Australian Government
Department of the Environment and Energy

Title of Proposal - Portland Landfill Borehole Installation

Section 1 - Summary of your proposed action

Provide a summary of your proposed action, including any consultations undertaken.

1.1 Project Industry Type

Waste Management (non-sewerage)

1.2 Provide a detailed description of the proposed action, including all proposed activities.

The proposed action is for the construction of a borehole monitoring point north-east of the Portland Landfill site measuring approximately 25 m2 and an associated access track (3m wide and 42 m long; 126 m2). This equates to a total area of 151 m2. The proposed action is to satisfy environmental legislative requirements as administered by the Victorian Environmental Protection Agency (EPA). The borehole installation is a requirement made by the EPA for the decommissioning and capping process of the landfill site as part of an environmental monitoring program. The proposed action is to occur within an area previously identified as ‘ Area A’ of the Portland Transfer Station (see Map 1_2016).

Two bore holes at a single location (‘bore hole drilling site’ in attached Map_3_2016) are required to sample ground water quality including levels of contaminants and potential leachates from the Portland landfill site. The proposed action is to satisfy Victorian environmental legislative requirements as administered by the Victorian Environmental Protection Agency (EPA).

An access track is proposed for a small geoprobe machinery (see Table 1 and APPENDIX 1 in Practical Ecology 2016) to drill two bore holes leaving two ~800 mm monument covers above ground. A small geoprobe will be used for drilling (‘GEOPROBE 6620 DT DRILL RIG’; see attached report ‘Practical Ecology 2016’ for further details). The machine measures approximately 1.5 m in width and 2.4 m in length. At least 0.5 m either side of the vehicle will be required and 1.5 m at the rear. This totals a minimum area of 2.5 m (width) x 4 m (length) for the drilling site and 2.5 m width for the access track through habitat. Access is to be permanent to enable continuing environmental monitoring of the landfill capping process. Additional areas will allow for maneuvering machinery and temporary spoil.

In total, this action will require an approximate 5 metre x 5 metre area/25 m2 (‘bore drilling site’) to be temporarily cleared of vegetation and a further 3 metre wide and 42 metre long access track (126 m2) as shown in Map 3_2016.

The access track travels 12 m through “Area A” (36 m2) and travels a further 30 m (90 m2) through a grassed area (exotic grass Kikuyu* which is below the minimum threshold of an average 50% foliage density at the 0.2-1.0 m height range according to definitions under the Significant Impact Guidelines for the species) for a total length of 42 m (126 m2) from the

proposed borehole location to existing areas of bare earth. The size of the cleared area is the minimum necessary to allow machinery to access the bore holes for construction and future monitoring. See attachment 'Map_07_2016'. The total area of vegetation within mapped habitat "Area A" affected is approximately 36 m².

In summary, the proposed extent of impact is 25 m2 for the bore hole drilling site and 126 m2 for an access track. The access track incorporates an area of non-habitat within 50 metres of suitable exotic habitat - as defined in the significant impact guidelines and mapped in Practical Ecology 2016 and shown in attachments Map 3_2016 and Map_7_2016. From the results of a pre-referral meeting with the commonwealth Department of Environment (4th November 2016), the proponent was advised to incorporate non-habitat where the species has been detected to within 50 m of vegetation qualifying at significant habitat under the guidelines. The total extent of impact based on these parameters is therefore 151 m2 or 0.015 hectares.

The nature of the impact will be in the removal of vegetation and long-term modification within the proposed footprint to allow access for routine monitoring of water quality through the proposed bore holes. There is likely to be some short-term impacts through the process of the access track and borehole construction.

1.3 What is the extent and location of your proposed action? Use the polygon tool on the map below to mark the location of your proposed action.

Area	Point	Latitude	Longitude
bore hole	1	-38.36908239554	141.58288607248
bore hole	2	-38.369086601396	141.58294776329
bore hole	3	-38.369129711413	141.58294642219
bore hole	4	-38.369126557022	141.58288473138
bore hole	5	-38.36908239554	141.58288607248

1.5 Provide a brief physical description of the property on which the proposed action will take place and the location of the proposed action (e.g. proximity to major towns, or for off-shore actions, shortest distance to mainland).

