although there is potential for the proposed pond embankment to fail during the operational phase causing a flood downstream, the EIS has stated that the final sketch plan has taken this risk into consideration and construction of the embankment will follow relevant standards.

The potential risk for unsafe acts or human error to create hazards on worksite and personnel safety is expected during the construction stage for a short term. Although the consequence of injury to workers will likely be major, it is considered the likelihood is low as inductions and first aid kits will be provided on site.

Another potential impact on personnel safety during construction is from hazardous material such as asbestos that could be uncovered from excavation of soil. The *Molonglo Valley phase 2 Contamination Assessment* has been undertaken and the recommendations of the report will be followed during construction.

4.11.2 Impacts

The following potential impacts were identified:

- ignition of grass through sparks/welding activities during construction;
- failure of pond embankment causing flooding downstream;
- unsafe acts and human errors creating hazards during construction activities;
- contamination of land and/or water due to spills of fuel, chemicals or concrete; and
- excavation of soil during construction uncovering material such as asbestos.

4.11.3 Commitments

A key commitment identified in the EIS which has been included in the assessment is:

- undertake works in accordance with an unexpected finds protocol which will be prepared by a suitably qualified environmental consultant and reviewed and endorsed by the Auditor prior to implementation.

4.11.4 Mitigation

Mitigation measures against impacts of the proposal have been detailed in the EIS. The table below details the mitigation measures associated with hazards and risks as proposed in the EIS.

Identified impacts	Proposed mitigation measures	Stage of implementation
Failure of pond embankment.	• appropriate construction standards will be applied to this project.	Prior to and during construction
Unsafe acts and hazards associated with construction activities.	• no smoking or fires on site is permitted; • fire extinguishers available on site; • appropriate signage of pond area; • emergency vehicle access maintained; and • inductions and first aid kit to be provided on site.	During construction
Excavation of soil during construction uncovers material such as asbestos.	• recommendations of the Molonglo Valley phase 2 contamination assessment report are to be followed; • site works to be undertaken in accordance with an unexpected finds protocol which will be prepared by a suitably qualified environmental consultant and reviewed and endorsed by the Auditor prior to implementation; • machine operators have to complete an asbestos training course; and • reuse or disposal of contaminated soil in accordance with EPA's approval.	Prior to, during and after construction

The Construction Environmental Management Plan proposed for this project sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the proposal. Refer to 5.2 Construction Environmental Management Plan for further information. The agencies responsible for endorsing or approving each mitigation measure or monitoring program are included in Table 3 of this report.

4.11.5 Scoping document requirements

Assessment of significance and residual risk

The table below details the risks associated with hazards and risks as defined in the EIS.

Potential Impact EIS	Risk Assessment			
	Likelihood (after mitigation)	Consequence (after mitigation)	Risk	Residual risk
Failure of pond embankment.	Remote	Catastrophic	Medium	Medium
Unsafe acts and hazards associated with construction activities.	Unlikely	Major (Moderate)	Medium	Low
Excavation of soil during construction uncovers material such as asbestos.	Possible (Unlikely)	Moderate	Medium	Low

4.12 Non potentially significant impacts

This section of the report assesses the environmental aspects that were classified as "non-potentially significant impacts". The risk assessment in the EIS identifies the following potential environmental risk aspects as having a pre-mitigation risk rating of less than medium:

- planning and land status;
- utilities; and
- Aboriginal and European cultural heritage.

ESDD's assessment of these findings is included in Table 2.

Environmental aspect from Scoping document			Scoping requirement/consideration	Assessment comments – impacts and mitigation measures	Assessment of Scoping Document requirements met
Sub item	EIS section	EIS page			
s 8.1.1 - Planning and Land Status[8]					
a)	1.2	1	A description of planning context of the area where the project will be located.	• the proposed WQCP will be located on Cravens Creek, which is located in the north-east section of the Molonglo Valley Stage 2 urban development.	Yes
b)	2.1 e)	6	Planning and development status of land/ project relevant to the proposal.	• the proposed WQCP has been identified as early infrastructure to be constructed prior to and in support of the Molonglo Stage 2 urban development.	Yes
c)	2.1 c)	4-6	Describe land use of the proposed land and any land to be affected.	• the blocks that the proposed WQCP is to be located on are mostly designated as rural registered, PRZ1-Urban Open Space with a small portion in NUZ4-River Corridor; and • the proposed WQCP complies with the objectives for all these zones.	Yes
c)	3.2	20-27	Address requirements of attachment A4.	• all relevant documents have been considered in the EIS.	Yes
s 8.1.2 - Utilities					
a)	5.3	71	Describe the existing utilities.	• there are currently no utility services located on the proposed Cravens Creek WQCP site.	Yes
b)	5.3	71	Describe any new utilities, removal, realignments or utility connections required as a result of this development.	• temporary electricity supply to the site is to be from a substation approximately 180m east of the proposed site compound location; and • a pump will be provided for water reticulation and solar power will be used to power the pump until such time as power is accessible.	Yes

[8] The proponent identified one medium rating risk of "changes to land use of the pond area" in the revised EIS but the risk rating has been reduced to "low" in the further information submitted on 17 February 2014. The assessment is that the revised risk assessment is acceptable. The further information identified a new low rating risk of "Molonglo River Corridor" under "Planning and Land Status" but did not provide detailed discussion. However, the potential impacts of the proposal on the Molonglo River Corridor have been discussed in sections 4.2, 4.4, 4.5, 4.7, and 4.8.

s 8.1.11 Aboriginal and European heritage					
a)	5.1-5.5	52, 64, 85	Describe the heritage value of the site and any impacts of the proposal on any heritage items.	• a number of heritage assessments were undertaken for Molonglo Valley; • previously located surface artefacts were collected in 2010; • several heritage artefacts were identified at some distance away from the proposed site; • a conservation management plan was completed for previously identified Aboriginal sites that are located outside the development footprint; and • no Aboriginal or European cultural heritage item is expected to be affected by construction or operation of the proposed WQCP.	Yes
b)	5.1-5.5		Address the requirements of attachment A2 (the ACT Heritage Council's comments).	• the ACT Heritage Council's comments have been addressed in the revised EIS; and • further comments received from the ACT Heritage Council are that the Unanticipated Discovery Protocol included in the *Molonglo River Corridor Cultural Heritage Assessment and Conservation Management Plan* (CHMA 2013) must be adhered to during construction.	Yes

Table 2 – Assessment findings in relation to non-potentially significant impacts

5 Development assessment

5.1 Development assessment considerations

Any development application (DA) related to the completed EIS will include consideration of appropriate conditions of approval such as those outlined below. Issues identified during the assessment of the subsequent impact track DA may be addressed through further conditions not included in this section or as a variation of these conditions.

Table 3 – Draft Conditions of Development Approval details possible conditions of approval identified during consideration of the EIS for the proposal.

Table 3 – Draft Conditions of Development Approval

No.	Condition contents	Endorsement/approval	Construction stage	Draft condition of approval
1	Environmental protection, conservation and management	TAMSD CPR-ESDD	Prior to construction During construction After construction	That the development has to comply with the following requirements: • environmentally sensitive areas (potential PTWL habitat) should be marked and fenced to ensure no unnecessary clearance or disturbance occurs; • all stockpiles to be located outside of the river park and other environmentally sensitive areas; • site induction to educate personnel on the management of environmentally sensitive areas; • ecologist to survey potential habitat areas to be impacted by construction prior to and during initial clearing works to undertake fauna rescue; • damaged PTWL habitat must be measured and recorded; • PTWL ecology to be discussed during induction; and • PTWL habitat that is impacted as part of this proposal will be managed as part of a broader offset package as described in the NES Plan. Implementation of mitigation and management measures from the NES Plan. The amount of Box-Gum Woodland which is cleared by the MVS 2 developments must be calculated, recorded and reported to SEWPAC under the NES Plan. The development will be required to conform to the NES Plan recommendations for PTWL mitigation measures and management. This includes a maximum of 27 ha of impact on high and moderate quality habitat. Management of risks to PTWL include protection of important habitat and management of indirect impacts that may change habitat quality (high to moderate etc). Enhancing connectivity is a consideration for offsetting impacts.

2	Construction Environment Management Plan (CEMP)	EPA TAMSD CPR-ESDD	Prior to construction	That a CEMP be endorsed by the identified entities prior to the commencement of any work on the site. The CEMP is required to include the following items as a minimum:
	(a) Erosion and sediment control plan	EPA	Prior to construction	An erosion and sediment control plan, clearly identifying stock pile location, must be developed in accordance with EPA guidelines and endorsed by the EPA prior to the start of construction.
	(b) Weed management measures	TAMSD	Prior to construction After construction	• weed growth must be monitored during construction works, particularly in stockpiles to ensure infestations do not occur; and • weed control to be undertaken as appropriate after construction works for the duration of the landscape consolidation period.
	(c) Investigation of Perunga Grasshopper	CPR-ESDD	Prior to construction During construction	• the presence of Perunga Grasshopper must be investigated prior to construction by a qualified and experienced environmental professional; and • if a Perunga Grasshopper is sighted, the proponent must stop construction works and report to CPR. Any sighted Perunga Grasshopper should be moved to an area of high quality grassy understorey in the adjacent or very nearby Molonglo River Corridor.
	(d) Restoration works	CPR-ESDD	During construction After construction	• disturbed areas should be vegetated as soon as practical to reduce erosion; • construction contractors to support any reasonable requests for assistance in salvaging excess rocks, where feasible and reasonable, for use in PTWL habitat restoration by others; and • excess rocks and salvaged tree logs to be stockpiled where feasible and reasonable for future restoration works in the Molonglo River Park.
	(e) Contamination management	EPA	Prior to construction During construction	• works are not to commence until completion of contamination assessments; and • works to be undertaken in accordance with the unexpected finds protocol as part of the relevant contamination assessment/s for the areas C2 and C4 of the Molonglo Valley.

	(f) Unanticipated Discovery protocol	ACT Heritage Council	During construction	The Unanticipated Discovery Protocol included in the *Molonglo River Corridor Cultural Heritage Assessment and Conservation Management Plan* (CHMA 2013) must be adhered to during construction.
3	Landscape plan	ESDD TAMSD	Requirement for DA	A landscape plan to be prepared as per TAMSD requirements and must incorporate the following recommendations[9]: • *tree and tall shrub plantings must not shade PTWL habitat;* • *clumps of native trees and shrubs to be utilised in a way that encourages small native birds to move through the area and for there to be a functional movement connection to the Molonglo River corridor; and* • *water extraction from the pond for landscaping purposes will leave at least 2.5m of depth in the pond to avoid fish kills. It is noted that for maintenance or emergency purposes the pond may need to be completely drawn down or emptied from time to time.*
4	Traffic management plan	TAMSD	Prior to construction During construction	• a temporary traffic management plan to be prepared and endorsed by TAMSD prior to commencement of site works; • the approved traffic management plan to be adhered to during construction; • confirm volume, composition, origin and destination of goods to be moved prior to construction; • the existing internal fire trail network to be upgraded to accommodate heavy vehicles; and • the access points to the site to be upgraded prior to commencement of works.
5	Water quality management	EPA	Prior to construction During construction During operation	Water quality to be managed in accordance with the following requirements[10]: • *water way works licence to be obtained from the EPA prior to commencement of works;* • *water quality monitoring schedules need to be established in*

[9] Taken directly from TAMSD's comments.
[10] Taken directly from the revised EIS.

				accordance with specifications outlined in waterway works licence for the life of the project; • *clean water flowing into the site to be kept separate from dirty water leaving the site;* • *if a significant quantity of groundwater is encountered during construction, a single groundwater monitoring bore is to be installed between the pond and the Molonglo River to enable periodic monitoring of groundwater; and* • *water flow through the existing creek line upstream of the construction site is to be retained in a coffer dam and diverted/piped around the external perimeter when dam levels necessitate release of water.*

5.2 Construction Environmental Management Plan

A CEMP has been proposed by the proponent to set out the framework for continuing management, mitigation, monitoring and, if relevant, adaptive management programs for the relevant impacts of the proposal. The CEMP also outlines relevant provisions for undertaking independent environmental auditing. The CEMP should include those sub-plans indicated in Table 3.

6 Recommendation

Having regard to the documentation and information provided, ESDD has assessed the Cravens Creek WQCP revised EIS as meeting the requirements of Chapter 8 of the Act.

The assessment of the revised EIS has identified a number of issues where the requirements of the scoping document were addressed as being only partially met. These are:

- inadequate discussion on the residual risk assessment for the potential impacts on NTG herb and forb species;
- inconsistent statements regarding the potential impacts on NTG; and
- incorrect residual risk assessment in regard to social, economic and health impacts.

It is the authority's assessment that the revised EIS has provided sufficient information to allow an informed evaluation of potential environmental impacts which could be attributed to the Cravens Creek WQCP proposal. The proponent has proposed a range of mitigation and management measures to reduce or avoid potential environmental impacts arising from construction and operational activities associated with the project. It is considered that any potential adverse impacts can be adequately addressed by implementing these measures and the development application conditions specified in this report.

The influence of construction activities associated with the Cravens Creek WQCP, and the subsequent environmental performance attributable to its ongoing operation, will be monitored by a variety of public agencies; particularly the EPA, ESDD, and TAMSD.

The authority's recommendation is that the matters not substantially addressed in the revised EIS do not justify the establishment of a panel of inquiry. The authority's recommendation is that the Minister needs take no action in relation to the revised EIS. The Minister may however, decide to present the revised EIS to the Legislative Assembly. This action does not affect an EIS being complete in accordance with section 209 of the Act.

This page has been left intentionally blank.

Appendix 1 – Final Scoping Document

This page has been left intentionally blank.

