REFERRAL OF A PROJECT FOR A DECISION ON THE NEED FOR ASSESSMENT UNDER THE *ENVIRONMENT EFFECTS ACT 1978*

REFERRAL FORM

The *Environment Effects Act 1978* provides that where proposed works may have a significant effect on the environment, either a proponent or a decision-maker may refer these works (or project) to the Minister for Planning for advice as to whether an Environment Effects Statement (EES) is required.

This Referral Form is designed to assist in the provision of relevant information in accordance with the *Ministerial Guidelines for assessment of environmental effects under the Environment Effects Act 1978* (Seventh Edition, 2006). Where a decision-maker is referring a project, they should complete a Referral Form to the best of their ability, recognising that further information may need to be obtained from the proponent.

It will generally be useful for a proponent to discuss the preparation of a Referral with the Department of Transport, Planning and Local Infrastructure (DTPLI) before submitting the Referral.

If a proponent believes that effective measures to address environmental risks are available, sufficient information could be provided in the Referral to substantiate this view. In contrast, if a proponent considers that further detailed environmental studies will be needed as part of project investigations, a more general description of potential effects and possible mitigation measures in the Referral may suffice.

In completing a Referral Form, the following should occur:

- Mark relevant boxes by changing the font colour of the 'cross' to black and provide additional information and explanation where requested.
- As a minimum, a brief response should be provided for each item in the Referral Form, with a more detailed response provided where the item is of particular relevance. Cross-references to sections or pages in supporting documents should also be provided. Information need only be provided once in the Referral Form, although relevant cross-referencing should be included.
- Responses should honestly reflect the potential for adverse environmental effects. A Referral will only be accepted for processing once DTPLI is satisfied that it has been completed appropriately.
- Potentially significant effects should be described in sufficient detail for a reasonable conclusion to be drawn on whether the project could pose a significant risk to environmental assets. Responses should include:
    - a brief description of potential changes or risks to environmental assets resulting from the project;
    - available information on the likelihood and significance of such changes;
    - the sources and accuracy of this information, and associated uncertainties.
- Any attachments, maps and supporting reports should be provided in a secure folder with the Referral Form.
- A CD or DVD copy of all documents will be needed, especially if the size of electronic documents may cause email difficulties. **Individual documents should not exceed 2MB.**

- A completed form would normally be between 15 and 30 pages in length. Responses should not be constrained by the size of the text boxes provided. Text boxes should be extended to allow for an appropriate level of detail.
- The form should be completed in MS Word and not handwritten.

The party referring a project should submit a covering letter to the Minister for Planning together with a completed Referral Form, attaching supporting reports and other information that may be relevant. This should be sent to:

Postal address

Minister for Planning
GPO Box 2392
MELBOURNE VIC 3001

Couriers

Minister for Planning
Level 7, 1 Spring Street
MELBOURNE VIC 3001

In addition to the submission of the hardcopy to the Minister, separate submission of an electronic copy of the Referral via email to ees.referrals@dtpli.vic.gov.au is encouraged. This will assist the timely processing of a referral.

Melbourne Water

17 December 2013

Matthew Guy
Minister for Planning
GPO BOX 2392
MELBOURNE VIC 3001

Dear Mr Guy,

Re: Referral under the *Environment Effects Act 1978* - Water for a Growing West

Please find enclosed documentation to support a referral under the *Environment Effects Act 1978* in relation to Melbourne Water's Water for a Growing West pipeline project.

The project involves the construction of a new 17 km potable water transfer pipeline to connect St Albans and Cowies Hill reservoirs. This will improve water supply security for the cities of Brimbank, Melton and Wyndham.

The pipeline alignment has been selected based on the findings from flora, fauna, cultural heritage and geotechnical surveys. Constructability and engineering assessments, as well as extensive stakeholder consultation, were significant factors in planning for the project.

Melbourne Water has invested considerable time and effort to ensure the proposed project will avoid and minimise environmental effects wherever practicable, as well as minimising disturbance to affected landowners.

For your consideration we provide a duly completed Referral Form and supporting information in the following attachments:

- Mapping, including Locality Plan
- Options Assessment Summary Report
- Consolidated Ecological Impact Report
- Kororoit Creek Multi-criteria Assessment
- Aboriginal Cultural Heritage Management Plan (draft)
- Historical Heritage Assessment
- Summary of Stakeholder Engagement activities.

A hardcopy and CD version of the referral are also provided.

Should you have any queries regarding the project or on the information provided, please contact me directly, or alternatively contact Rebecca Hunt, KBR Senior Environmental Planner, on 03 9828 5232 or at rebecca.hunt@kbr.com

Yours faithfully

Peter Clark

PETER CLARK
SENIOR PROJECT MANAGER
MELBOURNE WATER

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State Government Victoria

PART 1 PROPONENT DETAILS, PROJECT DESCRIPTION & LOCATION

1. Information on proponent and person making Referral

Name of Proponent:	**Melbourne Water Corporation (Melbourne Water)**
Authorised person for proponent: **Position:** **Postal address:** **Email address:** **Phone number:** **Facsimile number:**	Peter Clark **Senior Project Manager** **PO Box 4342 Melbourne VIC 3001** peter.clark@melbournewater.com.au **03 9679 7502** **03 9679 7099**
Person who prepared Referral: **Position:** **Organisation:** **Postal address:** **Email address:** **Phone number:** **Facsimile number:**	Rebecca Hunt **Senior Environmental Planner** **Kellogg Brown & Root Pty Ltd (KBR)** **3/441 St Kilda Road, Melbourne VIC 3004** rebecca.hunt@kbr.com **03 9828 5232** **03 9820 0136**
Available industry & environmental expertise: (areas of 'in-house' expertise & consultancy firms engaged for project)	Melbourne Water has in-house experience in water infrastructure, planning, project development, project implementation, environmental management and consultation. Melbourne Water has engaged suitably qualified consultants to undertake a range of project investigations: • preliminary flora and fauna assessment - GHD Pty Ltd; • cultural heritage assessments - Australian Cultural Heritage Management (ACHM). • geotechnical investigations and engineering design – KBR Pty Ltd • supplementary terrestrial and aquatic flora and fauna assessment – KBR Pty Ltd • environmental assessment and management – KBR Pty Ltd.

2. Project – brief outline

Project title: Water for a Growing West (WGW) pipeline project

Project location: (describe location with AMG coordinates and attach A4/A3 map(s) showing project site or investigation area, as well as its regional and local context)

The project is located in Melbourne's western suburbs and comprises a 1.2 m diameter by 17 km long potable water supply pipeline running from St Albans to Tarneit (Werribee). A locality plan showing the project area and the local context is included in **Attachment A**.

The project area includes the temporary construction corridor, temporary construction laydown areas, the pipeline alignment and a permanent 5 m easement, where applicable.

The table below describes the AMG coordinates for key points along the pipeline alignment.

Name	X_Coordinate	Y_Coordinate
Station Road, St Albans	304266.4927	5819967.316
Kororoit Creek, Deer Park	302759.3299	5818539.965
Robinsons Road, Burnside	302465.6909	5818309.503
Western Highway, Burnside	302444.1541	5818072.068
Westwood Drive, Ravenhall	302364.7876	5817309.835
Ballarat Rail Corridor	302371.2139	5816936.756
Robinsons Road, Ravenhall	302335.8531	5816643.023
Riding Boundary Road, Ravenhall	302243.4778	5816062.922
Robinsons Road, Derrimut	302150.3565	5814629.801
Middle Road, Derrimut	302132.6469	5814426.491
Christies Road, Truganina	300531.4547	5814559.438
Middle Road, Truganina	298742.3245	5814720.976
Skeleton Creek, Truganina	298128.1158	5814138.284
Derrimut Road, Tarneit	297139.15	5813198.934
Dry Creek, Tarneit	295872.8767	5811998.245
Dohertys Road, Tarneit	295681.4035	5811817.037
Tarneit Road, Tarneit	295375.5179	5811583.838
Tarneit Road, Tarneit	295239.2737	5810321.173
Leakes Road, Tarneit	295495.5383	5810190.612
Cowies Hill Transfer Point	295523.6793	5809569.739

Short project description (few sentences)**:**

As noted above, the project comprises 1.2 m diameter by 17 km long, buried potable water supply pipeline running from St Albans to Tarneit (Werribee).

The project is the second stage of Melbourne Water's Wyndham transfer capacity augmentation program, which is designed to meet potable water supply demands in the rapidly developing outer west of Melbourne.

The overall program comprises a 19.6 km potable water supply pipeline connection from St Albans Reservoir to the Cowies Hill Reservoir in Tarneit. The first 2.6 km section of the pipeline was completed in 2009 and this project will complete the connection.

3. Project description

Aim/objectives of the project (what is its purpose / intended to achieve?):

The purpose of the project is to complete the potable water supply connection between Melbourne Water's St Albans and Cowies Hill Reservoirs. This will then provide a dual supply system to Cowies Hill and enable Melbourne Water to continue to meet its bulk water supply service level obligations for flow and pressure to City West Water.

Background/rationale of project (describe the context / basis for the proposal, e.g. for siting):

The recent expansion of the Melbourne Urban Growth Boundary (UGB) provides for significant development in the western growth area. Potable water supply to this area is supplied from the Cowies Hill Reservoir and the peak day demand is forecast to exceed the current transfer capacity to the reservoir. The proposed pipeline will create a dual supply system to Cowies Hill, which will improve security of supply and increase the water transfer capacity.

The project area has been selected based on the findings from flora, fauna, cultural heritage and geotechnical surveys. Constructability and engineering assessments, as well as extensive stakeholder consultation were significant factors in planning for the project.

Construction is planned to commence in the second half of 2014. On this basis, the pipeline is scheduled to be operational by the summer of 2016/17.

The following relevant reports and maps are attached to this referral:

Attachment A: Mapping
Attachment B: Options Assessment Summary
Attachment C: Consolidated Ecological Impact Assessment Report
Attachment D: Kororoit Creek Multi-criteria Assessment
Attachment E: Geotechnical Report
Attachment F: Draft Aboriginal Cultural Heritage Management Plan
Attachment G: Historical Heritage Assessment
Attachment H: Stakeholder Engagement Summary

A glossary of terms is also supplied.

Main components of the project (nature, siting & approx. dimensions; attach A4/A3 plan(s) of site layout if available):

As described above, the project will involve the installation of a new 17 km, 1.2 m diameter buried pipeline that will transfer water between the St Albans reservoir and the Cowies Hill reservoir, Tarneit. The pipe will be buried approximately 900 – 1200 mm below ground level. Above ground assets associated with the water main include air valves, marker posts and instrumentation control roadside cabinets.

The project area incorporates a linear corridor beginning at Station Road, St. Albans, where it is located within an existing power easement and connects to an existing pipeline at Penrose Promenade, Tarneit. This existing pipeline services the Cowies Hill Reservoir in Tarneit.

The project area generally follows an existing power easement and current and future road reserves. It has been devised based on consultation with stakeholders and the use of multi-criteria assessment methods.

The project crosses major road and rail infrastructure including Ballarat Road and the Western Freeway's Deer Park Bypass as well as the Melbourne-Ballarat railway line and Regional Rail Link (RRL). The pipeline will cross Kororoit Creek, which is considered an environmental, cultural heritage and recreational asset within Melbourne's western region (DPCD 2012). Dry and Skeleton creeks are also directly impacted and considered areas of environmental and heritage value.

A 30 m wide project area will generally apply along the pipeline alignment, except in areas where the project area may be reduced to avoid impact on environmental and social values, or, where there are design and access constraints. Once completed, a 5 m easement will be applied along the pipeline alignment within private land.

Ancillary components of the project (e.g., upgraded access roads, new high-pressure gas pipeline; off-site resource processing):

A construction laydown area will be established on Melbourne Water owned property, adjacent to Leakes Road, Tarneit. The laydown area will be utilised for temporary construction purposes only, including storage of pipes, other construction machinery and equipment and office facilities. The environmental values of this site have been assessed as part of project investigations.

Key construction activities:

Construction activities will include:

- installation of temporary fences, storage areas, site offices/amenities and vehicle haul routes
- trench excavation, with a trench width of approximately 2 m
- rock breaking
- storage of bedding material, pipeline and backfill
- laying pipeline and backfilling trench
- boring for pipeline installation or use of existing sleeves, at selected locations
- material transportation
- ancillary construction activities include
    - relocation of services
    - alteration of drainage
    - minor works at roads, and pathways including reinstatement
- reinstatement of the existing surface, including topsoil, grass and fencing.

The majority of the pipeline will be installed through open cut trenching. Exceptions to this include using existing sleeves constructed within the RRL corridor and trenchless methods at the Melbourne-Ballarat rail crossing.

The pipes will be delivered and stockpiled in the project's laydown area. The pipes will be brought to site and laid within the trench. Some materials will be temporarily stored on site. The pipes will be laid on imported bedding material (sand or crushed rock) and the trench backfilled and land reinstated progressively to original condition. A monitoring regime will be implemented to

evaluate reinstatement works.
Key operational activities: Once commissioned the pipeline will require minimal servicing. Routine maintenance such as checking the operation of air valves and maintaining the easement will be undertaken.
Key decommissioning activities (if applicable): N/A
Is the project an element or stage in a larger project? ☐ No ☒ Yes If yes, please describe: the overall project strategy for delivery of all stages and components; the concept design for the overall project; and the intended scheduling of the design and development of project stages). The current project is the second stage of the Wyndham transfer capacity augmentation program. Stage 1: 2.6 km of pipeline from St Albans Reservoir, along Kings Road to Station Street, St Albans. This section was completed in 2009. Stage 2: 17 km section of pipeline from St Albans to Cowies Hill Reservoir in Tarneit (i.e. this project)**.**
Is the project related to any other past, current or mooted proposals in the region? ☒ No ☐ Yes If yes, please identify related proposals.

4. Project alternatives

Brief description of key alternatives considered to date (e.g., locational, scale or design alternatives. If relevant, attach A4/A3 plans):

Several alternative pipeline alignments were considered during project planning. A detailed option assessment was completed in order to select the alignment and involved:

- Review of all existing information including a gap assessment report and its addenda;
- Review of a concept alignment or 'base case' proposed by Melbourne Water;
- Key stakeholder consultation;
- Development of alternative alignments based on new information and stakeholder consultation;
- Screening and short listing of alignment options;
- Preparation of comparative cost estimates for the shortlisted options;
- Undertaking a Multi Criteria Analysis (MCA) of the shortlisted options.