The study area is within the Portland Transfer Station, located in south-western Victoria, approximately 362 km west of Melbourne and 3 km to the south of Portland CBD (attached Map_A1). The site falls within the Shire of Glenelg, the Glenelg Plain Bioregion, and Glenelg Hopkins Catchment. The Portland Transfer Station site is approximately 36 hectares in size.

The majority of the Portland Landfill Transfer station site is composed of active landfill, areas of exotic groundcover, access tracks and roads. Native shrub cover over an exotic groundcover occurs along the eastern boundary of the site (approx. 3.75 hectares) while a larger area of bushland supports remnants of heathland and swamp scrub (approx. 7 hectares) within the

northern portion of the site. Other areas of remnant vegetation occur along the bounding southern and western roadsides of Malings Road and McNeillys Road respectively.

The proposed action is to occur within “Area A” of the Portland Transfer Station (see attachment Map_1_2016 and Practical Ecology 2016) as assessed in a 2015 targeted survey for Southern Brown Bandicoot (Practical Ecology 2015 and attachment Map_5_2016). The total area assessed as part of targeted Southern Brown Bandicoot surveys (Areas A-C shown in Map_1_2016) in 2015 by Practical Ecology P/L was 15 hectares.

“Area A” was deemed an appropriate location for borehole installation and on-going monitoring by Glenelg Shire Council engineers in consultation with the Victorian Environmental Protection Agency (EPA; shown in Map 2_2016).

1.6 What is the size of the development footprint or work area?

151 m2

1.7 Is the proposed action a street address or lot?

Lot

1.7.2 Describe the lot number and title. Lot 1 TP120802

1.8 Primary Jurisdiction.

Victoria

1.9 Has the person proposing to take the action received any Australian Government grant funding to undertake this project?

No

1.10 Is the proposed action subject to local government planning approval?

No

1.11 Provide an estimated start and estimated end date for the proposed action.

Start date 03/2017

End date 12/2018

1.12 Provide details of the context, planning framework and State and/or Local government requirements.

Commonwealth:

The proposed action is being referred to the Commonwealth to determine whether or not it is a controlled action under the EPBC Act.

The EPBC listed Southern Brown Bandicoot Isoodon obesulus obesulus has been recorded recently (2012) in the larger northwest patch of the study site (Area A in Map_1_2016; Damon Barclay pers comm.). However, further information on the distribution and movements of bandicoots across the larger study area was considered necessary to provide background information on potential ecological impacts of the landfill decommissioning and capping process.

Practical Ecology Pty Ltd was commissioned by the Glenelg Shire Council (DEPI) in 2015 to undertake a targeted survey for the Southern Brown Bandicoot within the Portland Landfill and Transfer Station site (see Practical Ecology 2015 and Map_5_2016). This targeted survey was in response to the conclusion of landfill activities at the site and the commencement of a capping process (see Fig 1.).

The 2014-2015 survey results were intended to provide guidance through the design of the capping process in regards to the EPBC listed Southern Brown Bandicoot. Targeted surveys for the study area (Portland Landfill site) were undertaken for the Southern Brown Bandicoot by suitably qualified zoologists from Practical Ecology P/L in 2015 to understand the distribution of the species and habitat within the site and adjacent roadsides (Practical Ecology 2015 and attachment Map_A2_2015; see also attachment Map_5_2016 for distribution of camera traps and hair traps in Area ‘A’). Habitat connectivity across the study site and immediate local area was also assessed (see Practical Ecology 2015 and attachment ‘Map_A4_2015’). Surveys in 2014-2015 were undertaken in accordance with draft Commonwealth significant impact guidelines for the species (DSEWPC 2011) and maximised the chance of detecting the species and accounted for uncertainty and error. A limitation was that only a single 30 day survey was undertaken. However, no detailed plans for the landfill capping process had yet been determined and the results were considered sufficient to inform plans for the capping process (Damon Barclay pers. comm.). It is considered unlikely that a second survey would have resulted in a change in the estimated bandicoot distribution based on the distribution, quality, and connectivity of habitat observed.

