Australian Government
Department of the Environment and Energy

Referral of proposed action

What is a referral?

The *Environment Protection and Biodiversity Conservation Act 1999* (the **EPBC Act**) provides for the protection of the environment, especially matters of national environmental significance (**NES**). 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 of the matters of NES without approval from the Commonwealth Environment and Energy Minister or the Minister's delegate. (Further references to 'the Minister' in this form include references to the Commonwealth Environment and Energy Minister or the Minister's delegate.) To obtain approval from the Minister, a proposed action must be referred. The purpose of a referral is to enable the Minister to decide whether your proposed action will need assessment and approval under the EPBC Act.

Your referral will be the principal basis for the Minister's decision as to whether approval is necessary and, if so, the type of assessment that will be undertaken. These decisions are made within 20 business days, provided sufficient information is provided in the referral.

Who can make a referral?

Referrals may be made by or on behalf of a person proposing to take an action, the Commonwealth or a Commonwealth agency, a state or territory government, or agency, provided that the relevant government or agency has administrative responsibilities relating to the action.

When do I need to make a referral?

A referral must be made by the person proposing to take an action if the person thinks that the action for actions that has, will have, or is likely to have a significant impact on the following matters protected by Part 3 of the EPBC Act:

- World Heritage properties (sections 12 and 15A);
- National Heritage places (sections 15B and 15C);
- wetlands of international importance (sections 16 and 17B);
- listed threatened species and communities (sections 18 and 18A);
- listed migratory species (sections 20 and 20A);
- protection of the environment from nuclear actions (sections 21 and 22A);
- Commonwealth marine environment (sections 23 and 24A);
- Great Barrier Reef Marine Park (sections 24B and 24C);
- a water resource, in relation to coal seam gas development and large coal mining development (sections 24D and 24E);
- the environment, if the action involves Commonwealth land (sections 26 and 27A), including:
    - actions taken outside Commonwealth land that are likely to have a significant impact on the environment of Commonwealth land;
    - actions taken on Commonwealth land that may have a significant impact on the environment generally;
- the environment, if the action is taken by the Commonwealth (section 28); and
- Commonwealth Heritage places outside the Australian jurisdiction (sections 27B and 27C).

You may still make a referral if you believe your action is not going to have a significant impact, or if you are unsure. This will provide a greater level of certainty that Commonwealth assessment requirements have been met.

To help you decide whether or not your proposed action requires approval (and therefore, if you should make a referral), the following guidance is available from the Department's website:

- Submitting a referral under the EPBC Act – A fact sheet for a person proposing to take an action http://www.environment.gov.au/epbc/publications/factsheet-environment-assessment-process

- The Policy Statement titled Significant Impact Guidelines 1.1 – Matters of National Environmental Significance http://www.environment.gov.au/epbc/publications/significant-impact-guidelines-11-matters-national-environmental-significance Additional sectoral guidelines are also available.
- the Policy Statement titled Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies http://www.environment.gov.au/epbc/publications/significant-impact-guidelines-12-actions-or-impacting-upon-commonwealth-land-and-actions
- the Policy Statement titled Significant Impact Guidelines: Coal seam gas and large coal mining developments—Impacts on water resources http://www.environment.gov.au/resource/significant-impact-guidelines-13-coal-seam-gas-and-large-coal-mining-developments-impacts
- the interactive map tool (enter a location to obtain a report on what matters of NES may occur in that location) http://www.environment.gov.au/epbc/pmst/index.html

Can I refer part of a larger action?

In certain circumstances, **the Minister may not accept a referral for an action that is a component of a larger action and may request the person proposing to take the action to refer the larger action for consideration under the EPBC Act (Section 74A, EPBC Act).** If you wish to make a referral for a staged or component referral contact the Referrals Gateway (1800 803 772).

Do I need a permit?

Some activities may also require a permit under other sections of the EPBC Act or another law of the Commonwealth. Information is available on the Department's web site.

Is your action in the Great Barrier Reef Marine Park?

If your action is in the Great Barrier Reef Marine Park it may require permission under the *Great Barrier Reef Marine Park Act 1975* (**GBRMP Act**). If permission is required, referral of the action under the EPBC Act is deemed to be an application under the GBRMP Act (see section 37AB of the GBRMP Act). This referral will be forwarded to the Great Barrier Reef Marine Park Authority (**the Authority**) for the Authority to commence its permit processes as required under the *Great Barrier Reef Marine Park Regulations 1983* (**GBRMP Regulations**). If permission is not required under the GBRMP Act, no approval under the EPBC Act is required (see section 43 of the EPBC Act). The Authority can provide advice on relevant permission requirements applying to activities in the Marine Park.

The Authority is responsible for assessing applications for permissions under the GBRMP Act, GBRMP Regulations and Zoning Plan. Where assessment and approval is also required under the EPBC Act, a single integrated assessment for the purposes of both Acts will apply in most cases. Further information on environmental approval requirements applying to actions in the Great Barrier Reef Marine Park is available from http://www.gbrmpa.gov.au/ or by contacting GBRMPA's Environmental Assessment and Management Section on (07) 4750 0700.

The Authority may require a permit application assessment fee to be paid in relation to the assessment of applications for permissions required under the GBRMP Act, even if the permission is made as a referral under the EPBC Act. Further information on this is available from the Authority:

Great Barrier Reef Marine Park Authority

2-68 Flinders Street PO Box 1379
Townsville QLD 4810
AUSTRALIA

Phone: + 61 7 4750 0700
Fax: + 61 7 4772 6093

www.gbrmpa.gov.au

What information do I need to provide?

Please complete all parts of this form to assist the Department to process your referral efficiently. If a section of the referral document is not applicable to your proposal, please enter N/A.

You can complete your referral by entering your information into this Word file.

Instructions

Instructions are provided in blue text throughout the form.

Attachments/supporting information

The referral form should contain sufficient information to provide an adequate basis for a decision on the likely impacts of the proposed action. You should also provide supporting documentation, such as environmental reports or surveys, as attachments.

Coloured maps, figures or photographs to help explain the proposed action and its location should also be submitted with your referral. Aerial photographs, in particular, can provide a useful perspective and context. Figures should be good quality as they may be scanned and viewed electronically as black and white documents. Maps should be of a scale that clearly shows the location of the proposed action and any environmental aspects of interest.

Please ensure any attachments are below five megabytes (5mb) as they will be published on the Department's website for public comment. To minimise file size, enclose maps and figures as separate files if necessary. If unsure, contact the Referrals Gateway (email address below) for advice. Attachments larger than five megabytes (5mb) may delay processing of your referral.

Note: The Minister may decide not to publish information that the Minister is satisfied is commercial-in-confidence. If you believe that your referral contains information that is commercial-in-confidence, you must clearly identify such information and the reason for its confidentiality at the time of making the referral. The Minister cannot be satisfied that particular information included in a referral is commercial-in-confidence unless a person demonstrates to the Minister that:

- release of the information would cause competitive detriment to the person; and
- the information is not in the public domain; and
- the information is not required to be disclosed under another law of the Commonwealth, a State or a Territory; and
- The information is not readily discoverable.

How do I pay for my referral?

From 1 October 2014, the Australian Government commenced cost recovery arrangements for environmental assessments and some strategic assessments under the EPBC Act. If an action is referred on or after 1 October 2014, then cost recovery will apply to both the referral and any assessment activities undertaken. Further information regarding cost recovery can be found on the Department's website at: http://www.environment.gov.au/epbc/publications/cost-recovery-cris

If you are an individual or a small business, you may be exempt from paying the referral fee. See Part 9 of this form for further details.

You may apply for all or part of a fee to be waived. See Part 9 of this form for further details.

Payment of the referral fee can be made using one of the following methods:

- **EFT Payments can be made to:**

  BSB: 092-009
  Bank Account No. 115859
  Amount: $6577
  Account Name: Department of the Environment and Energy.
  Bank: Reserve Bank of Australia
  Bank Address: 20-22 London Circuit Canberra ACT 2601
  Description: The reference number provided (see note below)

- **Cheque** - Payable to "Department of the Environment and Energy". Include the reference number provided (see note below), and if posted, address:

  The Referrals Gateway
  Environment Assessment Branch
  Department of the Environment and Energy
  GPO Box 787
  Canberra ACT 2601

- **Credit Card**

  Please contact the Collector of Public Money (CPM) directly (call (02) 6274 2930 or 6274 20260 and provide the reference number (see note below).

Note: an invoice will be raised and forwarded to you upon submission of your referral which will include the EPBC reference number for your referral.

How do I submit a referral?

Referrals may be submitted by mail or email.

Mail to:

Referrals Gateway
Environment Assessment Branch
Department of Environment and Energy
GPO Box 787
CANBERRA ACT 2601

- If submitting via mail, please also provide electronic copies of documentation (on CD/DVD or by email).

Email to: epbc.referrals@environment.gov.au

- Clearly mark the email as a 'Referral under the EPBC Act'.
- Attach the referral in a suitable electronic document format (e.g. Microsoft Word and, if possible, PDF).
- If submitting via email, please also mail a hardcopy of the referral including copies of any attachments or supporting reports.

What happens next?

