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 20, 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.

PART 1 PROPONENT DETAILS, PROJECT DESCRIPTION & LOCATION

1. Information on proponent and person making Referral

Name of Proponent:	Esso Australia Resources Pty Ltd
Authorised person for proponent: **Position:** **Postal address:** **Email address:** **Phone number:** **Facsimile number:**	David Ffrench Project Manager - Esso Pipeline Replacement Project GPO Box 400 Melbourne. Vic. 3001 david.g.ffrench@exxonmobil.com (03) 9270 3333
Person who prepared Referral: **Position:** **Organisation:** **Postal address:** **Email address:** **Phone number:** **Facsimile number:**	Andy Camp Project Safety and Regulatory Manager - Esso Pipeline Replacement Project Esso Australia Resources Pty Ltd GPO Box 400 Melbourne. Vic. 3001 andy.camp@exxonmobil.com (03) 9270 3333
Available industry & environmental expertise: (areas of 'in-house' expertise & consultancy firms engaged for project)	Esso Australia Resources Pty Ltd (ABN 62 091 829 819) (Esso), as the designated operator of the Gippsland Basin Joint Venture, proposes to replace the existing Longford to Long Island Point liquids pipeline through the installation and operation of a replacement pipeline. Esso has extensive experience in managing environmental commitments and has utilised key environmental staff to guide the planning and preparation of the assessment of environmental impacts required to support and assist this referral. The specialist consulting firms engaged to provide Esso with additional environmental expertise for this referral are: • Biosis – Biodiversity, Flora and Fauna; • Invert-Eco – Giant Gippsland Earthworm; • Andrew Long and Associates – Cultural Heritage; • WorleyParsons – Acid Sulfate Soils.

2. Project – brief outline

Project title: Esso Pipeline Replacement Project (the 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)

Table 1 provides the Project coordinates (AGD66), which are also shown as location points designating the alignment in **Map 1**.

Table 1 – pipeline coordinates

Location Point	Latitude	Longitude
1 (start point east)	38° 13' 23.208" S	147° 9' 41.690" E
2	38° 12' 35.567" S	146° 58' 51.196" E
3	38° 11' 12.613" S	146° 36' 0.667" E
4	38° 8' 5.450" S	146° 22' 10.837" E
5	38° 10' 2.613" S	146° 8' 5.560" E
6	38° 10' 43.232" S	145° 58' 7.844" E
7	38° 11' 53.924" S	145° 33' 59.255" E
8	38° 11' 31.480" S	145° 24' 15.683" E
9	38° 13' 3.534" S	145° 14' 55.414" E
10 (end point west)	38° 17' 35.200" S	145° 12' 23.682" E

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

Esso operates an existing 700 mm diameter pipeline (the Longford 700 pipeline), approximately 187 km in length, which transports crude oil and condensate between the Longford gas processing and crude oil stabilisation plants in Gippsland, and the Long Island Point Plant near Hastings, in Victoria. The pipeline is nearing the end of its operational life, therefore Esso is designing and seeking regulatory approval for a replacement pipeline to continue to transport crude/condensate between Longford and Long Island Point.

Esso proposes to install a 350 mm diameter replacement pipeline between Longford and Long Island Point. It is intended the replacement pipeline will be constructed within existing easements held by Esso which contain three existing oil and LPG pipelines, being the Longford 700 pipeline, its partial replacement in 1981 (for the first 86 km), and a 250 mm LPG pipeline.

From an east-west direction the Project passes in the vicinity of several towns including Longford, Rosedale, Traralgon, Yallourn North, Moe, Trafalgar, Warragul, Somerville and Hastings (**Map 1**).

Table 39 lists the proximity of the Project to these areas.

3. Project description

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

The aim of the proposed replacement pipeline is to allow the continued transport of crude oil and condensate.

A key project design objective is to minimise the environmental footprint by locating the proposed replacement pipeline within Esso's existing easements. The existing easements have been subject to prior disturbance during construction of the original Longford 700 pipeline in 1969, its partial replacement in 1981, construction of the LPG pipeline in 1969, and through Esso's ongoing pipeline maintenance program which involves excavations at discrete locations. These easements give Esso the right to construct, operate and maintain/repair its pipelines.

There may be a small number of locations where, due to restricted space within the existing easements, Esso may seek to position the replacement pipeline outside the existing easements. Should additional easement areas be needed, new easement will be negotiated with relevant landowners.

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

As described previously, Esso operates existing pipelines, located within the existing easements, between the Longford Plants and the Long Island Point Plant. The existing pipelines are governed by the *Pipelines Act 2005* and have a maintenance program in place.

The proposed replacement pipeline will have a diameter of 350 mm and will replace the existing Longford 700 mm pipeline, which is approaching the end of its operational life. The replacement pipeline will continue to underpin Esso's Gippsland operations which have provided crude oil, condensate, LPG and natural gas to the Australian market since 1969.

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

The main components of the proposed Project are characterised as permanent or temporary.

Permanent Components

Pipeline

The proposed replacement pipeline will be approximately 187 km, the same length as the existing Longford 700 mm pipeline but will have a reduced diameter of 350 mm, and will be buried to a minimum depth of cover approximately 0.75 m, in accordance with Australian Standard Pipelines – Gas and Liquid Petroleum (AS2885). The decreased pipeline diameter has been designed for present and anticipated future flow rates.

The proposed replacement pipeline will be constructed adjacent to the existing pipelines and within the existing disturbed easements held by Esso, as stated above, and will connect to existing facilities within the Longford and the Long Island Point Plants.

Facilities to protect the proposed replacement pipeline from corrosion that comply with AS2885 will be installed as part of the Project. The system ("cathodic protection") consists of electrical equipment located at the Longford Plant and the pipeline valve sites, and three locations ("ground beds") spaced along the pipeline. These ground bed locations have been considered as part of this referral (see "survey envelope" definition in Section 7). Each ground bed will be located approximately 50 m from the proposed replacement pipeline and will consist of a 200 mm diameter by 30 m deep hole in which metal rods are located, connected to the pipeline via an underground cable. At the surface, these ground beds will consist of a capped PVC tube (covering the ground bed), a metal stand and a small junction box.

To ensure continuity of oil and gas production from Gippsland, the existing Longford 700 pipeline will continue to operate until the replacement pipeline has been constructed and is put into operation. Esso will clean the Longford 700 pipeline and leave it *in situ* to minimise environmental impact and reduce disruption to landowners. Esso will continue to maintain the existing pipeline

licences for the Longford 700 pipeline and will continue to be responsible for safety and environmental requirements.

Valve Sites

Up to eight new above ground valve sites will be installed to facilitate isolation of pipeline sections in accordance with AS2885. The new valve sites will be located within existing easements and will be fenced.

A site hut will be installed at each valve site to house instrumentation and electrical equipment, and to provide basic weather protection for the equipment and maintenance personnel.

Photo 1 shows an existing pipeline valve site.

Photo 1 – Existing pipeline valve site

Pipeline Signs

Pipeline signs will be located along the proposed replacement pipeline in accordance with AS2885.

Monitoring Systems

The proposed replacement pipeline will have a new monitoring and control system (Supervisory Control and Data Acquisition system - referred to as a SCADA system) based at Longford with back up control capability at Long Island Point. The system will be monitored by Esso operating staff at the Longford and Long Island Point Plants, which are staffed 24 hours a day, 365 days a year. The SCADA will communicate between the Longford site, valve sites and Long Island Point site via a fibre optic cable. The fibre optic cable will typically be installed in the same trench as the proposed replacement pipeline, except for trenchless construction locations where it will be in a separately drilled hole immediately next to the proposed replacement pipeline.

The proposed replacement pipeline will also have a leak detection system which will have an audible and visible alarm at the Longford control room.

Temporary Components

Offsite premises

Temporary offsite premises will be required for construction management offices, equipment storage areas, storage of hazardous materials (chemicals, fuels, oils, etc.), toilet facilities and waste storage and disposal. A pipe storage area will also be located within existing industrial premises near Hastings.

Offsite premises will be located in existing commercial or industrial facilities or areas with existing storage facilities where possible, and located outside the Construction Right of Way (defined on page 7). In the event that offsite premises cannot be located in existing commercial, industrial, or

storage areas, Esso will obtain appropriate permits from the local planning authorities to establish temporary offsite premises.

No accommodation camp will be established for the Project. Construction personnel will be accommodated in existing commercial accommodation (hotels, motels, rental properties). Construction crews will work concurrently along different sections of the proposed replacement pipeline throughout the construction period. As a result, it is unlikely the Project will give rise to accommodation availability and affordability issues for the wider community.

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

Power supply infrastructure

Existing electricity supply will be accessed to provide power to the proposed new valve sites. Supply will be provided by either upgrading existing above ground infrastructure (new wires on existing power poles) or by installing new underground cabling from existing supply (installed via a hole up to 2 m in diameter, to allow construction personnel access to drill electrical cabling underground to the valve site). The length of underground cable will vary between 30 m and 260 m. Potential impacts have been assessed and no vegetation clearance is anticipated for electricity supply works.

Key construction activities:

Esso has engaged at an early stage in the Project an experienced pipeline construction company to provide construction expertise, thereby reducing project uncertainty in design and construction execution.

Esso will need to undertake the following construction works as part of the Project:

Construction Right of Way

A Construction Right of Way (Construction ROW) will be established to facilitate the construction of the Project. The Construction ROW will include the existing easement, approximately 25 m in width, and generally an additional area (Temporary Workspace) for various activities (e.g., travel of pipe laying equipment, light and heavy vehicle travel, directional drilling set-up areas, pipe laydown areas, truck turning areas, soil storage areas).

The Temporary Workspace within the Construction ROW will be typically a strip of land 15 m wide and located adjacent to the existing easements. The exact width of the additional Temporary Workspace may vary depending on available space, environmental, cultural heritage, and construction efficiency factors. Where sought, Temporary Workspace will be agreed with the landowner. Esso's assessment of the potential impacts arising from construction takes into account potential changes in the area of temporary workspace available, and therefore the area of the Construction ROW.

Where Temporary Workspace cannot be established, work will be undertaken within existing easements.

Figure 1 shows a typical pipeline Construction ROW.

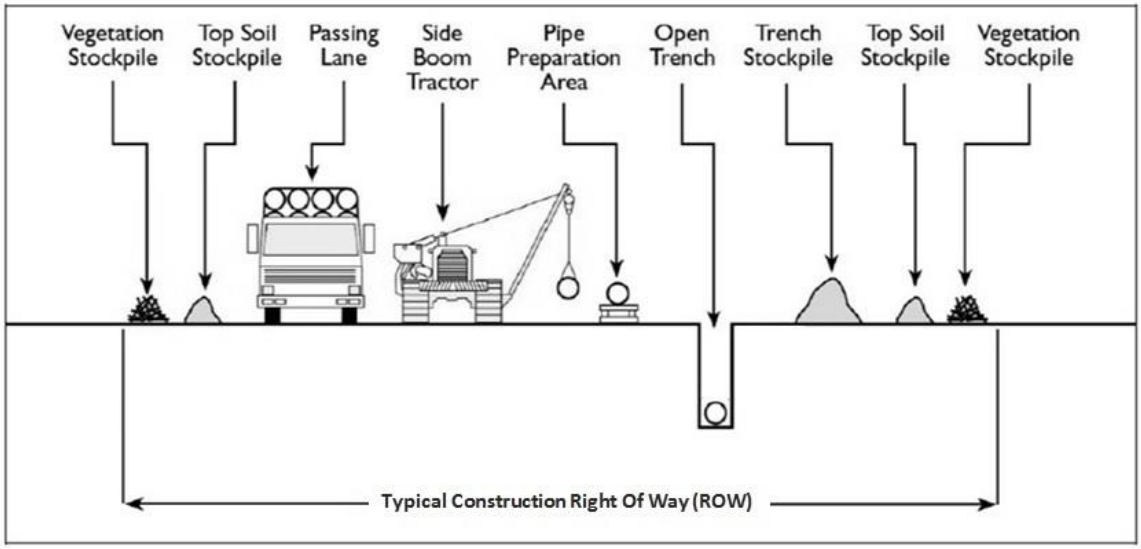

Figure 1 - Typical Construction ROW layout for a pipeline[1]

Establishing access to Construction ROW

Construction vehicles, plant and equipment will access the Construction ROW from public roads via access tracks. As far as practicable, access tracks will use existing access tracks (which may need upgrading works). The location of access tracks will be negotiated with landowners and occupiers and have been considered as part of this referral (see "survey envelope" definition in Section 7).

Access tracks will be kept to the minimum width practicable for the safe movement of heavy vehicles.

Surveying and fencing of Construction ROW

The Construction ROW will be delineated by land surveyors prior to the commencement of any construction activities. Fences and gates across or parallel to the Construction ROW will be replaced with temporary fences and gates, where necessary, and in consultation with landowners and occupiers.

Clear and grade of Construction ROW

Once the Construction ROW is delineated, vegetation will be removed from the Construction ROW and placed in a stockpile on the edge of the Construction ROW. Topsoil will then be removed and stockpiled in windrows, separate to vegetation and subsequent trench spoil stockpiles.

Trenching

A trench will be excavated along the proposed replacement pipeline route, and the material removed from the trench will be set aside for later use as backfill. Specialised rotary trenching machines or excavators will typically be used to dig trenches. Minimum depth of pipeline cover will be approximately 0.75 m in accordance with AS2885. Trench width will vary depending on ground conditions and will be between approximately 0.7 m and 2 m.

Trenchless construction (including horizontal directional drilling (HDD)) will be used to construct the proposed replacement pipeline in areas that are not suited to ordinary trenching techniques, such as intersections with significant watercourses, railways and roads, and specific environmental sensitivities, including populations of Giant Gippsland Earthworms. The locations where trenchless construction will be used to avoid specific risks are discussed in Section 13.

Trenchless construction involves drilling a hole beneath the sensitivity and then pushing or pulling a welded length of pipe through the hole without disturbing the surface.

Figure 2 shows a typical profile of trenchless construction.

[1] There will be slight variations to this layout to reflect existing pipelines in the easements for this Project.

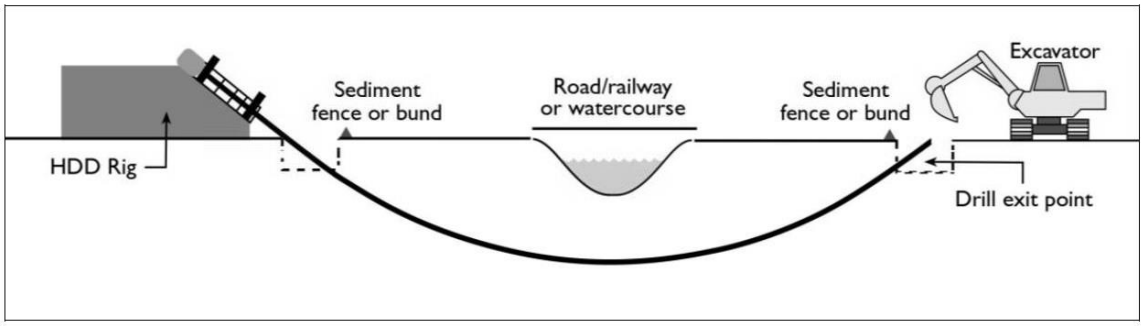

Figure 2 – Typical trenchless construction profile

Pipe Stringing and Bending

Pipes will be delivered and laid on the ground ("strung") within the Construction ROW ready for welding. Specialist pipe bending equipment is brought into the Construction ROW for any in-field pipe bending, where required.

Pipe Welding and Coating

Qualified welders will join pipes together, and welds will be inspected for integrity by non-destructive testing techniques using x-ray or ultrasonic equipment. The welded joint will then be coated to protect against corrosion. The coating process involves abrasive blasting to clean the pipe steel prior to applying the coating.

Pipe Laying

After final quality assurance checks, the pipe will be lowered into the trench using specialist side-boom tractors or excavators.

Trench Backfill

Once the pipe is in place, the trench will be backfilled with the stockpiled trench spoil. Erosion and sediment control measures will be used to manage erosion and sediment runoff.

Rehabilitation of Construction ROW

The topsoil will be reinstated to its pre-existing contours. Surface erosion and sediment control measures will be installed, where required. The Construction ROW will be rehabilitated to its pre-existing condition as far as practicable. Rehabilitation of the Construction ROW will take into consideration landowner and occupier preferences.

Pipeline Pressure Testing

Pipeline pressure testing ("hydrotesting") involves filling the proposed replacement pipeline with water. If tested as a single length, the volume of water required would be approximately 18 Megalitres (Ml). Esso proposes to test the replacement pipeline in smaller sections so that the water used in the first section will be re-used in subsequent sections. This approach will reduce the maximum volume of water required for hydrotesting to approximately 7 Ml.

Hydrotesting requires the water to be managed at the start and end of each section. This is typically achieved with temporary, above-ground water holding areas, known as "turkey's nests". Turkey's nests are constructed by building up and compacting earthen material in layers to form the sides of the holding areas and are required to a) store the volume of water required to hydrotest a pipeline section; and b) hold hydrotest water after it is removed from one section and before being used to fill a subsequent section.

Up to four turkey's nests will be required and will be designed to hold up to 7 Ml of water.

During detailed design, the locations of the turkey's nests will be determined. The locations of the turkey's nests will be negotiated with the relevant landowner or occupier, and detailed in the Construction Environment Management Plan for pipeline construction (CEMP). In accordance with the *Pipelines Act 2005,* the CEMP will be prepared and submitted to Department of State Development, Business and Innovation (DSDBI) for regulatory approval before construction

commences.

After hydrotesting is complete, hydrotest water will be disposed of in accordance with regulatory requirements. Disposal may include irrigation, evaporation, or discharge to a watercourse or sewer. Discharge to the environment will be subject to implementation of appropriate sediment and erosion control measures.

Borrow Pits

Gravel, sand and other material may be sourced for pipe bedding material where trench spoil is not suitable, and for the maintenance of access tracks. Existing borrow pits will be used as far as practicable. If new borrow pits are required, and identified during detailed design, the locations will be negotiated with the relevant landowner or occupier and will be detailed in the CEMP.

Key operational activities:

Esso will operate the proposed replacement pipeline in accordance with its licence to construct and operate a pipeline granted under the *Pipelines Act 2005* and AS2885. The proposed replacement pipeline will operate continuously and unscheduled outages are not expected.

Operational activities typically focus on confirmation of normal pipeline operations, and include the following:

- Surveillance and control of flow rates at Longford and Long Island Point Plants;
- Periodic field surveillance of valve sites and third party activities on and near the easements; and
- Periodic contact with owners and occupiers of land subject to easements to maintain awareness of the pipelines.

Key decommissioning activities (if applicable):

Esso will continue to maintain the existing pipeline licences for the Longford 700 pipeline and will continue to be responsible for safety and environmental requirements. In accordance with AS2885, Esso will clean the Longford 700 pipeline and leave it *in situ* to minimise environmental impact and reduce disruption to landowners and occupiers.

The proposed replacement pipeline will be decommissioned in accordance with the regulatory requirements of the time.

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 Project is a stand-alone replacement pipeline for the existing Longford 700 pipeline. It is not part of a larger 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):

The existing Longford 700 pipeline is nearing the end of its operational life. Continued production of oil and gas from Gippsland requires a pipeline to transport crude oil and condensate from the Longford Crude Stabilisation Plant.

A number of alternative concepts were considered by Esso. These included:

- New onshore pipeline route through areas with no previous pipeline or easement;
- A new offshore pipeline, connected to an offshore vessel;
- Road transport between Longford and Long Island Point Plants, requiring significant numbers of trucks each day; and
- Rail transport between Longford and Long Island Point Plants, requiring significant numbers of train movements.

Given the significant environmental and social impacts expected from these alternatives, along with the prohibitive capital and/or operational costs, significant safety risks and the length of time to implement, these alternative concepts were discounted.

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

No further key alternative locations, timeframes or activities will be considered as part of the Project.

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:

The Project described in this referral constitutes the entire project. It is not part of a staged development and ancillary activities associated with the proposed replacement pipeline have been described. There are no ancillary activities or other project stages that have been excluded from this referral.

Section 20 provides information regarding ongoing surveys for the Project, which will continue during detailed design.

6. Project implementation

Implementing organisation (ultimately responsible for project, i.e. not contractor)**:**
Esso Australia Resources Pty Ltd (Esso) (ABN: 62 091 829 819)

Implementation timeframe:

Subject to obtaining all regulatory and internal approvals, construction could commence as early as late 2014 with construction completion targeted for the end of 2016.

Proposed staging (if applicable):

Construction of the proposed replacement pipeline will be undertaken by construction crews working concurrently along different sections of the pipeline throughout the construction period.

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/Landform

The majority of the survey envelope traverses the Gippsland Plain Bioregion which is characterised by flat to gently undulating terrain and vegetated by Swamp Scrub and open forests. The bioregion is generally below 200 m in altitude, with coastal areas of sandy beaches, shallow inlets and extensive mudflats and mangroves (VEAC 2010).

Vegetation cover

The Gippsland Plain Bioregion is characterised by native vegetation of disparate pattern, reflecting a variety of land-use histories in the bioregion. The region has been heavily modified by agricultural practices with only a quarter of the original extent of native vegetation remaining. Approximately half of the remaining native vegetation is located within public land, with a substantial proportion of this being within conservation reserves (VEAC 2010).

The area of the proposed replacement pipeline is predominantly agricultural land and contains pasture or other non-native vegetation which has limited value as significant species habitat. In general, ecological values are highest where the existing easement crosses roads and waterways, or runs within a larger patch of native vegetation (Biosis 2014).

Geology/soil

Geological maps encompassing the Project area (Geological Survey of Victoria's 1:63,360 scale Westernport Sheet, 1:63,360 scale Cranbourne sheet and the 1:250,000 scale Warragul sheet) indicate the majority of the proposed replacement pipeline is characterised by soils (clay, silts, sands and gravels). However, in some areas near Yallourn North, there are areas with outcropping mudstone, siltstones and sandstones. In areas near Warragul, the geological map indicates there are areas with outcropping mudstones, siltstone and sandstones as well as areas of basalt. The rock formations are typically weathered to a clay, silt or sand soil near the surface. A summary of the geological conditions along the pipeline route are summarised in **Table 2** (WorleyParsons 2013).

Table 2 – Overview of general project area geology

Location	Geology
Longford to Nilma	• Tertiary age Haunted Hill Gravels which typically comprise primarily clays, silts and sands. Also includes gravel beds as well as ferruginous (cemented) sand beds. • Near creeks and rivers - Quaternary age fluvial deposits comprising sand, silts and clays. • At Yallourn North - Devonian age Walhalla Group sandstone, siltstone and minor conglomerate and residual soils. - Some outcropping Cretaceous Strzelecki Group Wonthaggi formation sandstone, siltstone and conglomerate.

Nilma to Drouin South	Devonian age mudstone, siltstone and sandstones and Tertiary age Older Volcanics basalt.
Drouin South to west of Pearcedale	Quaternary age Koo Wee Rup Swamp deposits comprising sand, silts and clays. Sections of alluvium, also comprising sand, silts, clays and also some areas of sand dunes.
West of Pearcedale to Hastings	Tertiary age Baxter Sandstone comprising clays, silts, sands and ferruginous (cemented) sand beds.

The Acid Sulfate Soil (ASS) study of the proposed replacement pipeline identified the presence of soils with acidity exceeding the EPA screening criteria for ASS. However, the soils have low concentrations of sulphur and, as a result, it can be inferred that there is not widespread ASS along the proposed replacement pipeline route. It is noted that the nature and formation of ASS is such that they can be encountered in localised areas. Therefore ASS or Potential Acid Sulfate Soils (PASS) can still be expected to be encountered in localised areas along the proposed replacement pipeline route. ASS and PASS are discussed further in Section 14.