ACT Government
Environment and Sustainable Development

Form

Scoping Document

Under Part 8 of the *Planning and Development Act 2007*

APPLICATION NUMBER: 201200083		**DATE OF THIS NOTICE: 1 May 2012**
DATE LODGED: 20 March 2012		**DATE OF EXPIRY: 30 October 2013**
PROJECT: Cravens Creek Pond and Pond N1, Molonglo Valley		
BLOCKS: 45	**SECTION: 000**	**SUBURB: STROMLO**
ADDRESS: Molonglo Valley Future Urban Area, Stage 2		
APPLICANT: Ben Crossling, Shared Services Procurement		
LESSEE: Unleased Territory Land, Australian Capital Territory		

SCOPING DOCUMENT:

The planning and land authority within the Environment and Sustainable Development Directorate (ESDD) received your application under Section 212(1) of the *Planning and Development Act 2007* (the Act) for Scoping of an EIS for the above proposed development. Pursuant to Section 212(2) of the Act ESDD has:

a) Identified the matters that are to be addressed by an Environmental Impact Statement (EIS) in the relation to the development proposal.

b) Prepared a written notice (the ***scoping document***) of the matters.

NB: The attached scoping document is final. The Environmental Impact Statement must conform to the requirements of this scoping document. This document does not indicate approval, or support in any way, nor does it indicate approval in principle.

TERM OF SCOPING DOCUMENT

Pursuant to Section 215 of the Act, this scoping document is effective for 18 months from the day after the date of this notice.

FORM AND FORMAT OF DRAFT EIS

The ESDD requires that the proponent prepares an EIS in the following form and format:

- The EIS must be prepared in accordance with section 50 of the *Planning and Development Regulation 2008*
- The EIS document sized A4 with maps and drawings in A4 or A3 format
- The proponent must supply three (3) copies of the draft EIS and four (4) copies of the revised EIS
- The EIS must be presented for circulation and web posting in an electronic format

Form

Scoping Document

Under Part 8 of the *Planning and Development Act 2007*

- The proponent must supply nine (9) CD/DVD copies of the draft EIS and three (3) CD/DVD copies of the revised EIS. Additional CD/DVD copies must be produced on request
- Digital files must not exceed 10 MB each
- The EIS must be written in plain English and avoid the use of jargon as much as possible
- The EIS is required to be provided in the same structure as described in this scoping document as closely as possible. A table that cross-references the EIS to the final scoping document must be included if the structure is different
- Additional technical detail, including relevant data, technical reports and other sources of the EIS analysis must be provided in appendices
- Maps, diagrams and other illustrative material should be included in the EIS to assist readers to interpret information.

COST OF PREPARATION OF DRAFT EIS

The proponent is responsible for the preparation of the draft and revised EIS and any related applications and associated costs. This includes additional copies of the draft and revised EIS and other associated documents as required by ESDD from time to time.

NEXT STEPS:

Pursuant to Section 216(2) of the Act, you are now required to:

a) Prepare a document (a ***draft EIS***) that addresses each matter raised in the scoping document for the proposal
b) Pay the public notification fee once you receive the fee advice from Customer Services, ESDD
c) Prepare a document (a ***revised EIS***) that addresses each matter raised in ESDD's comments and the representations on the draft EIS
d) submit the revised EIS to ESDD for evaluation.

If you have any queries about the requirements outlined in this scoping document, please contact Yuyan Wei to arrange a suitable time to discuss.

Delegate
Ben Ponton
A/g Deputy Director General,
Planning Policy
Environment & Sustainable Development Directorate

2 May 2012

Contact
Yuyan Wei
Assessment Officer
Impact and Estates Assessment
Planning Delivery Division
Environment & Sustainable Development Directorate
E: yuyan.wei@act.gov.au
T: (02) 6205 8683

GENERAL REQUIREMENTS FOR THE EIS

1 Cover Page

The cover page must clearly display the following:

- The name of the proposal (project title)
- The block identifier and street address for the proposal
- The date of the preparation of the document
- Full name and postal address of the designated proponent
- Name of the person/organisation who prepared the documents
- Address, telephone and email contact details for the person/organisation who prepared the document
- Name of person/organisation for which the document was prepared.

2 Glossary

Provide a glossary of technical terms, acronyms and abbreviations used in the EIS.

3 Executive Summary

Provide a non-technical summary of the EIS including a description of the proposal, key findings and recommendations.

4 Introduction

Summarise the proposal background and justification for the proposal.

5 Proposal Details

5.1 Project Description

Provide a description of the proposal, including:

a) The location of the land to which the proposal relates, including detailed maps

b) The custodian of the land

c) The purposes for which the land may be used

d) Clearly identify all lands subject to direct disturbance from the proposal and associated infrastructure and geomorphic features such as waterways and wetlands

e) An outline of any developments that have been, or are being, undertaken by the proponent, or other person(s) or entities, within the proposal area and broadly in the region. Describe how the action relates to these in the region affected by the action

f) A description of all the components of the action, including the proposal specifications including the predicted timescale for implementation (design, approvals, construction and decommissioning) and project life

g) A description of the precise location of any works to be undertaken, structures to be built or elements of the action that may have relevant impacts

h) A description of the construction methodologies for the proposal.

5.2 Alternatives to the proposal

Provide details of any alternatives to the proposal considered in developing the proposal including a description of:

a) Any alternatives to the proposal and provide reasons for selecting the preferred option Include any detailed analysis of site selection as an attachment to the EIS

b) The criteria used for assessing the performance of any alternative to the proposal considered

c) Any matters considered to avoid or reduce potential impacts prior to the selection of the preferred option

d) Details of the consequences of not proceeding with the proposal.

5.3 Objectives

Describe the objectives of and justification for the proposal.

6 Legislative Context

A description of the EIS process including any statutory approvals obtained or required for the proposal.

6.1 Statutory requirements

6.1.1 ACT requirements for the preparation of an EIS

The EIS must include information on statutory requirements for the preparation of an EIS, including:

- *Planning and Development Act 2007*
- *Planning and Development Regulation 2008*
- *Related statutory approvals.*

6.1.2 Commonwealth matters

The EIS must address how the proposal is considered under:

- *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*
- *Molonglo Valley Plan for the Protection of Matters of National Environmental Significance*

6.2 Other requirements

The description must also include information on how each of the following has been considered in the preparation of the EIS:

- Territory Plan 2008
- National Capital Plan
- Sustainability Policy
- Sustainable Transport Plan
- Canberra Spatial Plan
- ACT Climate Change Strategy
- The Draft Strategic Assessment Report of the Molonglo Valley
- Important Planning Requirements for the First Release Area in the Molonglo Valley
- Molonglo Stage 2 Planning and Design Framework

- Important Planning Requirements (IPRs) for the First Release Area
- The Molonglo River Park Concept Plan
- Preliminary Risk Assessment, Molonglo Valley Urban Development Stage 2 and Supporting Infrastructure
- Other relevant planning and environmental guidelines and management plans.

6.2.1 Ecologically sustainable development

Provide a description of the proposed action in relation to the long-term and short-term considerations of economic development, social development and environmental protection. A statement should be provided to address how the following ecologically sustainable development principles have been considered in the preparation of the EIS:

a) The precautionary principle

b) The principle of intergenerational equity

c) The conservation of biological diversity and ecological integrity

d) Improved valuation, pricing and incentive mechanisms.

6.2.2 Territory Plan strategic directions

A statement must be provided regarding the proposal's compatibility with the principles setup in the Statement of Strategic Directions in the Territory Plan 2008 (Section 2.1- Strategic Direction).

7 Risk Assessment

7.1 Risk Assessment Methodology

Provide a risk assessment in accordance with the Australian and New Zealand Standard for risk management AS/NZS ISO 31000:2009 *Risk Management – Principles and guidelines.* The proposed criteria for determining which risks are potentially significant impacts must be described. This should be based upon the Preliminary Risk Assessment (PRA) submitted with your request for the scoping application.

Should any risk levels change during the preparation of the EIS or any new risks become apparent, these must be assessed and included within the EIS, and where relevant, the residual risk assessment.

-Assessment guide-			
Provide a table with the headings below to describe the risks identified and the original risk rating without any mitigation strategies in place. This table format is one option, however alternative formats can be used provided the methodology is clearly described and in accordance with AS/NZS ISO 31000:2009 *Risk Management – Principles and guidelines*			
Risk	Likelihood	Consequence	Risk rating

8 Assessment of Impacts

Sufficient information is required to provide ESDD with an adequate understanding of the environmental impacts associated with the proposal. Each potentially significant impact rated with a risk rating of medium and above as identified in the risk assessment must be addressed against items identified in sections 8.2 - 8.6 where not already identified in Table 1.

Table 1 identifies the issues that ESDD has identified as potentially significant risks, and sections of the scoping document that must be addressed in the EIS. The risks and their associated risk levels were determined from the information submitted with the PRA, comments received from entities on the request for scoping document application and ESDD's assessment.

Table 1 – Identified Impacts and requirements to be addressed in the EIS

Environmental Theme	Risk identified	Sections of scoping document to be considered
Planning and land status		8.1.1
Traffic and transport	• Traffic impacts on the local road network during construction	8.1.2, 8.4, 8.5
Utilities		8.1.3
Materials and waste	• Impacts of material handling, storage and stockpiling on surrounding sensitive areas, including habitats for threatened fauna species, native vegetation, and Molonglo River Corridor.	8.1.4, 8.4, 8.5
Landscape and visual	• Important view shed changes • Changes to nature of the environment • Changes to value of landscape	8.1.5
Soils and geology	• Soil disturbance, sedimentation and erosion impacting on surrounding sensitive areas and habitat	8.1.6, 8.2 -8.6
Water quality and hydrology	• Potential for changes to existing water table • Changes to water quality of local watercourses during construction and operation • Changes to and impacts on channel morphology • Impacts on local hydrology including moderation of environmental flows and water storing • Landform changes impacting on the potential for localised flooding	8.1.7, 8.2- 8.6
Climate change and air quality	• Reduced air quality during construction and associated impacts on fauna and threatened bird species, and the Mt Stromlo Observatory	8.1.8, 8.2-8.6

Environmental Theme	Risk identified	Sections of scoping document to be considered
Terrestrial flora and fauna	• Reduction and removal of native vegetation, including trees with significant ecological or landscape values • Direct impacts on Pink-tailed Worm Lizard and its habitat • Direct impacts on Perunga Grasshopper and its habitat • Removal of local fauna habitat • Habitat fragmentation and disconnection, particularly relating to bird and local fauna species	8.1.9, 8.2-8.6
Aquatic flora and fauna	• Changes to local ecosystem • Water flow changes impacting on aquatic species	8.1.10, 8.2-8.6
Aboriginal and European cultural Heritage	• Removal of or damage to known and undiscovered heritage items	8.1.11, 8.2-8.6
Socio-economic and health		8.1.12
Noise, vibration and lighting	• Construction impacts on threatened bird species	8.1.13, 8.4, 8.5
Hazard and risk	• Catastrophic failure of dam wall • Unsafe acts and hazards associated with construction activities	8.1.14, 8.5
Recreation		8.1.15
All other impacts		8.1.16

8.1 General

The baseline information used for predicting each potentially significant environmental impact identified within the scoping document should be outlined within this section. This should be discussed under the headings 8.1.1 – 8.1.15. Describe the assessment scenario for each heading under 8.1.1 – 8.1.15.

-Assessment Guide-		
Assessment Scenarios: Proponent should describe and use baseline case, application case and planned development case in their EIS to describe and address impacts at all stages of the project (construction, operation, decommissioning and reclamation)		
Baseline case The baseline case establishes and describes the conditions that exist prior to the development or if the project were not developed. Describe the environmental conditions that include the effects of existing land uses of the area.	**Application case** The application case describes the baseline case with the effects of the proposal added. Information is provided to allow regulators to determine how project operations should be controlled and how adverse effects can be mitigated and managed.	**Planned development case** The planned development case describes the environmental conditions of the project when integrated with the existing conditions and any other planned projects which can be reasonable expected to occur.