The MCA was completed having regard to the methodology described in *Melbourne Water's Triple Bottom Line Guidelines—A guide to sustainable decision making, November 2011*, the *Melbourne Water TBL-MCA Model User Manual, December 2008* and Department of Treasury and Finances scoring approach relative to a base case.

Details of the options assessment, including identified advantages and disadvantages of shortlisted options, are provided in **Attachment B.**

Consequently, the pipeline alignment and project area has been selected based on the outcomes of preliminary investigations and assessment of social, environmental, technical and financial considerations. Stakeholder consultation has taken place throughout the project's planning phase and played a major role in the final alignment selection.

A key alternative initially considered positioned the pipeline alignment within Christies Road to meet with Middle Road. This alternative alignment was ultimately not selected for the following reasons:

- insufficient space due to major current and future infrastructure upgrades in the area, such as RRL
- likely impacts on Ravenhall Grassland NCR.

Brief description of key alternatives to be further investigated (if known)**:**

N/A

5. Proposed exclusions

Statement of reasons for the proposed exclusion of any ancillary activities or further project stages from the scope of the project for assessment:
There are no ancillary activities or further project stages proposed for exclusion from this assessment.

6. Project implementation

Implementing organisation (ultimately responsible for project, i.e. not contractor)**:**

Melbourne Water Corporation

Implementation timeframe:

Construction is planned to commence in the second half of 2014 and operational by the summer of 2016/17.

Proposed staging (if applicable):

Stage 1 of the broader augmentation project is already complete.

7. Description of proposed site or area of investigation

Has a preferred site for the project been selected?

☐ No ☒ Yes If no, please describe area for investigation.

If yes, please describe the preferred site in the next items (if practicable).

General description of preferred site (including aspects such as topography/landform, soil types/degradation, drainage/ waterways, native/exotic vegetation cover, physical features, built structures, road frontages; attach ground-level photographs of site, as well as A4/A3 aerial/satellite image(s) and/or map(s) of site & surrounds, showing project footprint):

Topography and soils

The topography of the project area is a generally flat to slightly undulating landscape. The project is located on the open basalt plains to the west of Melbourne. One escarpment is present along the project area associated with the permanent waterway, Kororoit Creek. Two other ephemeral waterways are traversed (Dry Creek and Skeleton Creek).

The soils in the region are dominated by newer volcanics and some quaternary sediments. Weathering and sedimentation of the basalt has produced a variable soil profile containing a large quantity of boulders and rocks.

The variable soil structure, depth of the soil profile and the presence of large boulders and rock have influenced the project design, constructability and methods for laying the pipeline.

Waterways and catchments

The project area crosses Kororoit Creek, Skeleton Creek and Dry Creek. The project also crosses one drain, the Laverton Main Drain in Robinsons Road reserve. The project area is located adjacent to a small dam and Environment Protection and Biodiversity Conservation Act (EPBC Act)-listed Plains Grassy Wetland area located in Ravenhall Nature Conservation Reserve (NCR, east).

The project area at Kororoit Creek is located adjacent to a small escarpment where vegetation is of high quality. Vegetation between the base of the escarpment and the creek edge is exotic. Riparian vegetation is present on the creek bank. Flow can be prevalent throughout the entirety of the year.

At the Skeleton Creek crossing, the banks are shallow, wide and have minimal vegetation cover consisting of grassed embankments and no large shrubs within the project area.

At Dry Creek, scattered large rocks and low quality vegetation are present along the banks. The creek banks are highly modified and predominantly covered in grass and exotic weed species.

Vegetation and habitat

Vegetation in the project area is largely degraded and most native vegetation has been removed. However, some patches of remnant native vegetation persist. The majority of native vegetation present is *Low-rainfall* Plains Grassland (EVC 132) in varying condition. The highest quality areas are considered to be commensurate with the federally listed community, Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP). A small area of Riparian Woodland (EVC 641) is recorded at the crossing of Kororoit Creek.

The largest patch of native vegetation in the project area is located between Middle Road and Derrimut Road. The grassland also provides suitable habitat for *Delma impar* (striped legless lizard) and *Synemon plana* (golden sun moth). However, it is regularly grazed and generally lacks a herb component, but retains some native grasses.

Threatened flora of conservation significance is recorded adjacent to, but, not within the project area. This includes several EPBC Act-listed critically endangered *Pimelea spinescens* ssp. *spinescens* (spiny rice-flower). Threatened fauna habitat and associated species with potential to occur in remnant grasslands and waterways include three *Flora and Fauna Guarantee Act 1988* (FFG Act) and EPBC Act-listed species: *Delma impar* (striped legless lizard), *Synemon plana* (golden sun moth) and *Litoria raniformis* (growling grass frog).

Built form and physical features
The majority of the project area is located within a power easement. The easement abuts residential areas at the northern end and is situated in agricultural land at the southern end. In other sections, the project area is adjacent to industrial developments and the prison precinct and is located in road reserves.

Site area (if known): approximately 49 hectares

Route length (for linear infrastructure): approximately 17 km **and width** approximately 30 m

Current land use and development:

The project area spans a variety of land uses and developments which includes residential, recreational, agricultural and commercial/business. Approximately 50 per cent of the project area, from, Ravenhall to Tarneit, is within agricultural land to be developed for future urban growth. The project area traverses the Cities of Brimbank, Melton and Wyndham Council jurisdictions and crosses three waterways namely: Kororoit Creek, Dry Creek and Skeleton Creek.

The northern section of the project area is located in a linear open space on private land owned by the Australian Bosnian Islamic Society of Deer Park. The open space adjacent to the Islamic Society is also used as a recreational asset by local residents. This open space contains a high voltage powerline, the Deer Park Urban Forest, and crosses Kororoit Creek. Kororoit Creek is considered an environmental and recreational asset within Melbourne's western region.

The project area then traverses a series of current or future road reserves. The main affected roads are Robinsons Road and Middle Road. For sections in future road reserves, the current land use is business/industrial or is undeveloped Department of Justice land. The project area also traverses Ballarat Road and the Melbourne-Ballarat rail corridor and runs under the Western Freeway grade separation (Deer Park interchange).

From Middle Road, the project area re-enters the existing power easement and the land use here is typified by larger agricultural properties and unsealed vehicle access tracks. The agricultural land is highly modified with many areas of the landscape cropped or sown with exotic pasture species, or is utilised for grazing purposes. Through the power easement, the project area crosses Boundary Road, Derrimut Road, Dry Creek and Skeleton Creek.

The project area then follows Tarneit and Leakes Roads. It adopts an alignment in current or future road reserves, consistent with draft Precinct Structure Plans for the area. It then enters Penrose Promenade in the suburb of Tarneit, where the pipe is sited within road reserves within a developed residential setting. For sections sited in future road reserves, the land is undeveloped. However, subdivision plans have been submitted to the Metropolitan Planning Authority (MPA) including this future road.

Description of local setting (e.g. adjoining land uses, road access, infrastructure, proximity to residences & urban centres):

At the northern end of the project area, the surrounding land is residential including the long established suburbs of Albanvale and Deer Park..

As the project area passes along Robinsons Road and Middle Road, adjoining land uses include residential (within the City of Brimbank), industrial, business and conservation reserve in association with the Ravenhall NCR. Residences in the vicinity of this section of the project area are located immediately adjacent to Robinsons Road. The residential developments in this area are quite newly established, in comparison the residents at the northern most part of the pipeline alignment. There are a number of commercial businesses and warehouses within the industrial and business zone areas. The NCR site is currently managed for conservation and the section located adjacent to Robinsons Road is proposed as an offset site associated with the Ravenhall prison precinct development.

The project area is sited south of the Melbourne Remand Centre and Boral Quarry, both located north of Middle Road.

Land south of Middle Road is relatively undeveloped and is predominantly agricultural in nature or rural living on large blocks. This land is potentially earmarked for future developments, including the Western Interstate Freight Terminal (WIFT) and proposed East-West Link arterial road adjacent to Middle Road.

Along the power easement, within the boundary of Middle Road and Leakes Road, land use is typically agricultural and rural-living within the urban growth boundary. Consequently, it is expected to be subject to future development and subdivision.

As the project area enters Penrose Promenade, the surrounding land use is residential dwellings to the west and a sports field/recreational space to the east.

Planning context (e.g., strategic planning, zoning & overlays, management plans):

Melbourne Water has consulted land use and transport authorities (e.g., MPA, VicRoads, DTPLI (Transport) and local councils) to determine strategic planning initiatives, potential changes in land use and proposed major project developments. The information from these authorities has contributed to the pipeline alignment and project area selection process.

Melbourne Water has sought to select an optimum pipeline alignment based on the most current information available in regards to future land use and development. It is noted that where the pipeline is proposed to be sited on freehold land, affected landowners may have access to compensation through the requirements of the *Land Acquisition and Compensation Act 1986*.

Melbourne Strategic Assessment

The project area is partially located within the Melbourne Strategic Assessment (MSA) area. The MSA is the result of an agreement between the State and Commonwealth government to assess the potential impact of the expansion of Melbourne's urban growth boundary through a strategic assessment process under the EPBC Act. The project area falling within the MSA boundary is covered under the Federal Minister's approval of classes of actions under the endorsed *Delivering Melbourne's Newest Sustainable Communities: Program Report* (DPCD 2009). Classes of actions are subject to the protection and management requirements of the Biodiversity Conservation Strategy (BCS) (DEPI 2013a) and Sub-Regional Species Strategies for the golden sun moth and growling grass frog (DEPI 2013b; c).

Precinct Structure Plans

The MSA includes urban growth areas which are designated for urban use and are further defined through the development of Precinct Structure Plans (PSP). PSPs are the main planning tool to determine the character and make-up of new communities within the MSA. The project area occurs within the Wyndham Growth Area where PSPs (PSP 28, 29, 1087 and 1090) apply. These are either being developed, or, have been approved. Due regard to PSPs has occurred in selecting the pipeline alignment.

At the southern end of the project area, the siting of the pipeline has taken in to consideration the proposed expansion of Tarneit Road and Leakes Road as described in the draft PSP for Tarneit North (PSP 1089) (both roads are to become six lane arterial roads). This places the centre line of the pipe approximately 10 m east of the current Tarneit Road reserve and 25 m north of the current Leakes Road reserve. In addition to the draft PSP, the developers that own the affected land have submitted Section 96A subdivision applications with the MPA for approval of the planned residential development of this land. These applications include provision for the intended expansion of Tarneit Road and Leakes Road. Consequently, the intended future layout at this section of the pipeline is to be developed and these plans are known by all affected stakeholders. There is a limited risk that development plans will be modified prior to final approval of the subdivisions. However, information regarding the pipeline siting is being supplied to the affected developers.

Palmers Road Corridor

The pipeline alignment crosses through land partly reserved for the future Palmers Road Corridor – Western Freeway to Calder Freeway project. The project is currently subject to an Environmental Effects Statement. Consequently, corridor and design plans for the future road have been developed to a concept plan level. VicRoads is the proponent for this project and is

seeking to enable the formal reservation of land for the future creation of a six lane arterial road, which will partly encompass the current Robinsons Road reserve. To date, VicRoads have already reserved land for its project south of the Western Freeway where the WGW project will be partly sited. This proposed road has also been identified on the MPA's West Growth Corridor Plan (2012), as a major arterial road.

The pipeline has been located to the western boundary of the proposed corridor, based on the concept plans as supplied by VicRoads. This places the centre line of the pipe approximately 28 m west of the current Robinsons Road reserve on the two privately owned land parcels south of the Ballarat railway line. A Melbourne Water easement on these affected properties is likely to be required and it is intended that the final easement will be 5 m wide. The Palmers Road Corridor project is still subject to various assessments and approvals, however there is a risk the final road corridor will change from the current concept plans.

The pipeline is also sited at the eastern edge of Department of Justice land. This land is part of the proposed Ravenhall Prison Project upgrade, but will also be impacted by the proposed Palmers Road Corridor. Department of Justice have provided in principle support for the pipeline on the affected land parcel. There is limited opportunity for the design of the road corridor to be modified in this location, given the proximity to the existing Deer Park Bypass and Ravenhall NCR.

Western Interstate Freight Terminal

A pre-feasibility study is currently being conducted by DTPLI (Transport) in regards to the Western Interstate Freight Terminal (WIFT). The pipeline traverses land through a potential site for the WIFT in Truganina and DTPLI has advised that this route is acceptable. The pipeline would be located at the south-east edge of the existing power easement. Co-locating of these services minimises design constraints for the WIFT. Appropriate depth and protection of the water main below any WIFT development would need to be provided at some future time, once the WIFT is established.

Zones and overlays

The project is subject to the *Planning and Environment Act 1987* (the relevant planning framework) and requires approval for land use and development. Three local planning schemes are applicable to the project area: Cities of Brimbank, Melton and Wyndham. State and local planning policy supports the expansion of Melbourne's urban growth boundary while providing appropriate infrastructure to supply the future population growth, including water infrastructure.

A range of zones and overlays apply to the project area (refer to **Attachment A** for maps illustrating applicable zones and overlays). The primary zone at the St Albans section is the Residential Zone. The pipeline passes through Environmental Significance Overlay areas, at Kororoit Creek before moving in to either Road Zones or Industrial Zones as it follows the current and future road reserves of Robinsons Road and Middle Road. There are a number of Public Acquisition Overlays present in association with the Outer Metro Ring Road upgrade and the RRL. In the central part of the alignment the land is predominantly Rural zone where it re-joins the existing power easement through private land. The pipeline terminates in a Residential Zone at Penrose Promenade.

In accordance with the land use definitions of Clause 74 of the Brimbank, Melton and Wyndham Planning Schemes, the proposed pipeline is defined as a 'minor utility installation' which includes land used for the distribution of water.

Relevant authorisations and consents under the *Planning and Environment Act 1987* are required, including the establishment of the pipeline infrastructure and the removal of native vegetation. An Incorporated Document is proposed to be included in the three affected planning schemes to provide planning authorisation for the project. A request to prepare the required planning scheme amendment is due to be submitted to the Minister for Planning.

Local government area(s):

The project area is situated in three municipalities: the cities of Brimbank, Melton and Wyndham.