Following receipt of a valid referral (containing all required information) you will be advised of the next steps in the process, and the referral and attachments will be published on the Department's web site for public comment. Any person may give the Minister comments on the referral within 10 business days of publication on the Department's website.

The Department will write to you within 20 business days to advise you of the outcome of your referral and whether or not assessment and approval under the EPBC Act is required. There are a number of possible decisions regarding your referral:

The proposed action is NOT LIKELY to have a significant impact and does NOT NEED approval

No further consideration is required under the environmental assessment provisions of the EPBC Act and the action can proceed (subject to any other Commonwealth, state or local government requirements).

The proposed action is NOT LIKELY to have a significant impact IF undertaken in a particular manner

The action can proceed if undertaken in a particular manner (subject to any other Commonwealth, state or local government requirements). The particular manner in which you must carry out the action will be identified as part of the final decision. You must report your compliance with the particular manner to the Department.

The proposed action is LIKELY to have a significant impact and does NEED approval

If the action is likely to have a significant impact a decision will be made that it is a *controlled action*. The particular matters upon which the action may have a significant impact (such as World Heritage values or threatened species) are known as the *controlling provisions*.

The controlled action is subject to a public assessment process before a final decision can be made about whether to approve it. The assessment approach will usually be decided at the same time as the controlled action decision. (Further information about the levels of assessment and basis for deciding the approach are available on the Department's web site.)

The proposed action would have UNACCEPTABLE impacts and CANNOT proceed

The Minister may decide, on the basis of the information in the referral, that a referred action would have clearly unacceptable impacts on a protected matter and cannot proceed.

For more information

- call the Department of the Environment and Energy Community Information Unit on 1800 803 772, or
- visit the web site http://www.environment.gov.au/epbc

All the information you need to make a referral, including documents referenced in this form, can be accessed from the above web site.

Referral of proposed action

Proposed action title:

Maroondah Aqueduct Replacement Project–aqueduct decommissioning

1 Summary of proposed action

1.1 **Short description**

The Melbourne Water Corporation (Melbourne Water) are proposing to replace a section of the ageing Maroondah Aqueduct, located north east of Melbourne, near Yarra Glen, which is currently at high risk of failure and poses unacceptable risks to water supply, water quality and health and safety for management personnel, livestock and wildlife. A new pipe has been installed to replace the open channel aqueduct and siphon pipes (under creeks). The old infrastructure will then be decommissioned to make the land safe (for people, stock and wildlife), through backfilling of the open channel. The action is the decommissioning of the aqueduct.

1.2 **Latitude and longitude**

The coordinates for the section of the Maroondah Aqueduct proposed for replacement are shown in the table: Coordinates are in GDA94 MGA55 (m)

Table of coordinates

ID	X_COR	Y_COR
1	145.39585	-37.63185
2	145.40059	-37.63071
3	145.40145	-37.63139
4	145.40403	-37.6311
5	145.40547	-37.62701
6	145.40652	-37.62557
7	145.40667	-37.62574
8	145.40587	-37.62706
9	145.4044	-37.63121
10	145.40129	-37.63168
11	145.40061	-37.63103
12	145.3963	-37.63189
13	145.42209	-37.62281
14	145.42003	-37.62249
15	145.41948	-37.62316
16	145.41817	-37.62408
17	145.41701	-37.62396
18	145.41724	-37.62369
19	145.41815	-37.62379
20	145.41918	-37.623
21	145.41984	-37.62225
22	145.42212	-37.62254
23	145.43938	-37.62194
24	145.43684	-37.62286
25	145.436	-37.62411
26	145.43328	-37.62472
27	145.43131	-37.62439
28	145.4309	-37.62404
29	145.43335	-37.62446
30	145.43569	-37.62398
31	145.43664	-37.62263
32	145.43928	-37.62177
33	145.44051	-37.6216
34	145.4415	-37.62297
35	145.44268	-37.62336
36	145.44241	-37.62393
37	145.44451	-37.62397
38	145.44487	-37.62528
39	145.44609	-37.62588
40	145.44659	-37.62737

Table of coordinates, cont.

ID	X_COR	Y_COR
41	145.44742	-37.62778
42	145.44732	-37.62833
43	145.4461	-37.62818
44	145.44624	-37.62745
45	145.44572	-37.62603
46	145.44455	-37.6254
47	145.44435	-37.62426
48	145.4422	-37.62409
49	145.44166	-37.62373
50	145.44029	-37.62169

1.3 **Locality and property description**

A 5.5 km section of the Maroondah Aqueduct will be decomissioned; located to the north east of the town of Yarra Glen, which is located approximately 40 km north east of Melbourne's central business district. The Maroondah Aqueduct transfers drinking water from Maroondah Reservoir on the Watts River, Healesville, to Sugarloaf Reservoir in Christmas Hills.

The location being referred is a discontinuous section of the 5.5 km section, where decommissioning of the aqueduct is occurring. A map of the replacement section is included in Attachment 1.

1.4	**Size of the development footprint or work area (hectares)**	13.11 ha
1.5	**Street address of the site**	The eastern extent of the project area is Pauls Lane, Yarra Glen The western extent of the project area is at Gulf Road, Yarra Glen.

1.6 **Lot description**

Lot 1 TP950873Y - The current aqueduct reserve west of Pauls Lane
Lot 2 TP951046G - The current aqueduct reserve west of Pauls Lane
Lot 2 TP950873Y - The current aqueduct reserve from Tunnel 7 to Bleases Lane
Lot 1 TP951049A - The current aqueduct reserve between Bleases Lane and the Melba Highway
Lot 2 TP51886H - The current aqueduct reserve between west of the Melba Highway
Lot 1 TP51886H - The current aqueduct reserve between west of the Melba Highway
Lot 1 TP566952U - The current aqueduct reserve east of Gulf Road

These lots are part of the existing aqueduct reserve managed by Melbourne Water.

1.7 **Local Government Area and Council contact (if known)**

Yarra Ranges Shire Council
Nick Wilkinson
Planning Officer
Ph: 9294 6878
Email: m.simone@yarraranges.vic.gov.au

1.8 **Time frame**

The decommissioning of the aqueduct will occur following commissioning and operation of the replacement pipeline. This is expected to occur from June/July 2017 to September/October 2017.

1.9	**Alternatives to proposed action**		No
		✓	Yes, please also complete section 2.2
1.10	**Alternative time frames, locations or activities**	✓	No
			Yes, you must also complete Section 2.3. For each alternative, location, time frame, or activity identified, you must also complete details in Sections 1.2-1.9, 2.4-2.7 and 3 and 5 (where relevant).
1.11	**Commonwealth, State or Territory assessment**	✓	No
			Yes, please also complete section 2.5
1.12	**Component of larger action**		No
		✓	Yes, please also complete section 2.7. The decommissioning of the pipeline can only occur following the construction and commissioning of the replacement aqueduct. This pipeline predominately impacts agricultural land, with no impacts to matters of national environmental significance.
1.13	**Related actions/proposals**	✓	No
			Yes, provide details:
1.14	**Australian Government funding**	✓	No
			Yes, please also complete section 2.8
1.15	**Great Barrier Reef Marine Park**	✓	No
			Yes, please also complete section 3.1 (h), 3.2 (e)

2 Detailed description of proposed action

2.1 Description of proposed action

Melbourne Water has recently replaced a section of the ageing Maroondah Aqueduct, located north east of Melbourne, near Yarra Glen, which is currently at high risk of failure. The aqueduct was constructed in the 1890s and enlarged during the 1920s and is currently in a poor condition. The aqueduct is integral to the water supply of the Yarra Glen Township and adjoining landholders, and enables drinking water to be transferred between the Maroondah Reservoir and the Sugarloaf Reservoir, part of Melbourne's water supply network.

In addition to immediate risks associated with structural deficiencies and impacts to water supply to Melbourne households, there are numerous concerns about water quality. These include issues from adjacent uncontrolled agricultural and horticultural land use practices, significant inefficiencies associated with substantial water losses (leakage and evaporation) experienced during water transfers, health and safety concerns arising from urban and agricultural encroachment, and risks to wildlife and livestock, where animals regularly drown in the open aqueduct.

A replacement pipeline is currently being constructed between the open channel, from Pauls Lane, to connect to the existing siphon (closed pipes linking open channel sections under creeks) at Steeles Creek. This siphon pipe was replaced recently as part of the Sugarloaf Pipeline project.

Following construction and commissioning of the pipeline, the existing aqueduct–including open channels, siphons and tunnels (aqueduct channels through hills)–will be decommissioned. This will involve:

- backfilling the open channel sections with fill to make the areas safe for people, livestock and wildlife
- installation of a drainage pipe in the aqueduct reserve to drain overland flow to mitigate the flooding risk to Balgownie Estate Vineyard Resort & Spa from overland flow during a storm event;
- the single tunnel (Tunnel 7) will be retained, with entrances covered with a steel mesh that will enable micro-bats to utilise the tunnel for roosting and nesting.

The aqueduct abandonment will occur between Pauls Lane to the east and Gulf Road to the west. The majority of works will occur where there is open channel:

- from Pauls Lane to Tunnel 7 entrance,
- from Tunnel 7 exit to Pauls Creek siphon (inlet)
- from Pauls Creek siphon (outlet) to Dixons Creek siphon (inlet)
- from Dixons Creek siphon (outlet) to Gulf Road. Note this area is partly covered with a concrete cover, with no open channel. This area is grazed by the adjacent landholder. This section will include the installation of drainage pipes.