Waterways

The Project traverses a total of 177 waterways. The project intersects 19 major waterways, including the La Trobe, Tyers, Tanjil, Moe and Bunyip Rivers. Further information on waterways is provided in Sections 8 and 13.

There are two wetlands of International importance (declared Ramsar Wetlands) in the vicinity of the Project. The Project crosses an extremity of the Westernport Ramsar Wetland for approximately 70 m at Watson Creek. In addition, the Project crosses 19 waterways which drain into Westernport Ramsar Wetland.

The Gippsland Lakes Ramsar Wetland is located, at its closest point, approximately 53 km downstream of where the project crosses Flynns Creek and approximately 65 km downstream of where the project crosses the La Trobe River.

The Ramsar Wetlands are discuss further in Section 13.

Site area (if known): See route length and width (hectares)

Route length (for linear infrastructure) - approximately 187 km; **and width -** approximately 40 m for construction and approximately 25 m for operation.

The area for environmental field surveys, defined as the "survey envelope", was based on the estimated Project area at the time the surveys were commissioned. The survey envelope included the estimated Construction ROW (comprising existing disturbed easements and Temporary Workspace adjacent to the existing easements), access tracks, truck entry/exit, trenchless construction areas, ground beds and power supply.

The final Project area will be defined during detailed design. It will be predominantly within the survey envelope, although it is possible that at a very small number of locations, project activities may extend slightly beyond the survey envelope. This will be determined during detailed engineering design and construction planning. Any such proposed areas will be assessed for any potential environmental impact, detailed in the CEMP (to be submitted to and approved by DSDBI before construction commences) and therefore will only be used if there is likely to be no significant environmental impact.

Map 2 shows the Project survey envelope, existing infrastructure, major waterways and kilometres points (KPs). KPs are used as location reference points in this referral.

Current land use and development:

The proposed replacement pipeline traverses approximately 520 individual parcels of land, consisting of privately owned freehold land, Crown land (including Holey Plains State Park for 14 km, located south-west of Longford) and land owned by Councils and public authorities.

The Project traverses predominately mixed farming, livestock production and rural residential areas. **Table 36** (Attachment 1) details the major land use types identified using Victorian Land Use Information System (VLUIS) within the survey envelope.

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

Adjoining Land Use

Land use data was obtained from the VLUIS for 2 km each side of the survey envelope. The data indicates that mixed farming, livestock production and rural residential areas are the main adjoining land use type. **Table 37** (Attachment 1) details the major land use types within 2 km each side of the survey envelope.

Existing Infrastructure

The Project intersects approximately 95 sealed and 240 unsealed roads, including the Princes Highway, Princes Freeway and the South Gippsland Highway, and two operational railway lines; the Gippsland Railway (2 crossing locations) and a spur railway line off Stony Point Railway.

Map 2 shows the major road and railways intersected by the Project.

Table 38 (Attachment 1) details the main existing infrastructure intersected by the Project.

Proximity to residences and urban/regional centres

Table 39 (Attachment 1) details the proximity of towns to the survey envelope. Distances from townships have been calculated using the Department of Sustainability and Environment (now Department of Environment and Primary Industries) VicMap Built up Area dataset.

Table 3 indicates the proximity of individual dwellings to the survey envelope. The number of dwellings was counted using aerial photography and may change subject to final detailed design of the proposed replacement pipeline and on-ground verification of the nature of the dwellings identified from the aerial photography (i.e., residences and non-residences).

Table 3 – Proximity of dwellings to survey envelope for the Project

Proximity of dwellings to survey envelope	Approximate number of dwellings
Within survey envelope	4
Within 100m of survey envelope	215
Within 200m of survey envelope	459

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

The proposed replacement pipeline will be constructed and operated in accordance with the provisions of the *Pipelines Act 2005*. Section 85 of the *Pipelines Act 2005* provides an exemption from the need to obtain planning permits under the *Planning and Environment Act 1987*. Section 85 of the *Pipelines Act 2005* states the following:

If a licence is issued under this Act for the construction and operation of a pipeline, nothing in a planning scheme under the Planning and Environment Act, 1987 -

> *(a) requires a permit under that Act for the use or development of land or the doing or carrying out of any matter or thing for the purpose of the pipeline; or*
>
> *(b) prevents the use or development of land or the doing or carrying out of any matter or thing for the purpose of the pipeline.*

Consideration of State environment matters typically addressed via the planning permit process (e.g., Department of Environment and Primary Industries (DEPI) Permitted Clearing of Native Vegetation – Biodiversity Assessment Guidelines) will be included as part of the CEMP, which will

be submitted to DSDBI for regulatory approval before construction commences.

Local government area(s):

The proposed replacement pipeline will be constructed in the following local government areas:

- Wellington Shire Council;
- La Trobe City Council;
- Baw Baw Shire Council;
- Cardinia Shire Council;
- City of Casey; and
- Mornington Peninsula Shire Council.

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)**:**

The following sections provide an overview of the key environmental assets and features in the Project area.

Native vegetation and flora and fauna

The survey envelope supports a range of ecological features including areas of native vegetation, scattered trees, degraded treeless vegetation, waterways and wetlands. The existing disturbed pipeline easement supports native vegetation which is usually limited to understorey component examples although more intact forests and woodland may occur immediately adjacent to the easement (Biosis 2014). A detailed flora and fauna assessment within the survey envelope is provided in Appendix C.

The majority of the survey envelope has been modified for agricultural purposes, including livestock grazing and cropping, and existing pipeline easement maintenance.

A total of 19 Ecological Vegetation Classes (EVCs) were identified and mapped within the survey envelope during the flora and fauna assessments (**Table 10**). The mapping was used to quantify likely impacts to native vegetation and to assist with the identification of important habitat for *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act) listed species or ecological communities.

A desktop assessment of State listed species under the *Flora and Fauna Guarantee Act 1988* (FFG Act) using the Victorian Flora Information System, Melbourne Water Fish Database, and the Victorian Biodiversity Atlas, identified 12 State listed flora species and 30 listed fauna species as potentially occurring within 5km of the survey envelope.

The Commonwealth Protected Matters Search Tool identified 13 flora species and 45 fauna species (including 26 migratory species) listed under the EPBC Act as potentially occurring within 5km of the Project area (Appendix B).

The assessment confirmed the presence of 11 protected matters under the EPBC Act, being; two ecological communities, two Ramsar Wetlands and seven listed species. Six of the seven species are also listed under the State FFG Act. One additional FFG Act listed species was also confirmed. Suitable habitat for a further 11 EPBC Act and FFG Act listed species was also confirmed.

Waterways

The Project traverses a total 177 waterways within two catchment management areas; the West Gippsland Catchment (managed by West Gippsland Catchment Management Authority) and the Port Phillip and Westernport Catchment (managed by Melbourne Water Corporation).

Waterways crossed by the Project were classified based on the following categories:

- Major: This category reflects regional priorities including waterways with high environmental, water supply or social value/s.
- Moderate: Moderate waterways have above average key geomorphic factors. These waterways may have increased potential for geomorphic instability and/or presence of site specific value/s.
- Minor: Waterways with below average geomorphic conditions, and have low instability and/or low environmental or social value.

Table 4 lists the number of waterways within each category that are intersected by the Project.

Table 4 – Waterways

Waterway Category	West Gippsland Catchment	Port Phillip and Westernport Catchment
Major	4	15
Moderate	10	16
Minor	84	48
Total	**98**	**79**

Major waterways intersected by the Project include the following:

- LaTrobe River (2 crossings);
- Tyers River;
- Tanjil River;
- Yallock Creek and one associated drain;
- Bunyip River and four associated drains (Bunyip River complex);
- Cardinia Creek and five associated drains/creeks (Deep Creek, Toomuc Creek, Cardinia Creek complex); and
- Watson Creek.

Map 2 shows locations of all major waterway crossings.

Wetlands

The proposed replacement pipeline crosses an extremity of the Westernport Ramsar Wetland at Watsons Creek for approximately 70 m. In addition, the Project crosses 19 waterways which drain into Westernport Ramsar Wetland.

The Gippsland Lakes Ramsar Wetland is located, at its closest point, approximately 53 km downstream of where the project crosses Flynns Creek and approximately 65 km downstream of where the project crosses the La Trobe River.

The location of the Project and the Ramsar Wetlands is shown in Map 3 and is discussed further in Section 13.

Vegetation and soil characteristics

The survey envelope supports a range of ecological features including areas of native vegetation, scattered trees, degraded treeless vegetation, waterways and wetlands. The existing disturbed pipeline easement supports native vegetation, which is usually limited to understorey component examples, although more intact forests and woodland may occur immediately adjacent to the easement (Biosis 2014). A detailed flora and fauna assessment within the survey envelope is provided in Appendix C.

Ground conditions along the majority of the proposed replacement pipeline are expected to comprise a layer of silty or sandy "topsoil" typically overlying clays, silts or sands. The clay, silt and sands in the geological formations present are typically stiff to hard (for clays/silts) or medium dense to very dense (for sands). The topsoil however is prone to softening when wet. It is expected that soft clays may however be intersected in localised areas, particularly near creeks and rivers and adjacent to the dune sands (WorleyParsons 2013).

The Acid Sulfate Soil (ASS) study (Appendix A) of the proposed replacement pipeline identified the presence of soils with acidity exceeding the EPA screening criteria for ASS. However, the soils have low concentrations of sulphur and, as a result, it can be inferred that there is not widespread ASS along the proposed replacement pipeline route. It is noted that the nature and formation of ASS is such that they can be encountered in localised areas. Therefore ASS or Potential Acid Sulfate Soils (PASS) can still be expected to be encountered in localised areas along the proposed replacement pipeline route. ASS and PASS are discussed further in Section 14.

Current state of the environment

Past land use has modified the pre-European vegetation along most of the survey envelope. Disturbance has predominantly come from agricultural land uses such as grazing and cropping. Esso's existing easements have been subject to disturbance due to construction and ongoing maintenance of its existing pipelines. The majority of the existing easement on private land is grazed and therefore maintained as low vegetation with very few shrubs or other woody plants (Biosis 2014).

Land use activities such as vegetation clearance have contributed to soil erosion and slope wash within the geographic region (Andrew Long and Associates 2014).

The flora and fauna assessment identified 65 introduced flora species within the survey envelope during the field surveys, including 10 declared noxious weed species.

Table 5 lists the noxious weed species identified.

Table 5 – Declared noxious weeds

Common name	Scientific Name	Declared weed status
Bridal Creeper	*Asparagus asparagoides*	Regionally restricted
African Boneseed	*Chrysanthemoides monilifera subsp. monilifera*	Regionally controlled
Spear Thistle	*Cirsium vulgare*	Regionally controlled
Hemlock	*Conium maculatum*	Regionally controlled
Montpellier Broom	*Genista monspessulana*	Regionally controlled
Ragwort	*Jacobaea vulgaris*	Regionally controlled
Blackberry	*Rubus fruticosus spp. agg.*	Regionally controlled
Willow	*Salix spp.*	Regionally restricted
Gorse	*Ulex europaeus*	Regionally controlled
Bulbil Watsonia	*Watsonia meriana var. bulbillifera*	Regionally controlled

Indigenous heritage values

Specialist technical investigations and targeted field surveys for Aboriginal cultural heritage were undertaken by Andrew Long and Associates (Appendix D). As the survey envelope falls within both a Registered Aboriginal Party (RAP) area and a non-RAP area, a Cultural Heritage Management Plan (CHMP) under the *Aboriginal Heritage Act 2006* will be prepared for each area. This process has commenced.

The desktop assessment identified one existing registered Aboriginal place (an artefact scatter) within the survey area and 134 previously registered Aboriginal cultural heritage places within the wider geographic region.

The standard assessment field survey identified 46 artefacts (34 within the survey envelope) in the survey area.

Based on the results of the standard assessment it was deemed necessary to undertake a complex assessment for the Project, which is in progress.

Aboriginal heritage values and the assessments undertaken are described further in Section 15.

Other places recognised as having heritage values

Seven historical sites listed on the Victorian Heritage Register (VHR) or Heritage Inventory are recorded within or close to the survey envelope. These historical sites will not be impacted by the Project.

The survey envelope is aligned within the Monomeith Park and Homestead Heritage Zone (as mapped in the Cardinia Planning Scheme), which is located approximately 3 km east of Koo Wee Rup. The survey envelope runs through grazing paddocks on the north of the property and the VHR heritage listed homestead itself will not be impacted by the Project.

An assessment of non-Aboriginal heritage values of the survey envelope was undertaken by Andrew Long and Associates and is attached as Appendix D.

9. Land availability and control

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

☐ No ☒ Yes If yes, please provide details.

The Project crosses Crown land including Holey Plains State Park, watercourses, road reserves and unreserved Crown land. **Table 6** provides a breakdown of Crown Land.

Table 6 – Crown Land

Crown Land	Approximate length (kilometres)	Approximate area within survey envelope (hectares)
Holey Plains State Park	14	77
Waterways	1	7
Road reserves	6	46
Unreserved crown land	10	49
Total	**31 km**	**179 hectares**

Current land tenure (provide plan, if practicable):

The proposed replacement pipeline traverses freehold land (owned by private persons), public land (land owned by or vested in a public authority) and Crown land (outlined above). **Table 7**

provides a breakdown of land tenure along the proposed replacement pipeline.

Table 7 – Current land tenure

Land tenure	Approx. Length (kilometres)	Approx. area within survey envelope (hectares)
Private Freehold Land	160	960
Public Land	4	36
Crown Land	21	125

Discrete areas of Crown land in the eastern portion of the proposed replacement pipeline are subject to native title. Esso has commenced engagement with Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC) in relation to cultural heritage assessments and a management plan for the eastern portion of the Project and will comply with relevant requirements under the Commonwealth *Native Title Act 1993*.

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

Esso has existing registered pipeline easements, which allow for the construction and operation of pipelines. It is intended that the proposed replacement pipeline will be constructed adjacent to the existing pipeline within existing easements held by Esso. Arrangements to facilitate construction and operation of the proposed replacement pipeline on Crown and public land will be agreed with Crown land departments, relevant agencies and public authorities.

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

All interests in affected land are described previously.

10. Required approvals

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

The existing Longford 700 pipeline is operated in accordance with Pipeline Licence 35. The partial replacement section (first 86 km) of the Longford 700 pipeline is operated in accordance with Pipeline Licence 126. Pipeline Licence was originally issued under the *Pipeline Act 1967* and is now governed by the *Pipelines Act 2005* along with Pipeline Licence 126.

Commonwealth Legislation

Environment Protection and Biodiversity Conservation Act 1999

An EPBC Act Referral will be submitted for the Project.

Native Title Act 1993

The Gunaikurnai people have been determined by the Federal Court of Australia to hold non-exclusive native title rights and interests in respect of certain Crown land areas in the eastern portion of the proposed replacement pipeline route. Esso recognises the Gunaikurnai people as important stakeholders in the region and has commenced engagement with GLaWAC.

The GLaWAC is both the RAP, for the purposes of Aboriginal heritage management and protection, and the registered native title body corporate under the Commonwealth *Native Title Act 1993.*

Esso will comply with all requirements under the *Native Title Act 1993* relevant to the Project.

State Legislation

Esso will be seeking a new pipeline licence for the proposed replacement pipeline. In accordance

with the *Pipelines Act 2005,* a pipeline licence grants the licensee the rights to construct and operate a pipeline within the identified route. The key approvals relevant to the proposed replacement pipeline are outlined in **Table 8.**

The pipeline licence application and approval process is linked to the decision on this referral. The *Pipelines Act 2005* enables the coordination of the public notice period for the pipeline licence application with an Environment Effects Statement (EES) public notice period, if an EES is required.

Key project requirements needing State approval are outlined in **Table 8.** Notwithstanding, Esso will obtain all other regulatory approvals prior to construction of the Project.

Table 8 – Key State Approvals

Legislation	Approval Required	Agency
Pipelines Act 2005	Pipeline licence to construct and operate a pipeline.	DSDBI.
	Environment Management Plan for pipeline construction (referred to as CEMP), subsequent to granting of pipeline licence.	DSDBI.
	Safety Management Plan for pipeline construction (referred to as CSMP), subsequent to granting of pipeline licence.	Energy Safe Victoria (ESV).
	Environment Management Plan for pipeline operation (referred to as OEMP), subsequent to granting of pipeline licence.	ESV (in accordance with the MOU between DSDBI and ESV).
	Safety Management Plan for pipeline operation (referred to as OSMP), subsequent to granting of pipeline licence.	ESV (in accordance with the MOU between DSDBI and ESV).
Aboriginal Heritage Act 2006	Cultural Heritage Management Plan.	Warragul to Longford: GLaWAC. Long Island Point to Warragul: Office of Aboriginal Affairs Victoria (OAAV).
Water Act 1989	Works on waterway permit.	Warragul to Longford: West Gippsland Catchment Management Authority. Long Island Point to Warragul: Melbourne Water Corporation.
Roads Management Act 2004	Traffic Management Plan and Consent to conduct works on a road.	VicRoads and Municipal Councils.

Note: The *Pipelines Act 2005* provides an exemption from the need to obtain planning permits under the *Planning and Environment Act 1987*. Consequently, a planning permit to remove native vegetation is not required for the Project. Consideration of State environment matters typically addressed via the planning permit process (e.g., DEPI's Permitted Clearing of Native Vegetation – Biodiversity Assessment Guidelines) will be included as part of the CEMP, which will be submitted to DSDBI for regulatory approval before construction commences.

Have any applications for approval been lodged?

☒ No ☒ Yes If yes, please provide details.

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

Esso has commenced consultation with the following State and Federal agencies and regulators:

- Commonwealth Department of the Environment;
- Energy Safe Victoria;
- Department of State Development, Business and Innovation;
- Department of Environment and Primary Industries;
- West Gippsland Catchment Management Authority;
- Melbourne Water Corporation;
- Office of Aboriginal Affairs Victoria; and
- Department of Transport, Planning and Local Infrastructure.

Other agencies consulted:

All agencies consulted to date are listed above. Councils consulted are outlined in Section 20 and **Table 35**.

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):

During the planning phase, including engagement with DTPLI, it was identified that the project has the potential to impact:

- Native vegetation and flora and fauna species;
- Waterways and wetlands;
- Cultural heritage;
- Landscape and soils; and
- Amenity of residents due to excessive dust and noise.

A number of technical investigations have been completed by specialist consultants to identify and address the potential impacts of the Project. The specialist studies included:

- Flora and fauna (terrestrial and aquatic) - Biosis;
- Giant Gippsland Earthworm - Invert-Eco;
- Cultural heritage – Andrew Long and Associates; and
- Acid sulphate soils - WorleyParsons.

A summary of the potential impacts based on the specialist investigations have been provided below.

Flora and Fauna (Terrestrial and Aquatic)

Table 9 details the FFG Act and EPBC Act listed flora, fauna and ecological communities, or suitable habitat, within the survey envelope. EPBC Act matters have been considered in this referral for project completeness. Without implementing any mitigation measures it is likely that significant impacts to these listed species and ecological communities would occur due to removal of habitat and habitat fragmentation. Without implementing any mitigation measures the Project has the potential to remove 10 ha or more of endangered native vegetation and remove habitat needed by threatened species. However, no significant environmental impacts to listed species or ecological communities are expected as a result of this Project due to the implementation of the standard and project-specific mitigation measures outlined in Section 12.

Table 9 – Listed species and communities potentially significantly impacted in the absence of standard and project-specific mitigation measures.

Type	Listed species and ecological communities
Flora	• River Swamp Wallaby-grass (EPBC & FFG). • Matted Flax-lily (EPBC & FFG). • Strzelecki Gum (EPBC & FFG). • Wellington Mintbush (EPBC & FFG). • Purple Blown-grass (FFG).
Ecological Communities	• Seasonal Herbaceous Wetlands (Freshwater) of the

	Temperate Lowland (EPBC). • Plains Gippsland Red Gum Grassy Woodland and Associated Grassland (EPBC). • Central Gippsland Plains Grassland Community (FFG). • Forest Red-gum Grassy Woodland (FFG). • Herb-rich Plains Grassy Wetland (West Gippsland) Community (FFG).
Fauna	• Dwarf Galaxias (EPBC & FFG). • Australian Grayling (EPBC & FFG). • Southern Brown Bandicoot (EPBC & FFG). • New Holland Mouse (EPBC & FFG). • Growling Grass Frog (EPBC & FFG). • Giant Gippsland Earthworm (EPBC & FFG). • Eastern Great Egret (EPBC & FFG). • Australasian Bittern (EPBC & FFG). • Lewin's Rail (EPBC & FFG). • Latham's Snipe (EPBC). • Pale Mangrove Goby (FFG). • Swamp Skink (FFG). • White-footed Dunnart (FFG). • Little Egret (FFG). • Chestnut-rumped Heathwren (FFG).

Table 10 lists the 19 EVCs potentially affected by the Project. Removal of up to 40 ha of native vegetation is predicted during construction. Esso will develop a Native Vegetation Offset Strategy, in consultation with DEPI, prior to any disturbance of native vegetation and when all proposed losses of vegetation have been quantified. The Project Native Vegetation Offset Strategy will be submitted as part of the CEMP for regulatory approval and offsets will be secured in accordance with the Native Vegetation Offset Strategy.

Table 10 – Ecological Vegetation Classes potentially affected by the Project

EVC Name	EVC number
Damp Sands Herb-rich Woodland	EVC 3
Coastal Saltmarsh	EVC 9
Lowland Forest	EVC 16
Riparian Forest	EVC 18
Herb-rich Foothill Forest	EVC 23
Damp Forest	EVC 29
Heathy Woodland	EVC 48
Swamp Scrub	EVC 53

Plains Grassy Woodland	EVC 55
Floodplain Riparian Woodland	EVC 56
Swampy Riparian Woodland	EVC 83
Plains Grassy Wetland	EVC 125
Valley Heathy Forest	EVC 127
Sedge Wetland	EVC 136
Grassy Woodland	EVC 175
Riparian Scrub	EVC 191
Aquatic Herbland	EVC 653
Tall Marsh	EVC 821
Swampy Woodland	EVC 937

Section 12 details the flora and fauna survey results and mitigation measures for State and Commonwealth listed species and communities.

Waterways and Wetlands

A total of 177 major, moderate and minor waterways are intersected by Project. Major waterways include the LaTrobe River (2 crossings); Tyers River; Tanjil River; Yallock Creek and drain; Bunyip River complex; Deep Creek, Toomuc Creek, Cardinia Creek complex; and Watson Creek. The use of trenchless construction or other appropriate watercourse construction methods at these waterways will avoid potential significant impacts to waterways and Ramsar Wetlands from sedimentation and the removal of habitat.

Section 13 details the water environments potentially significantly impacted by the Project and mitigation measures to manage these potential impacts.

Landscape and Soils

Acidic soils, with acidity exceeding the EPA screening criteria for ASS, are present within the survey envelope. However, the soils have low concentrations of sulphur indicating that there is not widespread ASS along the pipeline route, but instead widespread acidic soils. Acidic soil management and contingencies for ASS management will be addressed in the CEMP. The CEMP will be prepared and submitted to DSDBI for regulatory approval before construction commences. Consequently, no significant impacts from ASS is expected from the Project.

Section 14 details the assessment of landscape and soils potentially affected by the Project and mitigation measures to manage these potential impacts.

Social Amenity and Cultural Heritage

Construction of the proposed replacement pipeline is likely to generate some temporary impacts on residential amenity, including dust, noise and visual changes. However, these impacts will be of a temporary nature and it is anticipated that significant impacts are unlikely where appropriate mitigation measures are applied.