8. Existing environment

Overview of key environmental assets/sensitivities in project area and vicinity (cf. general description of project site/study area under section 7)**:**

Key environmental assets/sensitivities in the project area are:

- three watercourses and associated tributaries, including Kororoit Creek, Skeleton Creek and Dry Creek
- ecological assets that have been identified within or adjacent to the project area include;
  - remnant areas of native vegetation, including grassland patches
  - threatened flora species, including the endangered spiny rice-flower
  - known and potential habitat for several threatened fauna species
  - threatened vegetation communities, specifically grasslands and wetlands as listed under the *Flora and Fauna Guarantee Act 1988* (FFG Act) and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- the Ravenhall Nature Conservation Reserve (NCR) located immediately adjacent to the project area. The project will avoid impacting this reserve
- recorded Aboriginal cultural heritage places and areas of sensitivity. These generally consist of isolated or diffuse artefact scatters.
- historical heritage locations, such as dry stone walls in the southern section of the construction area
- residential and commercial areas at the north and southern ends of the project area
- dispersed rural/residential dwellings through the central sections of the project area
- major roads including the Western Freeway and Ballarat Road and local roads including Robinsons Road and Middle Road.

9. Land availability and control

Is the proposal on, or partly on, Crown land?

☐ No ☒ Yes If yes, please provide details.

The following parcels of crown land will be affected:

- 101-201 Riding Boundary Road Ravenhall (identifier: Crown Allotments 2013/Parish of Derrimut) which is unreserved Crown land in the City of Melton
- 101-201 Riding Boundary Road Ravenhall (identifier: Crown Allotment 2040/Parish of Derrimut), which is reserved for public purposes – RRL and managed by DTPLI.
- south-west corner of Riding Boundary Road and Robinsons Road, Ravenhall (identifier: Crown Allotment:2010/Parish Derrimut., which is reserved for police purposes, managed by the Department of Justice and located in the City of Melton
- Robinsons Road, Ravenhall (identifier: Crown Allotment 2019/Parish of Derrimut), which is unreserved Crown land in the City of Melton
- Middle Road Ravenhall (identifier: Crown Allotment 2017/Parish of Derrimut) which is freehold land.

Crown Allotment 2029/Parish of Derrimut is a Government road and will be partially impacted by the project area for construction purposes.

Current land tenure (provide plan, if practicable):

The pipeline will be constructed on freehold private land, Crown land, power easement and road reserves.

Following consultation with VicRoads and MPA, the pipeline has been sited on land within future road reserves associated with planned expansions of Robinsons Road and Tarneit Road. As a result, some land that is currently freehold will be impacted by construction and easements. (refer to strategic planning response above). The affected freehold land adjacent to Robinsons Road is currently used as light industrial/business or is vacant land held by Department of Justice. The affected freehold land adjacent to Tarneit Road is currently vacant, undeveloped land. Other freehold land impacted in the project area is associated with the existing power easement and is currently used for recreational or agricultural purposes.

Intended land tenure (tenure over or access to project land):

An easement will be applied to the permanent pipeline alignment where it is located on freehold land. This will affect 18 land titles and 13 landowners. Melbourne Water will be working closely with each landowner to discuss the easement process. It will be subject to the provisions of the *Land Acquisition and Compensation Act 1986*, and other associated legislation, such as the *Crown Land (Reserves) Act 1978* and the *Land Act 1958.*

Where the pipeline is within road reserves, authorisation for the pipeline will occur under the provisions of the *Road Management Act 2004.*

Other interests in affected land (e.g. easements, native title claims):

Sections of the pipeline will be constructed within an existing power easement, therefore a 5 m wide pipeline easement will be co-located in the existing easement.

A search of the Native Title Register was conducted in September 2013 and the results indicate that there are no overlaps of the project area with any of the following:

- determination of native title as per the National Native Title Register
- registered application as per the Register of Native title Claims
- scheduled application as filed with the Federal Court
- Indigenous land use agreements notified but not registered by the Tribunal.

10. Required approvals

State and Commonwealth approvals required for project components (if known):

The following Victorian State approvals and consents are required:

- Cultural Heritage Management Plan (CHMP) under the *Aboriginal Heritage Act 2006*
- planning authorisation under the *Planning and Environment Act 1987*
- permits to remove protected native flora under the *Flora and Fauna Guarantee Act 1988*
- works on waterways permits under the *Water Act 1989*
- consents under various legislative instruments to enable access to and use of public land and for the project infrastructure
- consents may also be required under the *Wildlife Act 1975* and the *Fisheries Act 1995.*

The project has consulted with the federal Department of Environment regarding the actions the project may need to undertake under the EPBC Act. All construction work within the MSA will be completed in accordance with the Biodiversity Conservation Strategy and supporting sub-regional strategies and no further approval under the EPBC Act is required. The Department of Environment has advised that a referral for the components of the project sited outside of the MSA is not required.

Have any applications for approval been lodged?

☐ No ☒ Yes If yes, please provide details.

A request to amend the Brimbank, Melton and Wyndham planning schemes was submitted to the Department of Transport, Planning and Local Infrastructure (Planning Services) in November 2013.

Approval agency consultation (agencies with whom the proposal has been discussed):

The project has been discussed with the federal Department of Environment (DoE) regarding potential impacts on Matters of National Environmental Significance.

Given the range of approvals required for the project, Melbourne Water established an Approvals Working Group (AWG) that comprised of representatives from the following:

- Department of Environment and Primary Industries
- Department of Transport, Planning and Local Infrastructure (Planning Services)
- Melton City Council
- Brimbank City Council
- Wyndham City Council

The AWG was established to facilitate an efficient statutory approval process during the project's design stages. Representatives from the AWG will provide additional input into the scope and content of the project's Environmental Management Plan (EMP).

Separate to the AWG, further approvals consultation with agencies has taken place. Additionally, the project has treated Melbourne Water's waterways managers as an external approval authority, regarding the works required at each of the project's creek crossings.

Aboriginal Affairs Victoria has been consulted in preparation of the CHMP.

Other agencies consulted:

City West Water and Barwon Water have been consulted in regards to the water supply network.

Further discussions have been held with:

- MPA – pipeline placement within their Precinct Structure Plans
- DTPLI (Transport Planning) – the potential area for the Western Interstate Freight Terminal in Truganina
- RRL Authority – installation of pipeline sleeves under the new railway line.

PART 2 POTENTIAL ENVIRONMENTAL EFFECTS

11. Potentially significant environmental effects

Overview of potentially significant environmental effects (identify key potential effects and comment on their significance and likelihood, as well as key uncertainties):

Land use
Key land use effects likely to occur are:

- short term disruption to land use activities, in particular agricultural land uses
- application of permanent easements in private land which will restrict future use and development.

Social
Key social effects likely to occur are:

- temporary disruption to the local road network during construction
- noise and dust generation associated with construction activities
- short term loss of amenities such as open recreational areas and shared footpaths

Native Vegetation
Potentially significant effects on native vegetation include loss of areas of the endangered plains grassland and riparian woodland ecological vegetation class (EVC).

The loss of native vegetation present in the project area is unavoidable. A projected loss of 5.29 hectares of native vegetation is proposed. In selecting the pipeline's placement, Melbourne Water has made every effort to avoid and minimise this impact.

Threatened flora
One threatened flora species, *Pimelea spinescens* subsp. *spinescens* (spiny rice-flower) was observed in several locations during ecological assessments. Modifications to the project area have been made to avoid impacts to the species. Other threatened flora species predicted to occur through database searches, do not have suitable habitat within the project area and consequently no further effects on threatened flora are predicted.

Threatened fauna
No threatened fauna has been observed during project surveys. Targeted survey was conducted for the golden sun moth in areas of suitable habitat outside the MSA, during the species flight season. Suitable habitat is found within the MSA area. Given the habitat features found at Kororoit Creek and records of the species in locations up and down stream of the project area, it is presumed that growling grass frog will be present at this location. Other areas of suitable habitat for the growling grass frog occur throughout the MSA area. An assessment for the extent of suitable habitat for the striped legless lizard has been completed. In accordance with the MSA requirements, further assessment of habitat will be completed in consultation with DEPI to determine appropriate salvage and translocation efforts for this species, prior to works commencing.

The project is likely to have the following effects:

- localised disturbance to habitat for Growling Grass Frog at Kororoit Creek, Dry Creek and Category 2 habitat areas within the MSA
- disturbance of suitable habitat for golden sun moth and striped legless lizard.

The only other threatened species of note, is Bailons Crake which may utilise riparian vegetation at Kororoit Creek, however the urbanised environment limits the likelihood of the species occurring in the project area.

Threatened communities
Areas of the federally listed Natural Temperate Grassland of the Victorian Volcanic Plain community were recorded within the project area. In addition all grassland mapped by DEPI within the MSA is assumed to be natural temperate grassland. The community is also listed as a

threatened community under the FFG Act as the Western (Basalt) Plains Grassland Community.

The project will result in the loss of 4.82 hectares of the natural temperate grassland ecological community. The community occurs as isolated remnants adjacent to Kororoit Creek and within DoJ land. The largest occurrence is a contiguous patch of remnant vegetation within the power easement on privately owned agricultural properties, between Middle Road, Ravenhall and Derrimut Road, Tarneit.

Cultural heritage

Aboriginal cultural heritage

It is likely that some identified Aboriginal areas may be disturbed by construction of the pipeline. The extent of this impact and its cultural significance will be evaluated through the development of the CHMP.

Historic heritage

Historic heritage places that will be affected are restricted to several dry stone walls. The project works will involve partial removal of dry stone walls and then systematic reinstatement in keeping with council guidelines.

Waterways

The following waterways are crossed by the project:

- Kororoit Creek
- Dry Creek
- Skeleton Creek.

An open cut construction methodology will be applied at each waterway. This methodology has been selected on the basis of a multi criteria assessment (refer to **Attachment D**).

Potential temporary impacts to waterways include:

- reduction of the quality of surface water runoff into surrounding waterways, hence reducing the water quality of the waterways
- the temporary flow diversion at Kororoit Creek
- increased erosion and sedimentation into the waterways
- loss of riparian vegetation and habitat due to construction of the project
- a reduction in bank stability as a result of the loss of vegetation and ground disturbance.

As the waterways are located either adjacent to urbanised areas or within agricultural land, they are disturbed. With reinstatement and appropriate construction management these impacts are likely to be short term and of low significance.

12. Native vegetation, flora and fauna

Native vegetation

Is any native vegetation likely to be cleared or otherwise affected by the project?

☐ NYD ☐ No ☒ Yes If yes, answer the following questions and attach details.

What investigation of native vegetation in the project area has been done? (briefly describe)

An initial flora and fauna assessment of preliminary alignment options was completed by GHD in 2013. A supplementary flora and fauna assessment was undertaken by KBR in mid-2013. This further assessed additional alignment options and areas that were not previously surveyed by GHD. The project area that occurs on Department of Justice land has been subject to flora and fauna assessments in association with the Ravenhall Prison Project.

The majority of the project area has been subject to prior survey as part of the Biodiversity Conservation Strategy for Melbourne's Growth Corridors (DEPI 2013).

The results of these ecological assessments are summarised in a consolidated ecological impact report, provided in **Attachment C**.

What is the maximum area of native vegetation that may need to be cleared?

☐ NYD Estimated area 5.29 ha

Estimates of impacts on native vegetation are based on clearance of the total project area, which includes a typical width of 30 m, except where reduced to avoid areas of environmental, technical or social sensitivities. The project area also includes nominated laydown areas, which may exceed 30 m.

How much of this clearing would be authorised under a Forest Management Plan or Fire Protection Plan?

☒ N/A …… approx. per cent (if applicable)

Which Ecological Vegetation Classes may be affected? (if not authorised as above)

☐ NYD ☒ Preliminary/detailed assessment completed. If assessed, please list.

Ecological Vegetation Classes which may be affected include:

- 5.25 ha of *Low-rainfall* Plains grassland (EVC 132). *Low-rainfall* Plains grassland is endangered within the Victorian Volcanic Plain bioregion.
- 0.04 ha of Riparian woodland (EVC 641) at Kororoit Creek is likely to be affected by the project. Riparian woodland is endangered within the Victorian Volcanic Plain bioregion.

Have potential vegetation offsets been identified as yet?

☒ NYD ☐ Yes If yes, please briefly describe.

Offsets will be sought for impacted areas of plains grassland located within the boundary of the MSA area (approximately 4.49 ha) in the form of compensation, consistent with the requirements of the Biodiversity Conservation Strategy for Melbourne's Growth Corridors (DEPI 2013).

Native vegetation loss outside of the MSA (0.80 ha) are proposed to be offset in accordance with the Biodiversity Assessment Guidelines (DEPI 2013), once these guidelines have been incorporated into planning schemes. Brimbank City Council has expressed a preference that these losses be offset within the City of Brimbank. These arrangements are to be finalised but will be consistent with DEPI's recently released native vegetation reforms.

Other information/comments? (e.g. accuracy of information)

DEPI time stamped data has been utilised to calculate the area of plains grassland impacted within the MSA. During project surveys, it was observed that the time stamped data was generally consistent with the presence of remnant native vegetation, although the time stamped data

provides a conservative estimate of extent.

Limitations associated with the flora and fauna assessments are described in **Attachment C**.

NYD = not yet determined

Flora and fauna

What investigations of flora and fauna in the project area have been done?
(provide overview here and attach details of method and results of any surveys for the project & describe their accuracy)

Preliminary alignment flora and fauna assessment
A preliminary flora and fauna assessment was conducted in spring 2012 (GHD 2013) to assist with alignment option assessments. This preliminary assessment utilised DEPI time stamped data and draft conservation strategies to determine potential habitats for threatened fauna within the MSA. Habitat hectare and aquatic features assessment, as well as targeted species surveys were completed for potential alignments located outside the MSA.

Supplementary flora and fauna assessment
KBR undertook a detailed supplementary flora, fauna and vegetation assessment for new sections of the project area including Robinsons and Middle roads and within adjoining land (KBR 2013). The assessment included a due diligence evaluation of flora and fauna habitat features within the MSA, searches for scattered trees and aquatic features assessments to supplement the preliminary assessment.

Targeted flora and fauna survey
Targeted surveys were conducted in late 2012 (GHD 2013, Biosis Research 2012) for golden sun moth (*Synemon plana*).

For some fauna species, presence was assumed which negated the need for targeted surveys (*e.g.*, growling grass frog in Kororoit Creek and striped legless lizard in suitable native and non-native grasslands).

In mid-2013, KBR undertook a targeted survey for EPBC Act-listed critically endangered *Pimelea spinescens* subsp. *spinescens* (spiny rice-flower) in areas of suitable habitat. Targeted surveys were also undertaken for EPBC Act listed endangered *Carex tasmanica* (curly sedge) and the DEPI advisory-listed *Dianella* sp. aff. *longifolia* (Benambra) (arching flax-lily) at Kororoit Creek.