A map of the project area is included in Attachment 1.

The decommissioning works will aim to make the area safe, for people, stock and wildlife, and restore the natural drainage and surface flow, without creating ongoing management issues with wet depressions and increasing the flooding risk to adjacent properties and businesses.

Acknowledging that the environmental sensitivity of the landscape varies across the Phase 2 - Decommissioning Works Area, three separate construction methodologies are to be implemented to mitigate against the potential for adverse impacts:

- Standard method;
- Flood mitigation-Balgownie Estate;
- Preservation of matted flax-lily.

Standard method

The standard methodology is to be utilised for the majority of the Phase 2 - Decommissioning Works Area and involves the backfilling the open channel sections utilising spoil removed for the installation of the pipeline where adjacent to the alignment. The adjacent vehicle maintenance track on the low side of the hill will be graded down, where required, with spoil from the track used to assist in the backfilling and re-establish natural drainage as much as possible.

For the section east of Bleases Lane, the access track occurs at a similar level to the north side of the aqueduct. In this instance the access track will remain, with spoil removed from the pipe construction used to fill the aqueduct channel to a safe level. Drainage will then be achieved through grading areas within the channel to natural drainage points.

Excavators and bulldozers will transfer spoil from the pipeline corridor into the open channel, a bulldozer will then excavate and grade the maintenance track down to the required level with spoil from the track filling the channel. Machinery will then compact the fill with a gradient to allow either natural surface drainage or through the filled channel to regular drainage points, such as existing drainage lines.

Flood mitigation–Balgownie Estate

For the section behind Balgownie Estate (western portion of the works area), a maximum 1300 mm drainage pipe will be installed within the existing channel to capture drainage from the above catchment to hold and divert stormwater during a flood event. This method is required to mitigate the flooding impact to Balgownie Estate following decommissioning of the aqueduct, which currently minimises flooding. The access track will be graded down to backfill around the pipe. Drainage pipes will be installed into the open aqueduct to drain water away.

Preservation of matted flax-lily

Where matted flax-lily is present, the level of backfill will be limited to within the existing concrete-lined aqueduct. This will prevent impacts to matted flax-lily and native vegetation that occurs on the north side of the aqueduct. This method requires significant reduction in the height of the access track and removal of vegetation that occurs on the south side of the aqueduct to be able to drain water away from the backfilled channel and reduce health and safety risk to people, wildlife and stock.

2.2 Feasible alternatives to taking the proposed action

The current open channel aqueduct is considered a health and safety risk to people, Melbourne Water maintenance, livestock and wildlife. The option of leaving the channel in its current state is not considered by Melbourne Water to be a feasible option due to health and safety concerns. Wildlife, mainly wombats (*Vombatus ursinus*), wallabies (*Wallabia bicolor*), echidnas (*Tachyglossus aculeatus*) and kangaroos (*Macropus giganteus*), may also be injured and/or be trapped in the channel.

The aqueduct will also require ongoing maintenance in this form, due to the dilapidated state of the aqueduct, concrete and access track. Recently (July 2016) a failure of the aqueduct resulted in the collapse of the aqueduct wall and blow out underneath the aqueduct, which impacted adjacent landholders.

Initially Melbourne Water's preferred option was to backfill the channel to a level to recreate the natural crossfall of the landscape prior to the aqueduct construction. This option would have resulted in the loss of significant remnant native vegetation and species that are present in the aqueduct reserve. The current option, which involves filling in the aqueduct, has been designed to avoid impacts to significant species along the aqueduct reserve, while creating a safe environment.

2.3 Alternative locations, time frames or activities that form part of the referred action

There are no applicable feasible alternative locations, timeframes or activities that form part of this referred action.

2.4 Context, including any relevant planning framework and state/local government requirements

Removal of native vegetation will be required and need to occur in accordance with Clause 52.17 of the Yarra Ranges Planning Scheme under the *Planning and Environment Act 1987*. A permit for removal, destruction or lopping of native vegetation, including dead vegetation is required of the decommissioning component of the project. Impacts to native vegetation will also need to consider the Biodiversity Assessment Guidelines and require vegetation offsets. The project has submitted a planning permit application on 21 April 2017.

A permit to Take Protected Flora will also be obtained for this project for removal of protected species under the *Flora and Fauna Guarantee Act 1988* (FFG Act)

The project, including pipeline installation and decommissioning works, is considered to be a high impact activity within an area of cultural heritage sensitivity and therefore required the preparation and approval of a mandatory Cultural Heritage Management Plan (CHMP). The CHMP was approved for the pipeline installation and decommissioning works on 29 June 2016.

2.5 Environmental impact assessments under Commonwealth, State or Territory legislation

Ecological assessments have been undertaken to support the design phase of the project, the planning permit application to Yarra Ranges Council for removal of native vegetation as well as referral under the EPBC Act.

2.6 Public consultation (including with Indigenous stakeholders)

Direct consultation has occurred with the residents and businesses that will have the pipeline and construction works occur on their property. Consultation with landholders by Melbourne Water has occurred from the functional design phase following the selection of the preferred alignment of the replacement pipe. Melbourne Water has negotiated with private landholders on the establishment of easements with private property, including the payment of compensation for easement creation.

Consultation has occurred with other relevant stakeholders such as Yarra Ranges Shire Council, VicRoads, Yarra Valley Water, Multinet Gas Operations, Telstra VICTAS, AusNet Electricity Services, local residents, adjacent business and wineries, Heritage Victoria, and the Registered Aboriginal Party (Wurundjeri). This has been completed by Melbourne Water from the functional design stage of the project.

Following identification of a design and construction contractor, Melbourne Water has handed over consultation to the contractor. A Communications Action Plan has been prepared for the project which guides the consultation process. This includes door knocking and face-to-face meetings, letter dropping and constant updates to the stakeholders about the project. Directly and indirectly affected residents and residential communities will be consulted and their concerns integrated into the management of the project.

2.7 A staged development or component of a larger action

As discussed above, the project is part of the Maroondah Aqueduct Replacement Project. The overall project includes the following:

- installation of a replacement 1700 mm diameter pipeline between the sections of aqueduct to be decommissioned, including replacement of siphon pipes

- reconnection of existing diverters (direct water connections to landholders and businesses) that currently take water directly from the aqueduct
- decommissioning of open channel sections.

The works associated with the pipeline and reconnection of water diverters will predominately occur in degraded road reserves or in grazing land (See Appendix A in Attachment 2). No significant impacts are likely to occur from these works and therefore, these components of the Maroondah Aqueduct Replacement Project have not been referred.

Separate planning permits and permits under the FFG Act will be obtained by Melbourne Water for these decommissioning works.

2.8 Related actions

N/A

3 Description of environment & likely impacts

3.1 Matters of national environmental significance

A population of the matted flax-lily (*Dianella amoena*) has been recorded within the decommissioning works area. The species is listed as endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and is also considered endangered in Victoria, where it is listed under the Victorian FFG Act.

A targeted survey for the species on 21 December 2015 (KBR 2016a, Attachement 2) identified 84 individuals within three sections of the existing aqueduct reserve where open channel is present. An outlying individual was also recorded east of tunnel 7, which has not been located during previous visits to the site, though is still considered present.

In consideration of the dry and hot conditions experienced in the region prior to the targeted survey, Melbourne Water commissioned a supplementary survey on 1 December 2016 (KBR 2016b, Attachment 3) to determine if additional plants were present in the project area. An additional 74 matted flax-lily plants were recorded during the supplementary survey. The majority of these plants were recorded within and around the existing populations, however, an additional plant was located adjacent to the aqueduct The overall count of matted flax-lily recorded in the project area is 158. No other matters of national environmental significance have been recorded or are likely to occur or be impacted by the works.

The design of the decommissioning works has been modified to minimise impacts on the matted flax-lily. The design avoids removal of all but two matted flax-lily, although the decommissioning works will occur immediately adjacent to individuals.

3.1 (a) World Heritage Properties

Description

N/A. No world heritage properties are within the project area.

Nature and extent of likely impact

N/A

3.1 (b) National Heritage Places

Description

N/A. No national heritage places are within the project area.

Nature and extent of likely impact

N/A

3.1 (c) Wetlands of International Importance (declared Ramsar wetlands)

Description

N/A. No wetlands of international importance are within the project area or downstream of the project area.

Nature and extent of likely impact

N/A

3.1 (d) Listed threatened species and ecological communities

Description

One listed flora species, matted flax-lily, was recorded in the project area. No listed fauna species or ecological communities were recorded in the project area.

A population of the matted flax-lily has been recorded within the decommissioning works area. The targeted surveys for the species identified 158 individuals, concentrated within three sections of the existing aqueduct reserve where open channel is present. These were located within the project area to the west of tunnel 7, in vegetation that was dominated by a native grassy understorey, mainly kangaroo grass (*Themeda triandra*).