The Southern Brown Bandicoot was detected using a camera trap on several occasions immediately adjacent to the location of the proposed action (camera trap #C133 in Practical Ecology 2015 and shown in Map 5_2016). Consequently, there is high likelihood of at least one bandicoot making use of the area proposed to be affected.

A further detailed habitat and impact assessment was undertaken in 2016 of the area in which the action is proposed. This assessment applied to the site definitions and criteria for Southern Brown Bandicoot habitat contained within the significant impact guidelines for the species (DSEWPC 2011; Practical Ecology 2016).

Based on this information and discussions with the Department of Environment in a pre-referral meeting on the 4th November 2016 it was determined that a referral was likely to be required.

State:

Planning and Environment Act 1987 – Glenelg Planning Scheme

The land is zoned Public Use Zone within the Shire of Glenelg Planning Scheme. The site has no relevant environmental planning overlays.

Clause 52.17 under the Victorian Planning Scheme applies to the site in the context of flora species native to Victoria. Under Clause 52.17 the site must be assessed and a permit granted as the landholding is greater than 0.4 hectares and there is greater than 25% total perennial understorey plant cover composed of species native to Victoria (principally the weedy native Coast Wattle Acacia longifolia subsp. sophorae).

Environment Protection Act 1970

The proposed boreholes are to be installed to monitor for groundwater leachates escaping from the landfill site. The bore holes will sample water quality and contaminants from the landfill site. The bore holes must be installed at a point which corresponds with the flow of ground water drainage from the landfill site and as close as possible to the landfill site to increase detection of leachates escaping from the site. This corresponds to the hydrological flow of the water table from the south-western corner of the current landfill to the north-east (see arrow in Map_4_2016).

The proposed action is to satisfy environmental legislative requirements under the Environment Protection Act 1970, administered by the Victorian Environmental Protection Agency (EPA), for the decommissioning and capping process of a portion of the landfill site at the Portland Transfer Station, Derrill Rd, West of Cape Nelson Rd, Portland (GHD Rehabilitation Plan Portland Landfill shown in Fig.1 attached).

Aboriginal Heritage Act 2006

The site is a designated ‘Areas of Aboriginal Cultural Heritage Sensitivity’.

1.13 Describe any public consultation that has been, is being or will be undertaken, including with Indigenous stakeholders.

not applicable

1.14 Describe any environmental impact assessments that have been or will be carried out under Commonwealth, State or Territory legislation including relevant impacts of the project.

not applicable

1.15 Is this action part of a staged development (or a component of a larger project)?

No

1.16 Is the proposed action related to other actions or proposals in the region?

Yes

1.16.1 Identify the nature/scope and location of the related action (Including under the relevant legislation).

The proposed boreholes are to be installed to ongoing monitoring for groundwater leachates from the Portland Landfill site. The monitoring will determine if any leachates are escaping the site and entering into the local surrounding groundwater and therefore if any actions are required to restore barriers (e.g. liners or leachate collection system) to the movement of leachates outside the landfill site.

The action has been triggered as a requirement under approvals by the Victorian Environment Protection Authority (EPA) for the decommissioning and capping of a section of the landfill site. Capping involves laying a layer of clean earth over all waste, followed by compacting, and finally laying a seal of earth (clay) to resist water penetration followed by a layer to support vegetation. The area of the landfill being capped occurs within the boundaries of the southern section of the site. The extent of the cap and associated works are shown in Fig.1_2016: GHD Rehab Plan Portland Landfill.

The borehole installation itself is not dependent or co-dependent on the landfill capping process and could be undertaken independently of the capping process as a standalone action.

The related action of the landfill capping and decommissioning has been considered by Glenelg Shire Council unlikely to increase threats or have impacts on a Matter of National Environmental Significance and therefore does not require referral under the EPBC Act.

Section 2 - Matters of National Environmental Significance

Describe the affected area and the likely impacts of the proposal, emphasising the relevant matters protected by the EPBC Act. Refer to relevant maps as appropriate. The interactive map tool can help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in your area of interest. Consideration of likely impacts should include both direct and indirect impacts.