There will be temporary and localised traffic impacts on roads in the vicinity of the Project. Pipeline materials, equipment and machinery will be delivered to the Construction ROW by road transport, resulting in an increased number of traffic movements across local road networks during the construction phase. Impacts to traffic on major highways from pipe trucks and other project related vehicle movements are expected to be negligible in comparison to existing traffic volumes on these roads. Traffic impacts on local roads will be temporary. Construction will be progressive and the duration of the traffic impact to any one road will be of limited duration. A Traffic and Transport Management Plan (TTMP) will be developed for heavy vehicle movements and routes. The TTMP will be developed in consultation with the relevant road authorities.

Aboriginal cultural heritage impacts from the project will be managed through two endorsed

Cultural Heritage Management Plans (CHMPs). The project CHMPs are being prepared by Andrew Long and Associates (Cultural Heritage Advisors) and will be submitted to the GLaWAC (eastern project area, from Longford to Warragul) and OAAV (western project area, from Warragul to Long Island Point) for endorsement under the *Aboriginal Heritage Act 2005*. One previously registered Aboriginal heritage place is present in the survey envelope, but field investigations for the project CHMPs are ongoing and registration of more sites is considered likely. Submission and endorsement of the project CHMPs is currently scheduled for mid-2014.

Section 15 details potential impacts to social environments (including Cultural Heritage) and mitigation measures to manage these potential impacts.

No significant environmental impacts are expected as a result of this Project due to the implementation of standard and project-specific mitigation measures outlined in the subsequent section and summarised in **Table 58.** These mitigation measures include avoidance through trenchless construction at specific locations, minimisation of the Construction ROW near sensitive areas, timing works to minimise sensitive periods in fauna lifecycles (e.g. breeding seasons), limiting construction activities to minimise impacts to nocturnal species, and compliance with the CEMP. As a minimum, the mitigation measures in this referral will be described in the CEMP. In accordance with the *Pipelines Act 2005,* the CEMP will be prepared and submitted to DSDBI for regulatory approval before construction commences.

Construction activities will occur within and adjacent to the existing disturbed easements and through modified landscapes.

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.

A key project design objective is to minimise the environmental footprint by locating the proposed replacement pipeline within Esso's existing cleared and maintained easements, however, up to 40 ha of native vegetation will be removed during construction.

In many cases vegetation within the survey envelope meets the criteria for native vegetation as defined by DEPI (DSE 2007), but is highly modified due to regular slashing or grazing of vegetation within the existing easements. In addition, the easements have been previously disturbed from construction of the existing pipelines and an ongoing pipeline maintenance program requiring excavations at discrete locations. In these instances the vegetation lacks much of the structure and diversity found in undisturbed examples of these communities.

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

A flora and fauna assessment of the survey envelope was undertaken by specialist ecological consultants Biosis. The report *Esso Pipeline Replacement Project – Hastings to Longford: Flora and Fauna survey and impact mitigation* is attached as Appendix C. Throughout the survey envelope, areas of native vegetation were mapped according to EVCs. The boundaries of EVCs were determined by the definition criteria in DSE guidelines (2007); where native understorey vegetation comprises at least 25% of the total understorey plant cover; or where three or more canopy trees in a group have at least 20% foliage cover. Each EVC includes a collection of floristic communities (i.e. lower level in the classification that is based solely on groups of the same species) that occur across a biogeographic range, and although differing in species, have similar habitat and ecological processes. Habitat zones were also mapped using methods described in DSE guidelines (DSE 2004).

Threatened ecological communities listed under the FFG Act and EPBC Act were mapped, where present, in the survey envelope. These generally corresponded with EVC habitat zone boundaries where the vegetation qualified as both an EVC and listed community.

Scattered trees were identified and mapped within the survey envelope. Each tree was placed in

a size class according to DEPI requirements (DSE 2007).

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

☒ NYD…….Estimated area: 40 hectares

This calculation is based on the area required for the Construction ROW. The calculation does not include any native vegetation within the existing cleared and maintained pipeline easement as these areas are highly modified, as identified by Biosis (Appendix C). Esso will develop the Native Vegetation Offset Strategy, in consultation with DEPI, prior to any disturbance of native vegetation and when all proposed losses of vegetation have been quantified. The Project Native Vegetation Offset Strategy will be submitted as part of the CEMP for regulatory approval and offsets will be secured in accordance with the Strategy.

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

☒ N/A …….approx. percent (if applicable)

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

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

Table 10 (Section 11) lists the 19 EVCs potentially affected by the Project.

Have potential vegetation offsets been identified as yet?

☒ NYD ☐ Yes If yes, please briefly describe.

Vegetation was identified, characterised and mapped within the survey envelope. During detailed engineering design, the total area, condition and habitat importance of native vegetation to be removed will be determined. Removal of native vegetation will be incorporated into a Native Vegetation Offset Strategy, in accordance with the Permitted Clearing of Native Vegetation Biodiversity Assessment Guidelines (DEPI 2013a).

The Project Native Vegetation Offset Strategy will be developed, in consultation with DEPI, prior to any disturbance of native vegetation and when all proposed losses of vegetation have been quantified. The Project Native Vegetation Offset Strategy will be submitted as part of the CEMP for regulatory approval and offsets will be secured in accordance with the Strategy.

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

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)

A flora and fauna assessment was undertaken by Biosis (Appendix C). This assessment was undertaken in two stages.

The preliminary assessment included a desktop review of flora and fauna values as well as some targeted investigations for listed species. The main objective of the preliminary assessment was to investigate locations of listed species recorded in relevant databases and to verify the survey priority of sites in the detailed assessment. To achieve this, relevant literature and databases were reviewed to determine the location of existing records for threatened flora and fauna and EVC that might contain other significant values. The preliminary and targeted field investigation took place within the existing easement (Biosis 2014).

The subsequent detailed flora and fauna assessment for the Project involved detailed surveys within the survey envelope and collection of flora and fauna data to identify significant biodiversity matters and propose mitigation options for the Project.

Literature and database review

Information about flora and fauna from within 1 km of the existing easements (considered as the 'local area') was obtained from relevant public databases. Records from the following databases were collated and reviewed:

Preliminary Assessment

- Flora Information System (FIS) which includes records from the Victorian Biodiversity Atlas 'VBA_FLORA25, FLORA100 & FLORA Restricted' August 2012 © The State of Victoria, Department of Environment and Primary Industries (DEPI);
- Victorian Biodiversity Atlas 'VBA_FAUNA25, FAUNA100 & FAUNA Restricted' August 2012 © The State of Victoria;
- DEPI Biodiversity Interactive Map (BIM);
- DEPI Nature Print database;
- Protected Matters Search Tool of the Australian Government Department of Environment, (DoE) for matters protected by the EPBC Act; and
- Melbourne Water Fish database (MWF).

Other sources of biodiversity information included:

- DEPI NaturePrint; accessed through the Biodiversity Interactive Map; and
- Biosis records that have been submitted to DEPI but do not yet appear on the FIS.

Detailed Assessment

For the detailed assessment, predictive habitat mapping for Victorian State listed threatened species, accessed from DEPI, was used to determine the presence or absence for State listed threatened species.

Field surveys

Targeted surveys for threatened flora species

Targeted surveys for threatened species were undertaken as part of the detailed assessment, based on an assessment of priority locations done during the preliminary assessment. Areas that were considered likely to provide suitable habitat for species requiring survey in spring/summer were identified during the preliminary assessment, to inform further survey in the detailed assessment.

The survey method for each priority location devised following the preliminary assessment is described below.

High priority

Sites were surveyed for threatened shrub and herbaceous flora species in transect lines no more than 5 m apart. Transects started at previously recorded sites (from State government databases) with greatest spatial accuracy and ran along the length of the survey envelope until the edge of the area of occupancy was located. Transects ceased 100 m from the start point where no individuals of the target species were located. Tree species were searched for by surveying relevant sections of the survey envelope using 10 m transects. The boundaries of observed populations were mapped along with point locations for individuals.

Medium priority

Targeted searches were undertaken within five 1,000 m² sample areas. Where the target species were located, a transect was run along the length of the easement until the edge of the area of occupancy was located. Transects ceased 100 m from the start point where no individuals of the target species were located.

Low priority

Areas were either traversed on foot, by car or observed from adjacent land depending on the ecological values which were expected to be present. Areas of native vegetation were mapped and areas that were identified in the field as potential habitat for threatened plant species were searched using medium priority search methods (described on page 27).

Targeted survey for threatened fauna species

Following the preliminary assessment, it was determined that targeted surveys should be undertaken for the following EPBC Act listed species, based on the likelihood of these species occurring within the survey envelope and the potential for impacts during construction:

- Southern Brown Bandicoot *Isoodon obesulus obesulus;*
- New Holland Mouse *Pseudomys novaehollandiae;*
- Growling Grass Frog *Litoria raniformis;*
- Dwarf Galaxias *Galaxiella pusilla;* and
- Giant Gippsland Earthworm *Megascolides australis.*

Although these species were targeted from the outset of the detailed assessment, surveys confirmed the presence of additional species and these are discussed below. Locations of fauna sampling sites during the present study are provided in Appendix C and discussed in further detail below.

Southern Brown Bandicoot

High sensitivity habitat identified for Southern Brown Bandicoot during the preliminary assessment included Holey Plains State Park and the land owned by BlueScope Steel in the western portion of the proposed replacement pipeline near Tyabb. Remote camera traps were used to survey areas of potential Southern Brown Bandicoot habitat at 29 locations within the survey envelope (Appendix C). The cameras were active for a total of 749 camera nights across the survey period. A total of 21,862 images were logged.

Southern Brown Bandicoot was recorded at one location within VicTrack land (disused rail reserve) south-east of Koo Wee Rup township (see maps in Appendix C).

New Holland Mouse

Elliott traps were set in areas of habitat deemed suitable for New Holland Mouse. Within the survey envelope, this was restricted to Holey Plains State Park and the land owned by BlueScope Steel near Tyabb. Within Holey Plains, a total of 120 Elliott traps were set over four nights. The survey effort for Holey Plains was 480 trap-nights. Within BlueScope, a total of 56 Elliott traps were set over four nights. The survey effort for this site was 224 trap-nights.

New Holland Mouse was not detected during the trapping surveys in Holey Plains or the land owned by BlueScope Steel near Tyabb. Although an extensive trapping effort was conducted, there were very low capture rates for non-target small mammals across both sites.

Growling Grass Frog

Targeted survey for Growling Grass Frog was undertaken at 29 sites throughout the survey envelope. Survey nights were selected on the basis of projected weather conditions: fine and mild conditions (i.e. day time temperatures above 15 °C and night time temperatures above 12 °C) with little or no wind.

Twenty-four sites were surveyed on two separate nights between 18 November and 17 December 2013. Four sites were surveyed only once due to the habitat being deemed unsuitable for Growling Grass Frogs during the first survey (e.g. no water present). One site (at Deep Creek) was surveyed only once due to Growling Grass Frogs being confirmed as present at the site.

Individuals were heard calling from the Deep Creek, Toomuc Creek, Cardinia Creek complex, south of the disused rail reserve in Koo Wee Rup (Appendix C). The individuals heard calling

were outside the survey envelope, however, it is likely this network of drains provides important habitat and movement corridors for the species in the local area, providing connectivity with suitable breeding wetlands nearby.

Dwarf Galaxias

Targeted survey for Dwarf Galaxias was undertaken at 21 sites throughout the survey envelope. An additional four sites were surveyed in close proximity to the survey envelope where suitable habitat exists for Dwarf Galaxias. These surveys were undertaken to determine the likelihood of downstream impacts. Habitat assessment was conducted at an additional 39 sites to determine the likelihood of Dwarf Galaxias occurrence. Sites were surveyed between 28 October and 12 December 2013. Sites were selected based on suitable aquatic habitat, flow regime and level of connection to known populations of Dwarf Galaxias.

Dwarf Galaxias were recorded at three sites associated with two watercourses within the survey envelope: Shady Creek and an unnamed tributary of the Moe Drain at Saxton Swamp. Dwarf Galaxias are predicted to occur (based on habitat assessment) at an additional 16 sites within the survey envelope.

Giant Gippsland Earthworm (GGE)

The DEPI Victorian Biodiversity Atlas and private records held by Dr Beverley Van Praagh were reviewed and a visual assessment of aerial photographs of the proposed replacement pipeline was completed to identify areas of potential GGE habitat for targeted field sampling.

Field surveys were undertaken between 28 October 2013 and 12 January 2014. During field surveys a visual inspection of the proposed alignment was undertaken to identify additional areas of suitable habitat (not identified during the desktop assessment). Some sites within the targeted sampling areas were inaccessible due to water-logging and access track conditions. Sampling was conducted at all likely sites for GGE habitat within the survey envelope to the satisfaction of the Project's GGE technical expert (Dr Beverley Van Praagh).

Surveys involved striking the ground with a spade, and listening for the sound of worms retreating down their burrows; and excavation of soil quadrat to look for evidence of GGEs (burrows and cast (waste) material).

Evidence of GGE presence was identified at five sites within the survey envelope and at one site outside and adjacent to the survey envelope (**Table 11** and Appendix E).

<u>Determination of habitat suitability</u>

For the detailed assessment, habitat for all State advisory listed species (DSE 2005 and DEPI 2013b) was determined from maps of predicted habitat available through the Biodiversity Interactive Map (www.depi.vic.gov.au). This approach provides an objective evaluation of habitat suitability with consistent accuracy and errors, as each species is modelled using the same general procedure.

Where modelled habitat mapping was not available for a threatened species (e.g. Southern Brown Bandicoot), habitat was mapped as likely habitat based on expert opinion. This approach was also applied to relevant EPBC Act species to better inform consideration of whether any impacts are likely to have a significant impact on the relevant protected matters. Habitat suitability varies depending on the species and may include breeding habitat (e.g. wetland with floating macrophytes for Growling Grass Frog) or foraging habitat (e.g. intact Heathy Woodland understorey vegetation for Southern Brown Bandicoot). Sites which are likely to only be occasionally visited by fauna but not considered important for either breeding or foraging were not displayed as habitat (consistent with the EPBC Significant Impact Criteria test of whether an action will 'adversely affect habitat critical to the survival of a species'). Habitat suitability is therefore binary and has no consideration of temporal variables. For the purpose of this Project, habitat suitability has been determined based on general descriptions of habitat in literature and the opinion of relevant experts and field staff in recognising habitat from other surveys in the region.

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.

The assessment confirmed the presence of 11 protected matters under the EPBC Act being two ecological communities, two Ramsar Wetlands and seven listed species. Six of the seven species are also listed under the State FFG Act. One additional FFG Act listed species was also confirmed. Suitable habitat for a further 11 EPBC Act and FFG Act listed species was also confirmed.

The following section details the presence of species and ecological communities listed under the FFG Act and EPBC Act, or habitat suitable for these species where the species has a greater than medium likelihood of occurrence (Biosis 2014). Locations for each species can be found in the maps in Appendix C.

Threatened Species

Southern Brown Bandicoot – Endangered (FFG & EPBC listed)

The Southern Brown Bandicoot is a medium-sized marsupial with a distribution across southern and eastern Australia. It prefers habitat that provides a high cover with open areas for foraging, usually associated with forest, woodland, shrub and heath vegetation communities, although it is also commonly found in disturbed areas dominated by weed species (e.g. Blackberry thickets). Southern Brown Bandicoot camera surveys can be done year-round (although Autumn is preferred) (Biosis 2014).

Southern Brown Bandicoot was recorded at one location within VicTrack land (disused rail reserve) south-east of Koo Wee Rup township (see maps in Appendix C). An extant population of Southern Brown Bandicoot is well documented throughout Koo Wee Rup, particularly within the disused rail reserve and within linear vegetation along the drains and road reserves. No Southern Brown Bandicoots were recorded within Holey Plains State Park. Based on historical database records and recent survey results by Biosis, it is considered unlikely that Southern Brown Bandicoots occur within Holey Plains State Park.

No Southern Brown Bandicoots were detected in the land owned by BlueScope Steel near Tyabb, despite the site providing suitable habitat. The cameras recorded a large number of images of Red Fox *Vulpes vulpes*. It is possible that high densities of this introduced predator may have impacted on the persistence of a Southern Brown Bandicoot population at this site. For the purposes of this Project it is assumed, however, that where habitat suitable for Southern Brown Bandicoots is present in the survey envelope then the species is also present.

Based on historical database records and recent surveys, the current known distribution for the Southern Brown Bandicoot within the region of the Project extends approximately from Longwarry to Crib Point at Westernport Bay. With reference to the survey envelope, the core habitat for Southern Brown Bandicoot is likely to extend from Westernport Road in the east, to the Long Island Point Plant in the west.

Australasian Bittern – Endangered (FFG & EPBC listed)

Australasian Bittern is a large, solid heron that occurs in southern Australia. Habitat for Australasian Bittern generally consists of densely vegetated wetlands and watercourses. It prefers shallow water with reeds, grasses and shrubs for foraging, and deeper water with dense rushes, sedges and reeds for nesting.

Targeted surveys for Australasian Bittern were not conducted as part of the current assessment due to the mobile nature of the species. However, potential habitat was identified at several locations throughout the survey envelope, and it is possible that a variety of wetlands within or near the survey envelope are utilised on an irregular basis for foraging. In particular, wetlands associated with Tall Marsh and Sedge Wetland EVCs, and some of the larger, permanent wetlands with dense vegetation may be used.

Strzelecki Gum – Vulnerable (FFG & EPBC listed)

Strzelecki Gum is a tall, forest tree which is endemic to southern Victoria; most populations occur in south Gippsland. It occupies a range of landscape positions although, within the survey envelope, it may be similar to that of a related and more widespread species Swamp Gum *Eucalyptus ovata.* Swamp Gum was recorded in several locations throughout the alignment.

There are two key areas containing Strzelecki Gum which require particular management during construction works. These are the riparian areas and floodplains of Tanjil River and Shady Creek (see maps in Appendix C).

Wellington Mint Bush – Vulnerable (FFG & EPBC listed)

Wellington Mint Bush is a medium shrub which typically grows among dense heathy vegetation. Soils with higher clay content in Damp Sands Herb-rich Woodland provide good conditions for this species. Despite searches during its generally accepted flowering period, only one individual was located within the survey envelope.

New Holland Mouse – Vulnerable (FFG & EPBC listed)

New Holland Mouse is a small, indigenous rodent distributed along the south-east coast of Australia. The preferred habitat for this nocturnal species includes woodlands, heathlands, open forest and paperbark swamps with sandy substrates. Populations are known to respond positively to increased floristic diversity found within habitat in the period of 3 to 5 years post-fire.

New Holland Mouse was not detected during the trapping surveys in Holey Plains or the land owned by BlueScope Steel near Tyabb. Although an extensive trapping effort was conducted, there were very low capture rates for non-target small mammals across both sites.

Despite not detecting New Holland Mouse, there is still potential for the species to occur at Holey Plains based on habitat suitable features and nearby records. Although the habitat within land owned by BlueScope Steel near Tyabb appears suitable, the species has not been recorded from the Mornington Peninsula region since the early 1970s (DSE 2003). It is possible that the species has become locally extinct due to factors such as predation and urbanisation. The lack of recent fire may have also diminished the habitat characteristics favoured by the species.

Growling Grass Frog – Vulnerable (FFG & EPBC listed)

The Growling Grass Frog is a large frog endemic to south-eastern Australia. It prefers permanent or semi-permanent waterbodies. Habitat characteristics, such as the extent of fringing aquatic vegetation and submerged vegetation, can also have a positive impact on the likely use of a waterbody by the Growling Grass Frog, but may not be as important as the distance to the nearest population.

Growling Grass Frogs were recorded at one of 29 survey sites during the current assessment.

Individuals were heard calling from the channel complex for Deep Creek, Toomuc Creek, and Cardinia Creek, south of the disused rail reserve in Koo Wee Rup (Appendix C). The individuals heard calling were outside the survey envelope, however, it is likely this network of drains provides important habitat and movement corridors for the species in the local area, providing connectivity with suitable breeding wetlands nearby.

Important populations of Growling Grass Frog are well documented from the Pakenham and Officer region, north of Koo Wee Rup (Biosis 2014) Recent records of Growling Grass Frog are from a watercourse on railway land within the survey envelope at approximately KP 155 (see maps in Appendix C). Consequently, this site was not surveyed and the species is presumed present for the purposes of assessing the potential impacts of the Project.

Despite survey at several other sites around the Koo Wee Rup area, the species was not recorded at these sites. Habitat at many sites did not provide suitable breeding habitat, mostly due to insufficient water to successfully facilitate breeding. Many additional small road-side drains in the region provide habitat for Growling Grass Frog, particularly for movement and dispersal. However, these are unlikely to provide important breeding habitat and any impacts on these sites are expected to be low at the local level.

Dwarf Galaxias – Vulnerable (FFG & EPBC listed)

Dwarf Galaxias were recorded at three sites associated with two watercourses within the survey envelope: Shady Creek and an unnamed tributary of the Moe Drain at Saxton Swamp. Dwarf Galaxias are predicted to occur at an additional 16 sites within the survey envelope:

Lower Latrobe

In addition to the VBA records used for the desktop assessment of priority sites, records within the Lower Latrobe catchment were provided by (DEPI). These records give an indication of the distribution of Dwarf Galaxias within the major tributaries of the Loy Yang Creek (Blind Joe Creek, Flynns Creek) and identify a significant population of the species within these drainages. Surveys conducted by Biosis were consequently concentrated within these major tributaries and included Sandy Creek, Sheepwash Creek and several unnamed tributaries of Loy Yang Creek. These sites consist of both ephemeral (Blind Joe and Sandy Creeks) and permanent habitats (Flynns and Sheepwash Creeks). While Dwarf Galaxias were not recorded at these sites, it is considered likely that the species is present, particularly during higher flow periods coinciding with spawning and dispersal.

Rintoul Creek

A habitat assessment only was conducted at Rintoul Creek. While marginal habitat exists for Dwarf Galaxias at this site, they may persist in low numbers or transition through this site during spawning / dispersal phases given its proximity to multiple records in the upper reaches of the Loy Yang Creek.

Yallock Creek and tributaries

A significant population of Dwarf Galaxias exists within an extensive reach of the Yallock Creek upstream of the South-Gippsland Highway to Cora Lynn at the Bunyip River diversion. Dwarf Galaxias have been recorded consistently here between 2005 and 2008. Dwarf Galaxias were not recorded during the Biosis survey for the Project, presumably due to protracted periods of high flow during the survey period.

Dwarf Galaxias is considered to be present in the permanent habitat within Yallock Creek and ephemeral habitat in associated drainages for the purposes of the impact assessment for the Project.

Langwarrin Creek

Dwarf Galaxias were not recorded during the survey, however, they are considered present due to the proximity of records within the upper catchment less than 700 m from the survey envelope for the purposes of the impact assessment for the Project.

Watson Creek

A survey was not conducted within Watson Creek due to protracted periods of high flow during the survey period. Large numbers of Dwarf Galaxias have been consistently recorded within the upper Watson Creek catchment by Biosis for other projects between 2010 and 2012 and are considered likely to be present within the survey envelope for the purposes of the impact assessment for the Project.

Australian Grayling – Vulnerable (FFG & EPBC listed)

Australian Grayling is a diadromous species which spends most of its life in freshwater. Juveniles inhabit estuaries and coastal seas. Adults occur in freshwater habitats, typically rivers and major creeks of significant winter discharge with cool, clear waters and gravel substrates, but occasionally also in turbid waters. Australian Grayling is predicted to occur within the Rintoul Creek, Latrobe River, Deep Creek, Toomuc Creek, Cardinia Creek complex, and Bunyip River.

The Australian Grayling population in the Bunyip River has been extensively surveyed between 2008 and 2011 (Koster *et al.* 2013) including monitoring of dispersal and migration of adults and spawning sites. Drift net surveys were conducted at numerous locations within the Bunyip River downstream of the Tarago River confluence. Over 95% of the larval material was collected in the vicinity of the survey envelope suggesting that this site is the spawning area for Australian

Grayling in the Bunyip River. The survey envelope at this site is consequently of high environmental sensitivity.