An outlying individual was recorded east of tunnel 7, which has not be recorded since the first targeted survey, but is still considered to be present. This section is characterised by typical forest vegetation, with a sedgy understorey that is dominated by rough saw-sedge (*Gahnia radula*). Although this individual was recorded in a disturbed area, with minimal vegetation cover. This individual is also the only record to occur on the south, or low, side of the aqueduct.

The other outlying individual was recorded east of Bleases Lane. As above this area is dominated by rough saw-sedge and contained higher coverage of blackberry and other grassy weeds, including phalaris (*Phalaris aquatica*).

The individuals recorded west of tunnel 7 were all recorded on the north, or high, side of the aqueduct. The north side is subject to less disturbance and management, as access is difficult and terrain is generally steep. Therefore, the north side of the aqueduct is not slashed nor are weeds controlled for management. In comparison, the south side of the aqueduct, which includes a maintenance track, is regularly slashed and weeds that are common on the north side, including blackberry (*Rubus fruticosus* spp. agg.), Spanish heath (*Erica lusitanica*) and wild watsonia (*Watsonia meriana* var. *bulbifera*) are controlled.

Nature and extent of likely impact

The proposed design for decomissioning has been significantly modified to avoid impacts to the matted flax-lily populations. Where the populations are present the design has been modified to limit the extent of fill in the aqueduct channel to 150 mm below the top of concrete.

In these instances, the lower bank will be further cut down to achieve desired drainage and overland flow of water or, for the section between Gulf Road and Melba Highway, a drainage pipe will be installed to divert drainage.

This distance below the top of concrete will allow for physical barriers to be erected and construction works to be able to safely work within proximity to the matted flax-lily without impacting the plants. It is also observed that occasionally, matted flax-lily plants hang over the concrete lining of the aqueduct, particularly older and dessicating material. Where leaf material overhangs the concrete, those leaves

will be pruned to reduce the risk that those leaves are buried under back-fill. This will be completed by the ecologist supervising the works.

However, the two outlying matted flax-lilies occur in areas where the required drainage and safety requirements cannot be achieved without impacting these two matted flax-lily individuals. These two plants are proposed to be impacted by the decommissioning.

The individual present east of Bleases Lane is proposed to be buried under the fill, as the access channel in this location will not be cut down. Drainage requirements determine that the area is likely to be buried under the fill and the individual is considered to be lost.

The individual present east of Tunnel 7 is likely to be impacted by the works, truck and excavator movement, associated with cutting down the access track and the adjacent aqueduct wall to allow drainage of the channel to spill into the adjacent drainage line.

3.1 (e) Listed migratory species

Description

No listed migratory species have been recorded within the project area. No habitat for terrestrial and wetlands species are considered to be present.

Nature and extent of likely impact

N/A

3.1 (f) Commonwealth marine area

(If the action is in the Commonwealth marine area, please complete 3.2(c) instead. This section is for actions taken outside the Commonwealth marine area that may have impacts on that area.)

Description

N/A

Nature and extent of likely impact

N/A

3.1 (g) Commonwealth land

(If the action is on Commonwealth land, please complete 3.2(d) instead. This section is for actions taken outside Commonwealth land that may have impacts on that land).

Description

N/A

Nature and extent of likely impact

N/A

3.1 (h) The Great Barrier Reef Marine Park
Description

N/A

Nature and extent of likely impact

N/A

3.1 (i) A water resource, in relation to coal seam gas development or large coal mining development
Description

N/A

Nature and extent of likely impact

N/A

3.2 Nuclear actions, actions taken by the Commonwealth (or Commonwealth agency), actions taken in a Commonwealth marine area, actions taken on Commonwealth land, or actions taken in the Great Barrier Reef Marine Park

3.2 (a)	**Is the proposed action a nuclear action?**	✓	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment		

3.2 (b)	**Is the proposed action to be taken by the Commonwealth or a Commonwealth agency?**	✓	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment		

3.2 (c)	**Is the proposed action to be taken in a Commonwealth marine area?**	✓	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(f))		

3.2 (d)	**Is the proposed action to be taken on Commonwealth land?**	✓	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(g))		

3.2 (e)	**Is the proposed action to be taken in the Great Barrier Reef Marine Park?**	✓	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(h))

3.3 Description of the project area and affected area for the proposed action

The majority of the study area was generally of a modified state. This has been modified through historic clearing for the construction of the aqueduct and regular maintenance, predominately slashing, which is limited to the south side of the aqueduct channel. Understorey vegetation has remained intact and the majority of the vegetation within the project area is now grassy areas dominated by kangaroo grass or sedgey areas dominated by rough saw-sedge. The tree and shrub layer has largely been cleared and regularly maintained for aqueduct maintenance, although there are several areas of regrowth.

The aqueduct reserve with open channel generally consists of three narrow bands of native vegetation across the project area divided by the open channel and the maintenance track. North of the channel the vegetation is not slashed and does not appear to be maintained, such as weed spraying. The vegetation is considered to be remnant patch vegetation that is dominated by grasses, herbs and forbs, with the occasional shrub. This band of vegetation also contains the highest levels of weed cover, predominately blackberry and phalaris (*Phalaris aquatica*).

Between the channel and the maintenance track, a band of remnant vegetation persists. This vegetation was dominated by kangaroo grass and contained few weeds at low or negligible cover. Although, only some scattered forbs at the end of their fruiting period were present at the time of survey, these patches are likely to contain a high diversity of annual forbs, which were present in similar patches within pipeline alignment that were assessed at a more optimal time.

To the south of the maintenance track, the vegetation varies depending on the location. It is likely that, as with the remainder of the aqueduct reserve, the vegetation was cleared of trees and shrubs. Within these patches remnant trees and shrubs have been allowed to regenerate, or have been planted in the reserve, such as the section between the Melba Highway and Gulf Road. These patches appear to be the most modified, containing a mix of planted indigenous vegetation, regrowth trees and shrubs and a generally weedy understorey.
Fauna habitat is limited within the project area. The overstorey vegetation has been largely removed of trees and shrubs and as a result, there are minimal habitat features associated with trees, including hollows, nests, logs and other debris. Fauna use of the site was predominately by rabbits (*Oryctolagus cuniculus*), with scats present along the majority of the project area. There was also evidence of common wombat (*Vombatus ursinus*), including burrows in the access track embankment.

There are some locations that do contain some trees and overstorey habitat, including between Melba Highway and Gulf Road, and between Tunnel 8 exit and Tunnel 7 entrance. Trees are present on the south side of the aqueduct reserve between Melba Highway and Gulf Road on the south side of the reserve; apparent as a mix of regrowth and supplementary planting. There appears to be minimal top soil within these patches and the understorey, including weedy species. These tend to be sparse, generally dominated by burgan (*Kunzea ericoides*), a known indigenous colonising species. This strip of habitat is generally isolated in the landscape, with the trees relatively young in appearance there are minimal hollows present. Furthermore, there is also minimal habitat cover available in the understorey. Although this section may provide some habitat value as a stepping stone within the landscape, it is likely to be utilised by common bird species.

The section of the project area between the Tunnel 8 exit and Tunnel 7 entrance on the north side of the channel abuts a large patch of vegetation that is continuous with Pauls Range and Toolangi State Forest. This area north of the channel is generally lacking trees, which is due to management of the aqueduct, plus the 2009 Black Saturday bushfires which impacted the area. Numerous eucalypts are regenerating

following the fires, mainly on the outer edge of the reserve, away from the aqueduct. There are also numerous logs from burnt trees that have fallen. This area provides some habitat value for fauna that utilise the adjacent habitat connected to Pauls Range and Toolangi State Forest, but as there are minimal trees, the fauna likely to use the habitat are ground-dwelling fauna, such as wombats, black wallaby (*Wallabia bicolor*), antechinus (*Antechinus spp.*) and native and exotic rat species (*Rattus spp.*).

3.3 (b) Hydrology, including water flows

The aqueduct runs in a general east-west alignment across the landscape at a gradually sloping grade to transfer water. To transfer water through high points, tunnels were created through hills, and in valleys and beneath waterways, siphon pipes and inlets and outlets were installed. The areas within the project area that are being abandoned are the open channel and a tunnel. The open channel also includes a catch-drain that runs parallel on the up side of the aqueduct to trap any overland flow to minimise run-off and contaminants entering the aqueduct and water supply. These catch drains lead to culverts that drain overland flow across the aqueduct at regular intervals.

The decommissioning of the aqueduct has been designed to recreate the natural overland flow that existed in the landscape prior to the aqueduct. However, the method is required to be modified behind Balgownie Estate to mitigate flooding during a storm event, as the current aqueduct channel retards and captures flood water. A drainage pipe installed within the aqueduct will capture and divert stormwater mitigating the risk of flooding to Balgownie Estate property.

The siphon pipes under Dixons Creek and Pauls Creek are currently being removed and replaced with a new pipe. Both waterways where the existing pipes are being replaced are considered to be degraded and modified. In particular, Dixons Creek within the project area is dominated by willows (*Salix spp.*) and contains little native riparian vegetation or in-stream vegetation. Pauls Creek has also been modified at the intersection of the project area, and has historically been lined with concrete to support the pipes, which are exposed in the channel of the waterway.