In late-September 2013, targeted surveys were completed for other threatened flora species with particular emphasis on *Diuris basaltica* (small golden moths orchid), *Rutidosis leptorrhynchoides* (button wrinklewort), *Senecio macrocarpus* (large-headed fireweed), *Cullen tenax* (tough scurf-pea), *Podolepis* sp. 1 (basalt podolepis) and *Carex tasmanica* (curly sedge).

Targeted flora and fauna surveys were restricted to the project area outside the MSA, except for the spiny rice-flower. Target surveys for this species within the MSA is a requirement under the Biodiversity Conservation Strategy (DEPI 2013).

Extensive surveys for rare or threatened flora and fauna were undertaken in support of the Biodiversity Conservation Strategy (DEPI 2013). Due to the extent and timeliness of these surveys, the project has used this data where the project area occurs within the MSA. However, based on due diligence assessments completed during the supplementary assessment, targeted surveys for flora and fauna of conservation significance within the MSA would not be considered warranted, due to lack of suitable habitat.

Other relevant surveys
Detailed ecological surveys were undertaken by Biosis Research for the Department of Justice's proposed redevelopment of the Ravenhall Prison Precinct (Biosis Research 2012), which includes sections of land intersected by Melbourne Water's project area. Information collected by Biosis Research for the Department of Justice redevelopment has been utilised by the project where applicable (*i.e.*, Department of Justice land bordered by Robinsons Road and Riding Boundary Road, Ravenhall).

Have any threatened or migratory species or listed communities been recorded from the local area?

☐ NYD ☐ No ☒ Yes If yes, please:

- List species/communities recorded in recent surveys and/or past observations.
- Indicate which of these have been recorded from the project site or nearby.

Database searches established the potential presence of species of conservation significance within and in the vicinity of 5km of the project area. Sources reviewed included the following:

- Department of Environment (DoE) Protected Matters Search Tool (PMST) Database
- DEPI Victorian Biodiversity Atlas (VBA)
- DEPI Ecological Vegetation Class (EVC) mapping and benchmarks
- DEPI Biological Significant Sites (Biosites) Maps and Reports

The outcomes of the database searches and the assessment of likelihood of occurrence of individual species and communities are included in **Attachment C**.

Listed communities

The critically endangered and nationally listed community natural temperate grassland of the Victorian volcanic plain has been recorded within the project area. The identified community is consistent with the FFG Act listed community Western (basalt) plains grassland.

A small area likely to be classified as the critically endangered and nationally listed community Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains is located adjacent to the project area (in the Ravenhall NCR) and will be avoided.

No other listed communities occur within the project area.

Threatened Flora

Results from the VBA database search indicate that 13 species listed under the FFG Act have previous records within 5 km of the project area. Of these, eight are also listed under the EPBC Act. In addition one additional flora species listed under the EPBC Act was predicted to occur based on the EPBC Act PMST search. Results from the searches also indicate 13 records for DEPI advisory listed species, which are not listed under the FFG Act or EPBC Act.

The FFG Act/EPBC Act listed *Pimelea spinescens* subsp. *spinescens* (spiny rice-flower) was recorded in several locations during survey. However, the project area has been modified to avoid these individuals.

Several individuals of FFG Act listed *Cullen tenax* (tough scurf pea) are recorded on an escarpment north of Kororoit Creek, however this is outside the project area.

The following DEPI advisory listed species were also recorded during assessments:

- *Dianella* sp. aff. *longifolia* (Benambra) arching flax-lily
- *Sclerolaena muricata* var. *muricata* (black roly-poly)
- *Rhagodia parabolica* (fragrant saltbush)
- *Convolvulus angustissimus* subsp*. omnigracilis* (slender bindweed).

Several other advisory listed species are predicted to occur within 5 km of the project and are considered to have potential to occur in the project area, however these were not detected during survey: *Tripogon loliformis* (rye beetle-grass) and *Eleocharis pallens* (pale spike-sedge).

Threatened Fauna

Twenty species listed under the FFG Act and the EPBC Act has been recorded or are predicted to occur within 5 km of the project area. An additional 10 DEPI advisory listed species have also been recorded.

Based on project assessments, suitable habitat is available for the following threatened species:

- *Litoria raniformis (*Growling grass frog) (FFG and EPBC Act listed)
- *Synemon plana (g*olden sun moth) (FFG and EPBC Act listed)
- *Delma impar (*Striped legless lizard) (FFG and EPBC Act listed)
- *Porzana pusilla* (Bailons Crake) (FFG Act listed).

There are numerous records of growling grass frog occurring along Kororoit Creek. The species

nearest known population to the project area occur more than 1.5 km upstream and downstream of the proposed pipeline's crossing.

Multiple historical records for striped legless lizard occur throughout and adjacent to the project area. In particular there are numerous records in the vicinity of the power easement at the northern end of the project area, throughout what is now developed residential suburbs.

Several records of golden sun moth occur to the east of the project, the closest record occurring 2 km from the project area, within a developed industrial estate.

There are four historical records of Bailons Crake within 5 km of the project area. However, the limited number of records may be due to the secretive nature of the species. There is suitable habitat for the species within the dense riparian vegetation of Kororoit Creek.

Other threatened species may occur in the project area, however due to constant negative impacts on the majority of the habitat from threatening processes including mowing of road reserves, overgrazing by agricultural livestock, cultivation and cropping and the maintenance of sections of the power easement as an urban recreation reserve, it is likely that the occurrence of other threatened species may be limited to birds and as a movement corridor between suitable habitat areas.

Migratory species
Results from PMST indicated that 14 migratory species may be present near the project area, however the likelihood would be low, as the project area contains minimal migratory species habitat. The most suitable habitat is the wetland area within the Ravenhall NCR (East) located next to the project area. However this area is minor, ephemeral and will be avoided by Melbourne Water's works. As the project area is located adjacent to the Ravenhall wetland, it is likely that migratory birds would fly over, however it would be unlikely that these species utilise the degraded habitat present in the project area.

Birds listed as migratory that have previously been recorded or are considered a possibility to occur are *Ardea alba* (great egret), *Ardea ibis* (cattle egret), *Hirundapus caudacutus* (white-throated needletail) and *Merops ornatus* (rainbow bee-eater).

If known, what threatening processes affecting these species or communities may be exacerbated by the project? (e.g. loss or fragmentation of habitats) Please describe briefly.

The following threatening processes for grassland habitats may potentially be exacerbated:

- clearing and habitat destruction
- soil disturbance and promotion of exotic species invasion
- loss of key grassland species.

Are any threatened or migratory species, other species of conservation significance or listed communities potentially affected by the project?

☐ NYD ☐ No ☒ Yes If yes, please:

- List these species/communities:
- Indicate which species or communities could be subject to a major or extensive impact (including the loss of a genetically important population of a species listed or nominated for listing) Comment on likelihood of effects and associated uncertainties, if practicable.

Listed communities
The critically endangered and nationally listed community, Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP) has been recorded within the project area. The identified community is also consistent with the endangered FFG Act listed community Western (Basalt) Plains Grassland of the Victorian Volcanic Plain.

Likely impacts on the natural temperate grassland community were determined via two methods:

- the use of DEPI time stamped date for areas within the MSA
- field survey data for areas outside the MSA

As a result the maximum loss of natural temperate grassland community by the project is expected to be 4.82 ha.

The effect of the project on the threatened community will not result in a significant impact on the survival of this community. As a part of the pipeline alignment selection process, disturbed areas such as road reserves and power easements was purposely selected to reduce impacts on native vegetation and biodiversity values, therefore reducing the potential for fragmentation. The project will not impact on habitat critical to the survival of this ecological community.

Threatened flora
During targeted survey, several individual spiny rice-flower were recorded and the project area was realigned so that impacts to the species are expected to be avoided.

No other threatened flora are predicted to be affected.

Flora species of conservation significance
The following species have potential to be affected:

- arching flax-lily
- slender bindweed.

A single occurrence of arching flax-lily was recorded during survey and cannot be avoided.

Slender bindweed occurs throughout the project area and is likely to be affected by project works.

Rye beetle-grass may occur in less disturbed areas, including non-cultivated agricultural areas. However the species has not been observed during the project's field assessments.

Pale spike-sedge may possibly occur within seasonally wet depressions and suitable habitat is present at Kororoit Creek. However the species has not been observed during field assessments.

The project area does not support genetically important populations for any of these flora species and a significant impact is unlikely. The single, isolated arching flax-lily is located in degraded road reserve and no plants were observed nearby. Slender bindweed is recorded in several of the higher quality remnants in the project area; however the plant is infrequently recorded within the more degraded edges where the project impacts will occur and few if any plants within these locations are likely to be affected.

Other conservation significant flora recorded during project surveys will be avoided due to realignment of the project area.

Threatened fauna

There is potential for the following threatened fauna species to be affected by the project:

- growling grass frog (FFG and EPBC Act listed)
- golden sun moth (FFG and EPBC Act listed)
- striped legless lizard (FFG and EPBC Act listed)
- bailons crake (FFG Act listed).

<u>Growling grass frog</u>
The growling grass frog is likely to use ephemeral and aquatic environments that intersect the project corridor or the surrounding area during their movement periods. In particular at Kororoit Creek, the species is presumed to be present, due to the availability of suitable habitat features. At Dry Creek, rock pools are present and the species may use the waterway for dispersal. Open cut trenching at the crossings will result in temporary changes in hydrology and alteration of aquatic habitat corridors. However this approach will provide for a shorter duration of works than the alternate boring methods. It will also avoid the need for significant disturbance and impact on the banks of the creek associated with the boring approach (due to the requirement for large entry/exit pits required and associated works compounds).

The growling grass frog sub-regional conservation strategy identifies other areas of suitable habitat that can be cleared for urban development, but for which habitat compensation must be provided. Within the project area, the sub-regional strategy nominates several areas of suitable

habitat for the species (represented by 6.54 ha of Category 2 habitat). Observations during project field assessments found that these nominated habitats generally occur associated with Skeleton Creek, minor depressions and terrestrial environments that were observed to have been ploughed and seeded with exotic pasture.

Across the project area a total of 6.62 ha of growling grass frog suitable habitat will be disturbed. Impacts are likely to be temporary and localised and therefore will not have a significant impact on this species.

Golden sun moth

Construction of the pipeline will create a temporary loss and degradation of suitable golden sun moth habitat at two fenced grassland reserves located north and south of Kororoit Creek. At these locations reinstatement with indigenous native species and management of the areas post construction, to prevent weed establishment will be implemented to minimise impact.

Suitable habitat also occurs on the Department of Justice (DoJ) land that has been approved for development of the Ravenhall Prison Precinct. However as Melbourne Water's project is likely to occur prior to this development commencing, and consequently, will result in the direct loss of habitat where the project's construction area will be sited. Suitable habitat also occurs in a small land parcel adjacent to Ravenhall NCR, north of Deer Park Bypass.

Suitable habitat is found within grassland located in the power easement between Middle Road, Ravenhall and Tarneit Road, Tarneit. These occur where less modified patches of plains grassland remain amongst a cultivated landscape. Ploughed and heavily grazed areas along the easement have been deemed to be unsuitable habitat.

The pipeline trench will cause a direct loss of habitat at these locations, with a total area of loss predicted to be 4.47 ha. This impact is not considered to be major or extensive given the area to be removed is a narrow linear corridor surrounded by a broader landscape of suitable habitat for the species. Targeted surveys for the species were conducted in areas of suitable habitat (outside the MSA), and the species was not detected.

Striped legless lizard

Suitable habitat throughout the project area has been identified for striped legless lizard, based on the observation of suitable habitat features and absence of degradation (e.g. ploughed fields). Approximately 5.23 ha of suitable habitat is likely to be disturbed. The project activities may impact on the species over a short term temporary period during activities such as soil disturbance, and when rocks are removed and bare ground is exposed.

Impacts will be minimised by reinstating the soil and reusing removed rock as habitat in suitable locations. Although suitable habitat areas are likely to be disturbed, direct effects are likely to be minimal for the species as the DEPI salvage and translocation protocol will implemented prior to the commencement of works.

Bailons Crake

Impacts on potential habitat for Bailons Crake are limited to localised habitat removal at Kororoit Creek and Dry Creek. Suitable reinstatement of the waterway and riparian vegetation will occur at the completion of works. Impacts are considered to be localised and temporary and will not constitute a major impact.

Fauna species of conservation significance

Fauna of conservation significance with potential to occur in the project area includes *Aythya australis* (hardhead), which is considered vulnerable in Victoria and was identified during project survey.

There are 18 historical records for the DEPI advisory listed fat-tailed dunnart (*Sminthopsis crassicaudata*) and areas of higher quality plains grassland may provide suitable habitat for the species.

Of the remaining DEPI advisory listed fauna species that have previous records or are considered possible to occur, the most likely are the bird species *Coturnix ypsilophora* (brown quail), *Falco niger* (black falcon) and *Nycticorax caledonicus* (Nankeen night heron).

The project area does not support genetically important populations of these fauna species and a significant impact is unlikely. A single hardhead was observed during the field survey on a small dam adjacent to the project area and would experience only temporary disturbance. The fat-tailed dunnart, previously recorded in higher quality grassland, is likely to temporarily move away from areas affected by direct project impacts and is unlikely to rely on degraded edge habitats where project impacts are concentrated. Birds, including species preferring grassland, birds of prey, waterbirds and migratory species are likely to utilise the Ravenhall NCR and higher quality habitats on the DoJ land (adjacent to the project area) occasionally, but are species sensitive of disturbance or very secretive and are likely to avoid the degraded habitat and noisy environment adjacent to busy arterial roads such as Robinsons Road. The project works impacts are a temporary and minor additional disturbance in comparison.

Migratory species
No migratory species are predicted to be significantly affected by the project. The current environment of the project area contains minimal habitat for migratory species. The most suitable habitat present is a wetland area within Ravenhall NCR (East), which is located adjacent to the project area. This area is small, ephemeral and avoided by the project works.

Is mitigation of potential effects on indigenous flora and fauna proposed?
☐ NYD ☐ No ☒ Yes If yes, please briefly describe.

Several mitigation measures are proposed to avoid or minimise potentially adverse effects on indigenous flora and fauna.