NOTE: *the information provided under the following headings is for guidance only and is not an exhaustive list of matters that may be required to accurately detail the assessment scenarios.*

8.1.1 Planning and land status

- *Include a description of planning context of the area where the project will be located*
- *Describe planning and development status of any land or project relevant to the proposal*
- *Describe land use of the proposed land and any land to be affected (including zoning, lessee(s) or custodian of the land, the permissibility of the proposed use defined in the Territory Plan)*
- *Address requirements outlined in A4 of Attachment A by Land and Infrastructure Policy Branch.*

8.1.2 Traffic and transport

- *Describe arrangements for the transport of construction materials, equipment, products, wastes and personnel during both the construction phase and operational phases of the development proposal*
- *Include a description of the volume of traffic generated during construction and operation*
- *Include details of vehicle traffic, transit routes and transport of heavy and oversize loads (including types and composition)*
- *Address Item 2 outlined in A5 of Attachment A by Territory and Municipal Services Directorate (TAMSD).*

8.1.3 Utilities

- *Describe the existing utilities located on the land subject to this proposal*
- *Describe any new utilities, removal, realignments or utility connections required as a result of this development.*

8.1.4 Materials and waste

- *Describe hazardous materials and dangerous chemicals to be used or stored on site during construction and operation*
- *Describe the nature, sources, location and quantities of all materials to be handled, including the storage, stockpiling and disposal of materials and waste.*

8.1.5 Landscape and visual

- *Undertake a visual assessment of the site and surrounds to describe the current landscape character of the area*
- *Identify important view sheds and significant views and vistas to and from the site*
- *Conduct a visual impact analysis that details predicted impacts the proposal may have on the landscape character of the site and surrounds*
- *Provide perspectives and/or a visual analysis of the proposal from local vantage points*
- *Address Item 5 outlined in A5 of Attachment A by TAMSD.*

8.1.6 Soils and geology

- *Describe the potential impacts associated with soils and geology on the proposed site and surrounding areas (including Molonglo River Corridor)*
- *Provide information on methods of impact reduction and rehabilitation associated with soils and geology*
- *Address the requirement outline in A3 of Attachment A by Environment Protection*
- *Address Item 3 outlined in A5 of Attachment A by TAMSD.*

8.1.7 Water quality and hydrology

- *Describe the present and potential water uses and users within the affected catchment of the proposal. Include a map of the catchment*
- *Describe how water will be managed on the site and for nearby areas during construction and operation*
- *Provide information on the stormwater management both during construction and operation including any on site detention and water quality protection measures*
- *Describe the current groundwater quality and measures proposed to maintain and monitor ground water quality*
- *Describe how the ponds will impact local watercourses and surrounds, including Cravens Creek, the Molonglo River, and the Molonglo River corridor*
- *Address items 1 and 2 outlined in A1 of Attachment A by the Conservator of Flora and Fauna.*

8.1.8 Climate change and air quality

- *Discuss the potential air emissions from the proposed development during construction and operation*
- *Discuss the potential impacts of air quality change, e.g. dust generated during construction, on Mt Stromlo Observatory*
- *Discuss methods for reducing impacts of air emissions.*

8.1.9 Terrestrial flora and fauna

- *Include a description of the existing ecology and environmental values*
- *Include a list of all species that may be present on site and their status under Territory legislation*
- *Describe the effects or potential effects of the proposal on terrestrial flora and fauna of the region*
- *Address items 3 and 4 outlined in A1 of Attachment A by the Conservator of Flora and Fauna.*

8.1.10 Aquatic flora and fauna

- *Include a description of the local aquatic ecosystems including a description of downstream systems and those having the potential to be impacted by the development*
- *Describe the effects and potential effects of the proposal on aquatic flora and fauna*

- *Address items 2 outlined in A1 of Attachment A by the Conservator of Flora and Fauna.*

8.1.11 Aboriginal and European cultural heritage

- *Describe the heritage values of the site and any impacts of the proposal on any heritage items*
- *Address the requirements outlined in A2 of Attachment A by the ACT Heritage Council.*

8.1.12 Socio-economic and health

- *Provide an analysis of the potential impacts on human health and any measures incorporated into the development to mitigate these impacts*
- *Describe the suitability of the land for the type of proposal described in terms of people health*
- *Detailed discussion of the potential social and economic impacts associated with the proposal*
- *Provide maps showing sensitive receivers.*

8.1.13 Noise, vibration and lighting

- *Identify any potentially sensitive receivers (including residential dwellings and road users) which may be affected by the construction and operation of this proposal*
- *Discuss the magnitude, duration and frequency of any noise or vibration that might arise from the construction phase*
- *Discuss the types, duration and frequency of any noise during operation phases of the proposal.*

8.1.14 Hazard and risk

- *Describe the potential for hazard and risk associated with the construction and operation of the project including flooding, vandalism and accidents*
- *Describe how the site is suitable for the proposed use, including considerations of hazards and risks relating to topography and contamination*
- *Address Item 1 outlined in A5 of Attachment A by TAMSD.*

8.1.15 Recreation

- *Describe the usability of ponds as a recreation facility*
- *Describe any areas relevant to the proposed site used for recreation (formal or informal) and the potential for the proposal to impact on these areas, including areas used by equestrians, cyclists and walkers*
- *Address Item 4 outlined in A5 of Attachment A by TAMSD.*

8.1.16 All other impacts

- *Describe any potential impacts that have not been discussed in the previous sections.*

8.2 Environmental conditions and values

Describe the environmental conditions and identify the environmental values for the environmental themes identified in Table 1. This section should discuss the baseline conditions for the area.

8.3 Investigations

Identify the findings and results of any environmental investigation in relation to the land to which the proposal relates.

8.4 Impacts

Describe the effects of the environmental impact as a result of construction and operation for the environmental themes identified in Table 1 (including cumulative, consequential and indirect effects) on physical and ecological systems and human communities. Particular emphasis should be placed on the potentially significant impacts identified in the risk assessment. Include a discussion of the timeframes of impacts i.e. short or long term, their nature and extent and whether they are reversible or irreversible, unknown or unpredictable. Include an analysis of the significance of the relevant impacts. Information must include any technical data and other information used or needed to make a detailed assessment of the relevant impacts.

8.5 Mitigation and offsets

Discuss the proposed safeguards and mitigation measures proposed to be taken for the environmental management of the land to which the proposal relates for the environmental themes identified in Table 1. This is to include:

a) A description and an assessment of the proposed impact prevention, mitigation or offsetting measures to deal with the environmental impact of the proposal

b) A description of the expected or predicted effectiveness of the mitigation measures

c) Any statutory or policy basis for the mitigation measures

d) An outline of an environmental management plan that sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the action, including any provisions for independent environmental auditing

e) The name of the agency responsible for endorsing or approving each mitigation measure or monitoring program

f) If an offset package is required, it must provide compensation for any unavoidable impacts arising from the proposal on listed threatened species and communities. The offset package must include, but not be limited to, measures to address the long-term protection and management of relevant listed threatened species and communities at offset sites in the ACT (or surrounding area) and may also include management measures to improve the ecological values. Further information on the provision of Federal offsets is detailed in the *Draft Policy Statement: Use of environmental offsets under the EPBC Act* (August 2007) available on the Department of Sustainability, Environment, Water, Population and Communities website

g) A discussion on how the proposed mitigation and offset measures interact with the Molonglo Valley Plan for the Protection of Matters of National Environmental Significance

h) A description of the cost effectiveness of environmental mitigation or rehabilitation measures proposed and the expected or predicted effectiveness of those measures.

8.6 Residual risk

Provide a table that details the residual risk for the potentially significant impacts identified for the environmental themes in Table 1. A residual risk assessment is only required where the significance of impact is determined as medium or above. The calculation of the residual risk should take into account the influence of implementation of mitigation or offsetting measures on the impacts identified by the risk assessment. A discussion of how the calculations were determined should also be included.

-Assessment Guide-				
Provide a table with the headings below to describe the risks identified and the original risk rating without any mitigation. The residual risk assessment will include the consideration of management, mitigation and monitoring strategies applied to each risk identified. The residual risk rating describes the final risk with the mitigation measures in place.				
Risk identified in Section 7.1	**Original risk rating from items identified in 7.1**	**Residual likelihood**	**Residual consequence**	**Residual risk rating**

9 Community and stakeholder consultation

9.1 The proponent must consult with:

- Lease holders and land managers of land potentially impacted by the proposal
- Any recreational groups which will be affected by the proposal
- Any volunteer conservation, landscape management or land care groups active in the area to be effected by the proposal
- The local community.

9.2 Describe the community consultation undertaken (methodology and criteria for identifying stakeholders and the communication methods used).

9.3 The revised EIS must include the representations received, issues raised in the representations and a response to the issues and values identified. The summary response must clearly identify the representation(s) to which the responses relate.

9.4 Describe how any concerns have been considered in light of the proposal and any future development planned.

10 Recommendations

10.1 Provide a summary of any commitments to impact prevention, mitigation measures, offsetting measures and other actions within the EIS.

10.2 Provide a summary table outlining the residual risk assessment results.

10.3 Describe the monitoring parameters, monitoring points, frequency, data interpretation and reporting proposals.

11 Other relevant information

The proponent may wish to include issues outside of the scope of the EIS, as a separate section of the EIS. This allows the proponent to identify matters, not required to be addressed in the EIS, but that would be subject to development assessment consideration and notification. This can provide additional context for members of the public regarding management of environmental issues, by ensuring that the public is aware that these issues will be addressed in the detailed design of the proposal.

12 References

A reference list using standard referencing systems must be included.

13 Required Appendices

13.1 Final scoping document for the EIS

A copy of the final scoping document should be included in the EIS. Where it is intended to bind appendices in a separate volume from the main body of the EIS, the final scoping document should be bound with the main body of the EIS for ease of cross-referencing.

13.2 Scoping Document Reference

Include a table that cross-references the draft EIS and revised EIS to the scoping document.

13.3 Proponent's Environmental Record

Provide details of any proceedings under a Commonwealth or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:

- The person proposing to take the action
- For an action for which a person has applied for a permit, the person making the application.

If the person proposing to take the action is a corporation, then provide details of the corporation's environmental policy and planning framework.

13.4 Information Sources

For information given the following must be stated:

- The source of the information
- How recent the information is
- How the reliability of the information was tested
- What uncertainties (if any) are in the information.

13.5 Study team

The qualifications and experience of the study team and specialist sub-consultants and expert reviewers must be provided.

13.6 Specialist studies

All reports generated on specialist studies undertaken as part of the EIS are to be included as appendices.

13.7 Research

Any proposals for researching alternative environmental management strategies or for obtaining any further necessary information should be outlined in an appendix.

Attachment A

ENTITY REQUIREMENTS

Where not otherwise identified as a potentially significant impact, provide information in accordance with the requirements of the entities. If the issues raised by entities have been addressed in other sections of the EIS, this must be cross referenced in this section.

A1. The Conservator of Flora and Fauna

The EIS should address:

1. The impacts on the Molonglo River Park.
2. The impacts on the natural waterway below the dam wall of the construction and the operation of the ponds.
3. The proposed construction methods employed to minimise the impact of the proposal on the mapped Pink-tailed Worm Lizard habitat, including vehicle and machinery access.
4. Location and impact (if any) of the construction of the connecting pipeline and swale drain on the river corridor and Pink-tailed Worm lizard habitat.

A2. ACT Heritage Council

The only outstanding heritage requirement is adherence to all approved Unanticipated Discovery Protocols, in addition to conservation recommendations outlined in conservation management plans for MV18, and historic sites MHS1 and MHS2.

The following will be required where the proposal impacts the Molonglo River Corridor:

1. Review previous archaeological work carried out within the immediate and general area (the study area) to identify previously recorded cultural heritage values and sites (a desktop study).
2. Evaluate the potential for further surface and subsurface deposits of cultural material in the study area with the above data, and through the analysis of landscape features e.g. soil, geology, slope and hydrogeology (a predictive model of site locations).
3. Survey the study area to assess the current condition of recorded sites within the proposed development to test this model and to identify and additional surface sites (ground truthing).
4. Submit a report to the Heritage Unit detailing the results of archaeological investigation.
5. Develop a Conservation Management Plan
6. Prepare an Unanticipated Discovery Plan

A3. Environment Protection

The ACT Government Strategic Plan - Contaminated Sites Management, 1995, specifically requires that potentially contaminated land be investigated at the earliest stages of the planning process to ensure a site is suitable for the proposed use.

The EPA is aware that the Molonglo 2 development area is currently being assessed and independently audited for contamination issues. Whilst the level of contamination within this area of the development is unlikely to pose a significant risk of harm to human health the EIS documents should be updated based on assessments to date to make appropriate comment on this issue.

A4. Land and Infrastructure Policy Branch, City Planning Division, ESDD

The land and infrastructure group requires that:

1. Development applications for the Molonglo Stage 2 area should be consistent with the planning intent for the area as outlined in the following documents:
   - Molonglo Stage 2 Planning and Design Framework
   - Molonglo Valley Plan for the Protection of Matters of National Environmental Significance
   - Important Planning Requirements for the First Release Area
   - The Molonglo River Park Concept Plan
   - Preliminary Risk Assessment, Molonglo Valley Urban Development Stage 2 and Supporting Infrastructure
2. The EIS should address how the boundary of the development and its encroachment in the Molonglo River corridor and over the suburb footprint have been considered. State and justify the extent of the development boundary by considering the key physical site features, sensitive vegetation, habitat mapping and bushfire management requirements.

A5. Territory and Municipal Services Directorate

The EIS should not be limited to impacts on the 'natural' environment and should include details of impacts on the surrounding built environment and existing landuses/ land management as follows:

1. EIS must address fire management as the site is surrounded by grassed paddocks along the river. This includes risk of fires being started by heavy vehicles during the construction phase, in high fire danger periods.
2. EIS must address traffic impacts on surrounding sites, both during the construction phase and at completion. In particular:
   - Impacts of construction on access to existing fire trails within the development site. (If any new gates are proposed the developer must liaise with Parks and City Services Fire Management Unit to ensure that Fire and Emergency Services Officers have access –ie keys- to the gates).
   - Impacts on access to the nearby Stromlo Forest Park mountain biking site.
3. The EIS must address appropriate Sediment and Erosion Control measures to be followed during construction phase.
4. EIS must address benefits and impacts on recreational use of the proposed ponds area and adjacent sites, both in the construction phase and in the long term. This should include considerations of constructing facilities used for recreational purposes, and maintaining and managing these facilities at the post construction stage.
5. The EIS should:
   - consider the establishment of low-growing native grasses and groundcovers which are very drought hardy and would require minimal mowing, e.g. *Chloris truncate, Austrostipa scabra, Austrodanthonia carphoides, Bothriochloa macra, Microlaena stipoides, Panicum effusum,* and *Wahlenbergia sp;*

- provide a detailed description of the macrophyte planting along the pond edge. The surrounding pond areas should be landscaped with a similar native vegetation composition and genetic provenance to that which occurs along the Molonglo River to improve the connectivity with the adjacent river; and
- ensure protection of existing trees near proposed ponds in accordance with the Molonglo River Park Concept Plan.

For noting by the proponent only

A6. ActewAGL Electricity

All issues can be dealt with at the DA stage

A7. ActewAGL Water

There are no assets on the site.