Both waterways drain into the Yarra River approximately 2 km south of the project area. Dixons Creek drains into the Yarra River via Steeles Creek, passing immediately east of the Yarra Glen township. Pauls Creek, which is ephemeral, in flow will generally flows in a north–south direction, flowing into the Yarra River, and south of the Healesville - Yarra Glen Road.

3.3 (c) Soil and Vegetation characteristics

The soil types within the project area are predominantly highly compact yellow duplex Rudosols. These are predominantly shallow soils transitioning to hard unweathered rock within 600 mm of the surface. Local archaeological reports show that clay is identified at 500-600 mm depth. In close proximity to waterways this can be expected to transition to alluvial brown silty soils.

Vegetation is dominated by indigenous species, thatch saw-sedge at the eastern end of the alignment and kangaroo grass, thatch saw-sedge and native raspberry (*Rubus parvifolius*) west of Tunnel 7. The patches on the north of the channel are high in stature compared to the south side, as no mowing occurs as access is not available. The vegetation has varying weed cover, but is generally moderate (at least 25 per cent); and is predominately phalaris and blackberry. The north side of the channel also contained a variety of herbs and forbs, including the nationally listed matted flax-lily, often where less weeds and biomass were present.

The south side of the channel is currently used for maintenance vehicles and appears to be regularly slashed and the structure of the vegetation is low. Between the channel and the access track, the vegetation consists of high cover of kangaroo grass, generally above 70 per cent cover. Some lilies and orchids are present, although the majority had completed flowering and fruiting and were beginning to

die back. Some species that were identifiable included sun-orchids, a small tongue orchid (*Cryptostylis leptochila*), chocolate lily and milkmaids.

One matted flax-lily was recorded on the south side of the channel. This individual is also the only record east of Tunnel 7. The plant was located at a bend in the channel on what appeared to be fill. There is only minimal vegetation present as the location had little to no top soil. The individual may have been transported in fill from a nearby location; however, this is difficult to confirm.

3.3 (d) Outstanding natural features

The project area is in a semi-rural setting and whilst in relative proximity to a number of national and state parks, the immediate area is considered to be within a disturbed land context. Consequently, the project area is not subject to any outstanding natural features.

3.3 (e) Remnant native vegetation

A total of 4.903 ha of remnant vegetation was recorded within the aqueduct reserve. As noted above, the vegetation is largely removed of trees and shrubs, present as modified vegetation, though considered in a good state due to the lack of weeds and high cover and diversity of native understorey species.

On the north side of the channel, the vegetation contains significantly more weeds, plus scattered indigenous trees and shrubs. This area is not able to be maintained as regularly due to poor access and steep terrain. On the south side, where an access track is present south of the open channel, the vegetation is regularly mown.

Remnant vegetation was found to be representative of predominately modified grassy forest Ecological Vegetation Classes (EVCs). The majority of native vegetation will be retained in the project area following the modification of design to retain matted falx-lily. A total of 1.708 ha of remnant vegetation is proposed to be removed, therefore avoiding impacts to 3.195 ha of vegetation within the open channel aqueduct area.

3.3 (f) Gradient (or depth range if action is to be taken in a marine area)

The decommissioning of the aqueduct will occur in the aqueduct corridor which follows a gradually declining gradient across the hilly landscape in the foothills of the Kinglake Ranges. The project area often contains a cross-fall over the construction corridor.

3.3 (g) Current state of the environment

The project area is located on a landform described as low hills (relative relief 30-90 m) within the Eastern Uplands geomorphological unit. Today the region is largely cleared with an emphasis on crops for viticultural and agricultural use.

The Melbourne Water land of the project area initially underwent development in the early 1890s and has experienced ongoing maintenance since this period. The construction of the existing aqueduct has generated a moderate level of ground disturbance to sections of the project area. Continued maintenance has further contributed to these disturbances within the area.

Ecological reports of the area have also identified a number of pest species including blackberry, phalaris (*Phalaris aquatica*), exotic rat species (*Rattus spp.*) and rabbits (*Oryctolagus cuniculus*).

3.3 (h) Commonwealth Heritage Places or other places recognised as having heritage values

N/A

3.3 (i) Indigenous heritage values

Ethnographic observations indicate that the project area is located within the traditional lands of the Woi wurrung language group. The Woi wurrung clan most closely associated with the project area were the Wurundjeri, who principally identified with the Yarra and Plenty Rivers.

The project area encompasses land within 200 m of Pauls Creek and Dixons Creek. Therefore, the project area is located within an area of cultural heritage sensitivity, as defined in Regulation 23 (1) of the Aboriginal Heritage Regulations 2007 (Vic). Resultantly, a Cultural Heritage Management Plan was prepared for this area for the scope of the project. This indicated that the landscape features with the highest potential for archaeological sites in the region are waterways and elevated rises, with artefact scatters the most likely site type. During the archaeological survey, VAHR 7922-1026 was identified, the site comprising of a scatter with quartz (3), silcrete (1) and hornfels (1), located on a gentle slope to the northwest of Dixons Creek.

Ground surfaces within the existing Maroondah Aqueduct and road reserves within the project area appear to have been heavily disturbed by prior land use. There is a much lower likelihood for intact archaeological deposits within these sections of the project area. Furthermore, the rehabilitation works on the aqueduct do not pose any risks to the artefact scatter (VAHR 7922-1026) given its location away from the decommissioning activities.

3.3 (j) Other important or unique values of the environment

Kinglake National Park is approximately 20km north-west of the project area, whilst Pauls Range and Toolangi State Forest is approximately 10km north-east of the project area. Warrandyte-Kinglake Nature Conservation Reserve is approximately 7km west of the project area whilst the Yarra Ranges National Park is approximately 7km east.

Despite the proximity of unique values of the environment, the activities for the decommissioning of the aqueduct will not impact these areas.

3.3 (k) Tenure of the action area (e.g. freehold, leasehold)

The action area is a combination of freehold and leasehold land. Sections to the north of the aqueduct are owned by the Melbourne Water Corporation, whilst other parcels of land are privately owned.

3.3 (l) Existing uses of area of proposed action

The project area includes Melbourne Water (MW) land, private agricultural land and road reserve. The majority of the project area fits within a 'Green Wedge Zone' as stipulated by the Yarra Ranges Council Planning Scheme.

Uses surrounding the area include small scale agricultural, low density residential and commercial premises. The project area itself is currently used as an aqueduct which is being decommissioned due to safety concerns.

3.3 (m) Any proposed uses of area of proposed action

Currently, the area adjacent to the existing aqueduct is undergoing works for the installation of the replacement pipeline, which will be finalised prior to works for the decommissioning taking place. There is no other current Structure or Precinct Plans relevant to this area demonstrating other proposed uses.

4 Environmental outcomes

In addition to the protection measures included in Section 5 to protect the nationally significant matted flax-lily, the project offers the following environmental benefits.

Melbourne Water is committed to making the aqueduct safe to their personnel, the public, wildlife and stock. Currently, wildlife are regularly trapped and drowned within the aqueduct, which has also become a risk to maintenance workers retrieving animals and a risk to the water quality of drinking water. The proposal to decommission the aqueduct through backfilling, will allow safe passage of wildlife across the aqueduct channel.

Furthermore, in addition to protection of the matted flax-lily, the loss of native vegetation has been significantly minimised. A total of 4.903 ha of native vegetation is present in the project area for decommissioning. Through avoiding impacts to matted flax-lily, native vegetation impacts have also reduced by 3.195 ha, with a total of 1.708 ha of native vegetation being impacted.

The execution of the decommissioning works in this manner will enable the environment to be maintained for the remaining matted flax-lily's, allowing for them to continue to thrive throughout the area.

5 Measures to avoid or reduce impacts

The aim of this project is for the existing aqueduct to be filled to a level to provide a safe environment and allow surface water drainage that does not increase the risk or impact of flooding to properties and businesses on the downhill side of the aqueduct.,These fill activities have been carefully tailored in consultation with construction operators in order to protect as many of the matted flax-lillies as possible.

The presence of the matted flax-lily within the project area requires protection due to its state and national listing. A total of 157 were found on the north side of the existing aqueduct, whilst one was located on the south side.

Acknowledging that the environmental sensitivity of the landscape varies across the decommissioning project area, three separate designs are to be implemented to mitigate against the potential for adverse impacts:

- Standard method;
- Flood mitigation-Balgownie Estate;
- Preservation of matted flax-lily.

Standard method

The standard methodology is to be utilised for the majority of the project area to achieve the required safety and drainage requirements. This method involves the backfilling the open channel sections through re-use of spoil removed for the installation of the pipeline where adjacent to the alignment and/or through cutting down the adjacent vehicle maintenance track on the low side of the hill will to re-establish natural drainage as much as possible.

Flood mitigation–Balgownie Estate

For the section behind Balgownie Estate (western portion of the works area), the standard method will be applied, with a maximum 1300 mm drainage pipe will be installed within the existing channel to capture drainage from the above catchment to divert stormwater from adjacent buildings during a flood event. The adjacent access track will be graded down to backfill around the pipe.

Preservation of matted flax-lily

Where matted flax-lily is present, the level of backfill will be limited to within the existing concrete-lined aqueduct. This will prevent impacts to matted flax-lily and native vegetation that occurs on the north side of the aqueduct. This method requires significant reduction in the height of the access track and removal of vegetation that occurs on the south side of the aqueduct to be able to drain water away from the backfilled channel and reduce health and safety risk to people, wildlife and stock.