The following general measures aim to mitigate impact on all native flora and fauna throughout the project area:

- translocation of flora within the MSA. This is to be undertaken by DEPI in accordance with their guidelines (in development). Translocation protocols may apply outside the MSA (protocols in development) as a contingency, should species of conservation significance be identified during works
- pre-construction salvage and inspections for striped legless lizard are to be undertaken in areas of suitable habitat according to the method described in DEPI guidelines that are current at the time of the pre-construction inspections
- site induction and tool box talks for construction personnel to include discussions and maps of 'no go' areas and identification of ecological values
- the project area, including vehicle access routes and laydowns, to be demarcated with temporary fencing to avoid impacts to residual habitats and native vegetation (where present)
- clean construction techniques to be employed during the project to restrict the movement of weeds within and beyond the construction area. apply appropriate sediment controls in accordance with Environmental Guidelines for Major Construction Sites (EPA 1996)
- post-construction rehabilitation works not to change the hydrological or other physical conditions that may impact adversely on recorded native vegetation or habitat.
- while it is considered that there are no spiny rice-flowers present in the project area, for compliance with the BCS, implementation of the requirements of the DEPI flora translocation protocols (currently in development).

At Kororoit Creek:

- Works within aquatic and riparian habitat to be scheduled between April and mid-September, which is outside the high activity/breeding time for the growling grass frog (which extends from mid-September through to March)
- temporary works to be installed to ensure continuous flow in the creek during construction Appropriate water filters are to be fitted to suction hoses during any dewatering activities, to prevent harm to aquatic fauna. A qualified wildlife handler is to be present during these activities to translocate aquatic fauna
- area of disturbance of riparian vegetation adjacent to the waterway to be minimised
- length of habitat disturbance times to be minimised
- appropriate buffer to be established between the construction area and waterway and only work near the waterway when necessary during crossing activities
- stockpiles, storage areas, fuels, etc. to be located outside the waterway buffer

- amphibian fencing to be installed to allow a safe passage for the growling grass frog during trenching. The fence will dissuade growling grass frog from entering the construction area on either side of open trenches during works at Kororoit Creek
- trenches left open overnight to be inspected on a daily basis and subjected to searches for the species including tadpole, metamorph and adult frog searches
- if individual growling grass frogs are identified during construction, then all works within the immediate vicinity of the site will cease until individuals are removed. The qualified site wildlife handler is to be present to remove and (locally) relocate any individuals.

In the two fenced grasslands adjacent to Kororoit Creek:

- areas of fenced remnant patch vegetation at grasslands adjacent to Kororoit Creek are to be reinstated with locally sourced indigenous grass seed, where impacted by construction and where long term maintenance access is not required.
- flagging and signage to be erected along the fenced grassland boundary to clearly delineate the area as protected 'no go' zones
- works to temporarily relocate existing fencing around the grasslands are to be supervised by a suitably qualified ecologist.

In the DoJ land, some areas, particularly near the boundary to Robinsons Road and Riding Boundary Road, have experienced past disturbance and the soil is very soft. Vehicles and machinery required for construction are likely to become easily bogged and create increased impacts. Specific mitigation measures include:

- works in this area to be scheduled during dry conditions and at least one week after moderate to heavy rainfall to minimise disturbance to areas outside the project area
- temporary protective fencing to be installed around any environmental assets requiring protection during construction
- appropriate stormwater management controls to be applied to minimise impacts to the adjacent Ravenhall NCR wetlands.

In Robinsons Road next to Ravenhall NCR:

- flagging and signage to be erected along the Ravenhall NCR boundary that intersects the project area to clearly delineate the area as a protected 'no go' zone
- appropriate sediment controls to be applied in accordance with Environmental Guidelines for Major Construction Sites (EPA 1996) or other suitable controls to minimise the risk of sediments adversely impacting vegetation and the adjacent wetland. Should trenching works occur during wet conditions, appropriate controls are to be installed.
- water from any dewatering activities is not to be discharged into the Ravenhall NCR.

Other information/comments? (eg. accuracy of information)

Limitations associated with the flora and fauna assessments are described in **Attachment C**. Information in this referral reflects the outcomes of survey and assessments conducted specifically for the project between 2012 and the present, as well as data collected to inform the Biodiversity Conservation Strategy (DEPI 2013).

For the development of the Biodiversity Conservation Strategy for Melbourne's Growth Corridors June 2013 (BCS), the Victorian Government has relied on data in order to assess and to define conservation outcomes for in the growth areas. The BCS outlines the sources of this data including surveys (including targeted) and consultation with experts. This included:

- surveys and assessments by the Growth Area Authority (GAA) in specific precincts across the growth corridors for native vegetation type, extent and condition and targeted surveys for certain Commonwealth and Stated listed threatened species done between the period 2008 to 2011 (refer to Section 4.1.1 of the BCS)
- targeted surveys across the growth corridors for growling grass frog and golden sun moth done by the GAA and DEPI. The results of these surveys are described in technical reports including those associated with the sub-regional strategies (Ecology & Heritage Partners 2011a; Ecology & Heritage Partners 2011b; DEPI 2013a; DEPI 2013b)

As a result, the majority of the growth corridors have been surveyed, as shown in Figures 7 to 10 of the BCS. The WGW project area falls within the locality in Figure 7.

Based on this data, the prescriptions for the species and communities identified as impacted under State and Commonwealth biodiversity protection legislation were applied. Areas achieving defined conservation outcomes have been protected in Conservation Areas.

Section 6 of the BCS (pages 127 to 132) outlines further surveys, salvage, translocation and offset requirements for the area covered by the BCS. For example, surveys for large old trees and scattered trees are to be undertaken at the Precinct Structure Planning stage or permit stage for other development approvals. There may also be salvage and translocation requirements for species including growling grass frog, striped legless lizard, matted flax-lily, spiny rice-flower and other threatened and common flora species, where required for restoration programs (e.g. within the Western Grassland Reserve).

For the Water for a Growing West project area, the majority of the footprint has been surveyed through the GAA and DEPI surveys described above.

In compiling the information presented in this referral, the following has been considered with regard to BCS data:

- DEPI time stamped data has been used to calculate the area of plains grassland EVC (also commensurate with EPBC Act-listed natural temperate grassland community) impacted within the MSA. During project surveys, it was observed that the time stamped data was generally consistent with the presence of remnant native vegetation, although the time stamped data provides a conservative estimate of extent.
- Targeted flora and fauna surveys were restricted to the project area located outside the MSA, except for the spiny rice-flower. Surveys for threatened flora and fauna were undertaken as part of the BCS (as described above) and consequently have not been replicated in the project area that occurs in the MSA. Based on due diligence assessments completed during the supplementary assessment, targeted surveys for flora and fauna of conservation significance within the MSA would not be considered warranted due to lack of suitable habitat.
- Habitat for golden sun moth is difficult to determine, given the species is known to utilise native and non-native vegetation as habitat. The approach applied by the project to determine areas of suitable habitat for the species, has been to apply the sub-regional species strategy across the project area, which includes recognition of non-native vegetation as habitat. However, based on due diligence assessments, ploughed and heavily grazed areas have been deemed to be unsuitable habitat.
- DEPI are currently revising the protocol for the translocation of Striped Legless Lizard. Advice from DEPI is that the protocol will include updated mapping to further refine the likely extent of habitat for the species within the MSA. Consequently, it is expected that the extent of Striped Legless Lizard habitat presented in this referral is a conservative estimate.

The project has adopted and assumed accurate flora and fauna assessment and survey results collected for the Department of Justice's (DoJ) Ravenhall Prison Redevelopment project, which have been undertaken by ecological consultants, Biosis Research Pty Ltd. These assessments, undertaken throughout 2012 and 2013, overlap areas of the Water for a Growing West project area in the DoJ land bordered by Riding Boundary Road and Robinsons Road, Ravenhall. The assessment information has been endorsed by DoE and the DEPI via statutory approval processes.

The Ravenhall Prison project has received relevant approvals under state and federal legislation to clear the land. However as the Water for a Growing West projects works, including vegetation removal, are likely to occur prior to the commencement of the prison precinct development, the above description of likely effects includes loss of threatened ecological community and areas of suitable habitat within the DoJ land.

13. Water environments

Will the project require significant volumes of fresh water (e.g. > 1 Gl/yr)?

☐ NYD ☒ No ☐ Yes If yes, indicate approximate volume and likely source.

The project will not require significant volumes of fresh water and any water requirements are limited to temporary construction requirements (e.g. dust suppression).

Will the project discharge waste water or runoff to water environments?

☐ NYD ☐ No ☒ Yes If yes, specify types of discharges and which environments.

During construction there is potential for sediment laden runoff form the works area to enter water environments.

The project Environmental Management Plan (EMP) will include environmental controls to minimise the likelihood and potential impact of this risk, in compliance with Environmental Protection Authority (EPA) guidelines and consistent with good practice.

Are any waterways, wetlands, estuaries or marine environments likely to be affected?

☐ NYD ☐ No ☒ Yes If yes, specify which water environments, answer the following questions and attach any relevant details.

The project area crosses three waterways:

- Kororoit Creek - a low flow permanent creek
- Dry Creek and Skeleton Creek, - semi-permanent waterways (i.e. they are dry for periods of time throughout the year).

It is noted that a tributary of Dry Creek was mapped as intersecting the project area between Tarneit and Derrimut Road, and north of Dohertys Road. However during a field survey it was found that this tributary no longer exists, having been cut off by road development just upstream of the junction with Skeleton Creek sometime in the past.

The Ravenhall NCR is located immediately adjacent to the project area and supports wetlands likely to be consistent with a federally listed ecological community.

Features of these water environments relevant to the project are summarised below:

Kororoit Creek

The crossing at Kororoit Creek is contained within a highly urbanised environment. There is a rock escarpment on the north side with native vegetation and scattered large rocks in grassland adjacent to the construction zone. A pool riffle sequence occurs approximately 20 m downstream of the pipeline crossing point. Biosites #3288 and #5269 occur in the upper reaches and intercept the project area. The waterway is 10 m wide and is expected to contain water during the proposed construction period. The banks are wide and shallow and contain significant rock and vegetation, including native trees and shrubs. An established riparian zone approximately 10 m wide exists within the project area at the creek.

Skeleton Creek

Skeleton Creek has banks that are shallow, wide and have minimal vegetation cover, consisting of grassed embankments and no large shrubs within the project area. At the time of survey during the winter months it showed no signs of water flow. Construction will approximately take place over the months following summer when the creek water level is potentially low and will most likely consist of isolated pools of water. However, based on survey it is expected that no flow will be present within the project area.

Dry Creek

At Dry Creek scattered large rocks and low quality vegetation are present along the banks. The creek banks are highly modified and predominantly covered in grass and exotic weed species. Scattered rock is present within the creek bed with occasional shallow isolated pools. Biosite #4616 intercepts the project area at Dry Creek.

Tributary of Dry Creek
The tributary of Dry Creek runs through an agricultural land plot that is utilised for pasture cropping. The banks are not visible as the area has been completely harrowed and seeded, consequently the drainage line is barely discernible on site. There was no vegetation in the area at the time of survey and the waterway is considered absent (i.e. there is no water flow). A very shallow drainage depression may still exist in times of peak flows.

Wetland within the Ravenhall NCR
One wetland was identified immediately adjacent to the project area. Although highly modified in nature, the wetland contains patches of plains grassy wetland Ecological Vegetation Class (EVC) within the Ravenhall NCR associated with Laverton Main Drain and Whiteside Drain. This wetland is likely to be consistent with the federally listed Seasonal Herbaceous Wetland community description. A constructed dam within Ravenhall NCR and the prison precinct area provides habitat to wetland bird species. These wetland habitats will not be directly affected by the project works.

The wetland system is within 20 m of the pipeline alignment and is downhill of the project area. Laverton main drain is the main source of water for this wetland and takes its source from a road side reserve directly to the north of the wetland. It is unlikely that this flow source will be interrupted during construction. A secondary, yet minor source of water for the wetland could be from overland flow and the immediate subsurface drainage system. This secondary source of water could be interrupted if there is flow when excavation for the pipeline takes place.

Are any of these water environments likely to support threatened or migratory species?
☐ NYD ☐ No ☒ Yes If yes, specify which water environments.

Ecological assessments indicate the following are likely to occur within the creek systems*:*

- growling grass frog (*Litoria raniformis*) is known to occur and is considered to be present in Kororoit Creek. There is also potential for the species to be found in Dry Creek which provides a dispersal corridor for the species
- hardhead (*Aythya australis*) has been previously recorded in a small dam adjacent to the remand centre car park (adjacent to Middle Road). Australian bittern (*Botaurus poiciloptilus*) may occur along Kororoit Creek given that suitable habitat is available
- tough scurf-pea (*Cullen tenax*), listed as threatened under the *Flora and Fauna Guarantee Act 1988*, has been identified by Melbourne Water above the northern bank of Kororoit Creek and is associated with the rocky escarpment. Targeted surveys for the species did not identify it occurring within the project area.

Birds, including species preferring grassland, birds of prey, waterbirds and migratory species are likely to utilise the wetland in the Ravenhall NCR occasionally, but are species sensitive of disturbance or very secretive and are likely to avoid the degraded habitat and noisy environment adjacent to busy arterial roads such as Robinsons Road. The project works impacts are a temporary and minor additional disturbance in comparison.

No migratory species were detected during the site assessments, however the eastern grey egret may occasionally utilise habitat within the project area.

Are any potentially affected wetlands listed under the Ramsar Convention or in 'A Directory of Important Wetlands in Australia'?
☐ NYD ☒ No ☐ Yes If yes, please specify.

No Ramsar wetlands are listed in the project area or immediate surrounding area.

Could the project affect streamflows?
☐ NYD ☐ No ☒ Yes If yes, briefly describe implications for streamflows.

Brief interruptions to streamflow may occur at Kororoit Creek whilst temporary diversion works are put in place. Trenching across the waterway will involve in-stream excavation and pipe laying conducted within a temporarily dewatered section of the waterway. Protection of the work area from waterway flows is achieved by installing temporary dams upstream and downstream with a bypass flume or pump. Dams can be formed with water filled bladders commonly known as

'aquadams' or 'cofferdams'. Generally dewatering is still required in the 'dry' area and is achieved by strategically located sumps. Water resulting from dewatering will be directed to sedimentation ponds or other environmental control device to separate sediment before discharge. Further detail on the construction methodology for Kororoit Creek is provided in **Attachment D**.

The duration of such interruptions will be minimised and managed in accordance with the project EMP, Streamflow interruption at Kororoit Creek is expected to occur for a maximum of 3 weeks.

Flowing water is not expected at Dry or Skeleton Creeks, as works are planned to be preferentially scheduled to occur during low rainfall periods.