A8. Strategic City Planning and Design Branch, City Planning Division, ESDD

No comments were made on the proposal.

A9. ACT Emergency Services Agency

No comments were made on the proposal.

Attachment B

GLOSSARY

Biodiversity: The variability among living organisms defined under the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act).

Biodiversity corridor: A river corridor or wildlife corridor identified in the Territory Plan 2008 or in a nature conservation strategy, or action plan, under the *Nature Conservation Act 1980* (the NC Act).

Clearing of native vegetation: The actions that are undertaken to native vegetation and listed under the NC Act, section 74 (1).

Critical habitat: Habitats of threatened species or threatened ecological community defined under the EPBC Act, section 207A (4).

Ecological community: A group of ecologically related species defined under the NC Act, or an assemblage of native species defined under the EPBC Act.

Ecosystem: A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit, as defined under the EPBC Act.

Endangered: A native species or an ecological community listed under the EPBC Act, or an ecological community or a species defined under the NC Act.

Environment: As defined under the *Planning and Development Act 2007* (the P&D Act), each of the following is part of the environment:

(a) the soil, atmosphere, water and other parts of the earth;

(b) organic and inorganic matter;

(c) living organisms;

(d) structures, and areas, that are manufactured or modified;

(e) ecosystems and parts of ecosystems, including people and communities;

(f) qualities and characteristics of areas that contribute to their biological diversity, ecological integrity, scientific value, heritage value and amenity;

(g) interactions and interdependencies within and between the things mentioned in paragraphs (a) to (f);

(h) social, aesthetic, cultural and economic characteristics that affect, or are affected by, the things mentioned in paragraphs (a) to (f).

Habitat: An area defined under NC Act, or the biophysical medium or media defined under the EPBC Act.

Impact: An event or circumstance defined under the EPBC Act, section 527E.

Impact Track: An assessment track that applies to a development proposal defined under the P&D Act, section 123.

Long term: Greater than 15 years duration.

Medium term: Greater than three (3) years to 15 years duration.

Native Species: The kinds of native animal and native plant defined under the NC Act.

Native vegetation: In relation to an area, means the kinds of vegetation indigenous to the area as listed under the NC Act, section 73.

Protected: A species declared under the NC Act, section 34.

Protected Trees: A registered tree or a regulated tree defined under the *Tree Protection Act 2005*.

Rare: A species or ecological communities defined under the Nature Conservation (Criteria and Guidelines for Declaring Threatened Species and Communities) Determination 2008.

Reserved area: An area of public land reserved under the Territory Plan 2008 as a wilderness area, national park or nature reserve.

Regulated waste: waste defined under the *Environment Protection Act 1997*

Scoping: The process of identifying the matters that are to be addressed by an EIS in relation to the development proposal - see the P&D Act, Section 212 (2).

Short term: Zero to three (3) years duration.

Socio-economic: Involving both social and economic factors.

Threatening process: A process declared to be a threatening process under the NC Act, section 38 (4).

Threatened Species: A species is vulnerable or endangered, or an ecological community is endangered or a process is threatening under the NC Act, or a species included in the categories that are listed under the EPBC Act, section 178.

Vulnerable: A species defined under the NC Act, or a species or an ecological community listed in the vulnerable category under the EPBC Act.

Wilderness area: An area of public land reserved under the Territory Plan 2008 as a wilderness area.

Appendix 2 – *Executive Summary* from Cravens Creek Water Quality Control Pond revised EIS (November 2013)

This page has been left intentionally blank.

EXECUTIVE SUMMARY

Background

This draft EIS was prepared by NGH Environmental Pty Ltd on behalf of Cardno (NSW/ACT) Pty Ltd and is for the design and construction of the proposed Cravens Creek WQCP in the Molonglo Valley, west of Canberra. This draft EIS accords with the requirements of a scoping document issued by the ESDD in May 2012. The purpose of this draft EIS is to document the environmental impacts of a proposed WQCP which is to be positioned within the lower portion of the Cravens Creek drainage line, in close proximity to the Molonglo River. According to the 2004 Canberra Spatial Plan, the Molonglo Valley is to contain a three stage urban development set to house 55,000 people over the next 30 years. The proposed Cravens Creek WQCP forms part of the Molonglo Stage 2 urban development.

The Proposal

The proposed Cravens Creek WQCP has been identified as early works infrastructure to be constructed prior to and in support of the Molonglo Stage 2 urban development. The primary purpose of the WQCP is to protect the Molonglo River from pollution associated with urban development through retardation of stormwater flows. The concept plan for stormwater management of the Molonglo Stage 2 urban development included the retention of stormwater within the Molonglo River to create a lake. This option is now abandoned due to the extent of its environmental impacts and the high construction costs. Smaller ponds located in drainage lines that fed into the Molonglo River were considered to be a better alternative.

The proposed Cravens Creek WQCP represents such a pond and has been incorporated into the proposed Urban Open Space Zone to facilitate recreational areas and activities for future residents. This WQCP is also seen as a possible non potable water source for irrigation of surrounding green space and a vital component of the bushfire asset protection zone. Ramifications of not proceeding with the WQCP include erosion and degraded water quality downstream of the Molonglo Stage 2 urban development, as well as a decrease of recreational amenities for the area.

The current design of the proposed Cravens Creek WQCP involves:

- An earthen embankment consisting of a clay core, together with upstream and downstream rock facing.
- A primary spillway consisting of three parallel pipes conveying flows beneath the pond embankment and discharging into a stilling basin. This basin comprises energy dissipation blocks and multiple drop structures to reduce the velocity of water discharged into the lower portion of Cravens Creek and subsequently the Molonglo River.
- A secondary spillway consisting of a shaped landform aimed at discharging to the east of the pond embankment back into Cravens Creek.
- Two minor GPTs and a major GPT located at the inflow points into the Cravens Creek WQCP.

The scoping document for the proposed Cravens Creek WQCP makes reference to pond N1, a smaller secondary pond located nearby. Construction of this smaller secondary pond no longer forms part of this proposal. Hence, impacts relating to the development of this smaller secondary pond are not considered as part of this draft EIS.

Requirement for an EIS

The *PD Act* provides for a planning and land system that contributes to the orderly and sustainable development of the ACT. It determines if a development such as the proposed Cravens Creek WQCP requires assessment in terms of its environmental impact as part of the approval process. Due to the potential impact on the PTWL (a vulnerable species), and the location of the WQCP being within the Molonglo River Corridor, an area also identified as a special purpose reserve, it has been determined that an assessment in the form of an EIS is required.

Key Findings

This draft EIS has identified the key environmental aspects and potential impacts of the design and construction of the proposed Cravens Creek WQCP. As part of this draft EIS, a qualitative risk assessment was carried out to determine the relative rating of the environmental themes listed in the scoping document. A number of significant impacts were identified during the initial risk assessment. Of particular concern was:

- the dilapidation of the surrounding road network due to construction traffic;
- the visual impact on the surrounding landscape;
- the changes to water quality of the Molonglo River during construction;
- the ingress of water into the construction site affecting construction works;
- the impacts on the PTWL and destruction of its potential habitat;
- the loss of potential habitat for native species such as the Perunga grasshopper;
- the changes to the existing geomorphology and hydrology of Cravens Creek; and
- the noise associated with construction works, especially blasting.

A residual risk assessment taking into account the likely effects of mitigation measures on the environmental aspects of the proposed Cravens Creek WQCP is included in this draft EIS. The residual risk assessment identified probable direct impacts on PTWL and its habitat to be very high due to the actual location and nature of the proposed development. It should be noted that surveys to confirm the presence of PTWL within the construction site had not been undertaken at the time of writing this draft EIS. The residual risk assessment indicated that the application of mitigation measures described in this draft EIS, is likely to significantly reduce the impacts on environmental aspects to a negligible level. The concerns of construction impacts on water quality in the Molonglo River and on PTWL and its habitat may well be ameliorated through the use of pertinent control measures.

Recommendations

While construction of the proposed Cravens Creek WQCP will clearly have environmental impacts, implementation and adherence to an EPA approved CEMP is expected to achieve an environmentally sustainable development, and ensure compliance with the Molonglo NES plan.

Some of the key recommendations to diminish environmental impacts associated with the construction of the pond include:

- Fencing of ESAs to ensure no unnecessary clearance or disturbance takes place during construction.
- Searching of areas to be impacted for individual PTWLs by a qualified environmental professional immediately prior to the commencement of construction works.

- Monitoring of water quality within Cravens Creek, in particular turbidity levels (NTU) immediately upstream and downstream of the construction site so that should a difference of 10 NTU be detected between upstream and downstream locations, construction contractors can be instructed to stop work until water quality (turbidity) is improved.
- A regular schedule of independent environmental inspections should be undertaken at the construction site to monitor compliance with the CEMP.
- A plan of management for the operation of the Cravens Creek WQCP should be prepared, approved and published prior to the completion of the ponds construction.

Considering both the potential impacts on the environmental aspects identified for the proposed WQCP and the intended mitigation and management measures for construction works, this draft EIS indicates that there are not likely to be any unacceptable impacts associated with the design and construction of the Cravens Creek WQCP that would prohibit this development from proceeding.

Appendix 3 – Cross Reference Table Between EIS and the Final Scoping Document

This page has been left intentionally blank.

Scoping Document	Draft EIS
1. Cover Page	Cover Page
2. Glossary	Glossary
3. Executive Summary	Executive Summary
4. Introduction	1. Introduction
5. Proposal Details	2.0 Proposal Details
5.1 Project Description	2.1 Project Description
5.2 Alternatives to the proposal	2.2 Alternatives to the proposal
5.3 Objectives	2.3 Objectives and Justification of the WQCP
6. Legislative Context	3.0 Legislative Context
6.1 Statutory requirements	3.1 Statutory requirements
6.1.1 ACT requirements for the preparation of an EIS	3.1.1 ACT requirements for the preparation of an EIS
6.1.2 Commonwealth matters	3.1.3 Commonwealth matters
6.2 Other requirements	3.2 Other Requirements
6.2.1 Ecologically Sustainable Development	3.3 Ecologically Sustainable Development Principles
6.2.2 Territory Plan strategic directions	3.4 Territory Plan Strategic Directions
7. Risk Assessment	4.0 Risk Assessment
7.1 Risk Assessment Methodology	4.1 Methodology
	4.2 Risk Assessment
8. Assessment of Impacts	5.0 Assessment of Impacts
8.1 General	5.3 Assessment of impacts at all development stages
8.1.1 Planning and land status	5.3 Table 10
8.1.2 Traffic and transport	5.3 Table 11
8.1.3.Utilities	5.3 Table 12
8.1.4 Materials and waste	5.3 Table 13
8.1.5 Landscape and visual	5.3 Table 14
8.1.6 Soils and geology	5.3 Table 15
8.1.7 Water quality and hydrology	5.3 Table 16

8.1.8 Climate change and air quality	5.3 Table 17
8.1.9 Terrestrial flora and fauna	5.3 Table 18
8.1.10 Aquatic flora and fauna	5.3 Table 19
8.1.11 Aboriginal and European cultural heritage	5.3 Table 20
8.1.12 Socio-economic and health	5.3 Table 21
8.1.13 Noise vibration and lighting	5.3 Table 22
8.1.14 Hazard and risk	5.3 Table 23
8.1.15 Recreation	5.3 Table 24
8.1.16 All other impacts	No other impacts identified
8.2 Environmental conditions and values	5.1 Environmental conditions and values
8.3 Investigations	5.2 Specific Site Investigations
8.4 Impacts	5.4 Environmental Impacts
8.5 Mitigation and offsets	5.5 Impact avoidance, mitigation and offsets
8.6 Residual risk	5.6 Residual risk
9. Community and stakeholder consultation	6.0 Community Consultation
9.1 The proponent must consult with:	6.1 Consultation
9.2 Describe community consultation	6.1 Consultation
9.3 Representations, issues and summary response	6.2 Summary of Issues and representation received
9.4 Description of how concerns have been considered	6.2
10. Recommendations	7.0 Recommendations
10.1 Summary of commitments	7.1 Proponents commitments to impact prevention
10.2 Summary table outlining the residual risk assessment results	5.6 Residual risk
10.3 Description of monitoring parameters, points, frequency, data interpretation and reporting proposals.	Monitoring not undertaken as part of this EIS. Sections 5.0 and 7.1 identify possible future turbidity, PTWL and ground water monitoring, details of which have not been finalised
11. Other relevant information	Not Applicable
12. References	8.0 References
13. Required Appendices	Appendices
13.1 Final scoping document for the EIS	Appendix A

13.2 Scoping Document Reference	Appendix AB
13.3 Proponents Environmental Record	Appendix AC
13.4 Information sources	8.0 References
13.5 Study team	Appendix AD
13.6 Specialist studies	Cardno PSP Appendix AE Cardno CTMP Appendix AQ Envirolinks Visual Assessment Appendix AP Geotechnical Report Appendix AT
13.7 Research	Specific research was not required for development of this EIS
Attachment A	Appendices BD-BJ
Attachment B	Glossary

Appendix 4 – Approval of Strategic Assessment

This page has been left intentionally blank.