Giant Gippsland Earthworm – Vulnerable (FFG & EPBC listed)

Evidence of Giant Gippsland Earthworm (GGE) presence was identified at five sites within the survey envelope and at two sites outside and adjacent to the survey envelope (**Table 11** and **Figure 4** and **Figure 8** in Appendix E).

Table 11 - Giant Gippsland Earthworm records within the survey envelope

Location	Findings
Cameron's Rd (KP 107.5)	GGE identified within survey envelope along the north west boundary of property adjacent to Cameron's Rd. Restricted mainly to less water-logged areas and extends approximately 10-15 m south of boundary fence. Likely to be on roadside verge of Cameron's Rd.
Mattzed Close (KP 110)	GGE previously recorded from site but colony likely impacted by past construction of access road. One burrow located during second survey. Unclear whether GGE extant. Potential to occur in low density in parts of survey envelope.
Pine Grove (KP 110.5)	GGE located outside and adjacent to survey envelope around creek and under vegetation. Possibly extends into southern section of survey envelope.
Butlers Track (KP 112)	GGE identified from desktop assessment. Occur approximately 150 m north of existing pipeline easement, outside survey envelope.
Hazel Creek (KP 113)	GGE located under Swampy Woodland within northern section of survey envelope.
Lardners Track (KP 117)	GGE found in large stand of remnant Damp Forest adjacent to the south of the survey envelope around King Parrot Creek.
Moore Rd (KP 118)	One colony identified around edges and within remnant stand of vegetation within survey envelope. Two additional sites within survey envelope were identified with potential GGE habitat but no evidence found.

Matted Flax-lily – Endangered (FFG & EPBC listed)

While no Matted Flax-lily plants were found in likely habitat during November, the species will be assumed to be present at the Princes Highway crossing at KP 49.5 (see maps in Appendix C) for the purposes of the impact assessments for the Project.

Australian Painted Snipe – Vulnerable (EPBC listed)

The Australian Painted Snipe is generally found in shallow, terrestrial freshwater wetlands with rank, emergent tussocks of grass, sedges and rushes. Australian Painted Snipe can occur in well vegetated lakes, swamps, inundated pasture, saltmarsh and dams.

Limited suitable wetland habitat was identified within the survey envelope during the detailed assessment. It is considered possible that the species make very occasional use of wetlands within the survey envelope near Westernport, but they are not otherwise considered significant habitat for the species.

Swamp Fireweed – Vulnerable (EPBC listed)

Swamp Fireweed may occur in Plains Grassy Wetland within the Koo Wee Rup area. However, this species is very rarely recorded in the region and it was not recorded during surveys of these vegetation types. Due to the seasonal variation of grassy wetland communities, a precautionary approach has been taken to regard these areas as important habitat for the purposes of the impact assessments for the Project.

River Swamp Wallaby-grass – Vulnerable (EPBC listed)

River Swamp Wallaby-grass is a wetland grass that is typically found in permanent or ephemeral, shallow wetlands or running waterways; usually with a peaty or sandy substrate.

A population was located within the previously disturbed land owned by BlueScope Steel near Tyabb where it is part of a more extensive area of habitat within the local area. The record is the second record of this species on the Mornington Peninsula and elevates the biodiversity value of native vegetation within this part of the survey envelope.

White-footed Dunnart (FFG listed)

The White-footed Dunnart occurs in coastal areas and adjacent plains and foothills. The habitat of this species also extends inland along some major river valleys. Preferred habitats include coastal tussock grassland and sedgeland, wet heath, and forest or woodland with a dense heathy understorey or mid-storey vegetation. This species was recorded in Holey Plains State Park during detailed assessments for this Project (see maps in Appendix C).

Purple Blown-grass (FFG listed)

Purple Blown-grass is often found scattered in wet marshes and slightly saline swamps and depressions across the Victorian Volcanic Plain. This species is listed as being present on DEPI habitat models in the Plains Grassy Wetlands within the survey envelope (see Figure 4.21 in Appendix C), although no individuals were recorded during the detailed assessment.

Pale Mangrove Goby (FFG listed)

The Pale Mangrove Goby species is generally found in mangroves or holes in sea grass areas and will sometimes enter freshwater. In Victoria it is found almost exclusively in the tidal mangrove shrub-lands of estuaries. Within the survey envelope this species is assumed to be present in waterways flowing into Westernport, including the Bunyip River complex, Deep Creek, Toomuc Creek, Cardinia Creek complex and Watson Creek.

Swamp Skink (FFG listed)

The Swamp Skink occupies swamp scrub habitat in cool, temperate, low-lying wetlands and swamp margins with a dense shrub layer. It is particularly found in near-coastal areas ranging from the Mt Gambier region in the west, across southern Victoria to just beyond the New South Wales border to the east. Within the survey envelope, DEPI's habitat modelling indicates that the species is likely to be present around Yarragon, Drouin South and around Westernport (Figure 4.27 in Appendix C). The species is conservatively assumed to be present at these locations for the purposes of this assessment.

Little Egret (FFG listed)

The Little Egret occupies a wide range of wetlands and typically prefers the shallows of wetlands for foraging activities. Occasionally they will forage in small waterways or wet grassland areas. Consistent with DEPIs habitat modelling (Figure 4.17 in Appendix C), habitat for the Little Egret is assumed to be widely present around Westernport, however, the species is likely to only use relevant habitats within the survey envelope for occasional foraging (Biosis 2014).

Chestnut-rumped Heathwren (FFG listed)

The Chestnut-rumped Heathwren occurs in shrub land and heathland areas, and in dense scrubby areas of forests and woodlands. This is a shy species that typically forages on or near the ground and therefore requires habitat with suitable structure. Habitat modelling provided by DEPI indicates that this species is widely distributed across the Project area (Figure 4.6 in Appendix C), and based on previous records, it is considered likely that this species is present in Holey Plains State Park (Biosis 2014).

<u>EPBC Act Migratory Species</u>

Eight EPBC Act listed migratory species have potential to occur within the survey envelope including:

- Eastern Great Egret *Ardea modesta;*

- Cattle Egret *Ardea ibis;*
- Latham's Snipe *Gallinago hardwickii;*
- Lewin's Rail *Lewinia pectoralis;*
- Rainbow Bee-eater *Merops ornatus;*
- Black-faced Monarch *Monarcha melanopsis;*
- Satin Flycatcher *Myiagra cyanoleuca;* and
- Rufous Fantail *Rhipidura rufifrons.*

Although there is potential for individuals of these species to use habitat within the survey envelope, the survey envelope does not provide any areas of important habitat for any of these migratory species. The survey envelope does not support an ecologically significant proportion of any of these species and it does not provide habitat of critical importance to any of these species. Further, the habitat within the survey envelope is not at the limit of these species ranges, or located in areas where these species are declining. For these reasons, the Project is not expected to have a significant impact on listed migratory species.

Listed Communities

Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains – Critically Endangered (EPBC listed)

The ecological community is characterised by shallow wetlands which do not hold water over summer. They have a moderately high cover of native grasses and also include sedges, rushes and other herbs. In some situations, these waterways have been modified although they maintain the required composition and cover of native species to meet the definition of this community. This community is present in the survey envelope at KP 2.75 (near Longford), KP 147.5, KP 161.5 and KP 163.5 (near Koo Wee Rup) (see maps in Appendix C).

Other areas of corresponding EVCs (e.g. Plains Grassy Wetland) occur within the survey envelope although these areas have been deemed to not include the listed community.

Gippsland Red Gum Grassy Woodland and Associated Native Grassland – Critically Endangered (EPBC listed)

This community includes both treed and treeless examples within the survey envelope at KP 34 (Willung Road) and KP 49.5 (Princes Highway) (see maps in Appendix C). The canopy in treed areas is dominated by Gippsland Red-gum *Eucalyptus tereticornis*. Shrubs are usually sparse and the ground flora is dominated by various native grass species. The patches identified meet size and species composition thresholds identified in the listing advice.

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 proposed Project has the potential to exacerbate the loss or fragmentation of habitats. However, the loss or fragmentation will be temporary in nature and the vegetation will be reinstated in accordance with the CEMP. In accordance with the *Pipelines Act 2005,* the CEMP will be prepared and submitted to DSDBI for regulatory approval before construction commences. No long-term impacts to habitats are expected as a result of this Project.

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.

The following potential impacts are possible as a result of the Project if no mitigation measures are put in place:

- Removal of 10 ha or more of endangered native vegetation;
- A long-term decrease in the size of an important population of a threatened species;
- Reduction of the area of occupancy of an important population of a threatened species;
- Fragmentation of an existing important population into two or more populations of a threatened species;
- Adverse effect on habitat critical to the survival of a threatened species;
- Disruption of the breeding cycle of an important population of a threatened species;
- Modification, destruction, removal or isolation or decrease in the availability or quality of habitat of a threatened species, to the extent that the species is likely to decline;
- Resulting in invasive species that are harmful to the species becoming established in a threatened species' habitat;
- Introduction of disease that may cause a threatened species to decline, or
- Substantial interference with the recovery of a threatened species.

Details of potential impacts to threatened species and ecological communities are provided below and further information is provided in **Tables 40 - 54** in Attachment 1.

Implementation of the standard and project-specific mitigation measures outlined below mean that no significant impacts to threatened species are expected as a result of the Project. The following section details the threatened species that could potentially be affected by the Project.

Southern Brown Bandicoot – Endangered (FFG and EPBC listed)

Twenty four locations within the survey envelope are considered to contain habitat for populations of Southern Brown Bandicoot (
Table 12 and maps in Appendix C):

Table 12 – Southern Brown Bandicoot Populations

Locations	KP
Saxton Swamp	KP 100
Westernport Road	KP 125
Chambers Road	KP 131
Bridge Road	KP 131.1
Caldermeade Road	KP 134
McColls Road	KP 134.5
Hall Road	KP 141
O'Briens Road	KP 141.5
Southern Gippsland Railway Reserve	KP 150
Bunyip River complex	KP 153
Railway Road (runs parallel to)	KP 153.5–156
Deep Creek, Toomuc Creek, Cardinia Creek complex	KP 156
Tooradin Station Road	KP 160.5
Landale Road	KP 161.5
Lynes Road	KP 163
South Gippsland Highway	KP 164.5

Fisheries Road	KP 168
Baxter-Tooradin Road	KP 170
Callanans Lane	KP 173.5
South Boundary Road East	KP 174.5
Watson Creek	KP 175.5
Bungower Road	KP 176.5
Pikes Road	KP 178.5
Land owned by BlueScope Steel	KP 179.5–180.5
Thornells Road	KP 181.5

Project Impacts

Without the implementation of mitigation measures it is very likely that habitat important to Southern Brown Bandicoot populations would be removed. If this impact occurred the consequence would be high, as the major threats to the Southern Brown Bandicoot include habitat loss or modification, fragmentation and isolation of populations. Esso will adopt a number of standard and project-specific measures to avoid or minimise impacts of the Project on the Southern Brown Bandicoot. These measures are discussed in **Table 13** and will include compliance with the National Species Recovery Plan.

Consequently, no significant impact is expected to populations of Southern Brown Bandicoot as a result of this Project.

Table 13 – Site Specific Mitigation Measures for Southern Brown Bandicoot

Location	Project mitigation measures
Saxton Swamp (KP100)	Targeted survey did not detect the species at this site. • Trenchless construction will occur due to boggy conditions and Southern Brown Bandicoot habitat. • Construction equipment will avoid habitat.
Westernport Rd (KP 125) Chambers Rd (KP 131) Bridge Rd (KP 131.1) Caldermeade Rd (KP 134) McColls Rd (KP 134.5) Hall Rd (KP 141) O'Briens Rd (KP 141.5) Tooradin Station Rd (KP 160.5) Landale Rd (KP 161.5) Lynes Rd (KP 163) Fisheries Rd (KP 168) Baxter-Tooradin Rd (KP 170) South Boundary Rd East (KP 174.5) Bungower Rd (KP 176.5) Thornells Rd (KP 181.5)	Small sections of habitat within road reserves may be used for movement. • Minimise works during the breeding season (July to November). • Limit construction activities to daylight hours. • Undertake daily pre-construction inspection to ensure no animals within the Construction ROW. • Revegetate site with dense native understorey species. • Comply with biosecurity requirements in accordance with the National Species Recovery Plan. This will be addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.

Southern Gippsland Railway Reserve (KP 150)	Good quality habitat present adjacent to the easement. • Minimise works during the breeding season (July to November). • Restrict works to the currently cleared and maintained pipeline easement to minimise impacts to Southern Brown Bandicoot habitat. • Limit construction activities to daylight hours. • Undertake daily pre-construction inspection to ensure no animals within the Construction ROW. • Revegetate with dense native understorey species. • Supplement habitat with artificial shelters to allow connectivity while habitat regenerates. • Ensure connectivity is maintained between habitat patches parallel with the Construction ROW both during and at the completion of construction. • Comply with biosecurity requirements in accordance with the National Species Recovery Plan. This will be addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Bunyip River complex (KP 153) Deep Creek, Toomuc Creek, Cardinia Creek complex (KP 156)	Known extant population along this network of drains. Suitable and important habitat within the survey envelope. • Trenchless construction will occur due to hydrological reasons and Southern Brown Bandicoot habitat. • Avoid impacts on habitat by using trenchless construction, allowing a buffer of 30 m from edge of dense shrubby habitat.

Railway Road (KP 153.5–156) Disused South Gippsland rail reserve (KP 156–159)	This linear corridor adjacent to the easement is considered core habitat for the Koo Wee Rup population. • Minimise works during the breeding season (July to November). • Limit construction activities to daylight hours. • Restrict works to the currently cleared and maintained pipeline easement to minimise impacts to Southern Brown Bandicoot habitat along the rail reserve to the north. • Install exclusion fencing to ensure animals cannot enter the works area. • Undertake daily pre-construction inspection to ensure no animals within the Construction ROW. • Revegetate disturbed habitat with dense native understorey species. • Supplement habitat with artificial shelters to allow connectivity while habitat regenerates. • Ensure connectivity is maintained between habitat patches parallel with the Construction ROW both during and at the completion of construction. • Comply with biosecurity requirements in accordance with the National Species Recovery Plan. This will be addressed in the CEMP, which will be submitted to and approved by the DSDBI before construction commences.
South Gippsland Highway (KP 164.5)	Small patch of potential habitat. • Trenchless construction will occur due to traffic and safety reasons and Southern Brown Bandicoot habitat.
Callanans Ln (KP 173.5) Pikes Rd (KP 178.5) BlueScope Steel (KP 179.5-180.5)	Small section of habitat connected to larger adjacent patches of potential habitat or good quality habitat but species not detected. • Minimise works during the breeding season (July to November). • Limit construction activities to daylight hours. • Undertake daily pre-construction inspection to ensure no animals within the Construction ROW. • Revegetate site with dense native understorey species. • Ensure connectivity is maintained between habitat patches parallel with the Construction ROW both during and at the completion of construction. • Comply with biosecurity requirements in accordance with the National Species Recovery Plan. This will be addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.

Watson Creek (KP 175.5)	Small section of habitat within creek corridor that may be used for movement. Connected to larger patches of potential habitat. • Trenchless construction will occur due to Ramsar wetland and Southern Brown Bandicoot habitat.

Australasian Bittern – Endangered (FFG and EPBC listed)

Potential habitat was identified at several locations throughout the survey envelope, and it is possible that a variety of wetlands within or near the survey envelope are utilised on an irregular basis for foraging. In particular, wetlands associated with Tall Marsh and Sedge Wetland EVCs, and some of the larger, permanent wetlands with dense vegetation may be used. No impact is expected to migratory species as a result of construction activities due to the avoidance behaviour that is expected to be shown when construction occurs (i.e., they will fly away).

Project Impacts

Without the implementation of mitigation measures it is very unlikely that habitat important to Australasian Bittern populations would be removed. If this impact occurred the consequence would be low, as there are no habitats important to the species likely to be impacted. However, Esso will adopt standard and project-specific measures to avoid or minimise impacts of the Project on the Australasian Bittern. These measures are discussed in **Table 14**.

Consequently, no significant impact is expected to populations of Australasian Bittern as a result of this Project.

Table 14 – Site Specific Mitigation Measures for Australasian Bittern

Location	Project mitigation measures
Shady Creek (KP 95.5) Hazel Creek (KP 113.5) Bunyip River complex (KP 153) Deep Creek, Toomuc Creek, Cardinia Creek complex (KP 156)	Potential habitat that may be used on an irregular basis for foraging. • Shady Creek crossing will utilise trenchless construction due to boggy conditions and presence of Strzelecki Gum. • Hazel Creek crossing will utilise trenchless construction due to constructability reasons and Giant Gippsland Earthworm habitat and Strzelecki Gum habitat. • Bunyip River complex and Deep Creek, Toomuc Creek, Cardinia Creek complex crossings will utilise trenchless construction due to hydrological reasons and Southern Brown Bandicoot habitat. • At the completion of construction, vegetation will be re-instated. This will be addressed in the CEMP, which will be prepared and submitted for regulatory approval before construction commences.
Vowell Drive (KP 172) Long Island Point (KP 186)	Potential habitat that may be used on an irregular basis for foraging. • At the completion of construction, vegetation will be re-instated. This will be addressed in the CEMP, which will be prepared and submitted for regulatory approval before construction commences.

Strzelecki Gum – Vulnerable (FFG and EPBC listed)

There are two populations of Strzelecki Gum which require particular management during construction works. These are the riparian areas and floodplains of Tanjil River and Shady Creek (see maps in Appendix C). Tree Protection Zones for Strzelecki Gum trees will preferentially be avoided during construction where practicable. For any unavoidable losses of trees or their associated habitat (i.e. EVC), offsets will be sought in line with the State permitted clearing guidelines and the Commonwealth EPBC Act offset policy. To accomplish this, Esso will develop a Native Vegetation Offset Strategy, in consultation with DEPI, prior to any disturbance of native vegetation and when all proposed losses of vegetation have been quantified. The Project Native Vegetation Offset Strategy will be submitted as part of the CEMP for regulatory approval and offsets will be secured in accordance with the Strategy.

Project Impacts

Without the implementation of mitigation measures it is very likely that habitat important to Strzelecki Gum populations would be removed. If this impact occurred the consequence would be medium, as these are not considered important populations of Strzelecki Gum. Esso will adopt standard and project-specific measures to avoid or minimise impacts of the Project on the Strzelecki Gum populations. These measures are discussed in **Table 15** and will include compliance with the National Species Recovery Plan.

Consequently, no significant impact is expected to Strzelecki Gum populations as a result of this Project.

Table 15 – Site Specific Mitigation Measures for Strzelecki Gum

Location	Project mitigation measures
Tanjil River (KP 79)	Key area containing Strzelecki Gum. • Open-cut trenching is preferred at this location as the narrower footprint will have a lesser impact on the species. If open-cut is not feasible for hydrological or geotechnical reasons, trenchless construction will be adopted. • Where a Tree Protection Zone cannot be avoided and a tree is proposed for retention, a qualified arborist will be engaged to assess whether the activity will lead to the loss of the tree within 1-2 years following construction. • For any unavoidable losses of trees or their associated habitat (i.e. EVC), offsets will be sought for State matters (DEPI permitted clearing guidelines) and national matters (EPBC Act offset policy) where permitted.

Shady Creek (KP 95.5)	Key area containing Strzelecki Gum. • Trenchless construction due to boggy conditions and presence of Strzelecki Gum. • Construction activity will avoid Tree Protection Zones for this species where practicable. • Where a Tree Protection Zone cannot be avoided and tree is proposed for retention, a qualified arborist will be engaged to assess whether the activity will lead to the loss of the tree within 1-2 years following construction. • For any unavoidable losses of trees or their associated habitat (i.e. EVC), offsets will be sought for State matters (DEPI permitted clearing guidelines) and national matters (EPBC Act offset policy) where permitted.

Wellington Mint Bush – Vulnerable (FFG and EPBC listed)

Despite searches during its generally accepted flowering period, only one example of Wellington Mint Bush was located within the survey envelope.

Project Impacts

Without the implementation of mitigation measures it is somewhat likely that habitat important to Wellington Mint-bush populations would be removed. If this impact occurred the consequence would be high, as the distribution of this species has declined due to land clearing for settlement, agriculture and pine plantation and herbicide use on pine plantations in particular. Esso will adopt standard and project-specific measures to avoid or minimise impacts of the Project on the Wellington Mint Bush. These measures are discussed in **Table 16**.

As a result, no significant impact is expected to Wellington Mint Bush populations as a result of this Project.

Table 16 – Site Specific Mitigation Measures for Wellington Mint-bush

Location	Project mitigation measures
Holey Plains State Park (KP 15.5-29.75)	• Restrict works to the existing cleared pipeline area within Holey Plains State Park. • Where impacts to treed areas cannot be avoided for safety reasons, undertake survey to locate any individuals which may be present and collect material for propagation if present. • Permanent loss of individuals or associated habitat from this location may be offset for State matters (DEPI permitted clearing guidelines) and national matters (EPBC Act offset policy) where permitted.

River Swamp Wallaby-grass – Vulnerable (EPBC listed)

A population of River Swamp Wallaby-grass was located within previously disturbed land owned by BlueScope Steel near Tyabb (KP 180) (see Map 2.89 in Appendix C), where it is part of a more extensive area of habitat within the local area (Biosis 2014). The record is the second record of this species on the Mornington Peninsula and elevates the biodiversity value of native vegetation within this part of the survey area.

Project Impacts

Without the implementation of mitigation measures it is very likely that habitat important to River Swamp Wallaby-grass populations would be removed. If this impact occurred the consequence would be high, as this species is only known from one other location on the Mornington Peninsula. Esso will adopt standard and project-specific measures to avoid or minimise impacts of the Project on River Swamp Wallaby-grass. These measures are discussed in **Table 17**.

Consequently, no significant impact is expected to River Swamp Wallaby-grass populations as a result of this Project. Use of trenchless construction has been carefully considered through this section of the proposed replacement pipeline but has been discounted in favour of open-cut method, because trenchless construction would require removal of a significant area of native vegetation, including additional habitat for River Swamp Wallaby-grass.

Table 17 – Site Specific Mitigation Measures for River Swamp Wallaby-grass

Location	Project mitigation measures
McKirdys Road Drain (KP 180.25)	• Restrict works to the existing easement. • Removal of surface soil and plant material (intact sections) to a depth of 0.5 m and store for reinstatement following trenching. • Salvage when the soil is moist but not saturated or inundated. • Monitoring of weed spread and any loss of River Swamp Wallaby-grass will follow construction. Biosecurity will be addressed in the CEMP, which will be prepared and submitted for regulatory approval before construction commences.

New Holland Mouse – Vulnerable (FFG and EPBC listed)

No impact is expected to this species as a result of construction activities due to the avoidance behaviour that is expected to be shown when construction crews are present. Despite no New Holland Mouse detections, there is still potential for the species to occur within Holey Plains State Park based on suitable habitat features and nearby records. Although the habitat within land owned by BlueScope Steel near Tyabb appears suitable the species has not been recorded from the Mornington Peninsula region since the early 1970s. It is possible that the species has become locally extinct due to factors such as predation and urbanisation. The lack of recent fire may have also diminished the habitat characteristics favoured by the species.

Project Impacts

Without the implementation of mitigation measures it is somewhat likely that habitat important to New Holland Mouse populations would be removed. If this impact occurred the consequence would be medium, as the key threats to this species include habitat loss and modification. Esso will adopt standard and project-specific measures to avoid or minimise potential impacts of the Project on the New Holland Mouse and its habitat in Holey Plains State Park. These measures are discussed in **Table 18**

Consequently, no significant impact is expected to New Holland Mouse populations as a result of this Project.