Isolated pools of water are expected at Dry Creek, but not at Skeleton Creek. Any required dewatering at either location will be carried out in accordance with the project EMP.

Could regional groundwater resources be affected by the project?

☐ NYD ☒ No ☐ Yes If yes, describe in what way.

Geotechnical investigations did not detect any groundwater above a depth of 12 m for the borehole locations within the project area (refer to **Attachment E**). The project is therefore unlikely to impact on regional groundwater resources.

However, there is a possibility of high groundwater near creek areas, such as Kororoit Creek, noting that groundwater was not observed during excavation of test pits up to a depth of 4 m at this location. Groundwater in the form of perched water may be encountered in various areas of the project and will be dependent on the local subsurface conditions, seasonal fluctuations, rainfall and drainage.

Could environmental values (beneficial uses) of water environments be affected?

☐ NYD ☐ No ☒ Yes If yes, identify waterways/water bodies and beneficial uses (as recognised by State Environment Protection Policies)

Beneficial uses relevant to waterways include:

- recreation
- aquatic ecosystems

Aquatic ecosystem values include in stream features, such as pools, riffles and runs. These features provide habitat to fish (both native and exotic), amphibians including growling grass frog, macro-invertebrates and waterbirds found in Kororoit Creek, which can be described as a constrained urban catchment in that it flows through highly urbanised areas. This is often characteristic of urban development located adjacent to the riparian zone. These values are significantly reduced to non-existent in Dry Creek and Skeleton Creek.

Recreational values of water environments are present largely outside the project area. However given the location of Kororoit Creek within a residential area, community members may utilise the riparian area for recreational purposes. A shared user path (bicycle and walking) connects to a trail beside Kororoit Creek. Sections of the shared user path will need to be temporarily removed as a result of the construction works, but will be reinstated following installation of the pipeline.

If the waterways contain water during trenching activities, a direct impact to water quality may result in the release of sediment resulting in increased turbidity. The risk of this impact occurring is low, given proposed mitigation measures are to be in place during works.

Could aquatic, estuarine or marine ecosystems be affected by the project?

☐ NYD ☐ No ☒ Yes If yes, describe in what way.

Long term impacts are not expected on any aquatic ecosystems in the project area. Aquatic ecosystems may be affected by construction activities in the short term and expected impacts are described below.

Kororoit Creek Impacts

Pipeline construction for the creek crossing will be completed through open trenching. Works are proposed to take place outside of the growling grass frog activity period between September and

April. Where the construction schedule permits, works will preferentially occur during dry periods when the creek water level is potentially lower (but still flowing) compared to peak flow periods. The following potential impacts have been identified:

- temporary disruption to waterway and water flows with the construction of temporary diversion works
- localised vegetation removal consisting of scattered native and exotic trees, small shrubs and exotic grass
- disturbance of Growling Grass Frog habitat features (e.g. shrubs, rock and grasses)
- local soil and rock excavation associated with the pipeline trench.

Skeleton Creek Impacts
Pipeline construction for the creek crossing will be by open trenching. Given Skeleton Creek is expected to be dry, construction can take place at any time with expected impacts as follows:

- local soil and rock excavation associated with the pipeline trench
- removal of vegetation consisting of small shrubs and a mixture of some native and dominant exotic species
- localised dewatering of pools.

Dry Creek Impacts
Pipeline construction will be by open trenching. At the Dry Creek crossing, isolated pools of water are expected to be present, even during low rainfall periods. However, construction can occur at any time without restriction. Should conditions prove conducive to growling grass frog dispersal (i.e., wet, warm conditions) contingency measures identified in the EMP will be implemented. These will include daily checks of open trenches and general surveillance in the project area for the presence of growling grass frog, prior to works commencing.

The following impacts at Dry Creek have been identified:

- local soil and rock excavation associated with the trenching
- vegetation removal consisting of exotic grasses and native vegetation
- localised dewatering of pools.

Wetland within the Ravenhall NCR Impacts:
Project works are excluded from occurring within the Ravenhall NCR. However, indirect impacts to the wetlands within the NCR as a result of trenching in adjacent road reserve may occur include:

- sediment displacement as a result of trench excavation, should inadequate sediment controls be applied
- subsurface interruption of secondary sources of flows along localised drainage lines
- impacts to water quality in the case any severe weather event that may exceed the design capacity of erosion and sediment controls.

Is there a potential for extensive or major effects on the health or biodiversity of aquatic, estuarine or marine ecosystems over the long-term?

☒ No ☒ Yes If yes, please describe. Comment on likelihood of effects and associated uncertainties, if practicable.

Potential effects on the health and biodiversity of aquatic systems will be short term and are proposed to be managed through the mitigation measures described via the project EMP.

The key aquatic ecosystem in the project area is Kororoit Creek and careful consideration was given to the selection of an appropriate construction method for this crossing.

The options considered were:

- open cut trenching
- trenchless construction (e.g. boring)
- pipe bridge.

The methods were evaluated using a multi-criteria assessment (MCA) approach, with ratings made according to financial, technical, social and environmental criteria.

The preferred method was determined to be open cut trenching on the following basis:

- trenchless construction would have little impact on flow and at first would appear to have a relatively low impact on the waterway. However, the method would require excavation of entry/exit bore pits at either side of the creek and the establishment of associated working areas, which would cause significant disturbance to banks and riparian vegetation. Further geotechnical assessments placed this option in the high risk category for the project area due to the non-uniform nature of the soils (i.e. a mix of clay and rock). The method has been trialled on a number of projects in the western suburbs of Melbourne but with limited success due to the difficulty in navigating the basalt substrate. As a result, a number of bores have failed and required significant effort to remove and ultimately caused greater disturbance. In summary, due to constructability concerns, as well as environmental and financial implications, the trenchless methodology was not adopted.
- the pipe bridge option was assessed to have the highest direct impact on the environment and aquatic ecosystems, as well as the highest financial implication. The high environmental impact was primarily due to the need to clear a large tract of vegetation and creek bank to provide a hardstand area for two cranes, needed to lift the bridge sections into place. In addition, the construction methodology required sections of the bridge to be lifted over adjacent private residences in order to place them in the correct position.
- the open cut trenching method will cause short term disruption to the waterway, it will be temporary in nature and of relatively short duration compared to other methods. It is also noted that although the method does not require clearing large tracts of land, there are will be some impacts at the crossing within a 30 m wide project area. However these impacts will be low and are assessed as unlikely to lead to extensive or major effects on biodiversity or aquatic health.

Further details of the assessment are included in **Attachment D**.

Is mitigation of potential effects on water environments proposed?

☐ NYD ☐ No ☒ Yes If yes, please briefly describe.

Management and mitigation measures will be detailed in the EMP which will set out requirements for the works to be conducted in accordance with the following best practice guidelines:

- EPA (1996) Best Practice Environmental Management: Environmental Management for Major Construction Sites, Victoria.
- EPA (1991) Construction Techniques for Sediment Pollution Control, Victoria.

Proposed management measures would include:

- Length of time for trenching through waterways to be minimised
- Establish a buffer between the construction area and waterway (i.e. only work near waterway during crossing activities). Locate stockpiles, storage areas, fuels, etc. outside of buffer
- Minimise the construction corridor through beds and banks
- Preferentially schedule works at waterways during low flow periods, subject to seasonal variability and growling grass frog activity periods
- Utilise appropriate sediment control devices such as silt fences, rock filters and sediment basins
- Implement water treatment and discharge procedures for dewatering activities and during the management of sediment basins
- Ravenhall NCR is a ‘no-go’ zone for construction activities
- Implement appropriate measures to contain and manage hazardous substances (e.g. use of bunds for hydrocarbons).

Detailed reinstatement plans will be prepared for each creek crossing to comply with Melbourne Water guidelines for reinstatement of waterway crossings. This will include suitable revegetation and reinstatement of habitat features at Kororoit Creek.

Specific controls to mitigate risks to growling grass frog during works at Kororoit Creek have been developed (refer to **Attachment C**, Consolidated Ecological Impact Report).

Other information/comments? (e.g. accuracy of information)

N/A

14. Landscape and soils

Landscape

Has a preliminary landscape assessment been prepared?

☒ No ☐ Yes If yes, please attach.

A preliminary landscape assessment has not been prepared as the pipeline will be buried and impacts to the landscape from the project will be localised and largely confined to the construction phase.

Is the project to be located either within or near an area that is:

- **Subject to a Landscape Significance Overlay or Environmental Significance Overlay?**

  ☐ NYD ☐ No ☒ Yes If yes, provide plan showing footprint relative to overlay.

Several Environmental Significance Overlays (ESO) apply to the project area. Refer to **Attachment A** for the location of ESOs relative to the project area.

The northern portion of the project area is subject to ESO4 (Kororoit Creek Corridor Protection) where it crosses Kororoit Creek and an ESO6 (Sites of Known Biological Significance) for a patch of native grassland within the existing power easement south of Kororoit Creek. The objectives of ESO4 and ESO6 include to minimise impact of buildings and works on the creek corridor and to protect and enhance the viability and connectivity of ecosystems, species and genetic diversity.

ESO1 (Remnant Woodlands, Open Forests and Grasslands) applies at the Ballarat Rail corridor, in association with a north-western rail reserve grassland. The objective of ESO1 includes to protect and conserve remnant native woodlands, open forests and grasslands and discourage inappropriate use and development.

ESO2 (Wetlands, Waterways and Riparian Strips) applies at Skeleton Creek; and ESO1 (Waterway Corridors) and ESO2 (Rural Conservation Area) apply at Dry Creek. The objective of ESOs includes to protect and conserve wetlands and discourage inappropriate use and development.

- **Identified as of regional or State significance in a reputable study of landscape values?**

  ☐ NYD ☐ No ☒ Yes If yes, please specify.

On a broad scale, the project area lies with the Victorian Volcanic Plains bioregion, an area which contains ecosystems of State significance as described in *Victoria's Biodiversity Strategy* (DSE 1997). Development and urbanisation within the bioregion has resulted in extensive depletion and fragmentation of natural environments. The remaining ecosystems within the bioregion are significant for biodiversity conservation.

More specifically, the project area intersects biosites at the following locations:

- Biosite 5269: Kororoit Creek Escarpments – Deer Park (regional conservation significance)
- Biosite 4205: Ravenhall Grasslands NCR (Women's Prison Surrounds Grass VPME20).This area is protected as a conservation reserve; however, the component of the biosite intersected by the project is the road reserve, which does not contain any ecological values
- Biosite 4616: Skeleton Creek Upper Reaches (State significance).

Additional reserves which occur nearby but are not affected by the project areal include:

- Biosite 3567: Boral Quarry Deer Park (state conservation significance)
- Biosite 3593: Deer Park Shopping Centre (Grass PPSU004; local conservation significance)
- Biosite 3592: Angliss Grassland, Deer Park (Grass PPSU003; national significance).

The project area crosses two significant waterways. Kororoit and Skeleton Creeks are both documented as being significant regional landscapes. The significant landscape values of Kororoit Creek have been documented within *Kororoit Creek Regional Strategy 2005-2030* (DPCD 2006). The creek corridor is highly valued for Mount Kororoit and ancient river red gum trees to wide expanses of grassland and spectacular rock and cliff formations.

Downstream of its intersection with the project area, the Skeleton Creek valley is regarded as regionally significant for its uniquely preserved geomorphology (*Sites of Geological and Geomorphological Significance in the Western Region of Melbourne*, Rosengren 1987).

- **Within or adjoining land reserved under the *National Parks Act 1975*?**
  ☐ NYD ☒ No ☐ Yes If yes, please specify.

- **Within or adjoining other public land used for conservation or recreational purposes?**
  ☐ NYD ☐ No ☒ Yes If yes, please specify.

The northern most part of the project area at St Albans occurs within the existing power easement. The easement is on public land managed by the City of Brimbank and is used as a recreational reserve.

Two fenced grassland reserves, managed by Brimbank City Council, are located north and south of Kororoit Creek. The project area has been reduced as far as practicable to minimise impacts to each of the grassland reserves, however small areas of each will be removed during construction.

The project area is adjacent to and not within the Ravenhall NCR and avoids impact on environmental values in the conservation reserve.

The project area will impact the landscaped road reserve along Penrose Promenade, which provides direct connection to two large sports ovals and a playground, utilised by local residents. Temporary disruption to the road reserve will occur during construction and may alter access to these recreational assets. Suitable detours of pathways will be provided to maintain access to these facilities during construction.

Is any clearing vegetation or alteration of landforms likely to affect landscape values?
☐ NYD ☐ No ☒ Yes If yes, please briefly describe.

As the project is a buried pipeline, there will be no long term changes to the landscape or landform values intersected by the project.

Short term impacts of construction, including vegetation clearing, will be avoided and minimised to the greatest extent practicable and all construction activities will be conducted in accordance with the EMP.

The sensitive landscape areas are Kororoit, Skeleton and Dry Creeks which will be reinstated to the satisfaction of the water authority, Melbourne Water.

Is there a potential for effects on landscape values of regional or State importance?
☐ NYD ☐ No ☒ Yes Please briefly explain response.

The primary areas of landscape value are waterway crossings and grassland reserves, namely Kororoit Creek. Construction management measures will aim to avoid and minimise impacts to important landscapes through preparation and implementation of specific measures which will be detailed in the Environmental Management Plan.

Is mitigation of potential landscape effects proposed?
☐ NYD ☐ No ☒ Yes If yes, please briefly describe.

Reinstatement plans to mitigate construction impacts within the project area will be prepared and implemented following construction. As the pipeline is buried, the objective of reinstatement plans will be to return the land to pre-construction conditions.

In addition, the EMP will detail the construction measures taken to avoid and minimise environmental impacts from the project at key landscape features. This will include the requirement for all works on waterways to be undertaken in accordance with Melbourne Water re-instatement and revegetation requirements.

Potential effects on the Kororoit Creek landscape will be reduced through constraining the project area (from 30 m to 7 m in some areas) where significant values are present. This includes minimising the project area through areas of grassland north and south of Kororoit Creek and minimising the footprint during open trenching of Kororoit Creek in order to reduce impacts on significant fauna habitat. Specific revegetation plans will be prepared for Kororoit Creek and the two adjacent grasslands.

Other information/comments? (e.g. accuracy of information)
N/A

Note: A preliminary landscape assessment is a specific requirement for a referral of a wind energy facility. This should provide a description of:

- The landscape character of the site and surrounding areas including landform, vegetation types and coverage, water features, any other notable features and current land use;
- The location of nearby dwellings, townships, recreation areas, major roads, above-ground utilities, tourist routes and walking tracks;
- Views to the site and to the proposed location of wind turbines from key vantage points (including views showing existing nearby dwellings and views from major roads, walking tracks and tourist routes) sufficient to give a sense of the overall site in its setting.