Your assessment of likely impacts should consider whether a bioregional plan is relevant to your proposal. The following resources can assist you in your assessment of likely impacts:

• Profiles of relevant species/communities (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;

• Significant Impact Guidelines 1.1 – Matters of National Environmental Significance;

• Significant Impact Guideline 1.2 – Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies.

2.1 Is the proposed action likely to impact on the values of any World Heritage properties?

No

2.2 Is the proposed action likely to impact on the values of any National Heritage places?

No

2.3 Is the proposed action likely to impact on the ecological character of a Ramsar wetland?

No

2.4 Is the proposed action likely to impact on the members of any listed threatened species (except a conservation dependent species) or any threatened ecological community, or their habitat?

Yes

2.4.1 Impact table

Species	Impact
Southern Brown Bandicoot Isoodon obesulus	The nature of the impact will be in the removal

Species	Impact
obesulus	of vegetation and long-term modification within the proposed footprint to allow access for routine monitoring of water quality through the proposed bore holes. There is likely to be some short-term impacts through the process of the access track and borehole construction. See attached Practical Ecology 2016 and 'Portland_SBB_Measures to avoid or reduce impacts.pdf' for detailed assessment of impacts.

2.4.2 Do you consider this impact to be significant?

No

2.5 Is the proposed action likely to impact on the members of any listed migratory species, or their habitat?

No

2.6 Is the proposed action to be undertaken in a marine environment (outside Commonwealth marine areas)?

No

2.7 Is the proposed action likely to impact on any part of the environment in the Commonwealth land?

No

2.8 Is the proposed action taking place in the Great Barrier Reef Marine Park?

No

2.9 Will there be any impact on a water resource related to coal / gas / mining?

No

2.10 Is the proposed action a nuclear action?

No

2.11 Is the proposed action to be taken by the Commonwealth agency?

No

2.12 Is the proposed action to be undertaken in a Commonwealth Heritage Place Overseas?

No

2.13 Is the proposed action likely to impact on any part of the environment in the Commonwealth marine area?

No

Section 3 - Description of the project area

Provide a description of the project area and the affected area, including information about the following features (where relevant to the project area and/or affected area, and to the extent not otherwise addressed in Section 2).

3.1 Describe the flora and fauna relevant to the project area.

Targeted assessments for the Southern Brown Bandicoot were undertaken of the larger study area (Portland Landfill) between the 6th December 2014 to 7th January 2015 for a 30 day period (see Practical Ecology 2015 and attachment Map_5_2016). The proposed area of impact was assessed in further detail on the 21th ?September ?2016.

The proposed area of construction supports large areas of exotic Kikuyu – the larger part of the access track route - along with areas supporting a mixture of exotic and non-indigenous native vegetation composed largely of shrubs over a low grassy (exotic) understorey with some scattered occurrences of indigenous Austral Bracken Pteridium esculentum, Coastal Sword-Sedge Lepidosperma gladiatum, Thatch Saw-sedge Gahnia radula, and Coast Boobialla Myoporum insulare). The proposed drilling site area and a short section of the access track is dominated by weedy native shrubs (e.g. Coast Wattle Acacia sophorae, Sallow Wattle Acacia longifolia, naturalised natives (e.g. Cape Wattle Paraserianthes lophantha), exotic shrubs (Boneseed *Chrysanthemoides monilifera ssp. monilifera, Gorse *Ulex europaeus, Myrtle-leaf Milkwort *Polygala myrtifolia), herbs (Cape Ivy *Delairea odorata, English Ivy *Hedera helix, Soursob *Oxalis pes-caprae, Angled Onion A*Allium triquetrum, Arum Lily *Zantedeshia aethiopica) and grasses (Kikuyu *Pennisetum clandestinum, Panic Veldt Grass *Ehrharta erecta). There is some small cover (<5%) of indigenous remnant vegetation (Thatch Saw-sedge Gahnia radula, Bracken Pteridium esculentum, Coast Boobialla Myoporum insulare, and Coast Sword-sedge Lepidosperma gladiatum).