Table 18 – Site Specific Mitigation Measures for New Holland Mouse

Location	Project mitigation measures
Holey Plains State Park (KP 15.5-29.75)	• Minimise works during the breeding season (August to January). • Limiting construction activities to daylight hours. • Restrict works to the existing cleared pipeline area within Holey Plains State Park. • Undertake daily pre-construction inspection to ensure no animals within the Construction ROW. • Ensure connectivity is maintained between habitat patches parallel with the Construction ROW both during and at the completion of construction. • Comply with biosecurity requirements in accordance with the National Species Recovery Plan. This will be addressed in the CEMP, which will be prepared and approved by DSDBI before construction commences.

Growling Grass Frog – Vulnerable (FFG and EPBC listed)

Growling Grass Frogs was recorded at one of 29 survey sites during the current assessment.

Important Populations

The following water bodies within the survey envelope are considered to provide habitat for significant populations of Growling Grass Frogs:

- Mudlark Lane;
- Bunyip River complex;
- Railway Road; and
- Deep Creek, Toomuc Creek, Cardinia Creek complex.

Project Impacts

Without the implementation of mitigation measures it is very likely that habitat important to Growling Grass Frog populations would be removed. If this impact occurred the consequence would be high, as the key threats to this species include habitat loss and fragmentation and habitat degradation. Esso will also adopt standard and project-specific measures to avoid or minimise impacts of the Project on the Growling Grass Frog. These measures are discussed in **Table 19** and will include compliance with the National Species Recovery Plan.

Consequently, no significant impact is expected to populations of Growling Grass Frogs as a result of this Project.

Table 19 – Site Specific Mitigation Measures for Growling Grass Frog

Location	Project mitigation measures
Mudlark Lane (KP 2.7)	Seasonally inundated wetland. Potential for the species to occur under suitable (wet) conditions. • Trenchless construction will occur due to Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains Community and Growling Grass Frog habitat.

Bunyip River complex (KP 153) Deep Creek, Toomuc Creek, Cardinia Creek complex (KP 156)	Records of Growling Grass Frog are known from these networks of drains. Suitable habitat is present within the survey envelope. • Trenchless construction will occur due to hydrological reasons and Growling Grass Frog habitat.
Railway Road (KP 153.5)	Presumed present within the wetland adjacent to survey envelope (due to previous records). The species is also likely to use the surrounding terrestrial environment. • Undertake works during the driest part of the year, typically January to March, to minimise potential impacts during the breeding season (October to March). • Comply with biosecurity requirements in accordance with the National Species Recovery Plan and Threat Abatement Plan (e.g., *Chytrid* fungus). This will be addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences. • Undertake pre-construction habitat searches within a 200 m buffer of wetland habitat. Capture and release (by a qualified zoologist or wildlife specialist experienced in handling and transporting Growling Grass Frogs) into near-by areas any Growling Grass Frog within the 200 m buffer. • Implement sediment and water quality controls. • Ensure connectivity is maintained between habitat patches parallel with the Construction ROW both during and at the completion of construction.

Dwarf Galaxias – Vulnerable (FFG and EPBC listed)

Dwarf Galaxias were recorded at three sites associated with two watercourses within the survey envelope: Shady Creek and an unnamed tributary of the Moe Drain at Saxton Swamp. Dwarf Galaxias are predicted to occur at an additional 16 sites within the survey envelope, giving a total of 19 sites.

Important Populations

Of the 19 sites, the following waterbodies within the survey envelope are predicted to contain important populations of Dwarf Galaxias:

- Flynns Creek;
- Sheepwash Creek;
- Shady Creek;
- Saxton Swamp;
- Yallock Creek; and
- Watson Creek.

Project Impacts

Without the implementation of mitigation measures it is very likely that habitat important to Dwarf Galaxias populations would be removed. If this impact occurred the consequence would be high, as the key threats to this species include degradation and loss of habitat, alteration to flow regime and reduced connectivity. Esso will adopt standard and project-specific measures to avoid or minimise impacts of the Project on the Dwarf Galaxias.

These measures are discussed in **Table 20** and will include compliance with the National Species Recovery Plan.

Consequently, no significant impact is expected to populations of Dwarf Galaxias as a result of this Project.

Table 20 – Site Specific Mitigation Measures for Dwarf Galaxias

Location	Project mitigation measures
Flynns Creek (KP 41.75) Sheepwash Creek (KP 48.5) Yallock Creek (KP 147)	Permanent spawning and/or refuge habitat present. • Minimise works during the breeding period (August to November). Trenching will preferentially be restricted to dry periods, with appropriate in-stream water quality control measures implemented to manage incidental flows during construction. • When trenching coincides with periods of flow, Dwarf Galaxias individuals will be relocated downstream of the Project. Once relocation is completed, construction will commence in compliance with mitigation measures for general waterway crossings (to be described in the CEMP, which will be submitted to and approved by DSDBI before construction commences). • Waterways will be reinstated following completion of the works.
Shady Creek (KP 95.5) Saxton Swamp (KP 100)	Extensive ephemeral spawning habitat present. • Trenchless construction will occur due to boggy conditions and Dwarf Galaxias habitat.
Watson Creek (KP 175.5)	Permanent spawning habitat present. • Trenchless construction will occur due to Ramsar Wetland and Dwarf Galaxias habitat.

Australian Grayling – Vulnerable (FFG and EPBC listed)

Australian Grayling are predicted to occur within five drainages traversed by the survey envelope: Latrobe River, Rintoul Creek, Bunyip River complex, and Deep Creek, Toomuc Creek, Cardinia Creek complex.

Project Impacts

Without the implementation of mitigation measures it is very likely that habitat important to Australian Grayling populations would be removed. If this impact occurred the consequence would be high, as the key threats to this species include habitat disruption and degradation. Esso will adopt a number of standard and project-specific measures to avoid or minimise impacts of the Project on the Australian Grayling. These measures are discussed in **Table 21** and will include compliance with the National Species Recovery Plan.

Consequently, no significant impact is expected to populations of Australian Grayling as a result of this Project.

Table 21 – Site Specific Mitigation Measures for Australian Grayling

Location	Project mitigation measures
La Trobe River (KP 56.5) Bunyip River complex (KP 153) Deep Creek, Toomuc Creek, Cardinia Creek complex (KP 156)	This is core Australian Grayling habitat. • Trenchless construction will occur due to hydrological reasons and Australian Grayling habitat.
Rintoul Creek (KP 58.5)	This is marginal habitat for Australian Grayling. • Trenching will preferentially be restricted to dry periods, with appropriate in-stream water quality control measures implemented to manage incidental flows during construction. • When trenching coincides with periods of flow, Australian Grayling individuals will be relocated downstream of the Project. Once relocation is completed construction will commence in compliance with mitigation measures for general waterway crossings (to be described in the CEMP, which will be submitted to and approved by DSDBI before construction commences). • Rintoul Creek will be reinstated following completion of the works.

Giant Gippsland Earthworm (GGE) – Vulnerable (FFG and EPBC listed)

Evidence of GGE presence was identified at four sites within the survey envelope and at two sites adjacent to the survey envelope (see maps in Appendix E).

Project Impacts

Without the implementation of mitigation measures it is very likely that GGE populations would be impacted due to removal of habitat and injury and/or mortality of individuals by construction equipment. If these impacts occurred the consequence would be high, as the key threats to this species include soil disturbance and altered hydrology. Esso will adopt standard and project-specific measures to avoid or minimise impacts of the Project on the GGE. These measures are discussed in **Table 22** and will include compliance with the National Species Recovery Plan.

Consequently, no significant impact is expected to populations of GGE as a result of this Project.

Table 22 – Site Specific Mitigation Measures for GGE

Location	Project mitigation measures
Cameron's Road (KP 107.5) Butlers Track (KP 112)	Not within the Construction ROW. • Avoid impacts on GGE by avoiding the population and the 30 m habitat buffer through route selection. • Implementation of DEPI approved Contingency Plan if GGE are encountered during works.
Mattzed Close (KP 110) Pine Grove (KP 110.5) Hazel Creek (KP 113) Lardners Track (KP 117)	Within the Construction ROW. • Trenchless construction will occur due to constructability and GGE habitat. • Avoid impacts on habitat and 30 m buffer.

Moore Rd (KP 118)	• Transit construction equipment no less than 10 m from current GGE habitat. • Implementation of DEPI approved Contingency Plan if GGE are encountered during works.

Matted Flax-lily – Endangered (FFG and EPBC listed)

In Victoria, the Matted Flax-lily occurs most commonly in lowland grasslands, grassy woodlands, valley grassy forest and creek lines of herb-rich woodland. It is considered most likely to occur in conjunction with the EPBC Act listed Gippsland Red Gum Grassy Woodland community in the survey envelope, however the Matted Flax-lily was not identified during targeted field surveys for this Project (DoE 2013b).

Project Impacts

Without the implementation of mitigation measures it is very unlikely that Matted Flax-lily populations would be impacted. If removal of habitat or introduction of invasive species to Matted Flax-lily habitat did occur, the consequence would be high, as the key threats to this species include weed invasion and habitat destruction. No significant impact is expected to Matted Flax-lily as a result of this Project because (a) the species was not identified during targeted field surveys for this Project and (b) trenchless crossing of potential Matted Flax-lily habitat will provide protection in the unlikely event that the species is present in the survey envelope.

Australian Painted Snipe – Vulnerable (EPBC listed)

No impact is expected to migratory species as a result of construction activities due to the avoidance behaviour that is expected to be shown when construction occurs (i.e. they will fly away). Although there is potential for individuals of this species to use some grassy/sedgy wetland habitat within the survey envelope, the survey envelope does not provide any areas of important habitat for this species, therefore the survey envelope does not support an ecologically significant proportion of this species, it does not provide habitat of critical importance to this species, and the habitat is not at the limit of this species' range, or where this species are declining.

Project Impacts

Without the implementation of mitigation measures it is very unlikely that habitat important to Australian Painted Snipe populations would be removed. If a large area of habitat was removed, the consequence would be low, as there are no habitats important to the species likely to be impacted. No significant impact is expected to Australian Painted Snipe as a result of this Project as there are no important populations of Australian Painted Snipe within the survey envelope.

Swamp Fireweed – Vulnerable (EPBC listed)

Swamp Fireweed may occur in Plains Grassy Wetland within the Koo Wee Rup area. However, this species is very rarely recorded in the region and it was not recorded during surveys of these vegetation types. Due to the seasonal variation of grassy wetland communities, a conservative approach has been taken to regard these areas as important habitat for the purposes of the impact assessments for the Project.

Project Impacts

Without the implementation of mitigation measures it is very unlikely that Swamp Fireweed populations would be impacted. If this impact occurred the consequence would be high, as the key threats to this species include weed invasion and land clearing, habitat fragmentation and/or habitat degradation. No significant impact is expected to Swamp Fireweed as a result of this Project because (a) the species was not identified during targeted field surveys for this Project and (b) special mitigation measures of potential Swamp Fireweed habitat (for impact minimisation to EPBC listed Seasonally Herbaceous Wetlands communities) will provide an additional level of protection in the unlikely event that the species is present in the survey envelope.

Table 23 – Site Specific Mitigation Measures for Swamp Fireweed

Location	Project mitigation measures
Yallock Creek (KP 147.5) Landale Rd (KP 161.5) Lynes Rd/Western Contour Drain (KP 163.5)	• Minimise Construction ROW through this area. • Remove surface soil and plant material (intact sections) to a depth of 0.5 m and store for reinstatement following trenching. • Salvage when the soil is moist but not saturated or inundated. • Monitoring of weed spread and any loss of Swamp Fireweed will occur for two years following construction. Biosecurity will be addressed in CEMP, which will be prepared and submitted for regulatory approval before construction commences.

FFG Act Listed Species

DEPI habitat modelling indicates habitat is likely to be present in the survey envelope for the following FFG Act listed species (locations for each species can be found in Appendix C):

- White-footed Dunnart;
- Purple Blown-grass;
- Pale Mangrove Goby;
- Swamp Skink;
- Little Egret; and
- Chestnut-rumped Heathwren.

For unavoidable losses of FFG Act listed species and habitat, offsets will be sought in accordance with State permitted clearing guidelines. In addition, a permit to remove/disturb FFG Act listed species will be sought from DEPI.

EPBC Act Listed Migratory Species

Eight EPBC Act listed migratory species have potential to occur within the survey envelope, including:

- Eastern Great Egret;
- Cattle Egret;
- Latham's Snipe;
- Lewin's Rail;
- Rainbow Bee-eater;
- Black-faced Monarch;
- Satin Flycatcher; and
- Rufous Fantail.

Project Impacts

No impact is expected to migratory species as a result of construction activities due to the avoidance behaviour that is expected to be shown when construction crews are present (i.e. they

will fly away). Without the implementation of mitigation measures it is very unlikely that habitat important to Migratory Species would be removed. If this impact occurred the consequence would be low. Although there is potential for individuals of these species to use habitat within the survey envelope, the Project will not substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species. This is because the survey envelope does not support an ecologically significant proportion of any of these species, it does not provide habitat of critical importance to any of these species, and the habitat present is not at the limit of these species ranges, or where these species are declining (Biosis 2014).

EPBC Act Listed Communities

Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains – Critically Endangered

The ecological community is located where patches are sufficiently large enough and have the required composition and cover of species to meet definition criteria in the listing advice (DSEWPaC 2012). Other areas of corresponding EVCs (e.g. Plains Grassy Wetland) occur within the survey envelope although these areas are have been deemed to not include the listed community.

Project Impacts

Without the implementation of mitigation measures it is very likely that Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains communities would be impacted. If this impact occurred the consequence would be high, as the key threats to this species include land clearance. Esso will adopt standard and project-specific measures to avoid or minimise impacts of the Project on Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains communities. These measures are discussed in **Table 24**.

Consequently, no significant impact is expected to Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains communities as a result of this Project.

Table 24 – Site Specific Mitigation Measures for Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains Community

Location	Project mitigation measures
Mudlark Lane (KP 2.7)	Large, higher quality patch in the survey envelope, compared to Landale Road and Lynes Road. • Trenchless construction will occur due to Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains Community and Growling Grass Frog habitat.
Yallock Creek (KP 147)	Outside the Construction ROW. • Avoid impacts through route selection.

Landale Road (KP 161.5) Lynes Road (KP 163.5)	Small, lower quality patch in the survey envelope, compared with Mudlark Lane. • Minimise Construction ROW through this area. • Remove surface soil and plant material (intact sections) to a depth 0.5 m and store for reinstatement following trenching. • Salvage when the soil is moist but not saturated or inundated. • Monitoring of weed spread and any loss of Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains Community will occur for two years following construction. Biosecurity will be addressed in CEMP, which will be submitted to and approved by DSDBI before construction commences.

Gippsland Red Gum Grassy Woodland and Associated Native Grassland – Critically Endangered

Both treed and treeless examples of this community exist within the survey envelope. The patches identified at Willung Road and Princes Highway (see maps in Appendix C) meet size and species composition thresholds identified in the listing advice. However, in other areas, this community has been cleared to the extent that the remnant do not meet the definition criteria of the listed community e.g. weed cover too high or only scattered trees are present.

Project Impacts

Without the implementation of mitigation measures it is very likely that Gippsland Red Gum Grassy Woodland and Associated Native Grassland communities would be impacted. If this impact occurred the consequence would be high, as the key threats to this species include vegetation clearing, consequent fragmentation of native vegetation remnants and invasion by weeds and feral animals. Trenchless crossing of "Gippsland Red Gum Grassy Woodland and Associated Native Grassland" habitat is proposed, as discussed in **Table 25**.

As a result, no significant impact is expected to "Gippsland Red Gum Grassy Woodland and Associated Native Grassland" communities as a result of this Project.

Table 25 – Site Specific Mitigation Measures for Gippsland Red Gum Grassy Woodland and Associated Native Grassland Community

Location	Project mitigation measures
Willung Road (KP 34)	• Trenchless construction will occur due to Gippsland Red Gum Grass Woodland and Associated Native Grassland.
Princes Highway (KP 49.5)	• Trenchless construction will occur due to traffic and safety reasons and Gippsland Red Gum Grass Woodland and Associated Native Grassland.

<u>FFG Act listed communities</u>

Three FFG listed communities are present within the survey envelope.

Central Gippsland Plains Grassland Community

This community is found on the poorly drained, heavy alluvial clays of the lowland plains of central Gippsland, Seaspray west to Westernport, and on parts of the Mornington Peninsula. Rainfall ranges from 570–650 mm, generally <600 mm. It is comprised of open tussock grassland, mostly dominated by Kangaroo Grass. Between grass tussocks there is a variety of perennial herbs,

including riceflowers, daisies, lilies, sedges and orchids.

Project Impacts

Without the implementation of mitigation measures it is very likely that Central Gippsland Plains Grassland communities would be impacted. If this impact occurred the consequence would be high, as the key threats to this species include vegetation clearing, fragmentation of native vegetation remnants and invasion by weeds and feral animals. Trenchless crossing of Central Gippsland Plains Grassland community habitat is proposed for traffic and safety reasons, as discussed in **Table 26**.

Consequently, no significant impact is expected to Central Gippsland Plains Grassland communities as a result of this Project.

Table 26 – Site Specific Mitigation Measures for Central Gippsland Plains Grassland Community

Location	Project mitigation measures
Willung Road (KP 34)	• Trenchless construction will occur due to Central Gippsland Plains Grassland Community.
Princes Highway (KP 49.5)	• Trenchless construction will occur due to traffic and safety reasons and Central Gippsland Plains Grassland Community.

Forest Red-gum Grassy Woodland

This community is found on the poorly drained, heavy alluvial clays of the lowland plains of central Gippsland, from Traralgon east to Lakes Entrance. Rainfall ranges from 570–650 mm, generally <600 mm. It is dominated by Gippsland Red Gum over a grassy understorey that is similar to that of Central Gippsland Plains Grassland, but without the dominance of Kangaroo Grass.

Project Impacts

Without the implementation of mitigation measures it is very likely that Forest Red-gum Grassy Woodland communities would be impacted. If this impact occurred the consequence would be high, as the key threats to this species include vegetation clearing, fragmentation of native vegetation remnants and invasion by weeds and feral animals. Potential impacts are expected to one example of the “Forest Red-gum Grassy Woodland” community as a result of this Project.

These impacts will be minimised through standard and special mitigation measures, as discussed in **Table 27**.

Table 27 – Site Specific Mitigation Measures for Forest Red-gum Grassy Woodland Community

Location	Project mitigation measures
Unnamed site (KP 32)	• Minimise Construction ROW through this area. • For any unavoidable losses of trees or their associated EVC, offsets will be sought via the Native Vegetation Offset Strategy, as per the Permitted Clearing of Native Vegetation Biodiversity Assessment Guidelines and addressed in the CEMP, which will be prepared and submitted for regulatory approval before construction commences.
Willung Road (KP 34)	• Trenchless construction will occur due to Forest Red-gum Grassy Woodland Community.

Princes Highway (KP 49.5)	• Trenchless construction will occur due to traffic and safety reasons and Forest Red-gum Grassy Woodland Community.

Herb-rich Plains Grassy Wetland (West Gippsland) Community

This community has a swampy grassland/sedgeland ground layer and ranges in structure from naturally treeless to a woodland or open forest with a tree canopy of River Red-gum *Eucalyptus camaldulensis*. Areas of Plains Grassy Wetland within the survey envelope are this community. The geographic limit of this community is unclear, however, all mapped areas of the survey envelope containing grassy wetland vegetation will conservatively be regarded as this community.

Potential impacts are expected to several examples of Herb-rich Plains Grassy Wetland (West Gippsland) Community as a result of this Project. These impacts will be minimised through standard and special mitigation measures, as discussed in **Table 28**.

Table 28 – Site Specific Mitigation Measures for Herb-rich Plains Grassy Wetland (West Gippsland) Community

Location	Project mitigation measures
Mudlark Ln (KP 2.7)	• Trenchless construction will occur due to Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains Community and Growling Grass Frog habitat.
Un-named site (KP 32) Yallock Creek (KP 148) Tooradin Station Rd (KP 160) Landale Rd (KP 161.5) Lynes Rd (KP 163.5) Vowell Dr (KP 171.5) Tyabb Tooradin Rd (KP 174.5)	• Minimise Construction ROW through this area. • Remove surface soil and plant material (intact sections) to a depth 0.5 m and store for reinstatement following trenching. • Salvage when the soil is moist but not saturated or inundated. • Monitoring of weed spread and any loss Herb-rich Plains Grassy Wetland (West Gippsland) Community will occur for two years following construction. Biosecurity will be addressed in CEMP, which will be prepared and submitted for regulatory approval before construction commences.
Yallock Creek 2nd community (KP 147)	• No impacts are expected due to the distance of this community from the Construction ROW. The community will be flagged and fenced-off during construction to prevent access and inadvertent impacts.
South Gippsland Highway (KP 164.75)	• Trenchless construction will occur due to traffic and safety reasons and Herb-rich Plains Grass Wetland (West Gippsland) Community.

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

As described in the Site Specific Mitigation Measures Tables in Section 12.

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

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.

Approximately 50 Megalitres (Ml) of water will be required to support construction activity along the pipeline route. This water will typically be used for:

- Dust suppression;
- Use in trenchless installation techniques;
- Use in road upgrades or rehabilitation of road surfaces disturbed during construction; and
- Hydrotesting of the proposed replacement pipeline will occur in sections. The maximum volume of water anticipated for hydrostatic testing is approximately 7 Ml.

Water will be obtained from a combination of sources such as local standpipes, town supplies, natural waterways, or from dams belonging to local landholders. Extraction will be conditional upon obtaining the relevant approvals from the appropriate authority and/or stakeholder (e.g., local water supply authority, catchment management authority, or landowner).

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, the Project will discharge water - either stormwater or groundwater that has accumulated in the trench (trench dewatering) or hydrotesting water.

Water may be disposed of in several ways including; irrigation, release into sewers, landholders' dams, paddocks, or into watercourses subject to relevant regulatory and/or landholder approval.

Waste water management measures, including disposal of trench dewatering and hydrotest water will be addressed in the CEMP, which will be submitted and prepared for regulatory approval before construction commences.

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.

<u>Wetlands</u>

Two Ramsar Wetlands are located in the vicinity of the Project; the Westernport and Gippsland Lakes Ramsar sites (**Map 3**). Ramsar Wetlands are discussed further below in this Section.

<u>Marine Environments</u>

Marine environments will not be directly impacted by the Project. The use of trenchless construction and appropriate watercourse construction methodology will avoid direct and indirect impacts to the closest and most connected marine area, being the Westernport marine area.

<u>Watercourses</u>

The proposed replacement pipeline will cross 177 watercourses which have been identified from mapping obtained from the Vic Map Hydro dataset. All watercourses have been classified as major, moderate or minor based on hydrological, geomorphological and flooding characteristics (see Section 8).

Are any of these water environments likely to support threatened or migratory species?

☐ NYD ☐ No ☒ Yes If yes, specify which water environments.

The flora and fauna assessment completed by Biosis included an aquatic flora and fauna assessment. The fauna assessment identified the following aquatic threatened or migratory species which are likely to be supported by water environments along the survey envelope:

- Dwarf Galaxias were recorded at three sites associated with two watercourses within the

survey envelope: Shady Creek and an unnamed tributary of the Moe Drain at Saxton Swamp. Dwarf Galaxias are predicted to occur at an additional 16 sites within the survey envelope.

- Australian Grayling are predicted to occur within the Latrobe River, Rintoul Creek, the Bunyip River complex, and Deep Creek, Toomuc Creek, Cardinia Creek complex.

These species are described in Section 12.

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.

Gippsland Lakes Ramsar Wetland

The Gippsland Lakes Ramsar site is located east of the Latrobe Valley and south of the Eastern Highlands in Victoria, approximately 300 kilometres east of Melbourne. It consists of a group of coastal lagoons separated from the sea by a barrier system of sand dunes and fringed on the seaward side by the Ninety Mile Beach (DSEWPaC 2010a).