Soils

Is there a potential for effects on land stability, acid sulphate soils or highly erodible soils?
☐ NYD ☒ No ☐ Yes If yes, please briefly describe.

A geotechnical study (refer to **Attachment E**) of the project area was undertaken by Melbourne Water (Aurecon 2013), which included reviewing known data across the study region, studying previous reports and undertaking field investigations including test pits, bore holes and laboratory testing of soil samples.

The area between St Albans and Cowies Hill comprises basalt plains. Field tests concluded the basaltic clay in the area is typically stiff to very stiff consistency and of high plasticity, varying in colour from grey to red/brown. Basalt boulders were observed across the project area and these ranged from highly to slightly weathered and low to high strength. Excavation works will need to consider possible instability of the weathered basalt.

No erosion management overlays are present in the project area. During project surveys, no highly erosive areas have been identified.

Field pH tests for acid sulphate soils (ASS) indicated that all samples were of low ASS risk, with the exception of one test pit. This sample revealed only a slight risk of ASS. However, as cross-referencing with the relevant test pit log revealed clay soils, testing results were below the relevant texture-based action criteria (i.e. no evidence of ASS presence). Refer to **Attachment E** for details on ASS analysis.

Are there geotechnical hazards that may either affect the project or be affected by it?
☐ NYD ☐ No ☒ Yes If yes, please briefly describe.

Soil variability has the ability to significantly impact on the constructability of the pipeline as changes in the composition of the soil can lead to difficulty when boring and tunnelling. Highly variable soil requires contractors to change plant often, which slows the construction rate.

Geotechnical investigations show a high degree of variability across the project area, both within

the clay strata and the rock. Excavations will encounter clay, basalt boulders and bedrock which vary from extremely weathered to fresh rock. For this reason, open trenching is the preferred method of construction as it presents the lowest risk to equipment damage during construction due to unforeseen ground conditions. These risks are a key reason why open cut trenching was selected as the construction methodology at Kororoit Creek. The northern bank of Kororoit Creek was noted as an area of potential erosion during project field investigations due to the steep embankment.

It is expected that the highly jointed rock mass will be rippable along weak joints. However, the restricted space within the trenches will further increase the difficulty of breaking up the larger corestones and ripping hard rock mass. Localised large excavation or rock breaking will be required where large boulders are encountered. Rock breaking is a high noise activity, and is a key construction management issue to be addressed to minimise impacts to existing residents.

Refer to Section 15 for details on proposed construction noise controls.

Other information/comments? (e.g. accuracy of information)

N/A

15. Social environments

Is the project likely to generate significant volumes of road traffic, during construction or operation?

☐ NYD ☒ No ☐ Yes If yes, provide estimate of traffic volume(s) if practicable.

Construction of the pipeline is considered unlikely to generate significant increases to traffic volumes, with a maximum number of 20 construction vehicles and machinery per work front - this will have some impact on the local road network as vehicles mobilise to and from the work front on a daily basis.

Vehicles travelling to the work site will include trucks hauling materials and equipment, as well as personal vehicles.

Pipeline construction involves crossing roads and trenching in road reserves. This will require f lane closures and traffic management, particularly along Robinsons Road. Traffic impacts are described further in the following sections.

Routine maintenance checks of the pipeline may generate minimal additional road traffic during the ongoing operation phase.

Is there a potential for significant effects on the amenity of residents, due to emissions of dust or odours or changes in visual, noise or traffic conditions?

☐ NYD ☐ No ☒ Yes If yes, briefly describe the nature of the changes in amenity conditions and the possible areas affected.

Construction activities will be conducted in a manner that minimises impacts to local residents. However some impacts are likely due to the close proximity to residential areas.

The project area is adjacent to the following residential areas:

- The northern section of the project area, within the City of Brimbank, is an established residential area. Approximately 300 households will be in close proximity to the project works and these residential properties are either adjacent to the power easement or a road reserve.
- In the project's southern end, in the City of Wyndham, there are approximately 100 residents on Penrose Promenade, Tarneit who will be impacted by construction.

Air emissions (dust and odour)

No odorous emissions will be generated by the project.

The main impact on air quality from the project will be as a result of dust generated during construction. This will be mitigated through application of appropriate suppression and avoidance techniques, such as the use of water trucks, restricting truck movements to designated haulage roads, restricted speed limits and staged revegetation of cleared areas. Mitigation measures will be detailed in the construction works and will comply with EPA Environmental Guidelines for Major Construction Sites, specifically with regard to dust control (EPA Victoria 1996).

Visual impacts

The pipeline will be installed underground and therefore invisible from public or private views subsequent to project completion. The only visual evidence of the pipeline will be air valves, scour valves, manholes and small signage indicating the presence of the pipeline.

Noise

During construction, noise is likely to occur. This is the consequence of activities such as rock breaking, drilling, machinery, vehicles and construction personnel.

All construction activities will be required to comply with EPA Publication 1294—Noise Control Guidelines.

The project EMP will be developed prior to commencement of construction and will specify in detail the requirements for control of environmental impacts including dust, noise and visual amenities.

Traffic

The driveways of approximately 20 residents on Robinsons Road, Deer Park and 10 residents on Penrose Promenade, Tarneit, will be temporarily affected by construction works. Access to resident driveways will be maintained throughout construction, however there may be small delays for individual residents accessing their properties, The project team will work closely with each resident to minimise disruption.

Access will be maintained to affected residents. If necessary, detours will be established to provide clear access to residents adjacent to the pipeline. These will be detailed within the contractor's Traffic Management Plan (TMP).

A staged approach to construction means that short sections of roads will be impacted in a progressive manner as the pipeline is installed. A conservative estimate of likely timeframes for road closures has been calculated based on the typically speed of trenching and pipe installation, and has determined that:

- various sections of Robinsons Road will experience lane closures and reduced speeds for approximately 12 weeks
- Ballarat Road crossing will experience lane closures and reduced speeds for approximately three weeks
- Robinson Road under the Deer Park Bypass crossing will experience lane closures and reduced speeds for approximately two to three weeks
- Middle Road, a minor, majority unsealed road will experience similar conditions for approximately 14 weeks
- other minor roads, including Penrose Promenade, and crossings will have lane closures between two to 12 days.

Single lane closures will apply to all affected roads.

For the proposed works under the Deer Park Bypass, careful management at this location is required. In consultation with VicRoads, the pipeline route has been extended to avoid the freeway entry ramp.

Potential traffic impacts during construction include:

- increased traffic and road use by vehicles and machinery
- lane closures for installation of the pipeline within road reserves.

As a substantial proportion of the pipeline is located within local road reserves, lane closure or detours will be required during the construction phase. The main contractor, once appointed, will be required to prepare suitable TMPs in consultation and with approval by the relevant road authority under Roads Management Act 2006.

Shared user paths will be impacted and the contractor will be required to establish appropriate signage and detours in such circumstances.

Melbourne Water's expectations in regards to traffic management will be detailed in a Traffic Management Strategy. The strategy will be included in the construction contract and will address the following:

- approach to road closure management during construction (i.e. partial road closures only)
- agreements to date with the relevant road authorities
- communication protocols for affected stakeholder groups requirement to consider impacts beyond the affected roads (e.g. access to schools and other community facilities)

The contractor will be required to comply with the relevant road authority requirements regarding traffic management, including obtaining consents to occupy road reserves and the preparation of localised TMPs to minimise impacts on the community.

Is there a potential for exposure of a human community to health or safety hazards, due to emissions to air or water or noise or chemical hazards or associated transport?

☐ NYD ☐ No ☒ Yes If yes, briefly describe the hazards and possible implications.

Potential community health and safety hazards include dust and increased traffic movements during the construction phase. Mitigation measures for these hazards will be developed and incorporated into the relevant project specific plans.

Is there a potential for displacement of residences or severance of residential access to community resources due to the proposed development?

☐ NYD ☒ No ☐ Yes If yes, briefly describe potential effects.

There is no requirement to permanently displace residents.

No full road closures are anticipated during construction and no road or residential access impacts are expected to sever access as a result of the project works. Communities will be engaged to confirm specific residential access requirements at affected properties.

Community resources such as the sports ovals adjacent to Penrose Promenade will likely have modified access during construction.

Are non-residential land use activities likely to be displaced as a result of the project?

☐ NYD ☒ No ☐ Yes If yes, briefly describe the likely effects.

Some private properties will require the application of a permanent easement to property titles in order for Melbourne Water to undertake maintenance activities in the future. The application of an easement will restrict future development of affected land, but unlikely to affect non-residential land use given that existing recreational and agricultural activities (e.g. grazing and cropping) that currently occur along the power easement can continue.

Do any expected changes in non-residential land use activities have a potential to cause adverse effects on local residents/communities, social groups or industries?

☐ NYD ☒ No ☐ Yes If yes, briefly describe the potential effects.

No changes in non-residential land use are proposed.

Is mitigation of potential social effects proposed?

☐ NYD ☐ No ☒ Yes If yes, please briefly describe.

A range of management measures are proposed to mitigate effects on the community and affected stakeholders. The key focus for managing social effects is thoughtful, timely and consistent communication with the community and affected stakeholders. To achieve this during construction, Melbourne Water will have a designated Communications and Engagement professional who will manage strategic communications and engagement activities. In addition, the contractor will be required to provide a Communications and Engagement professional to manage all 'on the ground' matters, including responding to and closing out complaints and enquiries during construction.

Melbourne Water will establish a property access agreement with each private landowner prior to works. The contractor is required to comply with this agreement and develop and implement a Land Access Protocol to manage and minimise impacts to affected landowners.

Melbourne Water had developed a Communication and Engagement Plan (CEP) that will include standards for the construction partner to comply with:

- timeframes for dealing with complaints
- timeframes for notifying residents and the community about proposed works
- commitments for wide-reaching engagement with the community
- offers to property conditions surveys to affected landowners, prior to works commencing
- a process for dealing with and rectifying property damage.

Works are expected to occur during typical construction hours and are to be conducted in accordance with EPA Publication 1294—Noise Control Guidelines. Should night works be required, the appointed contractor will be responsible for managing these activities consistent with EPA guidelines, including appropriate community notifications.

Other information/comments? (e.g. accuracy of information)

N/A

Cultural heritage

Have relevant Indigenous organisations been consulted on the occurrence of Aboriginal cultural heritage within the project area?

☒ No If no, list any organisations that it is proposed to consult.
☒ Yes If yes, list the organisations so far consulted.

The following organisations have been consulted:

- Aboriginal Affairs Victoria (AAV)
- Bunurong Land Council Aboriginal Corporation (former Registered Aboriginal Party (RAP) Applicants and traditional owners)
- the Boon Wurrung Foundation (former RAP Applicants and traditional owners)
- the Wurundjeri Tribe Land Compensation Cultural Heritage Council (traditional owners).

What investigations of cultural heritage in the project area have been done?
(attach details of method and results of any surveys for the project & describe their accuracy)

A desktop assessment, a review of background information and a Standard Assessment (survey) under the provisions of the *Aboriginal Heritage Act 2006* have been undertaken. A copy of the draft Standard Cultural Heritage Management Plan (CHMP), that describes the methodology and results are included in **Attachment F**.

Is any Aboriginal cultural heritage known from the project area?

☒ NYD ☒ No ☒ Yes If yes, briefly describe:

- Any sites listed on the AAV Site Register
- Sites or areas of sensitivity recorded in recent surveys from the project site or nearby
- Sites or areas of sensitivity identified by representatives of Indigenous organisations

A search of the Victorian Aboriginal Heritage Register (VAHR) was completed on 7 June 2013 once the activity area had been further refined. The desktop assessment indicated that there are 100 sites within the activity area, 13 of which are located within the project area. Table 1 describes these sites.

Table 1. Sites on the VAHR Site Register

Place Number (VAHR)	Place Name	Site Type
7822-0466	Moorookyle 10	Artefact Scatter
7822-0468	Moorookyle 12	Artefact Scatter
7822-0469	Moorookyle 13	Artefact Scatter
7822-0706	Ravenhall	Artefact Scatter
7822-0912	Powerline Site 1	Artefact Scatter
7822-0914	Powerline Site 3	Artefact Scatter
7822-0915	Powerline Site 4	Artefact Scatter
7822-1409	Lady Gee 3	Artefact Scatter
7822-1412	Lady Gee 1	Artefact Scatter
7822-2673	Transmission Easement 2	Artefact Scatter
7822-2672	Transmission Easement 1	Artefact Scatter
7822-2845	Lot 2 Leakes Rd IA 1	Artefact Scatter
7822-2476	Leakes Road AS	Artefact Scatter

The Standard Assessment involved a surface archaeological survey. As a result, newly recorded sites were identified as described in Table 2.

Table 2. Sites recorded during the 2013 Standard Assessment

Place Number (VAHR)	Place Name	Site Type Site	Contents
VAHR 7822- TBC	Middle Road Truganina LDAD 1	Low Density Artifact Distribution	1 quartz distal flake
VAHR 7822-TBC	Derrimut Road Truganina LDAD 1	Low Density Artifact Distribution	1 proximal silcrete flake/ 1 crystal quartz distal flake
VAHR 7822-TBC	Tarneit Road Tarneit LDAD 1	Low Density Artifact Distribution	1 quartz core/ 1 quartz distal flake
VAHR 7822-TBC	Tarneit Road Tarneit LDAD 2	Low Density Artifact Distribution	1 quartzite core

Areas of sensitivity identified during the standard assessment include:

- The immediate vicinity of Kororoit Creek (i.e. within 50 m of the creek), including its banks
- Dry Creek and Skeleton Creek
- areas of fenced native vegetation near Kororoit Creek. These areas may indicate areas which may not have been impacted by the general disturbance within the power easement (between Station Road and Ballarat Road)
- area adjacent to the swamp between Riding Boundary Road/Foleys Road and the Western Freeway
- area between the Western Freeway and Middle Road may be sensitive due to the proximity to the swamp mentioned above
- stony rises located near Middle Road and Derrimut Road.

Are there any cultural heritage places listed on the Heritage Register or the Archaeological Inventory under the *Heritage Act 1995* within the project area?

☐ NYD ☒ No ☐ Yes If yes, please list.

A historic archaeology assessment has been conducted and the results are provided in **Attachment G**.