APPROVAL DECISION FOR THE TAKING OF ACTIONS IN ACCORDANCE WITH AN ENDORSED PLAN UNDER THE *ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999* (EPBC ACT)

MOLONGLO VALLEY PLAN FOR THE PROTECTION OF MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE, AUSTRALIAN CAPITAL TERRITORY

General	Further explanatory information related to this approval decision is at Annexure 1.
Approved action/class of actions	All actions associated with urban development in East Molonglo as described in the *Molonglo Valley Plan for the Protection of Matters of National Environmental Significance* (ACT Government, September 2011) provided such action takes place wholly within the strategic assessment area in East Molonglo (as shown in Annexure 2).
Relevant controlling provisions	The approval has effect for: • Listed threatened species and communities (sections 18 & 18A) • Listed migratory species (sections 20 & 20A)
Period for which approval has effect	The approval has effect until 31 December 2041

Person authorised to make decision

Name and Position	The Hon Tony Burke MP Minister for Sustainability, Environment, Water, Population and Communities
Signature	Tony Burke
Date of decision	20.12.11

ANNEXURE 1

Explanatory information

This approval decision is made under section 146B of the EPBC Act which provides for the Minister to approve actions, or classes of actions, undertaken in accordance with a policy, plan or program that has been endorsed following a strategic assessment being undertaken under Part 10 of the EPBC Act. An approval under section 146B of the EPBC Act has the same effect as an approval given under Part 9 of the EPBC Act, therefore actions approved under this decision will not require separate referral, assessment or approval under the EPBC Act prior to being taken.

On 7 October 2011 the Minister for Sustainability, Environment, Water, Population and Communities, the Hon Tony Burke MP (the Minister), endorsed the *Molonglo Valley Plan for the Protection of Matters of National Environmental Significance* (ACT Government, September 2011) (the Plan). The Plan is in respect of urban development, and broadacre land use in East and West Molonglo, ACT (as shown in Annexure 2), and details commitments to protect matters of national environmental significance.

The endorsed Plan provides for all actions associated with development within East and West Molonglo, including infrastructure (such as bridges) and services within the proposed development areas.

This approval applies to all actions associated with urban development in East Molonglo as described in the *Molonglo Valley Plan for the Protection of Matters of National Environmental Significance* (ACT Government, September 2011) provided such action takes place wholly within the strategic assessment area in East Molonglo (as shown in Annexure 2).

ANNEXURE 2

Strategic assessment area and development boundary[1]

[1] "EPBC Pre-approved area" denotes the suburbs of North Weston, Coombs and Wright which were assessed and approved under separate EPBC Act Part 9 referrals (EPBC referrals 2009/4752, 2009/5041 and 2009/5050), and are not part of the strategic assessment
Approval Decision under s146B of the EPBC Act for the *Molonglo Valley Plan for the Protection of Matters of National Environmental Significance*, ACT.

Appendix 5 – Further Information Request

This page has been left intentionally blank.

ACT Government
Environment and Sustainable Development

Sri Tharan
sri.tharan@act.gov.au

Dear Mr Tharan,

Thank you for the revised EIS for Cravens Creek Water Quality Control Pond. We have reviewed the revised EIS and have circulated it to agencies for comment.

Although most comments for the draft EIS have been addressed, some areas still require further information. These have been outlined in the attached table. A number of the outstanding issues relate to the accuracy of risk assessment and insufficient discussion for medium or above rating risks identified in the preliminary risk assessment.

I am happy to arrange a time to meet with you to discuss the outstanding matters if this would help.

Yours sincerely

Jonathan Teasdale
Technical Coordinator, Impact Assessment
23 December 2013

ACT Government
Environment and Sustainable Development

Issue	EIS Section/page	Comment
Construction timeframe	Section 2.1 page 8 Section 5.4 page 97	Page 8 states that the construction timeframe will be 12 months, however page 97 states the construction timeframe will be 8-10 months. Please provide clarification.
Terrestrial flora and fauna	Section 4.2 page 37 Section 5	PTWL • Further explanation is required as to why the risk of "habitat fragmentation from construction" is very low. If this refers to PTWL habitat fragmentation, the impacts should be significant and it appears to be covered by the risk of "direct impact on PTWL and its habitat". If this risk refers to impacts on habitat for other species, please clearly state the species' name and occurrence on the site and revise Section 5 accordingly. NTG & BGW • Table 6 (page 37) identifies a high risk rating for "An area potentially containing some natural temperate grassland species will be cleared for development". This is inconsistent with the statement in section 5 that there is no natural temperate grassland (NTG) occurring on the site. Please clearly state whether the proposal will have impacts on NTG and how a potential impact may occur if there is no NTG identified on the subject site. • Table 6 identifies a new risk of "indirect impact on BGW" but table 31 does not discuss mitigation measures. • If the proposal has potential indirect impacts on NTG and/or BGW due to the introduction of weeds, I would suggest using a single risk of "indirect impacts on NTG and BGW from introduction of weeds" to replace the risks of "introduce / or promote the spread of exotic species" and "Indirect impacts on BGW from the proposal, i.e. introduction of weeds". • The reasons provided for residual risk for "An area potentially containing some natural temperate grassland species will be cleared for development" on page 117 needs to be revised to provide an adequate explanation of risk reduction.

Water quality and hydrology	Section 5.4 page 93	Page 93 should be expanded to clearly explain all risks that have a medium or above rating identified in Table 6 under "water quality and hydrology".
Planning and land status	Section 4.2 page 34 Section 5.4	Please provide further detail as to why the consequence of "changes to planning and development context of the pond area" is minor. It appears that the consequence of this risk is major due to the potential cost to the Government. Relevant sections (e.g. discussion of impacts, mitigation measures and residual risks) need to be revised if the risk rating is medium or above. Detailed explanation is required in section 5.4 for the medium risk rating for "changes to land use of the pond area".
Social-economic and health"	Section 5.6	Please provide residual risk assessment for all medium and above risk rating in relation to "social-economic and health".
Figure 5	Page 44	Figure 5 needs to be revised to include indicative project footprint. Please note that this is to help us better understand the potential impacts on MNES. I noted the project footprint was included on Figure 1 but it would be more helpful to understand the exact relationship of the proposal and the MNES if it was included on figure 5.
Molonglo River Corridor		The EIS includes some discussion about the significance of the Molonglo River Corridor but does not discuss whether the proposal will have impact on the corridor. Potential impacts on the river corridor should be included in Table 6, and in other relevant sections / tables if the impact is medium or above.

Appendix 5 – Further Information Request

This page has been left intentionally blank.

ACT Government
Environment and Sustainable Development

Sri Tharan
sri.tharan@act.gov.au

Dear Mr Tharan,

Thank you for the revised EIS for Cravens Creek Water Quality Control Pond. We have reviewed the revised EIS and have circulated it to agencies for comment.

Although most comments for the draft EIS have been addressed, some areas still require further information. These have been outlined in the attached table. A number of the outstanding issues relate to the accuracy of risk assessment and insufficient discussion for medium or above rating risks identified in the preliminary risk assessment.

I am happy to arrange a time to meet with you to discuss the outstanding matters if this would help.

Yours sincerely

Jonathan Teasdale
Technical Coordinator, Impact Assessment
23 December 2013

ACT Government
Environment and Sustainable Development

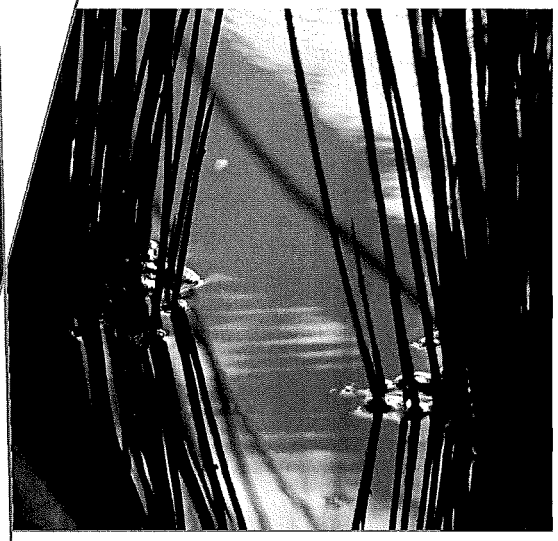
Issue	EIS Section/page	Comment
Construction timeframe	Section 2.1 page 8 Section 5.4 page 97	Page 8 states that the construction timeframe will be 12 months, however page 97 states the construction timeframe will be 8-10 months. Please provide clarification.
Terrestrial flora and fauna	Section 4.2 page 37 Section 5	PTWL • Further explanation is required as to why the risk of "habitat fragmentation from construction" is very low. If this refers to PTWL habitat fragmentation, the impacts should be significant and it appears to be covered by the risk of "direct impact on PTWL and its habitat". If this risk refers to impacts on habitat for other species, please clearly state the species' name and occurrence on the site and revise Section 5 accordingly. NTG & BGW • Table 6 (page 37) identifies a high risk rating for "An area potentially containing some natural temperate grassland species will be cleared for development". This is inconsistent with the statement in section 5 that there is no natural temperate grassland (NTG) occurring on the site. Please clearly state whether the proposal will have impacts on NTG and how a potential impact may occur if there is no NTG identified on the subject site. • Table 6 identifies a new risk of "indirect impact on BGW" but table 31 does not discuss mitigation measures. • If the proposal has potential indirect impacts on NTG and/or BGW due to the introduction of weeds, I would suggest using a single risk of "indirect impacts on NTG and BGW from introduction of weeds" to replace the risks of "introduce / or promote the spread of exotic species" and "Indirect impacts on BGW from the proposal, i.e. introduction of weeds". • The reasons provided for residual risk for "An area potentially containing some natural temperate grassland species will be cleared for development" on page 117 needs to be revised to provide an adequate explanation of risk reduction.

Water quality and hydrology	Section 5.4 page 93	Page 93 should be expanded to clearly explain all risks that have a medium or above rating identified in Table 6 under "water quality and hydrology".
Planning and land status	Section 4.2 page 34 Section 5.4	Please provide further detail as to why the consequence of "changes to planning and development context of the pond area" is minor. It appears that the consequence of this risk is major due to the potential cost to the Government. Relevant sections (e.g. discussion of impacts, mitigation measures and residual risks) need to be revised if the risk rating is medium or above. Detailed explanation is required in section 5.4 for the medium risk rating for "changes to land use of the pond area".
Social-economic and health"	Section 5.6	Please provide residual risk assessment for all medium and above risk rating in relation to "social-economic and health".
Figure 5	Page 44	Figure 5 needs to be revised to include indicative project footprint. Please note that this is to help us better understand the potential impacts on MNES. I noted the project footprint was included on Figure 1 but it would be more helpful to understand the exact relationship of the proposal and the MNES if it was included on figure 5.
Molonglo River Corridor		The EIS includes some discussion about the significance of the Molonglo River Corridor but does not discuss whether the proposal will have impact on the corridor. Potential impacts on the river corridor should be included in Table 6, and in other relevant sections / tables if the impact is medium or above.

Appendix 6 – Response to Further Information Request

Environmental Impact Statement Supplementary Information

Cravens Creek Water Quality Control Pond – Molonglo Valley Blocks 17 & 18



Prepared for
Cardno

February 2014

Cardno®
Shaping the Future

Contact Information

Cardno (NSW/ACT) Pty Ltd
Trading as Cardno (NSW/ACT) Pty Ltd
ABN 95 001 145 035

Level 2
14 Wormald Street
Symonston ACT 2609

Telephone: 02 6112 4500
Facsimile: 02 6112 4599
International: +61 2 6112 4500

Canberra@cardno.com.au
www.cardno.com

Document Information

Prepared for	Cardno
Project Name	Cravens Creek Water Quality Control Pond – Molonglo Valley Blocks 17 & 18
File Reference	Environmental Impact Statement Supplementary Information.docx
Job Reference	YN110049
Date	February 2014

Document Control

Version	Date	Description of Revision	Prepared By	Prepared (Signature)	Reviewed By	Reviewed (Signature)
1	04/02/2014	Response to comments by ESDD 23 /12/2014	PWT		JF	
2	17/02/2014	Update responses to meeting requirements 11/02/2014	PWT		JF	

Table of Contents

Executive Summary

This Supplementary report is to address question and requests for further information about the Environmental Impact Statement for the Cravens Creek Water Quality Control Pond in the Molonglo Valley dated November 2013.

This report contains our responses to a number of outstanding issues related to risk assessments as outlined ESDD's (Environment and Sustainable Development) letter dated 23 December 2014.

The table of queries and RFI's have been addressed by CARDNO and NGH Environmental before further information required requests which have been addressed by additional information in the table and or the rewriting of information in the original document which was then added to this report. Part of the tables that required amendment have been included in this report.