The Gippsland Lakes Ramsar Wetland is located, at its closest point to the Project, approximately 53 km downstream of where the project crosses Flynns Creek and approximately 65 km downstream of where the project crosses the La Trobe River. Due to the distance from Gippsland Lakes Ramsar Wetland, no direct or indirect impacts as a result of this Project are expected.

Westernport Ramsar Wetland

The Westernport Ramsar site consists of a large coastal bay situated approximately 60 km south-east of Melbourne, Victoria. The site occupies approximately 60,000 ha and includes large shallow areas dissected by deeper channels and, in some places, a narrow strip of adjacent coastal land (DSEWPaC 2010b).

The proposed replacement pipeline crosses the Westernport Ramsar Wetland (**Map 3**) for approximately 70 m at Watson Creek. This watercourse will be crossed using trenchless construction to avoid any significant impacts on the Westernport Ramsar Wetland.

Bunyip River complex (total of 5 waterways), and Deep Creek, Toomuc Creek, Cardinia Creek complex (total of 6 waterways) are in close proximity, and flow into, the Westernport Ramsar Wetland. These waterway will be crossed using trenchless construction for hydrological and construction reasons, therefore avoiding potential significant impacts to the Westernport Ramsar Wetland.

The Project crosses eight other watercourses upstream of the Westernport Ramsar Wetland. Erosion and sediment control measures will be implemented to minimise downstream impacts, in accordance with the CEMP, which will be prepared and submitted for regulatory approval.

Nature and Extent of Likely Impact to the Ecological Character of the Westernport Ramsar Wetland

The *Significant Impact Guidelines 1.1 Matters of National Environmental Significance* (the Guidelines) describe the ecological character of wetlands of international importance as 'the combination of the ecosystem components, processes and benefits/ services that characterise the wetland at a given point in time. The phrase 'at a given point in time' refers to the time of designation for the Ramsar List' (DoE 2013a).

The ecological character of the Westernport Ramsar Wetland described in the document *Westernport Ramsar Wetland Ecological Character Description* (Kellogg Brown & Root, 2010) States 'essential elements which support the critical components and processes of the site are water quality, tidal regime and climate'.

The Guidelines identify that a proposal is likely to have a 'significant impact' on a Ramsar wetlands if certain listed outcomes are likely or possible. **Table 29** summarises the potential for the Project to have a significant impact (listed outcome) on the Westernport Ramsar Wetland and

mitigation measures to reduce the potential impacts.

Table 29 – Significant impact criteria for the Westernport Ramsar Wetland

Listed Outcome	Project Mitigation Measures
Areas of wetland are destroyed or substantially modified	Not expected - Watsons Creek, Bunyip River complex (total of 5 waterways), and Deep Creek, Toomuc Creek, Cardinia Creek complex (total of 6 waterways) will be crossed by the proposed replacement pipeline using trenchless construction therefore, avoiding impacts to the Ramsar Wetland. Mitigation measures on the other eight waterways upstream of the Westernport Ramsar Wetland will be in accordance with the CEMP, which will be submitted to and approved by DSDBI before construction commences. Mitigation measures will include erosion and sediment controls and maintaining flow on all waterways upstream of the Ramsar site by the use of temporary and low impact structures.
There is a substantial and measurable change in the hydrological regime of the wetland	Not expected - Watsons Creek, the Bunyip River complex, and the Deep Creek, Toomuc Creek, Cardinia Creek complex will be crossed by the pipeline using trenchless construction and will avoid hydrological impacts to the Ramsar Wetland. Flow will be maintained on all waterways upstream of the Westernport Ramsar Wetland by use of temporary and low impact structures. Waterway works to maintain flow will be implemented in accordance with the CEMP, which will be submitted to and approved by DSDBI before construction commences.
The habitat or lifecycle of native species, including invertebrate fauna and fish species dependent on the wetland, being seriously affected	Not expected - Watsons Creek, Bunyip River complex, and Deep Creek, Toomuc Creek, Cardinia Creek complex will be crossed by the pipeline using trenchless construction and will avoid impacts to native species associated with the Ramsar Wetland. Flow will be maintained on all other waterways upstream of the Westernport Ramsar Wetland by use of temporary and low impact structures. Construction will be timed to occur during low flow conditions as much as practicable, to minimise potential impacts to habitat connectivity and migration routes for native species associated with the Ramsar Wetland. Waterway works will be implemented in accordance with the CEMP, which will be submitted to and approved by DSDBI before construction commences.
A substantial and measurable change to the water quality of the wetland – e.g. to salinity, temperature, pollutant or nutrient levels.	Not expected - mitigation measures on the other eight waterways upstream of the Westernport Ramsar Wetland will include erosion and sediment controls in accordance with the CEMP, which will be submitted to and approved by DSDBI before construction commences.
An invasive species harmful to the ecological character of the wetland becomes established	Not expected - invasive species will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.

While there may be temporary localised disturbance as a result of construction activities, with the above measures in place, this disturbance will be temporary and is not expected to have a significant impact on the ecological character of the Ramsar Wetland.

Could the project affect streamflows?

☒ NYD ☒ No ☒ Yes If yes, briefly describe implications for streamflows.

Selected major waterways will be constructed using trenchless construction for hydrology reasons, and are listed in **Table 30**. For other watercourses, trenching will be timed to occur during low flow conditions as much as practicable. Where this is not practicable, streamflows may be temporarily affected during pipeline construction where trenched crossings are proposed for watercourses with flowing water. Temporary and low impact structures will be used during waterway works.

Approvals will be obtained from Melbourne Water Corporation and West Gippsland Catchment Management Authority for works on waterways prior to construction commencing. The works on waterways application will describe the detailed watercourse crossing techniques and mitigation measures and reinstatement requirements.

Could regional groundwater resources be affected by the project?

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

Temporary and minor reduction of groundwater levels may be experienced during pipeline construction; however the pipeline depth (which will comply with AS2885) is considered unlikely to affect groundwater flows or recharge. The length of open trench during construction will be limited and the total time of disturbance (the construction period when dewatering might affect a particular groundwater resource) is expected to be short.

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)

The State Environment Protection Policy (Waters of Victoria) (SEPP) identifies a range of beneficial uses of water environments. These include:

- Aquatic ecosystems;
- Water suitable for aquaculture;
- Water based recreation;
- Water suitable for human consumption;
- Cultural and spiritual values;
- Water suitable for industrial and commercial use;
- Water suitable for agriculture; and
- Water suitable for the consumption of fish, crustacea and molluscs.

The proposed replacement pipelines crosses 177 watercourses and has the potential to affect the following beneficial uses:

- Aquatic ecosystems; and
- Water suitable for agriculture.

However, impacts to these beneficial uses resulting from the Project are not anticipated due to the following:

- Selected major watercourse crossings will be constructed using trenchless techniques;
- Construction of trenched watercourses will occur during low flow as far as practicable;
- Biodiversity values of specified watercourses will be managed as described in Section 12;
- Construction will be temporary and short term in nature;

- Trenching of watercourses will occur within the existing disturbed pipeline easements;
- Appropriate sediment and control measures will be implemented for all watercourses; and
- All trenched watercourses will be reinstated in accordance with the CEMP and works on waterways permits.

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

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

Estuarine and marine ecosystems are unlikely to be affected by the Project. Potential impacts on aquatic ecosystems from pipeline construction will be mitigated as discussed in the following sections.

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.

Pipeline construction will not have extensive or major impacts on the health or biodiversity of estuarine or marine ecosystems for the following reasons:

- Selected watercourse crossings will be constructed using trenchless techniques for hydrological reasons and will also mitigate impacts on aquatic biodiversity;
- Trenching of watercourses will occur within the existing disturbed pipeline easements;
- All trenched watercourses will be reinstated in accordance with the CEMP and works on waterways permits.

During operation of the proposed replacement pipeline, extensive or major impacts are not anticipated.

Is mitigation of potential effects on water environments proposed?

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

Selected watercourses will be constructed using trenchless techniques for hydrology reasons. Trenchless construction of these waterways will also mitigate impacts to threatened aquatic species or significant habitats that have been identified at these locations.

Table 30 lists the major waterways to be crossed with trenchless construction and the additional environmental benefits from utilising this construction technique.

Table 30 – Watercourses to be crossed using trenchless techniques

Waterway	Primary Driver	Environmental Benefit
LaTrobe River (2 x crossings)	Hydrological	• Australian Grayling
Shady Creek	Boggy	• Dwarf Galaxias • Australasian Bittern • Strzelecki Gum
Saxton Swamp	Boggy	• Dwarf Galaxias • Southern Brown Bandicoot
Unnamed waterway (KP 109)	Constructability	• Giant Gippsland Earthworm
Hazel Creek	Constructability	• Giant Gippsland Earthworm

Bunyip River complex	Hydrological	• Australian Grayling • Southern Brown Bandicoot • Growling Grass Frog • Australasian Bittern
Deep Creek, Toomuc Creek, Cardinia Creek complex	Hydrological	• Australian Grayling • Southern Brown Bandicoot • Growling Grass Frog • Australasian Bittern
Watson Creek	WesternPort Ramsar Wetland	• Dwarf Galaxias • Southern Brown Bandicoot

Trenched watercourse crossings will be scheduled for construction during dry periods as far as practicable, with effective erosion and sediment controls in place to minimise impacts. Any impacts to streamflows will be temporary as trenched construction of watercourse crossings will be reinstated upon completion of construction.

The CEMP will identify detailed risks to water environments, and associated management measures including erosion and sediment control, waste water management and spill response. The CEMP will be prepared and submitted to DSDBI for regulatory approval before construction commences. The CEMP process is outlined in Section 18.

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

14. Landscape and soils

Landscape

Has a preliminary landscape assessment been prepared?

☒ No ☐ Yes If yes, please attach.

A preliminary landscape assessment is not considered necessary as the visual impact of construction will be temporary, the pipeline will be buried, and there will be minimal above ground infrastructure.

The existing easements contain existing buried pipelines and associated above ground infrastructure including valve sites and pipeline signs, and as such the residual change to the landscape will be minimal.

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.

Planning permits are not required for the Project due to the exemption under the *Pipelines Act 2005.* However, to address the specific nature of this section, sections of the proposed replacement pipeline cross Environmental Significance Overlay (ESO) and Landscape Significance Overlay (LSO) identified in Victorian Planning Provisions.

Map 4 show the pipeline route within the ESO and LSO areas. **Table 31** lists the ESO and LSO details for each Local Government Area.

Table 31 – ESO and LSO

LGA	Overlay details
Wellington Shire Council	ESO7 - Landfill Buffer
La Trobe City Council	ESO1 - Urban Buffer
Baw Baw Shire Council	ESO1 - High Quality Agricultural Land
	ESO2 - Water Catchment Areas
	ESO4 - Protection of Giant Gippsland Earthworm and Habitat Areas
Cardinia Shire Council	ESO2 - Western Port
City of Casey	ESO1 - Coastal Environs
	SLO2 - Westernport Coast
Mornington Peninsula Shire Council	ESO5 - Westernport Hinterland
	ESO18 - Wetlands
	ESO17 - Streamlines

- **Identified as of regional or State significance in a reputable study of landscape values?**
  ☐ NYD ☒ No ☐ Yes If yes, please specify.

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

Esso's existing pipelines traverse approximately 14 km of Holey Plains State Park. Holey Plains State Park is a designated State Park under the *National Parks Act 1975.*

The proposed replacement pipeline works will be restricted to the existing cleared pipeline area within Holey Plains State Park and therefore will avoid or minimise any potential significant impacts on the environment and minimise removal of native vegetation.

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

The project intersects some public land used for conservation or recreational purposes. These existing pipeline areas have previously been cleared of vegetation and the construction impact will be temporary.

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

Construction and operation of the proposed replacement pipeline is unlikely to materially impact on landscape values as it is located within Esso's existing easements. Clearing of vegetation will be minimised and alteration of landform will be temporary.

Activities that may create temporary visual impacts from construction include the following:

- Clearing vegetation and stripping of topsoil to allow construction;
- Vehicle/machinery turn-around areas;
- Temporary stockpiles of excavated soil, pipeline or construction materials; and
- Temporary storage facilities.

The Construction ROW will be reinstated following construction so that there will be no significant change or alteration to landscape values.

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

Impacts on landscape values of regional or State importance are not anticipated.

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

The Construction ROW will be rehabilitated in accordance with the CEMP, which will be prepared and submitted to DSDBI for regulatory approval before construction commences. Due to the nature of pipeline construction, impacts to landform and landscape values will be temporary and residual impact will be low following rehabilitation.

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

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.

The Geosciences Australia Landslide database indicates that there are three recorded locations of landslide activity within 10 km of the proposed replacement pipeline (**Table 32**).

Table 32 – Landslides in vicinity of the Project.

Location	Approx. distance to existing pipeline	Description
Gippsland, Yallourn North Open Cut Mine. Located south of pipeline from approx. KP 72.	4 km	Rock slide. This 1948 slide at Yallourn North Open Cut was related to lithology and mining activity.
South Gippsland, Warragul to Korumberra Road. Located South of pipeline from approx. KP 114	2 km	This 1965 landslip in Cretaceous sediments affected the Warragul to Korumburra Road.
Cardinia Creek, Ferntree Gully. Located north of pipeline from approx. KP 159.	5 km	Earth slump. This rotational slump in Paleozoic sedimentary or volcanic rock at Cardinia Creek moved originally in 1952, and again in 1953 (Geosciences 2008)

No land stability issues have been identified for the proposed replacement pipeline. However highly erodible soils may be encountered at localised areas along the route. The CEMP will address erosion and sediment control measures, including erodible soils, and will be prepared and submitted to DSDBI for regulatory approval before construction commences.

Acid Sulfate Soil

A characterisation assessment of Acid Sulfate Soil (ASS) within the survey envelope has been undertaken by WorleyParsons. A desktop review was completed to identify "at-risk" areas and identified that ASS or Potential Acid Sulfate Soils (PASS) are potentially present between KP 55 and KP 71 (sub-parallel to LaTrobe River, north of Traralgon), and between KP 129 and KP 170 (Koo Wee Rup Marsh and Westernport Bay area, from Modella to northwest of Cannons Creek). This was used to inform field investigations, which involved the drilling of boreholes at nominated locations. Samples were obtained for testing for acid sulfate potential at an accredited laboratory.

The results of the field investigation identified the presence of acidic soils, with acidity exceeding the EPA screening criteria for ASS, along the survey envelope. However, the soils have low concentrations of sulphur indicating that there is not widespread ASS along the pipeline route, but instead widespread acidic soils.

Acidic soils will be addressed in the CEMP as follows:

- Avoid disturbing additional soils;
- Minimise disturbance of soils excavated;
- Minimise oxidation by stockpiling;
- Progressive construction so that soils are not exposed for longer periods than necessary; and
- Covering and/or managing runoff in soil that needs to be stockpiled for longer periods.

It is noted that the nature and formation of ASS is such that they can be encountered in localised areas. Therefore ASS or (PASS) can still be expected to be encountered in localised areas along the proposed replacement pipeline route.

The Acid Sulfate Soil Characterisation Report by WorleyParsons is attached as Appendix A.

Are there geotechnical hazards that may either affect the project or be affected by it?

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

A desktop assessment of ground conditions was undertaken and did not identify geotechnical hazards.

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

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.

There will be temporary and localised traffic impacts on roads in the vicinity of the Project. Pipeline materials, equipment and machinery will be delivered to the Construction ROW by road transport, resulting in an increased number of traffic movements across local road networks during the construction phase.

Approximate construction traffic volumes that will have an impact on road use will predominantly consist of the following:

- Transportation of pipe from the storage area near Hastings to various points along the Construction ROW. There will be approximately 200 return journeys per month between the storage area near Hastings and the Construction ROW for approximately four months;

- Mobilisation, demobilisation, and movements of construction machinery and equipment (e.g. fuel transport, water and soil supply), totalling approximately 300 to 400 journeys per month from commencement of clear and grade activities of Construction ROW to rehabilitation; and
- Daily movement of the construction workforce, travelling to and from construction sites at the start and end of each day and between construction sites throughout the day.

Traffic impacts to major highways from pipe trucks and other project related traffic movement are expected to be negligible in comparison to existing traffic volumes on these roads. Traffic impacts on local roads will be temporary. Construction will be progressive and the duration of the traffic impact to any one road will be of limited duration.

Vehicle movements will generally occur during daylight hours although occasional movement of machinery and equipment between work sites may occur at night to minimise impacts to local traffic. Construction storage areas receiving delivery of materials may also have extended hours of operation on occasions.

A Traffic and Transport Management Plan (TTMP) will be developed for heavy vehicle movements and routes. The TTMP will be developed in consultation with the relevant road authority.

To ensure public awareness of potential impacts during construction, Esso will engage neighbours and communities in the areas affected by the Project. This will include letterbox drops to neighbours of directly-affected landowners/occupiers and works notifications to advise them of upcoming project activities, including temporary road closures or traffic controls being advertised.

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 of the proposed replacement pipeline is likely to generate some temporary impacts on residential amenity including dust, noise and visual changes. However, these impacts will be of a temporary nature and it is anticipated that significant impacts are unlikely where appropriate mitigation measures are applied.

The survey envelope passes predominantly rural areas. However, in some areas it is aligned in close proximity to both isolated rural residential properties and urban residential areas.

Air Emissions

Sources of air emissions include particulates from construction machinery and vehicles, as well as fugitive dust generated from earthworks excavations, erosion of soil stockpiles and by vehicles and machinery movement. There will be limited impact on air quality during the construction of the proposed replacement pipeline. Construction will be progressive and therefore the duration and proximity to any one receiver or group of receivers will be limited.

Dust mitigation measures have been identified through the Project risk assessment process and will be managed through the CEMP. Mitigation measures include:

- Reduced speed limits will be applied where dust is a concern.
- Watering of exposed soils will be undertaken where required to manage dust.

Odour from construction activities is not expected.

Noise and Vibration

Noise and vibration can result from trenching and backfilling and trenchless construction drilling. Noise can also result from ground disturbance activities associated with the clearing and reinstatement of the Construction ROW, general earthworks, loading and unloading of materials, and vehicle movements within the Construction ROW.

Minimal and short duration noise impacts on landowners, occupiers and other residents within close proximity of the Construction ROW are likely, however, as construction activities are unlikely to be at one location for long periods, the noise impacts will be temporary. Esso will work with landowners and occupiers to minimise interference from noise.

Construction hours will be during daylight hours and generally between 6 am and 6 pm seven days a week. However, some activities will need to be undertaken on a 24 hour basis such as trenchless construction and hydrotesting works. If 24 hour construction is undertaken in close proximity to residents, arrangements including possible provision of alternative accommodation will be agreed with affected residents. Each resident will be managed on a case-by-case basis.

Traffic

Likely changes in traffic conditions are discussed in the previous section. It is expected that temporary changes to traffic conditions will not have a significant impact on the amenity of residents.

Visual Amenity

As described in the Section 14 there will be temporary and minimal visual changes to the landscape during construction will include temporary storage facilities, vegetation removal, machinery turn around areas and stockpiles. Permanent above ground structures, such as valve sites and pipeline signs, will be located in the existing easement.

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.

Significant health and safety hazards to the local community are not expected from the Project. Access to the construction site will be clearly demarcated and public access will be denied.

Chemicals used during pipeline construction will not be present in quantities to cause any significant impacts to human health. They will be stored, handled and disposed of in accordance with the Material Safety Data Sheets and the CEMP, which will be prepared and submitted to DSDBI for regulatory approval before construction commences.

Design, construction and operation of the proposed replacement pipeline will be undertaken in accordance with AS 2885. This standard facilitates the necessary requirements in consideration of the protection of the public, construction and operating personnel and the environment.

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.

The proposed replacement pipeline will be constructed within Esso's existing disturbed pipeline easements to the maximum extent possible. There may be a small number of locations where, due to restricted space within the existing easements, Esso may seek to position the replacement pipeline outside the existing easements. Should additional easement areas be needed, new easement will be negotiated with relevant landowners.

Due to the nature of pipeline construction, impacts to nearby residences will be limited and short in duration. Esso will discuss measures to mitigate potential impacts on landowners and occupiers and their activities in advance of any work undertaken.

Road access in some areas may be temporarily restricted or subject to traffic management measures during construction. Where temporary road closure is proposed, permits will be sought from the relevant road authority. Affected residences will receive notification in accordance with permit requirements.

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.

The proposed replacement pipeline is largely situated in agricultural land used for cropping, grazing, and other agricultural activities. Reinstatement of the Construction ROW will ensure that land use activities can resume.

The proposed replacement pipeline will be constructed within Esso's existing disturbed pipeline easements to the maximum extent possible. There may be a small number of locations where, due to restricted space within the existing easements, Esso may seek to position the replacement pipeline outside the existing easements. Should additional easement areas be needed, new easement will be negotiated with relevant landowners.

The location of above ground infrastructure associated with the proposed replacement pipeline (such as valve sites) will be discussed with affected landholders. To the extent it is practicable and safe to do so, this infrastructure will be located to minimise impact on land use. Landowners may be entitled to compensation for certain impacts in accordance with the *Pipelines Act 2005.*

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.

Changes to non-residential land use activities will be temporary only and are not expected to permanently affect local residences/communities, social groups or industries.

Additional workspace adjacent to the existing easements will be sought from landowners and/or occupiers and, where agreed, will minimise the amount of time Esso needs to be on a property to complete construction works for the replacement pipeline.

Is mitigation of potential social effects proposed?

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

The mitigation of potential social impacts such as noise, dust and odour impacts has been identified as part of the Project risk assessment process and will be detailed in the CEMP, which will be prepared and submitted to DSDBI for regulatory approval before construction commences.

Trenchless construction will be used to construct the pipeline crossing underneath selected roads to maintain traffic flow and minimise disruption to road users. Operational railway crossings will also be crossed using trenchless construction.

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

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 Indigenous organisations have been consulted on the Project:

- GLaWAC;
- Bunurong Land Council Aboriginal Corporation;
- Boon Wurrung Foundation Ltd;
- Wurundjeri Tribe Land and Compensation Cultural Heritage Council; and
- OAAV.

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)

Specialist cultural heritage investigations and targeted field surveys have been undertaken by Andrew Long and Associates (Cultural Heritage Advisors). As the survey envelope falls within both a RAP area and a non-RAP area, a CHMP under the *Aboriginal Heritage Act 2006* will be prepared for each area as follows:

- East –from Longford to Warragul. GLaWAC is the RAP for this area. Pursuant to Section 55 of the *Aboriginal Heritage Act* 2006, the RAP (GLaWAC) has advised that it will review the CHMP.
- West – from Warragul to Long Island Point. There is no RAP appointed for this area, therefore OAAV will review this CHMP.

The objectives of the cultural heritage assessment to:

(a) Determine the presence of Aboriginal cultural heritage places within the survey envelope;

(b) Plan the management and protection of known Aboriginal cultural heritage during the course of activities associated with the Project; and

(c) Provide contingency arrangements for managing the discovery of any further Aboriginal cultural heritage places during the course of activities associated with the Project.

At the time of preparation of this document, the Desktop Assessment and Standard Assessment for both CHMPs had been completed.

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

CHMP East

The desktop assessment identified no existing registered Aboriginal cultural heritage places within the eastern survey envelope. There are however, 93 previously registered Aboriginal cultural heritage places within the wider geographic region, the majority of which are artefact scatters or low density artefact distributions, and the remainder are scarred trees. Artefact scatters generally comprise low numbers of stone artefacts, although high-density artefact scatters also occur in the region.

A standard assessment field survey did not identify any tree scarring, caves, rock shelters or cave entrances within the eastern portion of the survey envelope Two single silcrete artefacts were identified in the eastern survey envelope during the standard assessment; one located in the Holey Plains State Park and the other on a vehicular track near Whittles Road.