There are no historic heritage places listed on the Victorian Heritage Register (VHR) adjacent to the project area.

A total of two places have been previously registered on the Heritage Inventory adjacent to the project area and these are detailed in Table 3.

Table 3. Heritage places recorded on the Heritage Inventory adjacent to the project area

Site Number	Site Listing	Site type	Significance	Potential Impact
D7822-0215	Delisted Victorian Heritage Inventory	DH1 STONE WALLS	Local	Nil – site previously destroyed
H7822-0174	Victorian Heritage Inventory	RAVENHALL MAGAZINE AND STORAGE FACILITY	Local	Pipeline is sited at the edge of the site boundary

In addition, a further nine unregistered sites (dry stone walls) were recorded during the survey and are detailed in Table 4.

Table 4. Newly recorded heritage places

Newly recorded site	Significance	Potential Impact
Dry Stone Wall 1 (north of Dohertys Road)	Local	Partial removal may be required
Dry Stone Wall 2 (north of Dry Creek)	Local	Partial removal may be required

Dry Stone Wall 3 (north of Dry Creek)	Local	Partial removal may be required
Dry Stone Wall 4 (north of Dry Creek)	Local	Partial removal may be required
Dry Stone Wall 5 (north of Dry Creek)	Local	Unlikely but pipeline is located adjacent to site and may be indirectly impacted during construction
Dry Stone Wall 6 (north of Dry Creek)	Local	Unlikely but pipeline is located adjacent to site and may be indirectly impacted during construction
Dry Stone Wall 7 (north of Dry Creek)	Local	Unlikely but pipeline is located adjacent to site and may be indirectly impacted during construction
Dry Stone Wall 8 (north of Dry Creek)	Local	Partial removal may be required
Dry Stone Wall 9 (north of Dry Creek)	Local	Unlikely but pipeline is located adjacent to site and may be indirectly impacted during construction

Dry stone walls are regarded as having local historical significance and do not require registration with Heritage Victoria. However, dry stone walls can be protected by local councils through planning schemes.

Wyndham City Council has recently amended its planning scheme to require a planning permit to remove a dry stone wall. Similarly, Melton City Council is implementing a planning scheme amendment to introduce the same control into its scheme.

Both Melton and Wyndham City Councils have been consulted to assist in determining an appropriate approach to the management of dry stone walls in the project area. Where impacts to walls will occur, appropriate reinstatement will be undertaken (as described below).

Is mitigation of potential cultural heritage effects proposed?

☐ NYD ☐ No ☒ Yes If yes, please briefly describe.

Aboriginal cultural heritage

A complex assessment is required to further evaluate the likely effects on Aboriginal cultural heritage and to complete the CHMP. It is expected that once approved, the CHMP will include recommendations to avoid and mitigate impacts on Aboriginal cultural heritage. Typical measures include:

- site inductions
- reducing construction footprints
- salvage of known sites, where impacts are unavoidable
- erecting temporary fencing around the areas of any identified cultural heritage to be protected during construction
- contingency plans in the event of the discovery of new Aboriginal heritage sites.

The project must comply with the requirements of the approved CHMP.

Historic heritage

Management measures will be incorporated into the EMP to address impacts on dry stone walls within the project area. As the dry stone walls cannot be avoided, the project proposes reinstatement of any walls which are affected as per the following method:

- prior to the commencement of works to remove a dry stone wall, a Dry Stone Wall Management Plan (DSWMP) will be prepared. The management plan will include details on the extent, height and structural condition of the wall specification and schedule of works
- any partial demolition of the dry stone wall will necessitate the storage of demolished stone on site to allow for the repair of the remaining sections of the wall.
- any reinstatement or repair of walls is to be undertaken by a professional craftsperson and is to be consistent with the construction style of the original wall.
- reinstatement is to use stone from (in order of priority):
    - the original wall in that location (including fallen stone adjacent to the wall).
    - a nearby section of the wall approved to be removed
    - from the adjacent paddock

- from walls approved to be removed in the nearby area (including stone stockpiled by Council).

Further consultation will be undertaken with Wyndham and Melton councils in regards to the management of dry stone walls.

Other information/comments? (e.g. accuracy of information)

In accordance with Section 49 of the *Aboriginal Heritage Act 2006*, a CHMP is required for the project. The activity has not yet been subject to a Complex Assessment (subsurface testing). A Complex Assessment is required to determine the nature, extent, and significance of Aboriginal cultural heritage potentially impacted by construction of the pipeline. The CHMP will also include final management recommendations which detail the approach to managing the potential impacts on Aboriginal cultural heritage sites, and will be submitted to AAV for evaluation and approval.

16. Energy, wastes & greenhouse gas emissions

What are the main sources of energy that the project facility would consume/generate?

- [x] Electricity network. If possible, estimate power requirement/output ……..
- [ ] Natural gas network. If possible, estimate gas requirement/output ……...
- [ ] Generated on-site. If possible, estimate power capacity/output ……
- [ ] Other. Please describe.

Please add any relevant additional information.

The project will have no direct energy consumption as the pipeline will be a gravity main.

There will be an increase in upstream power usage to deliver the additional water to the St Albans Reservoir. This usage is accounted for in Melbourne Water's overall forward projections for the system.

What are the main forms of waste that would be generated by the project facility?

- [ ] Wastewater. Describe briefly.
- [ ] Solid chemical wastes. Describe briefly.
- [x] Excavated material. Describe briefly.
- [ ] Other. Describe briefly.

Please provide relevant further information, including proposed management of wastes.

The majority of the pipeline will be constructed by open cut trenching. This activity will displace approximately 66,000 m^3 of soil, consisting of clean fill and rock. As far as possible, the excavated soil will be reused on site for trench backfilling. Any excess soil will then be available for reuse as clean fill, subject to compliance with EPA guidelines. It is not expected that any excavated material would be directed to landfill as waste.

What level of greenhouse gas emissions is expected to result directly from operation of the project facility?

- [x] Less than 50,000 tonnes of CO_2 equivalent per annum
- [ ] Between 50,000 and 100,000 tonnes of CO_2 equivalent per annum
- [ ] Between 100,000 and 200,000 tonnes of CO_2 equivalent per annum
- [ ] More than 200,000 tonnes of CO_2 equivalent per annum

Please add any relevant additional information, including any identified mitigation options.

The estimated increased emissions from the upstream power usage described above, is less than 50,000 tonnes of CO_2 equivalent per annum.

17. Other environmental issues

Are there any other environmental issues arising from the proposed project?

☒ No ☐ Yes If yes, briefly describe.

18. Environmental management

What measures are currently proposed to avoid, minimise or manage the main potential adverse environmental effects? (if not already described above)

☒ Siting: Please describe briefly

Melbourne Water has engaged ecologists, cultural heritage advisors and geotechnical specialists to conduct preliminary and detailed assessments of a number of pipeline alignment options. A preferred pipeline route between St Albans and Cowies Hill reservoir has been selected based on the findings from flora, fauna, cultural heritage, and geotechnical surveys, as well as constructability and engineering assessments, extensive stakeholder consultation and the use of triple bottom line method of assessment for route alternatives.

Melbourne Water has incorporated an 'avoid and minimise' approach through project planning which has resulted in minimal impacts on biodiversity and cultural heritage. Through careful consideration of the project area, impacts to threatened species, such as spiny rice-flower, have been avoided.

The most significant avoidance measure introduced in project planning has been to locate the pipeline and the project area outside of the Ravenhall NCR (East), which is managed for conservation. The project area is restricted to the road reserve along Robinsons Road to avoid recorded Natural Temperate Grassland of the Victorian Volcanic Plain ecological community, and potential Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains, and habitat for threatened fauna within the Ravenhall NCR.

Melbourne Water has undertaken detailed stakeholder engagement with VicRoads and Melton City Council and negotiations have allowed the pipeline to be installed within the current Robinsons Road reserve, adjacent to the Ravenhall NCR, in a manner which is sensitive to the proposed upgrade of Robinsons Road.

Through this measure, the most significant habitat associated with the project is being protected through avoidance of direct impacts on the biodiversity values identified with Ravenhall NCR.

Impacts from the project will be further reduced through constraining the project area to, at some locations only seven metres, where known biodiversity values and habitat are present. This includes minimising the project area through areas of grassland north and south of Kororoit Creek.

Where avoidance of habitat areas is not possible, such as Kororoit Creek and Dry Creek crossings, a project area has been selected based on areas of degraded habitat and the project area width and duration of works will be minimised.

☒ Design: Please describe briefly

The following actions will be investigated during detailed design:

- review the outcomes of the cultural heritage assessments for improved design options.

☒ Environmental management: Please describe briefly.

Environmental management for the project will be governed by a range of statutory authorisations and subsequent management plans. It is the responsibility of Melbourne Water to obtain necessary authorisations under the following:

- Environment Protection and Biodiversity Conservation Act
- Planning and Environment Act
- Aboriginal Heritage Act
- Heritage Act
- Land Acquisition and Compensation Act.

As a minimum, the following management plans will be developed for the project:

- Environmental Management Plan (EMP), and subsequent Construction

Environment Management Plan (CEMP)
- Aboriginal Cultural Heritage Management Plan (CHMP)
- dry stone wall management plan (DSWMP)
- native vegetation offset strategy.

Threatened species management (addressing both federal and state listed species) will be incorporated into the EMP.

The EMP will be developed by the proponent, Melbourne Water, setting out objectives, requirements, auditing and monitoring, and performance measures for the project. This will include a formal process for identifying additional stockpile, laydown or site compound locations, should this be required. The EMP will be prepared in consultation with the three affected councils and approved by DEPI, prior to works commencing.

The CHMP and offset strategy are to be developed by Melbourne Water. Each plan will be subject to approval by the relevant agency.

The DSWMP will be prepared by the construction contractor, in order to incorporate final construction impacts and management.

As a construction contractor is not yet engaged for the project, it will be a requirement of the contractor's contract with Melbourne Water to comply with the approved/endorsed versions of each management plan and prepare activity-specific CEMPs and work method statements, consistent with the management plans, prior to the commencement of works.

The contractors CEMP will as a minimum address the following:
- pre-construction surveys
- flora and fauna
- revegetation and rehabilitation
- cultural heritage management, including compliance with the approved CHMP
- waterways, surface water and groundwater,
- soil and erosion
- noise, air quality, weeds, fire and waste.

Stakeholder and community consultation will remain the responsibility of Melbourne Water; however, the construction contractor will be expected to engage appropriately with the community throughout the construction period

☒ Other: Please describe briefly

Add any relevant additional information.

Monitoring activities to gauge the effectiveness of the environmental management measures is an important activity and will include:
- construction and post-construction monitoring of the status of identified threatened species and communities will be required to gauge the effectiveness of the various management strategies
- any monitoring required in accordance with the approved CHMP
- water quality monitoring at Kororoit Creek and Dry Creek (should it be flowing) will be undertaken prior to construction works and regularly throughout construction, including immediately following a rain event. The parameters to be analysed include pH, turbidity and temperature. This will be in accordance with State Environment Protection Policy Waters of Victoria requirements.
- the contractor's contract will also include requirements to undertake monitoring and auditing of project activities to ensure compliance with the various management plans and any project approvals.
- Melbourne Water will complete regular audits of the contractor's compliance.

DEPI and other statutory authorities may inspect and audit the project at any time to ensure that it is completed in accordance the information provided in this referral.

19. Other activities

Are there any other activities in the vicinity of the proposed project that have a potential for cumulative effects?

☐ NYD ☒ No ☐ Yes If yes, briefly describe.

20. Investigation program

Study program

Have any environmental studies not referred to above been conducted for the project?

☒ No ☐ Yes If yes, please list here and attach if relevant.

Not applicable.

Has a program for future environmental studies been developed?

☐ No ☒ Yes If yes, briefly describe.

The following studies are designated for the project:

- complex cultural heritage assessment (Aboriginal) is due for completion early 2014.
- pre-construction salvage and translocation of striped legless lizard, in consultation with DEPI.
- pre-construction checks for the salvage and relocation of growling grass frog.

Consultation program

Has a consultation program been conducted to date for the project?

☐ No ☒ Yes If yes, outline the consultation activities and the stakeholder groups or organisations consulted.

Melbourne Water has developed a comprehensive Communications and Engagement Plan which outlines communication and engagement activities that will be undertaken during the life of the project.

Preliminary consultation with a range of stakeholders has been undertaken to introduce the project, discuss statutory planning, land access and environmental requirements and provide context for further consultation as the project progresses. A snapshot of stakeholder consultation undertaken to date is provided at **Attachment H**.

Community information sessions were held on the 24 and 25 September 2013. The key concern for local residents was identified to be the potential impact on local traffic conditions during construction and how this would be managed. As stated in Section 15 of this referral, appropriate traffic management and notification to residents will be undertaken by Melbourne Water to ensure the effective distribution of information and to minimise inconvenience on local residents and road users.

Has a program for future consultation been developed?

☐ No ☒ Yes If yes, briefly describe.

During design phase

For the remainder of the design phase, stakeholder consultation will seek to finalise approval requirements, commence negotiations regarding easement and temporary construction occupation areas, and introduce the project to residents and the wider community. Ongoing consultation is likely to include community information sessions, stakeholder meetings, community engagement events and community bulletins.

An 1800 community information line has been established for the project.

A planned consultation process is in place to discuss pipeline construction and easements with affected landholders.

Further consultation is proposed with members of the Approvals Working Group during development of the environmental management plan.

Discussions with DEPI will continue in order to confirm requirements in regards to flora and fauna translocation protocols, currently under development.

During construction

During construction Melbourne Water will be responsible for all strategic communications and engagement activities. The construction contractor will provide a dedicated Communications and Engagement professional who will manage 'on the ground' community relations issues which will be passed on to Melbourne Water as the Communications Manager. Further details for strategic plans and responsibilities during construction are discussed in Section 15.

Melbourne Water is committed to working with residents and the wider community to see that information is adequately communicated. Consultation and engagement will occur through advertising in local newspapers and newsletters, project website, community information sessions, door-knocking, bulletins and feedback surveys.

Communications about the project will be inclusive and consultative and will encompass diverse interest groups from different backgrounds, ethnicities, religions and non-English speaking persons. All materials will be provided in the appropriate format to successfully engage with these different groups and individuals.

Authorised person for proponent:

I, Peter Clark (full name),
Senior Project Manager (position), confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature Peter Clark

Date 17/12/13

Person who prepared this referral:

I, Rebecca Hunt (full name),
Senior Environmental Planner (position), confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature R. Hunt

Date 17/12/2013