It should be noted that two outlying individuals are present that are likely to be impacted by works. These individuals are located in areas where construction activities and works are required to direct drainage as part of flood mitigation works.

The presence of the majority of the species on the north side of the corridor has then required modifications to the preferred way to decommission the aqueduct. Two main design changes have been:

1. The height of the backfill within the channel has been dropped to 150 mm below the concrete lining. This will allow a clearance between works and the plants to install physical barriers and work safely to minimise accidental impacts to matted flax-lily.
2. The access track and areas to the south of the channel will be cut down further to protect the matted flax-lily and achieve the required drainage through restoring the overland flow.

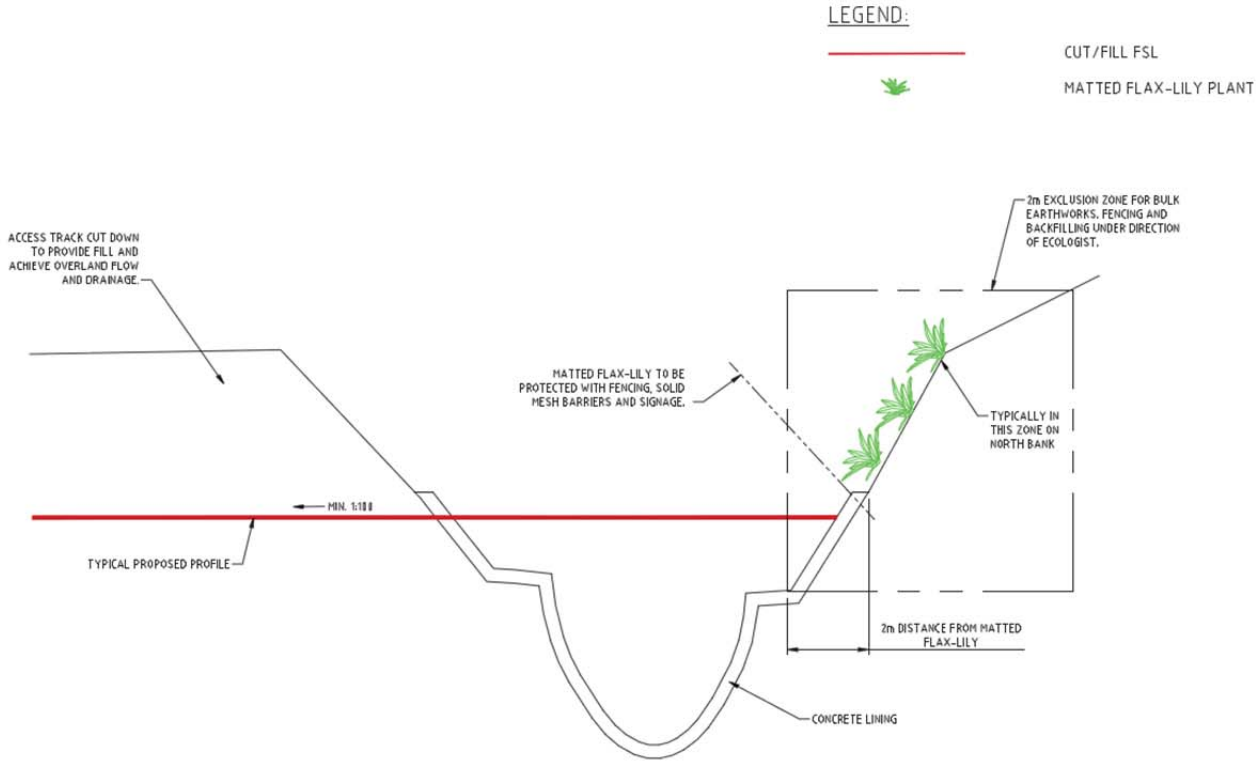
Construction methodology

Melbourne Water also consulted with the construction contractors to develop a construction method to protect the matted flax-lily individuals, when back-filling occurs adjacent to the records. Overall, matted flax-lily will be protected with sturdy and visible fencing and protective barricading and back-filling will occur in a two staged process, larger machinery for the bulk of back-filling will occur up to 2 m from the nearest matted flax-lily. Within 2 m to 150 mm below the top of concrete, smaller and mobile machinery, and hand tools will be used to back-fill. These works will be supervised by an ecologist.

Where matted-flax lilies' are present, the following process is to be implemented with barricading installed prior to any earthworks along the aqueduct alignment and inspected on a daily basis by the environmental coordinator prior to works:

1. Ecologist to mark out the location of matted flax lilies.
2. A physical barricade placed at a minimum offset of 2 metres and completely surrounding the plant/s consisting of:
    a. 1.8 metre star pickets driven at a maximum of 4 metre centres;
    b. Corner assemblies of 1.8 m star pickets driven at 45^0 and fixed to corner pickets using tie wire;
    c. 2.5mm medium tensile wire to be installed at approximately 50mm and 950mm above natural ground and tensioned adequately using wire strainers, gripples or similar;
    d. Fabric type 900mm barrier mesh or silt fence to be fixed to top and bottom wires using jambro fastner or similar;
    e. A sign with the words: 'MATTED FLAX LILY: DO NOT DISTURB' is placed on the barricading where it is clearly visible;
    f. Star picket caps are placed on all-star pickets.
3. Bulk earthworks commence to re-profile aqueduct access track, back-fill the channel and install drainage pipes.
4. Where works need to occur within the 2 metre exclusion zone of matted flax lily site specific controls will be put in place in consultation with the environmental coordinator and under supervision of the ecologist. These will consist of a:
    a. A wire cage with a weld mesh top (opening <25mm) being placed over the plant/s in the exclusion zone;
    b. Section of the protection fence being removed to facilitate the works;
    c. Fit for purpose machine being used to complete the profiling with in the exclusion zone (i.e. 3 tonne excavator under ecologist supervision, hand tools);
    d. Section of the protection fence being reinstated when the works are complete or at the end of each day;
    e. Wire cage being removed of matted flax lily plant/s.

The proposed protection measures to be implemented where matted flax-lilies are present during decommissioning is indicated in the below cross-section. The red-line marked in the cross section is the limit of fill for sections of the aqueduct where matted flax-lily occur.



MATTED FLAX-LILY IN TYPICAL CROSSECTION
N.T.S.

Where pruning is considered necessary by the ecologist, the ecologist will prune leaves overhanging the concrete lining. Pruning will be completed to the minimum extent necessary and is limited to the leaves only. Critical roots and soil disturbance, which is required for plant viability, will not be impacted. Pruning of occasional matted flax-lily plants has been discussed with Alan Webster of the Victorian Department of Environment, Land, Water and Planning, who agreed that pruning will not impact the plant, noting that the species is often burnt and grazed and leaf pruning will reflect natural conditions (A. Webster pers. comm.).

It has been identified that two matted flax-lily's would not be able to be avoided due to their location and the specific construction requirements. Of the two plants to be affected, both were considered outliers in the survey undertaken, one of these was also not able to be found again in subsequent surveys of the area.

Whilst these will be lost, the protection measures and ability to avoid impacts on the remaining 156 demonstrate that the decommissioning activity will not lead to a long-term decrease in the size of the population throughout this region, nor will it have an impact on the area of occupancy of the species as both plants to be impacted were seen to be outliers in the first instance. Existing groups within the overall population will not be fragmented into two and therefore the quality of the matted flax-lily and its survival ability will not be affected.

These measures will be defined in a project 'Site Environmental Plan' for the project area which will be provided to all contractors operating on site. This will provide clear, detailed information on the locations of matted flax-lily and protection measures in place for protecting the matted flax-lily's and specific personnel and other avenues of contact if any issues are to arise. Each staff member or contractor working on the decommissioning works will attend a briefing by the ecologist on the matted flax-lily and the protection measures included above.

Monitoring and reporting

The matted flax-lily protection measures will be checked daily prior to works, when works are occurring within the vicinity of matted flax-lily (<20 m). The checks will include functionality (visible and stability) of the fencing and signage. When working within close proximity to the matted flax-lily (within 2 m bulk earthworks exclusion zone), the ecologist will check the fencing and controls daily prior to works.

Weekly environmental inspections will also be undertaken by the environmental coordinator, which will include matted flax-lily. Details of inspections will be mainained by the construction contractor and reported to Melbourne Water on a monthly basis.

6 Conclusion on the likelihood of significant impacts

6.1 Do you THINK your proposed action is a controlled action?

✓	No, complete section 6.2
	Yes, complete section 6.3

6.2 Proposed action IS NOT a controlled action.

Based on the significant impact guidelines (DoE 2013) the activity is not likely to have a significant impact on the matted flax-lilies as:

- A maximum of two individuals will be impacted by the works
- There have been alterations to design and the construction methodology to avoid 156 of 158 plants
- Extensive protection measures have been put in place and will be communicated to all personnel operating throughout the project area
- A program for monitoring and reporting has been identified and will continually check the activities, so there are no additional adverse impacts
- There will not be a long-term decrease in the size of a population, nor reduction in the area of occupancy of the species or interfere with the recovery of the species.
- The activities will not fragment an existing population into two or more populations, adversely affect habitat critical to the survival of a species, or disrupt the breeding cycle of a population
- Decommissioning of the aqueduct will not modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. The two plants that will be impacted by works are a small proportion of the overall population (1%).
- The activities will not result in invasive species that are harmful to a critically endangered or endangered species becoming established in the matted flax-lily habitat, nor will it be likely that the activities will introduce disease that may cause the species to decline. Measures will be implemented during works to minimise the spread of disease and weed species, such as washdown of vehicles, machinery and boots.