Based on the results of the standard assessment it was deemed necessary to undertake a complex assessment, which will be completed by mid-2014.

CHMP West

The desktop assessment identified one existing registered Aboriginal place (an artefact scatter) within the western survey area and 41 previously registered Aboriginal cultural heritage places within the wider geographic region. The majority of these registered Aboriginal places are artefact scatters or low density artefact distributions, and the remainder are scarred trees and shell middens. The artefact scatters generally comprise low numbers of stone artefacts, although some high density artefact scatters also occur in the region.

No scar trees, caves, rock shelters or cave entrances were identified within the western survey envelope during the standard assessment. In total 44 stone artefacts (32 within the survey envelope) were identified in the western survey area.

Based on the results of the standard assessment it was deemed necessary to undertake a complex assessment which will be completed by mid-2014.

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.

Historical sites of varying archaeological significance are currently recorded within or close to the study area as listed in **Table 33**.

Table 33 – Historical sites within the Survey Envelope.

Site Name	Historical Database ID	Results	Impact of Proposed works
Wattle & Daub House	3958	Low ground surface visibility. No historical archaeological features or artefacts were identified.	The Project impacts the northern end of the Hermes unlisted area. The house itself will not be impacted by the Project.
Koo Wee Rup Swamp Rail Bridges Nos 1-6	185945	Low ground surface visibility. No historical archaeological features or artefacts were identified.	The Hermes area runs parallel to and along the survey envelope. The rail bridges will not be impacted by the Project.
Monomeith Homestead	H0452 HO77	Low ground surface visibility. No historical archaeological features or artefacts were identified.	The homestead and associated buildings are not impacted by the Project. The northern boundary of the grounds will be impacted by the Project.
Monomeith/Cardinia	HO78	Low ground surface visibility. No historical archaeological features or artefacts were identified.	The northern tip of the site will be impacted by the Project. The remaining area will not be impacted.
Pearcedale/Casey	HO21	Not surveyed. Site is outside survey envelope.	HO21 will not be impacted by the Project.
Old Darnum Park Homestead - Updated	H8121-0023	Not surveyed. Site is outside survey envelope.	The homestead will not be impacted by the Project.

Is mitigation of potential cultural heritage effects proposed?

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

Two Cultural Heritage Management Plans (CHMP) will be prepared by Esso as mandatory CHMPs under Section 46 of the *Aboriginal Heritage Act 2006.* Endorsement of these CHMPs will allow the management and protection of Aboriginal cultural heritage from the Project, which may disturb Aboriginal cultural heritage places within the activity area. In addition, these CHMPs provide contingency arrangements for managing the discovery of any further Aboriginal cultural heritage places identified during construction works associated with the activity.

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

Esso has extensive experience in pipeline construction and operation and has utilised key environmental and construction contractor staff and specialist consultants to guide the impact assessments for this referral.

16. Energy, wastes & greenhouse gas emissions

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

☒ Electricity network. If possible, estimate power requirement/output

The Project will require power supply for the operation of the valve sites, monitoring systems, and other operational equipment.

☒ 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.

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

☒ Wastewater. Describe briefly.

See section 13

☒ Solid chemical wastes. Describe briefly.
☒ Excavated material. Describe briefly.
☒ Other. Describe briefly.
Please provide relevant further information, including proposed management of wastes.

Table 34 lists the typical waste generated during pipeline construction:

Table 34 –Project Construction Waste

Type	Description
Non-hazardous waste	Polyethylene and PVC end caps and offcuts, mild steel offcuts and defective pipe, metal filings, timber skids, sandbags, plastic, wood, cardboard, packaging, and domestic rubbish.
Hazardous Waste	Cleaning chemicals, waste oils, hydrocarbon wastes, lube oils, chemical containers (such as epoxy coating cans), abrasive blasting residue and welding residue and sewerage sludge (offsite temporary toilet facilities).

All waste associated with pipeline construction and operation will be managed in accordance with procedures and practices detailed in the CEMP. The detailed procedures will address waste classification and segregation, labelling, storage, transport regulations and disposal.

The Environment Protection Authority's (EPA) waste transport certificate system will be used for tracking the transport of any prescribed waste generated as a result of the Project to the final disposal point.

During operation of the pipeline, small amounts of industrial and domestic waste associated with valve site operation, surveillance and periodic maintenance may be generated.

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

- ☒ 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.

Emissions produced from maintenance vehicles, equipment and activities during operation of the replacement pipeline will be negligible.

17. Other environmental issues

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

☒ No ☐ Yes If yes, briefly describe.

All environmental issues relevant to the Project have been considered in this Referral report. No other significant environmental issues have been identified.

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

The proposed replacement pipeline will be constructed within Esso's existing disturbed pipeline easements to the maximum extent possible There may be a small number of locations where, due to restricted space within the existing easements, Esso may seek to position the replacement pipeline outside the existing easements. Should additional easement areas be needed, new easement will be negotiated with relevant landowners.

☒ Design: Please describe briefly

Table 58 provides a summary of the design and construction measures proposed to avoid, minimise or manage the key potential adverse environmental impacts.

☒ Environmental management: Please describe briefly.

Management Plans

The *Pipelines Act 2005* requires the submission of an Environment Management Plan (EMP) and Safety Management Plan (SMP) for pipeline activities. In this referral, a Construction EMP (CEMP) is differentiated from an Operational EMP (OEMP) to account for the two different phases of a pipeline activity. **Table 8** outlines the relevant government agency responsible for each type of EMP and SMP.

In accordance with the *Pipelines Act 2005*, Esso will consult with:

- Land owners, occupiers or managers impacted by the Project; and
- Relevant stakeholders in the course of developing an EMP.

The Pipeline Regulations 2007 define the matters to be included in an EMP, which includes: Project activities, environmental impacts and risks, environmental performance objectives and standards, consultation, implementation strategy, environmental incidents, and records and reporting.

The Minister administering the *Pipelines Act 2005* may consult with any other Minister, public authority, person or body that is considered to be affected by an EMP before it is accepted. In addition, the *Aboriginal Heritage Act 2006*, requires a CHMP to be accepted by the RAP or OAAV prior to acceptance of a pipeline EMP.

The CEMP will address, as a minimum, the following environmental aspects: flora and fauna, cultural heritage, air quality and noise, erosion and sediment runoff, pests, weeds and disease (to be developed in consultation with DEPI), watercourse crossings, waste water, rehabilitation, and Native Vegetation Offset Strategy.

The Operation Environmental Management Plan (OEMP) will be prepared to manage environmental aspects during the operations phase. This will be submitted prior to operation of the proposed replacement pipeline.

Esso will also submit a rehabilitation bond, in an amount specified by DSDBI, as security for any rehabilitation works that may be required as a result of pipeline construction.

Environmental Management Tools

A range of environmental management tools will be used to ensure environmental impacts are minimised and environmental sensitivities are appropriately managed. These include:

- Pipeline alignment drawings that will be used to identify environmental sensitivities determined from field surveys;
- An Environmental Line List that will be used to describe the construction requirements for each environmental sensitivity;
- An environmental commitments register that will be prepared to capture environmental requirements specified in regulatory submissions and associated conditions of regulatory approvals; and
- An Environmental Clearance Process that will be implemented during construction to ensure compliance with the construction related environmental and cultural heritage requirements.

Risk Assessment

A comprehensive environmental risk assessment has been completed for the Project. This involved a risk workshop, with design and construction engineers, project managers and environmental specialists, to identify and assess potential significant environmental impacts and ways to avoid and minimise these impacts.

Environmental risk was assessed by ranking the probability and consequence of each potential impact using the Esso Risk Matrix and Definition Table (Appendix F).

Table 58 (Attachment 1) provides a summary of the Project's significant environmental impacts and risks.

☒ Other: Please describe briefly

Add any relevant additional information.

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.

Other major projects within the region include the Western Port Highway Upgrade, the Healesville - Koo Wee Rup Road Upgrade, and the Northern Towns Water Supply Pipeline. Potential cumulative impacts from the proposed replacement pipeline in association with other major projects and developments within the region are expected to be minimal for the following reasons:

- The proposed replacement pipeline will be constructed within Esso's existing disturbed pipeline easements to the maximum extent possible;
- Construction impacts will be temporary and the Construction ROW will be rehabilitated;
- The proposed replacement pipeline will be buried, with minimum above ground infrastructure;
- The Project is not part of a larger or staged project;
- Noise and air emissions will be temporary and transient in nature; and
- Mitigation measures will be applied throughout the Project to minimise impacts and potential cumulative impacts.

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.

All environmental studies undertaken for the Project have been referenced in this referral.

Has a program for future environmental studies been developed?

☒ No ☐ Yes If yes, briefly describe.

Further surveys may be required to quantify the final amount of vegetation removed for construction to inform the Native Vegetation Offset Strategy. The actual amount of vegetation removal is expected to be less than the conservative estimate set out in this referral.

Field surveys (e.g., complex cultural heritage assessment and geotechnical surveys) will progress in order to inform detailed design of the Project.

Consultation program

Has a consultation program conducted to date for the project?

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

Esso considers open, effective and positive engagement with stakeholders to be an invaluable part of the Project.

Esso developed a Pipeline Consultation Plan (PCP) for the Project (approved by DSDBI) to guide its consultation with landowners and occupiers. In parallel to developing the PCP for the Project, Esso developed a guide for its consultation with other stakeholders. The PCP and stakeholder engagement guide has led to the involvement of dedicated landowner and occupier liaison and stakeholder liaison teams. These teams have been and will continue to engage with directly and

indirectly affected landowners and occupiers, community groups, local councils, Victorian Government departments, special interest and industry groups and regulators.

Information made available to landowners, occupiers and other stakeholders has covered various aspects, including the Project's rationale, applicable regulatory processes, and advice on opportunities for feedback and discussion, through the following methods:

- Face-to-face meetings, phone calls, letters and emails and to meet the preferences and requirements of stakeholders;
- Provision of written information about the Project, including:
    - Formal notices;
    - Fact sheets on the following topics, presented in hard-copy and on the website for the Project (www.exxonmobil.com.au/pipelinereplacement);
        - About the Esso Pipeline Replacement Project;
        - Consultation with landowners and occupiers;
        - Pipeline development and construction;
        - Managing impacts on landowners and occupiers;
        - Managing the environment and cultural heritage;
        - How the pipeline is made ready for operation;
        - Enquiries, feedback and complaints;
        - Privacy information;
    - Copies of the approved PCP;
- The Project website;
- The Project's free-call phone number; and
- Feedback forms (hard and electronic versions).

Responses to enquiries are provided within a committed timeframe and a complaints resolution process has been established for the Project.

Consultation with Stakeholders

Consultation with landowners and occupiers of land on which the proposed replacement pipeline is located commenced in September 2013, and will continue throughout the life of the Project. Landowners and occupiers have received formal notices in accordance with the *Pipelines Act 2005* and have been consulted about the nature and timing of surveys on properties, as well as the various phases of the Project and how any impacts of the Project on existing land use can be minimised.

Table 35 outlines stakeholders Esso has engaged with in relation to the Project. Consultation with these stakeholders began in September 2013 and will continue throughout the Project's lifespan.

Table 35 – Stakeholders Consulted

Stakeholders	Details
Private, public and Crown landowners and occupiers	• Victorian Department of Environment and Primary Industries. • Gunaikurnai Land and Waters Aboriginal Corporation.

	• Melbourne Water Corporation. • VicTrack. • V/Line. • Metro Trains.
Commonwealth regulatory stakeholders	• Department of the Environment.
Victorian State regulatory or government stakeholders	• Office of Aboriginal Affairs Victoria. • Department of State Development, Business and Innovation. • Department of Transport, Planning and Local Infrastructure. • Department of Environment and Primary Industries. • Energy Safe Victoria. • VicRoads.
Indigenous stakeholders	• GLaWAC • Bunurong Land Council Aboriginal Corporation • Boon Wurrung Foundation Ltd • Wurundjeri Tribe Land and Compensation Cultural Heritage Council
Local Government Area authorities	• Wellington Shire Council. • Latrobe City Council. • Baw Baw Shire Council. • Cardinia Shire Council. • City of Casey. • Mornington Peninsula Shire Council.
Catchment Management Authorities	• Melbourne Water Corporation on behalf of Port Phillip and Westernport Catchment Management Authority. • West Gippsland Catchment Management Authority.
Utility stakeholders	Utilities/third-party infrastructure owners or occupiers of energy, telecommunications, road and rail utilities, water and wastewater, as well as emergency services providers.

Community groups, businesses and other relevant organisations	Business, community or interest groups focused on the social and commercial impacts of the Project, including industry bodies and other organisations that represent their members' views and interests relating to the Project (such as Landcare and Victorian Farmers Federation); service providers; holders of minerals and petroleum tenements relevant to the Project's geographic area.
Media	Local and State media organisations, such as newspapers.
General public	Any parties or persons who have expressed interest in the Project and have contacted Esso to learn more about the Project through its public contact points.
Other Stakeholders	• Public Transport Victoria. • Parks Victoria.

Has a program for future consultation been developed?

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

An approved PCP exists for the Project, which explains the formal engagement process with affected landowners and occupiers under the *Pipelines Act 2005* and covers Esso's consultation commitments throughout the life of the Project.

Esso will continue to provide relevant and timely Project information to landowners and occupiers and opportunities for them to extend their positive relationship with Esso in accordance with existing plans.

Esso will also continue to engage neighbours and communities in the geographic areas affected by the Project to seek their feedback and respond to any queries they may have.

Authorised person for proponent:

I, ...DAVID...GERARD...FFRENCH.....(full name),

.....PROJECT....MANAGER.....(position), confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature David Ffrench

Date 20/3/2014.

Person who prepared this referral:

I, ...Andrew...Francis...Camp.....(full name),

Safety & Regulatory Manager....(position), confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature

Date 20/3/2014.

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Maps

Map 1 Project Alignment and Location Points

Map 2 (1-26) Survey Envelope and Features

Map 3 Ramsar Wetlands and Holey Plains State Park

Map 4 Environmental Significance Overlays & Landscape Significance Overlays

Attachment 1

Table 36 – Major land use types within survey envelope

Land use type	Approximate area in hectares	Percentage
Mixed farming and grazing (generally more than 20 ha)	244	21.1
Livestock Production	223	19.2
Mixed Farming and Grazing (generally less than 20 ha)	130	11.2
Residential Rural / Rural Lifestyle	120	10.3
Unclassified Private Land	93	8.0
Unclassified	68	5.8
National/State Park - Land	63	5.4
Vacant Residential Rural / Rural Lifestyle 0.4 to 20 Hectares	32	2.8
Softwood Plantation	31	2.7
Major Industrial Complex	30	2.6
Forestry - Commercial Timber Production	18	1.6
Separate House and Curtilage	18	1.6
Food Processing Factory	14	1.2
Other	12	1.0
Market Garden	11	0.95
Oil Refinery	9	0.77
Detached Home	9	0.77
Horse Stud / Training Facilities/Stables	7	0.60
Industrial Development Site	6	0.52
Plantation type (unknown)	6	0.52
Poultry	5	0.43
Stream Frontage	5	0.43
General Purpose Factory	2	0.17
Abattoirs	2	0.17
Outdoor Sports	2	0.17
Total	**1160**	**100%**

Table 37 - Major land use types within a 2 km buffer of the Project

Land use type	Approximate area in hectares	Percentage
Mixed farming and grazing (generally more than 20 ha)	14726	20.0
Livestock Production	12585	17.1
Mixed Farming and Grazing (generally less than 20 ha)	10515	14.3
Residential Rural / Rural Lifestyle	8141	11.0
Unclassified Private Land	5635	7.65
Unclassified	4760	6.46
National/State Park - Land	4647	6.31
Other	1645	2.20
Separate House and Curtilage	1535	2.08
Vacant Residential Rural / Rural Lifestyle 0.4 to 20 Hectares	1509	2.05
Softwood Plantation	1300	1.77
Forestry - Commercial Timber Production	1180	1.60
Market Garden	1143	1.55
Detached Home	1131	1.53
Major Industrial Complex	996	1.35
Plantation type (unknown)	436	0.60
Horse Stud / Training Facilities/Stables	379	0.51
Poultry	375	0.51
Food Processing Factory	278	0.38
Stream Frontage	271	0.37
General Purpose Factory	144	0.19
Oil Refinery	114	0.15
Industrial Development Site	80	0.11
Outdoor Sports	75	0.10
Abattoirs	69	0.09
Total	**73661**	**100%**

Table 38 – Existing infrastructure intersected by the proposed replacement pipeline

Infrastructure	Details
Highways and Major Roads (VicRoads classified M, A and C roads)	• Princes Highway (A1) • Princes Freeway (M1) • South Gippsland Highway (M420) x 2 crossing locations • Traralgon – Maffra Rd (C105) • Tyers Rd (C481) • Moe – Walhalla Rd (C466) • Willow Grove Rd (C463) • Warragul – Korumburra Rd (C425) • Westernport Rd (C431) • Sybella Ave (C422) • Baxter – Tooradin Rd (C781) • Rossiter Road (C421) • Koo Wee Rup – Longwarry Road (C421) • Drouin-Korumburra Road (C432) • Brown Coalmine Road (C103) • Seaspray Road (C496)
Major Proposed Roads	• Koo Wee Rup Bypass • Traralgon Bypass
Railway Lines	• Gippsland Railway (Melbourne – Bairnsdale) Operator: V/Line (2 x crossing locations) • Spur line off Stony Point Railway. Operator: Metro Rail • Disused Dandenong-Leongatha Railway • Disused Stony Point Railway spur line

Infrastructure	Details
Power Transmission Lines	• Cranbourne-Tyabb x 2 crossing locations (220 kV) • Hazelwood-Cranbourne 1 & 2 (500 kV) • Hazelwood Ps-Rowville (220 kV) • Yallourn-Rowville 5 & 6 (220 kV) • Yallourn-Rowville 7 & 8 (220 kV) • Hazelwood-South Morang 1 & 2 (500 kV) • Tyabb-BlueScope (220 kV) • Victorian Desalination Electrical Transmission and Connection Asset (220kV – buried).
Underground Pipelines	• Bass Gas Pipeline • Victorian Desalination Pipeline • Gas pipeline – Origin Energy Resources • Morwell – Dandenong Gas Pipeline • Supply To Anderson Street, Warragul gas pipeline (lateral from the Morwell-Dandenong line) • Tyers – Morwell Gas Pipeline • Tasmania Gas Pipeline • Tarago – Westernport Water Main

Table 39 – Proximity of urban/regional centres to survey envelope

Township	Approximate distance to survey envelope
Longford	3.0 km
Rosedale	4.0 km
Traralgon	within Traralgon
Tyers	350 m
Moe	2.0 km
Trafalgar	4.4 km
Yarragon	4.6 km
Darnum	1.6 km
Nilma	within Nilma
Warragul	within Warragul
Drouin	4.9 km
Drouin South	1.3 km
Modella	100 m
Catani	100 m
Bayles	2.0 km
Koo Wee Rup.	150 m
Tooradin	1.6 km
Pearcedale	1.3 km
Tyabb	800 m
Hastings	600 m

Table 40 – Potential impacts to Southern Brown Bandicoot populations

Potential Impact	Applicability to this Project
A long-term decrease in the size of a population	Not expected - works will be temporary and any impacts from construction on this species will be minor and not permanent.
Reduction in the area of occupancy of the species	Not expected - impacted habitat will be reinstated with dense native understorey species following the completion of works.
Fragmentation of an existing population into two or more populations	Not expected - works will be temporary and habitat will be reinstated with dense native understorey species following the completion of works.
Adverse effect to habitat critical to the survival of a species	Not expected - impacted habitat will be reinstated with dense native understorey species following the completion of works.
Disruption to the breeding cycle of a population	Not expected - construction in Southern Brown Bandicoot habitat will be timed to minimise impacts during the breeding season (July to November).
Modification, destruction, removal, isolation or decrease in the availability or quality of habitat to the extent that the species is likely to decline	Not expected - impacted habitat will be reinstated with dense native understorey species following the completion of works.
Resulting in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	Not expected - invasive species will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Introduction of disease that may cause the species to decline, or	Not expected - potential diseases will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Interference with the recovery of the species.	Not expected - works will be temporary and any impacts from construction will not be permanent. Impacted habitat will be reinstated with dense native understorey species following the completion of works.

Table 41 – Potential impacts to Australasian Bittern populations

Potential Impact	Applicability to this Project
A long-term decrease in the size of a population	Not expected – works will be temporary and any impacts from construction on foraging grounds for this species will be minor and not permanent due to rehabilitation of the habitat that will take place after construction.
Reduction in the area of occupancy of the species	Not expected – potential foraging habitat impacted by the Project will be reinstated following the completion of works.
Fragmentation of an existing population into two or more populations	Not expected – works will be temporary and any impacts from construction on foraging grounds for this species will be minor and not permanent due to the habitat rehabilitation that will take place after construction.
Adverse effect to habitat critical to the survival of a species	Not expected – potential foraging habitat impacted by the Project will be reinstated following the completion of works.

Potential Impact	Applicability to this Project
Disruption to the breeding cycle of a population	Not expected – potential foraging habitat impacted by the Project will be reinstated following the completion of works.
Modification, destruction, removal, isolation or decrease in the availability or quality of habitat to the extent that the species is likely to decline	Not expected – potential foraging habitat impacted by the Project will be reinstated following the completion of works.
Resulting in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	Not expected – invasive species will be controlled and addressed in the CEMP, which will be submitted to, and approved by, DSDBI before construction commences.
Introduction of disease that may cause the species to decline, or	Not expected – potential diseases will be controlled and addressed in the CEMP, which will be submitted to, and approved by, DSDBI before construction commences.
Interference with the recovery of the species.	Not expected – works will be temporary and any impacts from construction will be not permanent due to the habitat rehabilitation that will take place after construction.

Table 42 – Potential impacts to Strzelecki Gum populations

Potential Impact	Applicability to this Project
A long-term decrease in the size of an important population	Not expected – individual trees in the population will be unaffected by the Project except for a small number of trees within the survey envelope.
Reduction of the area of occupancy of an important population	Not expected – individual trees in the population will be unaffected by the Project except for a small number of trees within the survey envelope.
Fragmentation of an existing important population into two or more populations	Not expected – individual trees in the population will be unaffected by the Project except for a small number of trees within the survey envelope.
Adverse effect on habitat critical to the survival of the species	Not expected – individual trees in the population will be unaffected by the Project except for a small number of trees within the survey envelope.
Disruption of the breeding cycle of an important population	N/A
Modification, destruction, removal or isolation or decrease in the availability or quality of habitat to the extent that the species is likely to decline	Not expected – individual trees in the population will be unaffected by the Project except for a small number of trees within the survey envelope.
Resulting in invasive species that are harmful to the species becoming established in the species' habitat	Not expected – invasive species will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Introduction of disease that may cause the species to decline, or	Not expected – potential diseases will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Substantial interference with the recovery of the species.	Not expected – individual trees in the population will be unaffected by the Project except for a small number of trees within the survey envelope.

Table 43 – Potential impacts to Wellington Mint Bush populations

Potential Impact	Applicability to this Project
A long-term decrease in the size of an important population	Not expected – survey identified only one individual within survey envelope.
Reduction of the area of occupancy of an important population	Not expected – survey identified only one individual within survey envelope.
Fragmentation of an existing important population into two or more populations	Not expected – survey identified only one individual within survey envelope.
Adverse effect on habitat critical to the survival of the species	Not expected – survey identified only one individual within survey envelope.
Disruption of the breeding cycle of an important population	N/A
Modification, destruction, removal or isolation or decrease in the availability or quality of habitat to the extent that the species is likely to decline	Not expected – survey identified only one individual within survey envelope.
Resulting in invasive species that are harmful to the species becoming established in the species' habitat	Not expected – invasive species will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Introduction of disease that may cause the species to decline, or	Not expected – potential diseases will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Substantial interference with the recovery of the species.	Not expected – survey identified only one individual within survey envelope.