1 Table of Queries and RFI...

Issue	EIS Section/Page	Comment	Response / Reason
		Environment and Sustainable Development Directorate	
Construction timeframe	Section 2.1 page 8 Section 5.4 page 97	Page 8 states that the construction timeframe will be 12 months, however page 97 states the construction timeframe will be 8-10 months. Please provide clarification.	It is confirmed that the construction time will be 12 months
Terrestrial flora and fauna	Section 4.2 page 37 Section 5	PTWL Further explanation is required as to why the risk of "habitat fragmentation from construction" is very low. If this refers to PTWL habitat fragmentation, the impacts should be significant and it appears to be covered by the risk of "direct impact on PTWL and its habitat".	The risk for habitat fragmentation from construction is deemed to be very low since the habitat remains connected to other areas of PTWL habitat and is therefore not cut off or isolated. Evidence of this fact is presented in Figure 5 given below. Add the following wordings to page 95: *"The risk for habitat fragmentation from construction is deemed to be very low since the habitat remains connected to other areas of PTWL habitat."*
		If this risk refers to impacts on habitat for other species, please clearly state the species' name and occurrence on the site and revise Section 5 accordingly.	Add the following wording to page 46 relating to the Perunga Grasshopper. "*Vegetation located at the site of the proposed Cravens Creek WQCP shows signs of previous disturbance. Key habitat for the Perunga Grasshopper comprises natural temperate grassland dominated by wallaby, kangaroo and spear grasses with forb food plants located in the inter tussock spaces and woodland areas with grassy understorey. These conditions are not existent on the site and the impact of the construction on Perunga Grasshopper will be low.*"
		NTG & BGW Table 6 (page 37) identifies a high risk rating for "An area potentially containing some natural temperate grassland species will be cleared for development".	An updated Table 6 is given below.
		This is inconsistent with the statement in section 5 that there is no natural temperate grassland (NTG) occurring on the site. Please clearly state whether the proposal will have	Construction of the pond necessitates the clearing of vegetation. It is anticipated that there will be no likely impact on NTG or BGW communities. An updated Table 37 is given

Issue	EIS Section/Page	Comment	Response / Reason
		impacts on NTG and how a potential impact may occur if there is no NTG identified on the subject site.	below.
		Table 6 identifies a new risk of "indirect impact on BGW" but table 31 does not discuss mitigation measures.	Potential impacts for BGW and weed introduction was merged in Table 6. Mitigation measures for BGW are included in the updated 37 and also Table 31: An updated 31 is given below.
		If the proposal has potential indirect impacts on NTG and/or BGW due to the introduction of weeds, I would suggest using a single risk of "indirect impacts on NTG and BGW from Introduction of weeds" to replace the risks of "introduce l or promote the spread of exotic species" and "Indirect impacts on BGW from the proposal, i.e. introduction of weeds".	Potential impacts for BGW and weed introduction was merged in Table 6 p. 37 to read as follows: "Indirect impacts on BGW and surrounding areas from the introduction and/or spread of one or more exotic species".
		The reasons provided for residual risk for "An area potentially containing some natural temperate grassland species will be cleared for development" on page 117 needs to be revised to provide an adequate explanation of risk reduction.	Page 117 Potential impact column has been reworded in the updated Table 37 to include the following: *"An area potentially containing some NTG herb and forb species that are known to be present in the NTG community will be cleared for development."* The following additional mitigation measures are included to explain risk reduction refer to table 37 below: *Inspection for threatened plants (herbs and forbs) to be undertaken by ecologist prior to clearing. If any NTG herbs of forb species are identified at this time, there presence will be report to CPR and ESDD.* *Limit of works will be defined to prevent unnecessary clearing.*

Issue	EIS Section/Page	Comment	Response / Reason
Water quality and hydrology	Section 5.4 page 93	Page 93 should be expanded to clearly explain all risks that have a medium or above rating identified in Table 6 under "water quality and hydrology".	Page 93 has been edited to more clearly explain all risks. Refer to reference Page 93 below
Planning and land status	Section 4.2 page 34 Section 5.4	Please provide further detail as to why the consequence of "changes to planning and development context of the pond area" is minor. It appears that the consequence of this risk is major due to the potential cost to the Government. Relevant sections (e.g. discussion of impacts, mitigation measures and residual risks) need to be revised if the risk rating is medium or above. Detailed explanation is required in section 5.4 for the medium risk rating for "changes to land use of the pond area".	The consequence of "changes to the planning and development context of the pond area" is Major to this project as it could become redundant or become a prohibited development in the Territory Plan. The likelihood of this is considered "Remote" as the ACT Government has already made substantial investment in infrastructure in Molonglo 2. Any changes to the planning and development context that prohibits the construction of this project would result in most of the development in Molonglo 2 not being able to proceed because of water quality impacts upon the Molonglo River. The revised risk rating is now "Low" (refer to the Table 6 below).
Social-economic and health"	Section 5.6	Please provide residual risk assessment for all medium and above risk rating in relation to "social- economic and health".	Residual Risk assessment is provided as part of Table 37 see below.
Figure 5	Page 44	Figure 5 needs to be revised to include indicative project footprint. Please note that this is to help us better understand the potential impacts on MNES. I noted the project footprint was included on Figure 1 but it would be more helpful to understand the exact relationship of the proposal and the MNES if it was included on figure 5.	Footprint of the pond has been included in the updated figure 5 on p.44. Refer to section below for the updated Figure 5
Molonglo River Corridor		The EIS includes some discussion about the significance of the Molonglo River Corridor but does not discuss whether the proposal will have impact on the corridor. Potential impacts on the river corridor should be included in Table 6, and in other relevant sections if the impact is medium or above.	New risk identified as "Molonglo River Corridor "under Planning and Land Status. Potential impacts to the river corridor are considered minimal. The structures to be constructed as part of the project that are within the corridor will not affect flow of the river and may change the landscape of a minor branch of the corridor with the likelihood of "likely" Table 6 Update below.
Environment and Sustainable Development – Estates and Environmental Impact			
Draft Statement Of Commitments	Page 137-138	Table of "draft statement of commitments" with two columns of "yes" and "no" against each commitment. No explanation	An updated table, "draft statement of commitments", p 137 is given below.

Issue	EIS Section/Page	Comment	Response / Reason
		provided as to what does yes or no refer to. However, it appears that all items listed in this table are commitment therefore the four items with a "no" do not make sense.	
		Environment Protection and Water Regulation	
Appendix BI		Appendix should be updated to make specific reference to the documents titled Site Audit Statement (RS ACT 001-4) dated 26 February 2013 and Site Audit Report titled Site Audit Report, MV2-C1-A2 and MV2-C2, Molonglo Stage 2, ACT dated February 2013 by Ms Rowena Salmon of Environ Australia Pty Ltd along with the auditor's requirements/conditions under these documents.	Agreed: This appendix was amended. Refer to new Appendix BI below
		TAMS - Asset Acceptance	
Appendix BK		The Cravens Creek facility is considered in the Molonglo River Park Concept Plan as a Gateway Park. It is unlikely that parking and toilet facilities will be provided as stated in the Molonglo Concept Plan (Page 45) in this River Park other than in recreation nodes at Sludge Pit Ponds and Ryans Hill. We have noticed that the ESA has recommended that Parking not be permitted along the urban development edge streets. Other suitable locations should be considered for visitor car-parking. This parking requirement can be considered during development application stage.	Noted: To be considered at DA stage.

2 Revised Table 6

Table 6 : Risk Assessment for the proposed Cravens Creek WQCP.

POTENTIAL IMPACTS	LIKELIHOOD	CONSEQUENCE	RISK RATING
Planning and Land Status			
Changes to planning and development context of the pond area.	Unlikely, amendments to the NCP and Territory Plan were implemented to allow urban development to proceed, refer to **Table 10**	Consequence of "changes to planning and development context of the pond area" is considered to be high as it will cost the Government large amount of time and money	Very Low
Changes to land use of the pond area.	Remote ACT Government has already made substantial investment in infrastructure in Molonglo 2. Any changes to the planning and development context that prohibits the construction of this project would result in most of the development in Molonglo 2 not being able to proceed because of water quality impacts upon the Molonglo River.	Major This project could become redundant or become a prohibited development in the Territory Plan	Low
Molonglo River Corridor	Likely The structures to be constructed as part of the project that are within the corridor will not affect flow of the river	Minimal, change to the landscape of a small area of the corridor when construction is complete	Low
Traffic and Transport			
Inadequate access for emergency services and construction traffic.	Almost certain, the proposal site overlaps existing fire access trails and existing trails are not suitable for heavy vehicles.	Major, will add to emergency response times, trucks could become stuck or drive off the road.	[redacted]
Congestion on surrounding roads.	Possible, Coppins Crossing Road is currently the only sealed road access to the site.	Major, commuter travel times will increase.	High
Accidents involving construction traffic.	Possible, fire trails are single lane.	Major, it will threaten the safety of site personnel.	High

Roads surrounding the pond site become degraded because of construction vehicles.	Almost certain, surrounding roads are used for all construction vehicles accessing Molonglo.	Major, it will threaten the safety of site personnel and impact the efficiency and safety of the construction process.	Significant
Utilities			
Impacts to utilities, including removal, realignment or connection.	Remote, no existing utilities, infrastructure is currently being planned	Minimal, access to services has been investigated as part of planning for the project	Negligible.
Materials and Waste			
Impacts of handling, storage and stockpiling of material on nearby sensitive areas.	Possible, can be avoided through location away from ESAs.	Major, it could degrade nearby ESAs.	High
Construction waste sent to landfill.	Possible, can be managed.	Minor, can be managed.	Low
Landscape and Visual			
Changes to the value of the existing landscape.	Almost certain, the site is currently grassland and will be inundated with water after construction.	Moderate, improved landscape values. Area to be designed and revegetated as recreational locality.	Very high
Visual impact on surrounding landscape from construction activities.	Unlikely, given landform characteristics, also temporary and not expected to affect many people.	Moderate, construction compound and machinery may be visible. Pond is hidden by surrounding landforms.	Low
Visual impact on surrounding landscape post construction.	Likely, to be negative in the short term. After revegetation works pond and associated infrastructure is likely to be aesthetically pleasing.	Minimal, in the long term. The pond is planned and designed to be revegetated as a recreational area.	Low
Soils and Geology			
Potential loss of stockpiled top-soil impacting nearby sensitive areas.	Likely, due to poor maintenance of erosion & sediment control.	Moderate, due to appropriate placement and limited soil requirements.	High
Water Quality and hydrology			
Water management: Ingress of surface water within creek into construction site from upstream.	Almost certain, sizeable catchment upstream.	Major, it has potential to affect works.	Significant
Water management: Surface water enters construction site from rain events.	Almost certain, slope directs water towards worksite.	Minor, can be managed.	High
Water management: Change to and impacts on channel morphology within Cravens Creek between the	Unlikely, pond is designed to reduce the impact on channel morphology.	Minor, controlling upstream diversion and managing discharges from within site.	Very low

pond embankment and river.			
Water management: River flood event affects construction site.	Unlikely, extremely rare event.	Moderate, affects only a small proportion of works.	Low
Water management: Ingress of ground water within creek into construction site from surrounds.	Almost certain, sizeable catchment upstream.	Major, it has potential to affect works.	
Water management: Creation of adjacent borrow pits bring groundwater to the surface, creating potential for localised flooding within works area.	Almost certain, construction requires excavation and removal of topsoil and rock dependant on depth of water table.	Moderate, can be managed.	Very high
Pond design changes local morphology and hydrology, reducing some visible flow of Cravens Creek into Molonglo River.	Possible, the embankment is approximately 2m below natural land surface but has been designed so as not to impact on visible flows after filling.	Moderate, there will be some seepage and design includes maintenance of some visible flows, based on off take design.	Medium
Changes to water quality of Molonglo River during construction through runoff.	Likely, works within drainage line.	Minor, Cravens Creek, an ephemeral creek does not contribute significant flows to the Molonglo River. It is thought that water quality is not likely to be affected.	Medium
Air Quality			
Emissions associated with construction vehicles and machines adversely impacts air quality.	Unlikely, vehicles should be compliant with Australian standards.	Minor, vehicles should be compliant with Australian standards.	Very low
Dust generated during construction adversely impacts air quality and visual amenity.	Almost certain access roads and construction footprint will be cleared.	Minor, visual amenity is not likely to have an impact due to location within a gully.	High
Reduced air quality during construction impacts on fauna, including threatened bird species.	Remote, birds tend to follow river not creeks, construction activities are likely to deter fauna from site.	Minimal, construction activities and presence of machinery is likely to deter fauna. In addition, vegetation located on the site is not thought to provide suitable habitat for threatened bird species, fauna are therefore not expected to be impacted by dust.	Negligible
Reduced air quality during pond construction impacts on the Mt Stromlo Observatory.	Unlikely, since the 2003 bushfires there are no longer working research telescopes located on Mount Stromlo. Facilities at Stromlo ensure that articles and materials to	Minor, since astronomical related scientific research is no longer undertaken on Mt Stromlo.	Very low

	be fabricated, processed, or tested meet specific requirements.		
Terrestrial flora and fauna			
Direct impact on PTWL and its habitat.	Almost certain, construction footprint is within known habitat.	Major, because of loss of habitat.	Significant
Loss of potential habitat that could be used by Perunga Grasshopper.	Almost certain, they have been recorded nearby.	Major, because of loss of habitat.	Significant
Removal of local native fauna habitat.	Almost certain, however with the exception of the PTWL habitat surrounding the Cravens Creek drainage channel is not considered to be of high quality due to previous landuse practices.	Major, because of loss of habitat to PTWL.	Significant
Potential death or injury to fauna from construction traffic.	Possible, construction speed limits will be in place.	Moderate, can be managed.	Medium
PTWL Habitat fragmentation from construction.	Possible, pond will impact on some PTWL habitat. Inundation of the gully may present a barrier to the lizard, habitat remains connected to other PTWL habitat areas. However presence of the species at the site is yet to be confirmed.	Minimal, not thought to impact many species or individuals.	Very low
An area potentially containing some NTG herb and forb species that are known to be present in the NTG community will be cleared for development.	Likely, since topsoil and rock will be removed.	Moderate, the area is not defined as natural temperate grassland. It shows signs of disturbance and impacts can be managed by restricting area to be cleared.	High
Indirect impacts on BGW and surrounding areas from the Introduction and/or spread of one or more exotic species.	Likely, weeds are already a problem due to previous land use practices.	Moderate, can be managed.	High
Aquatic Flora & Fauna			
Changes to ecosystem of Cravens Creek.	Almost certain, drainage gully will be flooded and developed as a community park.	Major, potential alterations to flow regime may alter the downstream Cravens Creek ecosystem.	Significant
Changes to water flows alter existing conditions and habitats, thereby affecting	Almost certain, within pond foot print area but flows remain similar	Major, at site of pond however will provide more diverse habitats in the	Significant

aquatic species below the pond.	upstream and downstream.	long term.	
Aboriginal & European Cultural Heritage			
Removal or damage to undiscovered heritage items during excavation.	Possible, the area has previously been surveyed. Discovered artefacts have been collected.	Minor, can be managed and area has previously been surveyed.	Low
Noise vibration and lighting			
Construction noise affects fauna and threatened bird species.	Almost certain that noise will deter fauna but temporary. The site of the proposal is not likely to provide suitable habitat for threatened bird species.	Minor because it is temporary and threatened birds have not been recorded on the pond site/ there is preferable habitat close by.	High
Social, Economic and Health Factors			
Detrimental impacts to human health.	Possible, chance of dust generation during construction.	Moderate, can be managed.	Medium
Potential social and recreation impacts associated with the pond.	Almost certain, pond and surrounds are expected to provide diverse range of recreational opportunities.	Major, will provide significant benefit to the local community.	
Potential economic impacts associated with the pond.	Possible, a cost estimate for construction has been undertaken.	Moderate, based on discussion held during the value management workshop	Medium
Hazard and Risk			
Ignition of grass through sparks/welding activities during construction.	Unlikely. Diesel vehicles will be used and welding will be conducted in approved areas.	Minor, can be managed.	Very low
Failure of pond embankment.	Remote, Under the relevant ANCOLD legislation, the dam embankment for Cravens Creek is only a minor risk given the low risk for any population downstream.	Catastrophic, considering ecological magnitude and economic factors.	Medium
Unsafe acts and hazards associated with construction activities.	Unlikely. Inductions and toolbox talks give an indication of issues and expectations.	Major, can be managed.	Medium
Contamination of land and/or water due to spills of fuel, chemicals or concrete.	Likely, spills may occur during refuelling, concrete may be stored inappropriately.	Minimal, will only affect small area, can be managed.	Low
Excavation of soil during construction uncovers material such as asbestos.	Possible, contamination has been uncovered in surrounding areas.	Moderate, can be avoided and managed.	Medium