6.3 Proposed action IS a controlled action

	Matters likely to be significantly impacted
	World Heritage values (sections 12 and 15A)
	National Heritage places (sections 15B and 15C)
	Wetlands of international importance (sections 16 and 17B)
	Listed threatened species and communities (sections 18 and 18A)
	Listed migratory species (sections 20 and 20A)
	Protection of the environment from nuclear actions (sections 21 and 22A)
	Commonwealth marine environment (sections 23 and 24A)
	Great Barrier Reef Marine Park (sections 24B and 24C)
	A water resource, in relation to coal seam gas development and large coal mining development (sections 24D and 24E)
	Protection of the environment from actions involving Commonwealth land (sections 26 and 27A)
	Protection of the environment from Commonwealth actions (section 28)

☐ Commonwealth Heritage places overseas (sections 27B and 27C)

7 Environmental record of the person proposing to take the action

		Yes	No
7.1	**Does the party taking the action have a satisfactory record of responsible environmental management?** **Provide details** Melbourne Water has an established Environmental Stewardship Policy (Melbourne Water Corporation 2013) which is publically available at: http://www.melbournewater.com.au/aboutus/whoweare/Legislationandpolicies/Documents/Environmental-stewardship-policy.pdf . Melbourne Water is committed to protecting, conserving and improving natural assets and using natural resources sustainably. Our Environmental Stewardship Policy specifies actions and outcomes to achieve maximum net environmental benefits to society and to promote sustainable resource management and use. Melbourne Water's Environment Policy supports Our Strategic Direction, which formalises Melbourne Water's commitment to a sustainable water future and links our programs to relevant Government policy platforms such as Melbourne 2030 and Our Environment Our Future (Melbourne Water Corporation 2016a). Melbourne Water's Environmental Management System is based on the International Standard AS/NZS ISO 14001:2004 and makes reference to our 'Integrated Management System Manual'. Melbourne Water's Integrated Management System manual sets out to combine, where possible, the common elements of Quality, Safety, Environment and Public Health, and Product Quality Management Systems (including risk management). It outlines the minimum requirements for Melbourne Water to achieve its vision of "Enhancing Life and Liveability" by, providing safe and high quality products and services to our customers, enhancing the value of our natural and cultural assets, and a commitment to achieve zero harm in the workplace, where the safety of people is paramount and people can count on a healthy safe and supportive work environment. The establishment and maintenance of the Environmental Management System underpins Melbourne Water's commitment to continual improvement in environmental performance. Melbourne Water provides annual Sustainability Reports detailing its performance, which are published on the corporation's website. Melbourne Water further provides ongoing monitoring and reporting of listed species and water quality to the Department of the Environment and Energy under existing audit requirements (EPBC 2002/688, EPBC 2008/3960, EPBC 2008/4221 and EPBC 2011/5992).	✓	
7.2	**Provide details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:** **(a) the person proposing to take the action, or** **(b) if a permit has been applied for in relation to the action - the person making the application.**	✓	

If yes, provide details

In 2000/01 Melbourne Water received two Penalty Infringement Notices for litter and odour related to the discharge of effluent to Bass Strait from Eastern Treatment Plant.

In 2005/06 Melbourne Water received two Penalty Infringement Notices for pollution and late notification related to a failure of a sludge supernatant pump at Eastern Treatment Plant.

In 2005/06 aluminium sulphate (alum) from the Winneke water treatment plant lost to Sugarloaf Creek at Christmas Hills was identified and contained in November 2005. The cause was a leaking chemical pipeline that went undetected because it was within a wall cavity at the plant. The leak is likely to have occurred for many weeks before being realised and finally resulted in a blue colouration to the creek water and a small number of dead fish in Watsons Creek. EPA Issued a Clean Up Notice for this incident.

In 2005/06 fluorosilicic acid (a liquid form of fluoride) from the Cardinia water treatment plant was lost to Cardinia Creek at Beaconsfield. The cause was a leaking chemical pipeline within a part of the plant that was out of service at the time of the incident. The leak occurred intermittently over a period of 3 weeks before it was identified and stopped. Inspection of the creek revealed no sign of fish deaths.

These two offences were heard together in the Magistrates' Court on 29 August 2007 with both found proven without a conviction recorded against Melbourne Water. Melbourne Water was required to make contributions to an environmentally relevant community project totalling $150,000 and also had to pay for the EPA's technical reports and its legal costs.

In 2006/07 Melbourne Water was issued a Pollution Abatement Notice to manage the remediation of the Dandenong Wastewater Treatment Plant. Melbourne Water inherited this plant from a previous organisation. The remediation work has now been completed.

KBR has not been subject to proceedings under any Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources

7.3	**If the person taking the action is a corporation, please provide details of the corporation's environmental policy and planning framework and if and how the framework applies to the action.**	✓	

	Melbourne Water's Environment Policy is available at http://iwww.melbwater.com.au/index/policy/policies/policy_environment.htm Yes. Melbourne Water's Environmental Management System covers all activities, sites and persons working for or on behalf of Melbourne Water in respect to its environmental obligations, including the current proposed action. Melbourne Water implements much of its capital works, mechanical and electrical maintenance requirements in alliance partnerships where members may have their own environment management tools. Melbourne Water's Integrated Management System manual sets out to combine the common elements of ISO 14001 Environmental Management System, ISO 9001 Quality Management System, and AS/NZ 4801 Occupational Health and Safety Management Systems, ISO 31000 Risk Management – Principles and Guidelines and ISO 22000 Food Safety Management System and the HACCP Codex Alimentarius principles. The Integrated Management System comprises certified management systems for safety, environment, quality and product quality, and also additional systems for assets, emergencies, security and risk. Each of these systems contributes towards achieving Melbourne Water's environmental performance improvement, supporting the role of the Environmental Management System (Melbourne Water Corporation 2016b).		
7.4	**Has the party taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?**		

Provide name of proposal and EPBC reference number (if known)

Melbourne Water have previously referred actions or been responsible for undertaking actions under the EPBC Act. Below is a list of referrals which occurred after 2010.

Ref. No.	Project Title	Outcome
2017/7893	Cockatoo Swamp Environmental Watering, Yellingbo NCR	Currently no decision,
2016/7822	Jacana Wetlands Rectification	Not a controlled action if undertaken in a particular manner.
2016/7671	Colchester Road Retarding Basin Upgrade, Kilsyth South, Victoria	Not a controlled action if undertaken in a particular manner.
2015/7619	WTP Effluent Discharge Improvement Works	Not a controlled action
2015/7515	Melbourne Water WTP Stage 2 Capacity Augmentation Project	Not a controlled action
2014/7313	WTP Stage 1 Augmentation	Not a controlled action if undertaken in a particular manner.
2014/7156	Kayes Drain drainage works	Not a controlled action
2013/6939	WTP: Sludge drying pan refurbishment	Not a controlled action if undertaken in a particular manner.
2013/6719	Kew: North Branch Sewer Upgrade	Not a controlled action
2012/6678	Seaford Wetlands Hydrology Works	Not a controlled action if undertaken in a particular manner.
2011/5992	Bunyip Main Drain Bank Rehabilitation Works	Approved with conditions.
2011/5926	Edithvale Wetlands Bird Hide Repairs, Vic.	Not a controlled action
2011/5921	WTP: Class C Recycled Water Supply Reliability Improvement	Not a controlled action if undertaken in a particular manner.
2010/5654	Mordialloc Creek: Wetland Lot 4 Governor Road Braeside	Not a controlled action
2010/5641	Replace the existing weir at Dights Falls with a new weir and vertical slot fishway, Yarra River	Not a controlled action
2010/5626	Eastern side of Turntable Way, Caroline Springs: Modification of an artificial dam into a constructed wetland and water retarding basin	Not a controlled action
2010/5376	Upgrade to Eastern Treatment Plant	Not a controlled action

8 Information sources and attachments

(For the information provided above)

8.1 References

KBR 2016a, Maroondah Aqueduct Replacement, Flora and Fauna Report. Prepared by Kellogg, Brown & Root Pty Ltd for the Melbourne Water Corporation, Melbourne.

KBR 2016b, Maroondah Aqueduct Replacement - Matted Flax-lily Supplementary Field Survey. Letter report prepared by Kellogg, Brown & Root Pty Ltd for the Melbourne Water Corporation, Melbourne.