Table 44 – Potential impacts to River Swamp Wallaby-grass populations

Potential Impact	Applicability to this Project
A long-term decrease in the size of an important population	Not expected – construction is predicted to impact 15% of the extent of this population. Experience from previous construction within the existing easement suggests impacts from construction will not be permanent.
Reduction of the area of occupancy of an important population	Not expected – works will be restricted to the current pipeline easement and habitat will be reinstated (see special mitigation measures below). Experience from previous construction within the existing easement suggests impacts from construction will not be permanent.
Fragmentation of an existing important population into two or more populations	Not expected – habitat will be reinstated (see special mitigation measures below) and experience from previous construction within the existing easement suggests impacts from construction will not be permanent.
Adverse effect on habitat critical to the survival of the species	Not expected – construction is predicted to impact 15% of the extent of this population. Experience from previous construction within the existing easement suggests impacts from construction will not be permanent. Habitat will be reinstated (see special mitigation measures below).
Disruption of the breeding cycle of an important population	N/A

Potential Impact	Applicability to this Project
Modification, destruction, removal or isolation or decrease in the availability or quality of habitat to the extent that the species is likely to decline	Not expected – construction is predicted to impact 15% of the extent of this population. Experience from previous construction within the existing easement suggests impacts from construction will not be permanent. Habitat will be reinstated (see special mitigation measures below).
Resulting in invasive species that are harmful to the species becoming established in the species' habitat	Not expected – invasive species will be controlled and addressed in the CEMP, which will be prepared and submitted for regulatory approval before construction commences.
Introduction of disease that may cause the species to decline, or	Not expected – potential diseases will be controlled and addressed in the CEMP, which will be prepared and submitted for regulatory approval before construction commences.
Substantial interference with the recovery of the species.	Not expected – habitat will be reinstated (see special mitigation measures below) and experience from previous construction within the existing easement suggests any impacts from construction will not be permanent.

Table 45 – Potential impacts to New Holland Mouse populations

Potential Impact	Applicability to this Project
A long-term decrease in the size of an important population	Not expected – works will be temporary and any impacts from construction will be not permanent.
Reduction of the area of occupancy of an important population	Not expected – works will be restricted to the existing cleared pipeline area within Holey Plains State Park.
Fragmentation of an existing important population into two or more populations	Not expected – works will be temporary and connectivity will be maintained between habitat patches parallel with the construction.
Adverse effect on habitat critical to the survival of the species	Not expected – works will be restricted to the existing cleared pipeline area within Holey Plains State Park.
Disruption of the breeding cycle of an important population	Not expected – works will be scheduled to minimise potential impacts during the breeding season (August – January). Works will be limited to daylight hours.
Modification, destruction, removal or isolation or decrease in the availability or quality of habitat to the extent that the species is likely to decline	Not expected – works will be restricted to the existing cleared pipeline area within Holey Plains State Park.
Resulting in invasive species that are harmful to the species becoming established in the species' habitat	Not expected – invasive species will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Introduction of disease that may cause the species to decline, or	Not expected – potential diseases will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Substantial interference with the recovery of the species.	Not expected – works will be temporary and any impacts from construction will be not permanent.

Table 46 – Potential impacts to Growling Grass Frog populations

Potential Impact	Applicability to this Project
A long-term decrease in the size of an important population	Not expected – works will be temporary and any impacts from construction will be not permanent.
Reduction of the area of occupancy of an important population	Not expected – habitat will be reinstated following the completion of works.
Fragmentation of an existing important population into two or more populations	Not expected – works will be temporary and habitat will be reinstated following the completion of works.
Adverse effect on habitat critical to the survival of the species	Not expected – habitat will be reinstated following the completion of works.
Disruption of the breeding cycle of an important population	Not expected – works will be scheduled to occur during January to March (the driest part of the year) to minimise potential impacts during the breeding season.
Modification, destruction, removal or isolation or decrease in the availability or quality of habitat to the extent that the species is likely to decline	Not expected – habitat will be reinstated following the completion of works.
Resulting in invasive species that are harmful to the species becoming established in the species' habitat	Not expected – invasive species will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Introduction of disease that may cause the species to decline, or	Not expected – potential diseases will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Substantial interference with the recovery of the species.	Not expected – works will be localised and temporary.

Table 47 – Potential impacts to Dwarf Galaxias populations

Potential Impact	Applicability to this Project
A long-term decrease in the size of an important population	Not expected – works will be temporary and any impacts from construction will be not permanent.
Reduction of the area of occupancy of an important population	Not expected – impacted habitat will be reinstated following the completion of works.
Fragmentation of an existing important population into two or more populations	Not expected – works will be temporary and any potential barrier impacts from construction will be not permanent.
Adverse effect on habitat critical to the survival of the species	Not expected – habitat will be reinstated following the completion of works.
Disruption of the breeding cycle of an important population	Not expected – works will be scheduled to occur outside of the breeding period (August - November).
Modification, destruction, removal or isolation or decrease in the availability or quality of habitat to the extent that the species is likely to decline	Not expected – habitat will be reinstated following the completion of works.
Resulting in invasive species that are harmful to the species becoming established in the species' habitat	Not expected – invasive species will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.

Potential Impact	Applicability to this Project
Introduction of disease that may cause the species to decline, or	Not expected – potential diseases will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Substantial interference with the recovery of the species.	Not expected – works will be temporary and any impacts from construction will be not permanent.

Table 48 – Potential impacts to Australian Grayling populations

Potential Impact	Applicability to this Project
A long-term decrease in the size of an important population	Not expected – trenchless construction will avoid impacts to core habitat of this species.
Reduction of the area of occupancy of an important population	Not expected – trenchless construction will avoid impacts to core habitat of this species.
Fragmentation of an existing important population into two or more populations	Not expected – trenchless construction will avoid impacts to core habitat of this species.
Adverse effect on habitat critical to the survival of the species	Not expected – trenchless construction will avoid impacts to core habitat of this species.
Disruption of the breeding cycle of an important population	Not expected – trenchless construction will avoid impacts to core habitat of this species.
Modification, destruction, removal or isolation or decrease in the availability or quality of habitat to the extent that the species is likely to decline	Not expected – trenchless construction will avoid impacts to core habitat of this species.
Resulting in invasive species that are harmful to the species becoming established in the species' habitat	Not expected – invasive species will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Introduction of disease that may cause the species to decline, or	Not expected – potential diseases will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Substantial interference with the recovery of the species.	Not expected – works will be temporary and any impacts from construction will not be permanent.

Table 49 – Project impacts to Giant Gippsland Earthworm populations

Potential Impact	Applicability to this Project
A long-term decrease in the size of an important population	Not expected – trenchless construction will avoid impacts to this species.
Reduction of the area of occupancy of an important population	Not expected – trenchless construction will avoid impacts to this species.
Fragmentation of an existing important population into two or more populations	Not expected – trenchless construction will avoid impacts to this species.
Adverse effect on habitat critical to the survival of the species	Not expected – the Project will reinstate ground conditions (including hydrology and soil moisture conditions).
Disruption of the breeding cycle of an important population	Not expected – trenchless construction will avoid impacts to this species.

Potential Impact	Applicability to this Project
Modification, destruction, removal or isolation or decrease in the availability or quality of habitat to the extent that the species is likely to decline	Not expected – trenchless construction will avoid impacts to this species.
Resulting in invasive species that are harmful to the species becoming established in the species' habitat	Not expected – invasive species will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Introduction of disease that may cause the species to decline, or	Not expected – potential diseases will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Substantial interference with the recovery of the species.	Not expected – works will be temporary and any impacts from construction will be not permanent.

Table 50 – Potential impacts to Matted Flax-lily

Potential Impact	Applicability to this Project
A long-term decrease in the size of a community	Not expected – trenchless construction will avoid impacts to the habitats most likely to be associated with this species.
Reduction in the area of occupancy of the community	Not expected – trenchless construction will avoid impacts to the habitats likely to be associated with this species.
Fragmentation of an existing community into two or more communities	Not expected – trenchless construction will avoid impacts to the habitats most likely to be associated with this species.
Adverse effect to habitat critical to the survival of a community	Not expected – trenchless construction will avoid impacts to the habitats most likely to be associated with this species.
Disruption to the breeding cycle of a community	N/A
Modification, destruction, removal, isolation or decrease in the availability or quality of habitat to the extent that the community is likely to decline	Not expected – trenchless construction will avoid impacts to the habitats most likely to be associated with this species.
Resulting in invasive species that are harmful to a critically endangered or endangered community becoming established in the endangered or critically endangered community's habitat	Not expected – invasive species will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Introduction of disease that may cause the community to decline, or	Not expected – potential diseases will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Interference with the recovery of the community.	Not expected – trenchless construction will avoid impacts to the habitats most likely to be associated with this species.

Table 51 – Potential impacts to Australian Painted Snipe

Potential Impact	Applicability to this Project
A long-term decrease in the size of a community	Not expected – the survey envelope does not provide any areas of important habitat for this species
Reduction in the area of occupancy of the community	Not expected – the survey envelope does not provide any areas of important habitat for this species
Fragmentation of an existing community into two or more communities	Not expected – the survey envelope does not provide any areas of important habitat for this species
Adverse effect to habitat critical to the survival of a community	Not expected – the survey envelope does not provide any areas of important habitat for this species
Disruption to the breeding cycle of a community	Not expected – the survey envelope does not provide any areas of important habitat for this species
Modification, destruction, removal, isolation or decrease in the availability or quality of habitat to the extent that the community is likely to decline	Not expected – the survey envelope does not provide any areas of important habitat for this species
Resulting in invasive species that are harmful to a critically endangered or endangered community becoming established in the endangered or critically endangered community's habitat	Not expected – invasive species will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Introduction of disease that may cause the community to decline, or	Not expected – potential diseases will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Interference with the recovery of the community.	Not expected – the survey envelope does not provide any areas of important habitat for this species.

Table 52 – Potential impacts to Swamp Fireweed populations

Potential Impact	Applicability to this Project
A long-term decrease in the size of an important population	Not expected – habitat will be reinstated following the completion of works. Experience from previous construction within the existing easement suggests impacts from construction will not be permanent.
Reduction of the area of occupancy of an important population	Not expected – habitat will be reinstated following the completion of works. Experience from previous construction within the existing easement suggests impacts from construction will not be permanent.
Fragmentation of an existing important population into two or more populations	Not expected – habitat will be reinstated following the completion of works. Experience from previous construction within the existing easement suggests impacts from construction will not be permanent.
Adverse effect on habitat critical to the survival of the species	Not expected – habitat will be reinstated following the completion of works. Experience from previous construction within the existing easement suggests impacts from construction will not be permanent.
Disruption of the breeding cycle of an important population	N/A

Potential Impact	Applicability to this Project
Modification, destruction, removal or isolation or decrease in the availability or quality of habitat to the extent that the species is likely to decline	Not expected – habitat will be reinstated following the completion of works. Experience from previous construction within the existing easement suggests impacts from construction will not be permanent.
Resulting in invasive species that are harmful to the species becoming established in the species' habitat	Not expected – invasive species will be controlled and addressed in the CEMP, which will be prepared and submitted for regulatory approval before construction commences.
Introduction of disease that may cause the species to decline, or	Not expected – potential diseases will be controlled and addressed in the CEMP, which will be prepared and submitted for regulatory approval before construction commences.
Substantial interference with the recovery of the species.	Not expected – habitat will be reinstated following the completion of works. Experience from previous construction within the existing easement suggests impacts from construction will not be permanent.

Table 53 – Potential impacts to Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains Community

Potential Impact	Applicability to this Project
A long-term decrease in the size of a community	Not expected – habitat will be reinstated (see special mitigation measures) and experience from previous construction within the existing easement suggests any impacts from construction will not be permanent.
Reduction in the area of occupancy of the community	Not expected – habitat will be reinstated (see special mitigation measures) and experience from previous construction within the existing easement suggests any impacts from construction will not be permanent.
Fragmentation of an existing community into two or more communities	Not expected – habitat will be reinstated (see special mitigation measures) and experience from previous construction within the existing easement suggests any impacts from construction will not be permanent.
Adverse effect to habitat critical to the survival of a community	Not expected – habitat will be reinstated (see special mitigation measures) and experience from previous construction within the existing easement suggests any impacts from construction will not be permanent.
Disruption to the breeding cycle of a community	N/A
Modification, destruction, removal, isolation or decrease in the availability or quality of habitat to the extent that the community is likely to decline	Not expected – habitat will be reinstated (see special mitigation measures) and experience from previous construction within the existing easement suggests any impacts from construction will not be permanent.
Resulting in invasive species that are harmful to a critically endangered or endangered community becoming established in the endangered or critically endangered community's habitat	Not expected – invasive species will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Introduction of disease that may cause the community to decline, or	Not expected – potential diseases will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.

Interference with the recovery of the community.	Not expected – habitat will be reinstated (see special mitigation measures) and experience from previous construction within the existing easement suggests any impacts from construction will not be permanent.

Table 54 – Potential impacts to Gippsland Red Gum Grassy Woodland and Associated Native Grassland Community

Potential Impact	Applicability to this Project
A long-term decrease in the size of a community	Not expected – trenchless construction will avoid impacts to this community.
Reduction in the area of occupancy of the community	Not expected – trenchless construction will avoid impacts to this community.
Fragmentation of an existing community into two or more communities	Not expected – trenchless construction will avoid impacts to this community.
Adverse effect to habitat critical to the survival of a community	Not expected – trenchless construction will avoid impacts to this community.
Disruption to the breeding cycle of a community	N/A
Modification, destruction, removal, isolation or decrease in the availability or quality of habitat to the extent that the community is likely to decline	Not expected – trenchless construction will avoid impacts to this community.
Resulting in invasive species that are harmful to a critically endangered or endangered community becoming established in the endangered or critically endangered community's habitat	Not expected – invasive species will be controlled and addressed in the CEMP, which will be submitted to, and approved by, DSDBI before construction commences.
Introduction of disease that may cause the community to decline, or	Not expected – potential diseases will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Interference with the recovery of the community.	Not expected – trenchless construction will avoid impacts to this community.

Table 55 – Potential impacts to Central Gippsland Plains Grassland Community

Potential Impact	Applicability to this Project
A long-term decrease in the size of a community	Not expected – trenchless construction will avoid impacts to this community.
Reduction in the area of occupancy of the community	Not expected – trenchless construction will avoid impacts to this community.
Fragmentation of an existing community into two or more communities	Not expected – trenchless construction will avoid impacts to this community.
Adverse effect to habitat critical to the survival of a community	Not expected – trenchless construction will avoid impacts to this community.
Disruption to the breeding cycle of a community	N/A

Potential Impact	Applicability to this Project
Modification, destruction, removal, isolation or decrease in the availability or quality of habitat to the extent that the community is likely to decline	Not expected – trenchless construction will avoid impacts to this community.
Resulting in invasive species that are harmful to a critically endangered or endangered community becoming established in the endangered or critically endangered community's habitat	Not expected – invasive species will be controlled and addressed in the CEMP, which will be prepared and submitted for regulatory approval before construction commences.
Introduction of disease that may cause the community to decline, or	Not expected – potential diseases will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Interference with the recovery of the community.	Not expected – trenchless construction will avoid impacts to this community.

Table 56 – Potential impacts to Forest Red-gum Grassy Woodland Community

Potential Impact	Applicability to this Project
A long-term decrease in the size of a community	Not expected – trenchless construction will avoid impacts to this community or habitat will be reinstated and experience from previous construction within the existing easement suggests any impacts from construction will not be permanent.
Reduction in the area of occupancy of the community	Not expected – trenchless construction will avoid impacts to this community or habitat will be reinstated (and experience from previous construction within the existing easement suggests any impacts from construction will not be permanent.
Fragmentation of an existing community into two or more communities	Not expected – trenchless construction will avoid impacts to this community or habitat will be reinstated and experience from previous construction within the existing easement suggests any impacts from construction will not be permanent.
Adverse effect to habitat critical to the survival of a community	Not expected – trenchless construction will avoid impacts to this community or habitat will be reinstated and experience from previous construction within the existing easement suggests any impacts from construction will not be permanent.
Disruption to the breeding cycle of a community	N/A
Modification, destruction, removal, isolation or decrease in the availability or quality of habitat to the extent that the community is likely to decline	Not expected – trenchless construction will avoid impacts to this community or habitat will be reinstated and experience from previous construction within the existing easement suggests any impacts from construction will not be permanent.
Resulting in invasive species that are harmful to a critically endangered or endangered community becoming established in the endangered or critically endangered community's habitat	Not expected – invasive species will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.

Introduction of disease that may cause the community to decline, or	Not expected – potential diseases will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Interference with the recovery of the community.	Not expected – trenchless construction will avoid impacts to this community or habitat will be reinstated and experience from previous construction within the existing easement suggests any impacts from construction will not be permanent.

Table 57 – Potential impacts to Herb-rich Plains Grassy Wetland (West Gippsland) Community

Potential Impact	Applicability to this Project
A long-term decrease in the size of a community	Not expected – habitat will be reinstated (see special mitigation measures) and experience from previous construction within the existing easement suggests any impacts from construction will not be permanent.
Reduction in the area of occupancy of the community	Not expected – habitat will be reinstated (see special mitigation measures) and experience from previous construction within the existing easement suggests any impacts from construction will not be permanent.
Fragmentation of an existing community into two or more communities	Not expected – habitat will be reinstated (see special mitigation measures) and experience from previous construction within the existing easement suggests any impacts from construction will not be permanent.
Adverse effect to habitat critical to the survival of a community	Not expected – habitat will be reinstated (see special mitigation measures) and experience from previous construction within the existing easement suggests any impacts from construction will not be permanent.
Disruption to the breeding cycle of a community	N/A
Modification, destruction, removal, isolation or decrease in the availability or quality of habitat to the extent that the community is likely to decline	Not expected – habitat will be reinstated (see special mitigation measures) and experience from previous construction within the existing easement suggests any impacts from construction will not be permanent.
Resulting in invasive species that are harmful to a critically endangered or endangered community becoming established in the endangered or critically endangered community's habitat	Not expected – invasive species will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Introduction of disease that may cause the community to decline, or	Not expected – potential diseases will be controlled and addressed in the CEMP, which will be submitted to and approved by DSDBI before construction commences.
Interference with the recovery of the community.	Not expected – habitat will be reinstated (see special mitigation measures) and experience from previous construction within the existing easement suggests any impacts from construction will not be permanent.

Table 58 – Summary Project environmental risk assessment

Activity 1- Construction Access, Surveying and Fencing			
Asset	**Impact/Effect**	**Inferred/Existing Controls**	**Additional Controls**
Diseases and weeds	Loss of biodiversity	All vehicles, equipment and material will be cleaned to prevent transfer of known weeds and diseases prior to entering the project area. All vehicles and equipment will remain on the Construction ROW and approved access tracks at all times. Clean down areas will be implemented at known disease and weed areas. Clean down areas will be located and managed to avoid impacts to areas of environmental sensitivity (native flora and fauna, cultural heritage sites and waterways).	The CEMP will incorporate the following: • Compliance with Parks Victoria requirements for cinnamon fungus management in Holey Plains State Park. • Compliance with Victoria's Public Land *Phytophthora cinnamomi* Management Strategy.
	Threat to livestock		• Compliance with Control Options for Bovine Johne's disease in Dairy Herds: Note Number: AG0933.
	Loss of agricultural production		• Clean down areas for potato cyst nematode area will be identified on alignment sheets and Environmental Line List. • Compliance with DPI Potato Cyst Nematode Note Number: AG0572.
Activity 2 - Clear and Grade			
Asset	**Impact/Effect**	**Inferred/Existing Controls**	**Additional Controls**
Flora	Removal of State and Federal listed vegetation	Vegetation to be retained within or near the construction area will be identified on alignment drawings and the Environmental Line List and clearly flagged as 'No Go' as part of the Environmental Clearance process.	• Wellington Mint-bush habitat See **Table 16** • Seasonally Herbaceous Wetlands See **Table 24** • Gippsland Red Gum Grassy Woodland See **Table 25**

			• Strzelecki Gum See **Table 15** • River Swamp Wallaby-grass See **Table 17**
Fauna	Disturbance to State and Federal listed fauna habitat and fauna behaviour	Fauna habitat to be retained within or near the construction area will be identified on alignment drawings and the Environmental Line List and clearly flagged as 'No Go' as part of the Environmental Clearance process.	• Growling Grass Frog See **Table 19** • New Holland Mouse See **Table 18** • Southern Brown Bandicoot See **Table 13** • Giant Gippsland Earthworm See **Table 22**
Cultural heritage	Disturbance to site of cultural heritage significance	Compliance with the endorsed CHMPs.	
Diseases and weeds	Loss of biodiversity	As per Construction Access, Surveying and Fencing above (Activity 1).	
	Threat to livestock		
	Loss of agricultural production		
Activity 3 - Trenching And Dewatering			
Asset	**Impact/Effect**	**Inferred/Existing Controls**	**Additional Controls**
Fauna	Disturbance to GGE populations	As per Clear and Grade above (Activity 2).	

Cultural heritage	Disturbance to site of cultural heritage significance	As per Clear and Grade above (Activity 2).	
Activity 4 - Trenching Watercourses			
Asset	**Impact/Effect**	**Inferred/Existing Controls**	**Additional Controls**
Aquatic flora	Removal of State and Federal listed vegetation	The Construction ROW will be minimised in waterways.	• The use of trenchless construction in selected waterways. See **Table 30**
Aquatic fauna	Alteration to migration patterns of State and Federal listed aquatic fauna	Temporary flumes will be installed during construction to maintain water flow where required.	Australian Grayling • See **Table 21** Dwarf Galaxias • See **Table 20**
	Alteration to migration patterns of other aquatic fauna	Temporary flumes will be installed during construction to maintain water flow where required.	
	Injury or death of aquatic fauna from change in water quality	Sediment controls will be installed to minimise sediment runoff from the construction areas.	
Cultural heritage	Disturbance to site of cultural heritage significance	As per Clear and Grade above (Activity 1).	
Ramsar Wetland	Significant impact to the ecological character of the Ramsar Wetland at Watson Creek	Surface water runoff will be diverted away from a regulated waterway prior to the top of bank. Sediment controls will be installed at the top and along waterway banks. Sediment controls will be inspected and monitored. Soil stockpiles will be situated a minimum of 10 m from the top of bank of a regulated	• Watson Creek will be trenchless construction.

		waterway. Soil stockpiles will cease 10 m from the top of bank of a regulated waterway. Waterways will be reinstated to its original form, or in accordance with the works on waterway permit accepted by Melbourne Water and West Gippsland Catchment Management Authority.	
Activity 5 - Trenchless construction			
Asset	**Impact/Effect**	**Inferred/Existing Controls**	**Additional Controls**
Cultural heritage	Disturbance to site of cultural heritage significance	As per Clear and Grade above (Activity 2).	

Appendices

Appendix A *Longford Liquids Pipeline Replacement Project. Acid Sulfate Soil Characterisation Report.* WorleyParsons. January 2014.

Appendix B Commonwealth Protected Matters Search Tool summary results.

Appendix C *Esso Pipeline Replacement Project – Hastings to Longford: Flora and Fauna survey and impact mitigation.* Biosis. January 2014.

Appendix D *Longford Liquids Pipeline Replacement Project. Interim Cultural Heritage Assessment.* Andrew Long and Associates. January 2014.

Appendix E *Esso Pipeline Replacement Project – Giant Gippsland Earthworm Survey Report*. Invert-Eco Terrestrial Invertebrate Consulting. January 2014.

Appendix F Esso Risk Matrix and Definitions.