Community Engagement			
Failure to engage with all key stakeholders impacted by the development.	Unlikely, EIS provides opportunities for community to have input.	Minor, can be managed.	Very low

3 **Table 31:** Proposed avoidance and mitigation measures for terrestrial flora and fauna

IDENTIFIED RISKS	POTENTIAL IMPACTS	PROPOSED MEASURES	ASSESSMENT OF MEASURES
Terrestrial Flora And Fauna			
Direct impacts on PTWL and its habitat.	Disturbance or destruction of PTWL habitat. Injury or death of individual PTWL.	Pond and supporting infrastructure has been aligned to avoid PTWL potential habitat areas. PTWL potential habitat that forms part of the ESAs will be mitigated by use of fence located at a distance of 20m from the edge of PTWL habitat and marked to avoid unnecessary disturbance. PTWL ecology to be discussed during induction. Ecologist to survey potential habitat areas to be impacted by construction prior to and during initial clearing works to undertake fauna rescue. Stockpiles to be installed and monitored to prevent loss of material into habitat areas. Retain habitat features for reinstatement adjacent to closest identified potential PTWL away from construction area. Monitor weed growth during construction works, particularly in stockpiles to ensure infestations do not occur. Undertake weed control as appropriate after construction works.	Informing workers about significance of PTWL and protecting potential habitat areas will prevent unnecessary injury or death of species. Damaged PTWL habitat will be measured and recorded. PTWL habitat that is impacted as part of this proposal will be managed as part of a broader offset package as described in the NES plan and section 5.5 of this EIS.

IDENTIFIED RISKS	POTENTIAL IMPACTS	PROPOSED MEASURES	ASSESSMENT OF MEASURES
Loss of potential habitat that could be used by the Perunga grasshopper.	Perunga grasshopper will not be able to recolonise area defined by proposed pond in the future.	Presence of the Perunga Grasshopper and its habitat within the area of works would need to be confirmed, previous surveys did not show species to be present.	Not Applicable. Measures to be determined if presence of the species is confirmed.
Removal of local native fauna habitat.	Habitat features such as fallen timber; thick grassy patches and/or rocks will be removed or damaged potentially resulting in a decline in species numbers and diversity.	A limit of works boundary will be defined. Vehicles to remain on access tracks to prevent unnecessary disturbance. Revegetation works associated with completion of the pond is anticipated to provide better quality habitat for a more diverse range of species than the existing environment. Excess rocks and salvaged tree logs will be stockpiled where feasible and reasonable for future restoration works.	Details of the revegetation works are expected to be embedded in the Final Design and Tender Documents. It is assumed that Australian Standards and Guidelines, as identified in the proposed Cravens Creek WQCP Project Engineering Brief will be adhered to.
Potential death or injury to fauna from construction traffic.	Loss of fauna.	Vehicles to remain on access tracks. Speed limits to be adhered to. Construction area is expected to be monitored.	Assumed to be the subject of an ongoing environmental inspection.
An area potentially containing some native flora species including natural temperate grassland herb and forb species will be cleared for development.	Endangered or threatened species could be cleared. Disturbance to soil and clearing of vegetation could promote the invasion of weeds. Bare ground is easily eroded.	Inspection for threatened plants (herbs and forbs) to be undertaken by ecologist prior to clearing. Weed outbreaks will be managed. Erosion and sediment control plans will be developed for approval by the EPA as part of the CEMP. Minimise clearing.	Details of the revegetation works are expected to be embedded in the Final Design and Tender Documents.
IDENTIFIED RISKS	**POTENTIAL IMPACTS**	**PROPOSED MEASURES**	**ASSESSMENT OF MEASURES**
Indirect impacts on BGW and surrounding areas from the introduction	The Molonglo River Park, an offset for the entire Molonglo Valley development is located adjacent to and within the development site.	Weed control measures are expected to be included in sub-plans of the CEMP and be the subject of a defects and liability period agreed to	Construction works will be inspected by an independent environmental consultant. Compliance with weed suppression will be monitored and reported in accordance

and/or spread of one or more exotic species.	Weeds could become established within this area.	by the construction contractor. It should be noted that after construction Cravens Creek WQCP will be included in the Plan of Management for Urban Lakes and Ponds when this plan is reviewed. The pond will be managed by TAMS who will be responsible for Weed control after construction.	with management requirements identified in the CEMP.

4 **Table 37:** Residual Risk Assessment for the proposed Cravens Creek WQCP

Table 37: Residual Risk Assessment for the proposed Cravens Creek WQCP

POTENTIAL IMPACTS	DISCUSSION OF MITIGATION MEASURES	LIKELIHOOD	CONSEQUENCE	RESIDUAL RISK RATING
Planning and Land Status				
Changes to land use of the pond area.	Land is currently managed by TAMS, community and recreation groups occasionally utilise the site. Canberra Urban Lakes and Ponds Plan of Management and Molonglo River Park Concept Plan will adequately address the planning and land use arrangements.	Almost certain, not likely to have significant impact to general public	Minimal, to be sympathetic to existing and future management plans	Medium
Traffic and Transport				
Inadequate access for emergency services and construction traffic.	Upgrading of existing access, fire trails and maintenance of access roads is expected to alleviate concerns. Construction contractor should implement the necessary traffic control signs in accordance with Australian Standard.	Remote (Almost certain)	Major	Low
Congestion on surrounding roads.	Traffic study undertaken by Cardno indicates roads can accommodate construction traffic, movements will be outside of peak traffic times.	Remote (Possible)	Major	Low
Accidents involving construction traffic.	Access tracks within construction site will be improved. Equipment and procedures to be utilised during construction will ameliorate concerns.	Remote (Possible)	Major	Low
Roads surrounding site become degraded because of construction vehicles.	Maintain and if required, repair damage to roads caused by construction traffic. This includes dirt tracked onto road at the entrance.	Unlikely (Almost Certain)	Minor (Major)	Very Low
Materials and Waste				
Impacts of handling, storage and stockpiling of material on surrounding sensitive areas.	Stockpiles will be sited to avoid PTWL potential habitat. Erosion and sediment control plans will be developed for approval by the EPA as part of the CEMP. Erosion and sediment control structures and water quality will be monitored and rectified as	Remote (Possible)	Major	Low

	required for the life of the project. Spill kits will be accessible on site.			
Landscape and Visual				
Changes to the value of the existing landscape.	Landscaping works are expected to improve the recreational and visual amenity of the site post construction.	Almost Certain	Minor (Moderate)	High
Soils and Geology				
Potential loss of stock piled top-soil impacting surrounding sensitive areas.	Erosion and sediment control plan to be prepared and approved prior to commencement of works. Stockpiles will be sited outside river corridor and away from ESA's so as to reduce potential impacts. Erosion and sediment control structures and water quality will be regularly monitored.	Remote (Likely)	Moderate	Very low
Water Quality and hydrology				
Water management: Ingress of surface water within creek line to construction site from upstream.	During construction, water will be diverted, preferably by pipe, to avoid the existing creek. Clean water flowing into the site will be kept separate from dirty water leaving the site.	Unlikely (Almost certain)	Major	Medium
Water management: Surface water enters construction site from rain events.	Pump water out of the construction site. Ensure that diversion drains keep water away from site.	Unlikely (Almost certain)	Minor	Very low
Water management: Ingress of ground water within creek into construction site from surrounds.	Water will be diverted, preferably by pipe, to avoid existing creek. Works to cease if work site becomes saturated/unsafe.	Possible (Almost certain)	Moderate (Major)	Medium
Water management: Creation of adjacent borrow pits bring groundwater to the surface, creating potential for localised flooding within works area.	Use temporary diversion drains to channel water away from the construction site.	Unlikely (Almost certain)	Moderate	Low
Pond design changes local morphology and hydrology, reducing some visible flow.	The pond is designed to attenuate stormwater flows. Once pond has been filled, environmental flows will continue as per pre pond development	Remote (Possible)	Moderate	Low
Changes to water quality of Molonglo River during construction through runoff.	Erosion and sediment control plans will be developed for approval by the EPA as part of the CEMP prior to commencement of works. Controls will be implemented prior to commencement of earth works	Unlikely (Likely)	Minor	Very low

	and maintained for the life of the project. Water quality, particularly turbidity levels, will be regularly monitored and reported.			
Air Quality				
Dust generated during construction of dam adversely impacts air quality and visual amenity.	Dust suppression techniques including the use of water carts are expected to avoid dust generation. Access will be limited to formed trails. Stockpiles to be in accordance with specifications as outlined in EPA (2011) i.e., under 2m high.	Unlikely (Almost certain)	Minor	Very low
Terrestrial flora and fauna				
Direct impact on PTWL and its habitat.	Pond and associated infrastructure will be aligned to avoid habitat areas. PTWL potential habitat forms part of the ESA that will be fenced and marked to avoid unnecessary disturbance. PTWL to be discussed during induction to ensure site personnel are aware of construction site limits. Ecologist to survey construction area prior to and during initial clearing works to undertake fauna rescue. Habitat features will be retained and reinstated away from the development area. Weed growth will be monitored during and after construction works to ensure infestations do not occur.	Almost certain	Moderate (Major)	Very high
Loss of potential habitat that could be used by the Perunga Grasshopper.	Occurrence of the Perunga Grasshopper and its habitat within the area of works would need to be confirmed, previous surveys have not shown species to be present on pond site. Pre-construction surveys for this species will need to be undertaken.	Almost certain	Major	Very high
Removal of local native fauna habitat.	Limit of works will be defined. Vehicles to remain on access tracks to prevent unnecessary disturbance to habitat. Landscaping works associated with completion of the pond is anticipated to provide better quality habitat for a more diverse	Almost certain	Moderate (Major)	Very high

	range of species than the existing environment.			
Potential death or injury to fauna from construction traffic.	Vehicles to remain on access tracks. Speed limits to be adhered to.	Unlikely (Possible)	Moderate	Low
An area potentially containing some NTG herb and forb species that are known to be present in the NTG community will be cleared for development.	Previous vegetation surveys have been undertaken in the area to determine presence of significant flora species. No threatened species were identified in transects around the site. Inspection for threatened plants (herbs and forbs) to be undertaken by ecologist prior to clearing. Weed outbreaks will be managed. Limit of works will be defined to prevent unnecessary clearing.	Likely	Minimal	Low
Indirect impacts on BGW and surrounding areas from the introduction and/or spread of one or more exotic species.	Weed control measures will be included in sub-plans of the CEMP. An operational plan of management for the proposed Cravens Creek WQCP will be developed. Weed outbreaks will be managed.	Unlikely (Likely)	Minor (Moderate)	Very low
Aquatic Flora & Fauna				
Changes to ecosystem of Cravens Creek.	Water way works licence to be obtained prior to commencement of works. Creek line above and below pond site will continue to flow; only area of creek affected by pond limit of works area will be disturbed. Revegetation works around the constructed pond will provide more diverse habitat and refuge for fauna.	Almost certain	Moderate	Very high
Changes to water flows alter existing conditions and habitats, thereby affecting aquatic species.	During construction, water within Cravens Creek will continue to flow above and below the construction site, but be diverted to avoid the works area. After construction and filling of the pond, environmental flows will continue to be released via the primary spill way.	Unlikely in the long term (Almost certain)	Major	Medium
Noise and vibration				
Construction noise affects fauna and threatened bird species.	Noise prevention measures, as described in EPA Guidelines (2011), will be adhered to. Noise levels should be monitored as part of the regular environmental inspection regime.	Likely (Almost certain)	Minor (Major)	Medium