Melbourne Water Corporation (2013) 'Environmental Stewardship Policy'. Internal document, Melbourne Water, version 1, November 2014, http://www.melbournewater.com.au/aboutus/whoweare/Legislationandpolicies/Documents/Environmental-stewardship-policy.pdf

Melbourne Water Corporation (2016a) Our Strategic Direction. Melbourne Water, Melbourne, http://www.melbournewater.com.au/aboutus/whoweare/ourvision/Pages/Our-vision-and-values.aspx

Melbourne Water Corporation (2016b) 'Environmental Management System Manual'. Internal document, Melbourne Water, July 2016.

8.2 Reliability and date of information

Melbourne Water has based the proposed impacts on matted flax-lily on the best available information. There is a high confidence in the data supplied to determine impacts, as the species was surveyed over consecutive flowering periods. In addition, the 2016 targeted survey for the matted flax-lily was completed following a wet spring in the region (KBR 2016b), which provides further confidence that matted flax-lily were flowering and visible at the time of survey.

8.3 Attachments

		✓ attached	Title of attachment(s)
You must attach	figures, maps or aerial photographs showing the locality of the proposed action (section 1)	✓	Attachment 1 - Locality and Vegetation impact maps
	GIS file delineating the boundary of the referral area (section 1)	✓	
	figures, maps or aerial photographs showing the location of the proposed action in respect to any matters of national environmental significance or important features of the environments (section 3)		
If relevant, attach	copies of any state or local government approvals and consent conditions (section 2.5)		
	copies of any completed assessments to meet state or local government approvals and outcomes of public consultations, if available (section 2.6)		

copies of any flora and fauna investigations and surveys (section 3)	✓	Attachment 2 - Maroondah Aqueduct Replacement, Flora and Fauna Report (KBR 2016a) Attachment 3 - Maroondah Aqueduct Replacement - Matted Flax-lily Supplementary Field Survey (KBR 2016b)
technical reports relevant to the assessment of impacts on protected matters that support the arguments and conclusions in the referral (section 3) conclusions in the referral (section 3 and 4)		
report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)		

9 Contacts, signatures and declarations

Proposed action title: Maroondah Aqueduct Replacement Project–aqueduct decommissioning

9.1 Person proposing to take action

Name and Title:	John Sheils, Senior Project Manager, Capital Delivery
Organisation:	Melbourne Water Corporation
ACN / ABN:	81 945 386 953
Postal address:	990 Latrobe Street, Docklands 3008
Telephone:	(03) 9679 7630
Email:	john.sheils@melbournewater.com.au

COMPLETE THIS SECTION ONLY IF YOU QUALIFY FOR EXEMPTION FROM THE FEE(S) THAT WOULD OTHERWISE BE PAYABLE

I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:

- □ an individual; OR
- □ a small business entity – aggregated turnover is less than $2million for the previous income year (as prescribed within section 328-110 (other than subsection 328-119 (4)) of the *Income Tax Assessment Act 1997*); OR
- □ a small business entity – aggregated turnover for the current financial year is likely to be less than $2million (note that aggregated turnover for one of the previous two income years must also be less than $2million) (as prescribed within section 328-110 (other than subsection 328-119 (4)) of the *Income Tax Assessment Act 1997*) (Cth)).
- ✓ not applicable.

If you are small business entity you must provide the Date/Income Year that you became a small business entity:

COMPLETE THIS SECTION ONLY IF YOU WOULD LIKE TO APPLY FOR A WAIVER

I would like to apply for a waiver of full or partial fees under regulation 5.21A of the EPBC Regulations. Under

- ✓ not applicable.

regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made:

Declaration:

I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct.
I understand that giving false or misleading information is a serious offence.
I declare that I am not taking the action on behalf of or for the benefit of any other person or entity.

Signature:  **Date**: 4 May 2017

9.2 Designated proponent

Name of proposed proponent:

If the name of the proposed proponent is not the same person as named at item 1 of section 9.1 above, please complete all of the below fields in section 9.2.

ACN / ABN (if applicable):

Postal address:

Telephone:

Email:

Declaration by the proposed proponent:

I ....., the proposed proponent, consent to the proposed designation of myself as the proponent for the purposes of the action described in this referral.

Signature : **Date**:

Declaration by the person proposing to take the action:

I ....., the person proposing to take the action, consent to the proposed designation of..... as proponent for the purposes of the action described in this referral.

Signature : **Date**:

9.3 Person preparing the referral information (if different from section 9.1)

Individual or organisation who has prepared the information contained in this referral form.

Name:	Adam Rigg
Title:	Senior Ecologist
Organisation:	Kellogg, Brown & Root Pty Ltd (KBR)
ACN / ABN (if applicable):	ABN 48 418 909 355
Postal address:	Level 3/441 St Kilda Road, Melbourne 3004
Telephone:	03 9828 5421
Email:	adam.rigg@kbr.com
Declaration:	I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct. I understand that giving false or misleading information is a serious offence.

Signature: 

Date: 4 may 2017

REFERRAL CHECKLIST

HAVE YOU:

- ❑ Completed all required sections of the referral form?
- ❑ Included accurate coordinates (to allow the location of the proposed action to be mapped)?
- ❑ Provided a map showing the location and approximate boundaries of the project area for the proposed action?
- ❑ Provided a map/plan showing the location of the action in relation to any matters of NES?
- ❑ Provided a digital file (preferably ArcGIS shapefile, refer to guidelines at Attachment A) delineating the boundaries of the referral area?
- ❑ Provided complete contact details and signed the form?
- ❑ Provided copies of any documents referenced in the referral form?
- ❑ Ensured that all attachments are less than three megabytes (3mb)?
- ❑ Sent the referral to the Department (electronic and hard copy preferred)

Geographic Information System (GIS) data supply guidelines

If the area is less than 5 hectares, provide the location as a point layer. If the area greater than 5 hectares, please provide as a polygon layer. If the proposed action is linear (eg. a road or pipeline) please provide a polyline layer.

GIS data needs to be provided to the Department in the following manner:

- Point, Line or Polygon data types: ESRI file geodatabase feature class (preferred) or as an ESRI shapefile (.shp) zipped and attached with appropriate title
- Raster data types: Raw satellite imagery should be supplied in the vendor specific format.
- Projection as GDA94 coordinate system.

Processed products should be provided as follows:

- For data, uncompressed or lossless compressed formats is required - GeoTIFF or Imagine IMG is the first preference, then JPEG2000 lossless and other simple binary+header formats (ERS, ENVI or BIL).
- For natural/false/pseudo colour RGB imagery:
    - If the imagery is already mosaiced and is ready for display then lossy compression is suitable (JPEG2000 lossy/ECW/MrSID). Prefer 10% compression, up to 20% is acceptable.
    - If the imagery requires any sort of processing prior to display (i.e. mosaicing/colour balancing/etc) then an uncompressed or lossless compressed format is required.

Metadata or 'information about data' will be produced for all spatial data and will be compliant with ANZLIC Metadata Profile. (http://www.anzlic.org.au/policies_guidelines#guidelines).

The Department's preferred method is using ANZMet Lite, however the Department's Service Provider may use any compliant system to generate metadata.

Privacy and Confidentiality Notice

The Department is required under section 74(3) of the *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**) to publish the information (including personal information of the author and/or third parties) provided in this referral on the internet. The information published may include your personal information.

Information including your personal information included in this referral will be used for the purposes of administering the EPBC Act. The information may be provided to various Commonwealth, State and Territory agencies for the purposes of administering the Act or other Commonwealth, State or Territory legislation. For example, if the proposed action (or a component of it) is to be taken in the GBRMP, the Minister is required to provide a copy of your referral to GBRMPA (see section 73A, EPBC Act). For information about how the GBRMPA may use your information, see http://www.gbrmpa.gov.au/privacy/privacy_notice_for_permits.

The Department will collect, use, store and disclose the personal information contained in this referral in a manner consistent with its obligations under the *Privacy Act 1988* and the Department's privacy policy.

The Department's privacy policy contains details about how respondents may access and make corrections to personal information that the Department holds about the respondent, how respondents may make a complaint about a breach of an Australian Privacy Principle, and how the Department will deal with that complaint.

A copy of the Department's privacy policy is available at: http://environment.gov.au/privacy-policy.

The Department is not obliged to publish information that the Minister is satisfied in commercial-in-confidence. If you believe that this referral contains information that is commercial-in-confidence, you must clearly identify such information and the reason for its confidentiality at the time of making the referral. The Minister cannot be satisfied that particular information included in a referral is commercial-in-confidence unless you demonstrate to the Minister (by providing reasons in writing) that:

- release of the information would cause competitive detriment to the person; and
- the information is not in the public domain; and
- the information is not required to be disclosed under another law of the Commonwealth, a State or a Territory; and
- the information is not readily discoverable.

The Department is subject to certain legislative and administrative accountability and transparency requirements of the Australian Government including disclosures to the Parliament and its Committees. While the Department will treat all referral information provided in this referral sensitively, any information contained in or relating to a referral, including information identified by a person as commercial-in-confidence, may be disclosed by the Department:

- to its employees and advisers in order to evaluate or assess a referral;
- to the Parliamentary Secretary;
- within the Department or other agencies where this serves the legitimate interest of the Australian Government;
- in response to a request by a House or Committee of the Parliament of the Commonwealth of Australia;
- where information is authorised or permitted by law to be disclosed; and
- where the information is in the public domain other than by the Department's disclosure of that information.