Social, Economic and Health Factors				
Detrimental impacts to human health.	Local area does not currently provide for housing, few individuals affected. Dust suppression techniques including the use of water carts are expected to avoid dust generation. Erosion and Sediment Controls will be implemented prior to commencement of earth works and maintained for the life of the project.	Possible, can be managed	Minor will not impact community	Low
Potential social and recreation impacts associated with the pond.	Impacts to be of a positive benefit to the community.	Almost certain	Minor, Community will use recreational area (major)	Low
Potential economic impacts associated with the pond.	Project expenses to be determined by estimator and monitored during project. Cost of pond insignificant in terms of the overall Molonglo development	Possible	Minor (Moderate)	Low
Hazard and Risk				
Failure of pond embankment.	Appropriate construction standards will be applied to this project. A hazard assessment has been undertaken as part of the FSP **(Appendix AF)**.	Remote	Catastrophic	Medium
Unsafe acts and hazards associated with construction activities.	No smoking outside of designated areas. No fires on site. Fire extinguishers to be available in all machinery onsite. Appropriate signage of pond area. Emergency vehicle access to all areas within the site.	Unlikely	Moderate (Major)	Low
Contamination of land and/or water due to spills of fuel, chemicals or concrete.	Refuelling to be completed in the designated area. Vehicles and machinery used on site must have up to date service history and no reportable leaks. Spills kits to be available on site.	Likely	(Minimal)	Low
Excavation of soil during construction uncovers contaminated material such as asbestos.	Works are to be in accordance with site auditors requirements. Excavators to have completed asbestos training course. In the ACT the EPA manages an approval process for controlling the beneficial reuse and disposal of contaminated soil.	Unlikely (Possible)	Moderate	Low

5 Section 5.4 Page 93 Water Quality and Hydrology

Construction of the Cravens Creek WQCP involves site preparation works including the clearing of vegetation, bulk earthworks, stockpiling of materials and damming of Cravens Creek. These kinds of activities have the potential to impact the water quality and aquatic ecology of the Molonglo River. The pond is located below a sizeable catchment, in order to prevent runoff from entering the work site and creating major safety/environmental problems, coffer dams will be required. These treatments up stream of the construction site will significantly reduce the egress of water for both rain events and surface flows from the upstream catchment into the construction site. Flows passing through the site during construction will be treated to remove pollutants via a series of sediment interception pond, silt fence and the use of buffer zones before the flows reach the Molonglo River. The implementation of erosion and sediment controls during construction is considered to be necessary for this project for the following reasons:

> Proximity of the construction site to the Molonglo River.

> The catchment area is relatively large, and the works will take place at the base of the catchment, within the existing drainage channel.

> Due to the nature of the works, the potential for sediment loads to enter the Molonglo River is expected to be high.

> The use of filter materials and sediment control devices are an effective method for causing the deposition of sediments from runoff waters, effectively filtering runoff water and preventing turbidity.

The treatment of the ground water flows during the construction of the embankment will be managed with the identification of springs and seepage areas and treatment of those areas with small coffer dams and the use of pumps. These ground water flows will be diverted to the pond as the embankment is constructed. Ground water encountered as part of the excavation of the secondary spillway will be directed with the use of swale and channels pass the site of works to be treated in a sediment interception pond.

The design of the embankment and spillway will allow for a similar trickle flow within the existing creek to present. The spillway has a low flow slot to pass the catchment trickle flow through the pond to the Molonglo River via the existing creek bed.

Stormwater runoff from the construction area has the potential to reduce water quality through erosion of unstable surfaces and deposition of sediment into the Molonglo River. Without construction of the pond, it is expected that the impacts on water quality and ecological systems in the Molonglo downstream of the proposed urban development would be far worse. Increased erosion during construction activities results in siltation of rivers, which has been linked to reduction of available habitats for aquatic species (Walsh et.al.2004).

The construction of the Molonglo Stage 2 development is expected to impact hydrological behaviour of local catchments due to increases in impervious areas and alteration of natural waterways within the catchment.

The main impacts can be summarised as follows:

> Increase in the frequency of runoff to receiving waters.

> Increased peak storm discharges and annual runoff volume.

> Increased frequency and severity of flooding events, leading to increased scouring of existing gullies.

> Reduced base flows in Cravens Creek between storm events, caused by a decrease in infiltration.

The measures for stormwater management of the Molonglo Stage 2 development through the Cravens Creek WQCP will need to address and minimise the issues outlined in Table 24.

6 Revised 137-138

6.1 PROPONENTS COMMITMENTS TO IMPACT PREVENTION

The following table "Draft Statement of Commitments" includes a list of comments identified by ACT Government agencies during the consultation period. The proponent's agreement to undertake requests made by an agency is marked below as "Agreed". Where amendments are required have been agreed with respective agency and are noted below. .

Adherence during construction to the Unanticipated Discovery Protocol included in the document titled "Molonglo River Corridor Cultural Heritage Assessment and Conservation Management Plan (CHMA 2013).	Agreed
Compliance with minimum clearance to overhead assets and minimum separation to underground assets.	Agreed
Contacting Actew AGL prior to the commencement of any development activity to negotiate the connection of new/upgrade and /or relocation of existing electricity assets if required.	Agreed
Establishing access for emergency services and construction traffic as per TAMS Standards	Agreed
Constructing and maintaining roads surrounding the pond as per TAMS standards.	See Note 1 below
The CEMP will provide for the restoration of trails subsequent to construction to an acceptable standard to PCS.	Agreed
Ensuring GPTs located at the inflow points into the Cravens Creek WQCP will conform to TAMS Standards.	Agreed
All stockpiles will be located outside of the River Park	Agreed
No temporary structures including diversion channels/drains will be located in the River Park other than temporary sediment ponds as required in the item below.	Agreed
Sediment control plans will be developed as stated in Appendix O and P of the draft EIS as part of the Construction Environment Management Plan (CEMP).	Agreed
Work will be undertaken in accordance with the approved CEMP	Agreed
Excess rocks and salvaged tree logs will be stockpiled where feasible and reasonable for future restoration works in the Molonglo River Park	Agreed
Construction activity will respond positively to any reasonable request for assistance in salvaging excess rock where feasible and reasonable for use in pink-tailed worm lizard habitat restoration by others.	See Note 4 below
Weed control will be undertaken as appropriate after construction works for the duration of the landscape consolidation period.	Agreed
A detailed plan of the fire management infrastructure (i.e. IAPZ, OAPZ, access tracks, water points and gates) shall be submitted with the DA for this project.[1]	See Note 2 below
The landscape plan will be prepared as per TAMS requirements.	Agreed
The landscape plan will include the following provisions:	Agreed
1. Tree and tall shrub plantings will not shade PTWL habitat;	Agreed
2. Clumps of native trees and shrubs will be utilised in a way that encourages small native birds to move through the area and for there to be a functional movement	Agreed

connection to the Molonglo River corridor;	
3. The pond will be revegetated using locally indigenous aquatic or wetland species; and	See Note 3 below
4. Water extraction from the pond for landscaping purposes will leave at least 2.5m of depth in the pond to avoid fish kills. It is noted that for maintenance or emergency purposes the pond may need to be completely drawn down or emptied from time to time.	Agreed
Investigating for the presence of Perunga Grasshopper prior to construction, by a qualified and experienced environmental professional.	Agreed
If significant quantities of groundwater is encountered during the project installation of a single groundwater monitoring bore if feasible between the pond and the Molonglo River to enable periodic monitoring of groundwater is proposed	Agreed
Due to the ephemeral nature of Cravens Creek, monitoring of water quality, both upstream and downstream of the works area during the construction phase and as part of the CEMP, will occur after rainfall events of 25mm per 24 hour period or greater.	Agreed
Undertaking works in accordance with the unexpected finds protocol (UFP) as part of the relevant contamination assessment/s for the areas C2 and C4 of the Molonglo Valley. The purpose of the UFP will be to guide the identification and management of potential contamination if encountered during the construction phase.	Agreed

Note 1 (TAMS have accepted proponent's response below)
TAMS request: Constructing and maintaining roads surrounding the pond as per TAMS standards

Proponent's response:
The scope of works for this project will not include the construction and maintenance of surrounding roads. The project will include an access track to the site for the purpose of the construction works and maintenance during the defects period. The access track will be constructed as per the TAMS standard and details will be outlined in the Development Application stage.

Note 2 (TAMS have accepted proponent's response below)
TAMS request : A detailed plan of the fire management infrastructure (i.e. IAPZ, OAPZ, access tracks, water points and gates) shall be submitted with the DA for this project.

Proponent's response:
The works under the project will include earth works, rock cutting, concrete works and other civil works related to dam construction. As required by the Strategic Bush Management Plan V3 for the Molonglo 2 projects, a Bush Fire Management Plan will be developed at the DA stage to address matters related to bush fire for site.

Note 3 (TAMS have accepted proponent's response below)
The pond will be revegetated using locally indigenous aquatic or wetland species

Proponent's response:
As agreed with TAMS, there will be delayed planting of the aquatic plants for the pond. The project scope will not include the planting of aquatic plants at this stage, but will be dealt at later stage as agreed with Jane Carder, PARKS AND CITY SERVICES DIVISION, TAMS (please refer to the attached email).

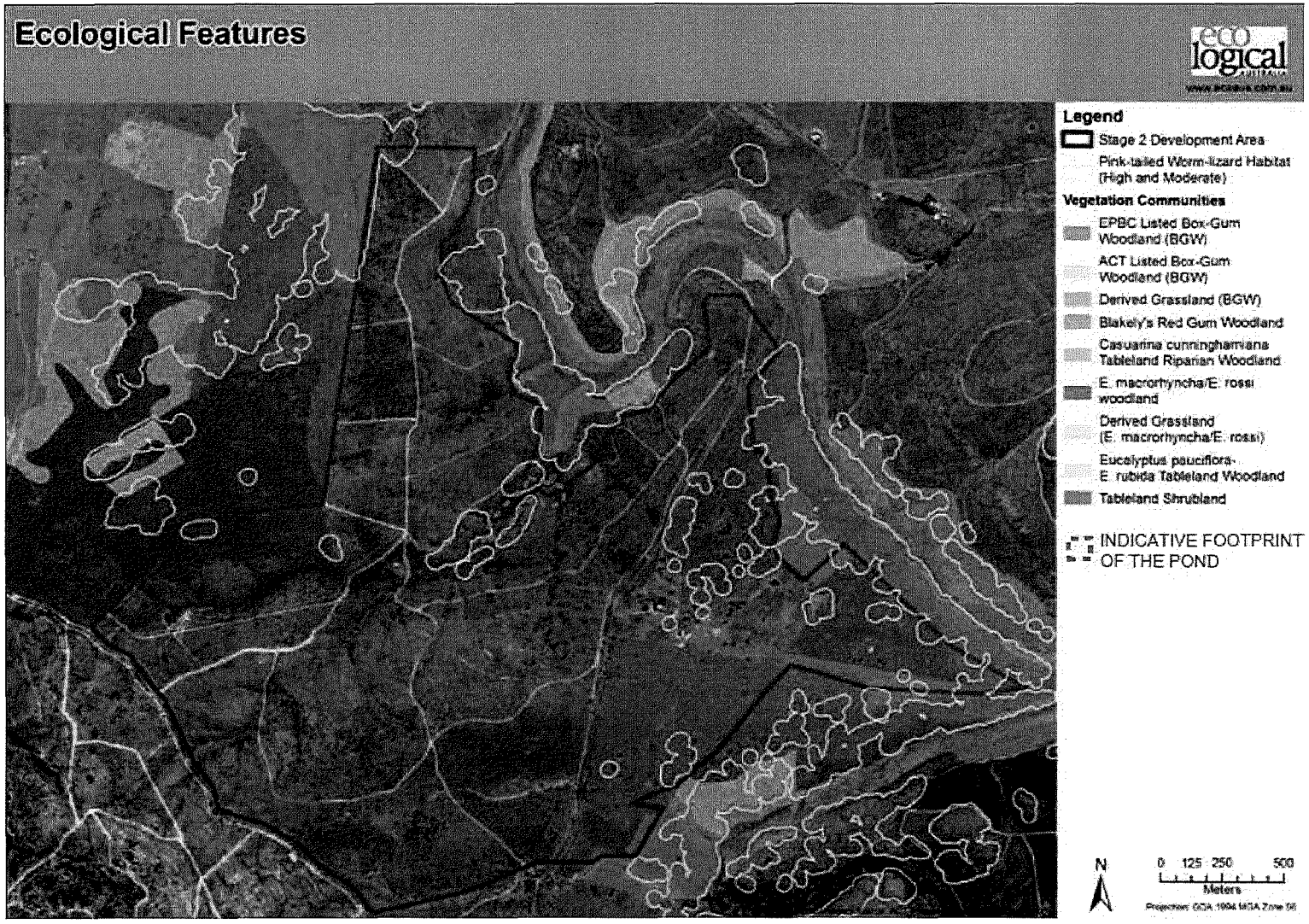
Note 4 (TAMS have accepted proponent's response below)
TAMS request : Construction activity will respond positively to any reasonable request for assistance in salvaging excess rock where feasible and reasonable for use in pink-tailed worm lizard habitat restoration by others.

Proponent's response:
The scope of works for this project will include any reasonable request for assistance in salvaging excess rock where feasible and reasonable for use in pink-tailed worm lizard habitat restoration by others that will involve minimal costs to the project. Work by the pond construction contractor will be confined to the site

area of the pond works. Salvaging excess rock, where found unreasonable within the scope of project, will be dealt separately where appropriate.

7 Figure 5

Figure 5 here as mentioned above has been updated to show the foot print of the site.



About Cardno

Cardno is a professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage and deliver sustainable projects and community programs. Cardno is an international company listed on the Australian Securities Exchange [ASX CDD].

Contact

Cardno (NSW/ACT) Pty Ltd

Level 2
14 Wormald Street
Symonston ACT 2609
Australia

Phone +61 2 6112 4500
Fax +61 2 6112 4599

canberra@cardno.com.au
www.cardno.com

Cardno
Shaping the Future