Targeted surveys for the Southern Brown Bandicoot using camera traps made 2775 observations of animals. In total 25 vertebrate fauna species were detected across the study area, comprising of 18 native and 7 exotic species (see Figure 15 for example images). The greatest number of detections were made in Area A, followed by Area B and Area C of the Portland Landfill site. Area C had a substantially lower number of records than other survey areas.

Based on total number of observations, the Swamp Wallaby Wallabia bicolor (714 images) was the most frequently capture animal, followed by Red Fox Vulpes vulpes* (396), Black Rat Rattus rattus* (327), Common Blackbird Turdus merula* (261), and the Swamp Rat Rattus lutreolus (240). The Swamp Wallaby was also recorded on the greatest number of cameras (9), followed by the Common Blackbird (7), House Cat (7), Red Fox (6), House Mouse Mus musculus (5), and Common Ringtail Possum Pseudocheirus peregrinus (5). The total number of species observed per area also varied, with 19 species recorded in Area A, 12 in Area B, and only 9 in Area C. The Southern Brown Bandicoot was detected 120 times across 3 cameras (C133,

C134, and C336), all located within Area A. No observations were made in Areas B or C.

In hair trap surveys, the Swamp Rat (Rattus lutreolus) was the most commonly recorded species, followed by House Mouse and Southern Brown Bandicoot. No additional species were recorded by hair traps compared to camera traps alone. The Southern Brown Bandicoot was only recorded along hair trap transects in Area A. Few samples of hairs were obtained from Areas B and C (refer to attached Map_1_2016).

3.2 Describe the hydrology relevant to the project area (including water flows).

Hydrology across the site follows contours. Groundwater generally flows from the south-western corner of the site in an north-easterly direction across the site towards the north-east boundary, pooling during flooding at low-lying sections in the northern section of the site coincident with ‘Area A’ and along Derril Road defining the north-east boundary of the site. Water drains through the proposed area of impact through a channel and flows onwards through ‘Area A’ through to an open swamp north-east of the area and immediately south-west of Derril Road. See attached ‘Map_4_2016’.

There is a leachate pond located approximately 40 m south-west of the proposed drilling site.

3.3 Describe the soil and vegetation characteristics relevant to the project area.

The area of proposed impact and the northern and eastern section of the larger landfill site supports siliceous Kurosol soils of aeolian origin forming part of coastal plains and ridges. The southern half of the Portland landfill site supports brown siliceous Dermosol soils of limestone origin (DELWP Biodiversity Maps Online accessed 6/02/2017).

The proposed area of construction supports large areas of exotic Kikuyu – the larger part of the access track route - along with areas supporting a mixture of exotic and non-indigenous native vegetation composed largely of shrubs over a low grassy (exotic) understorey with some scattered occurrences of indigenous Austral Bracken Pteridium esculentum, Coastal Sword-Sedge Lepidosperma gladiatum, Thatch Saw-sedge Gahnia radula, and Coast Boobialla Myoporum insulare).

Habitat within the proposed development footprint is low quality within minimal dense cover and a more open structure dominated with low exotic grasses and an open shrub layer. The proposed action avoids higher quality habitat immediately to the north meeting thresholds of greater than 50% foliage density as detailed in the draft significant impact guidelines (see attachment Map_7_2016 along with Map 7 and Plate 3 in Practical Ecology 2016).

Based on the habitat resources available and number of overall number of detections with camera traps and hair tubes in 2015 surveys, it is also considered that population density is likely low in the proposed bore area. Animals may be foraging in open habitat around the

proposed affected area from a patch of exotic vines and bracken immediately to the north which affords some protection from predators (e.g. Red Fox and Domestic Cat). In this way the proposed area does provide opportunity for foraging close to dense cover.

The larger Portland landfill site and adjacent roadsides are mapped by DELWP as supporting remnants of Heathy Woodland/Damp Heathy Woodland/Damp Heathland Mosaic (EVC 650) and Damp Sands Herb-rich Woodland (EVC 3). This mapping was confirmed during on-site surveys. Roadside sections along McNeillys and Malings Roads support highly modified remnant elements Heathy Woodland (EVC 48) and Damp Heathy Woodland (EVC 793), with the later prominent along the northern sections of McNeillys Road with strong shrub element due to the absence of fire. Some extensive areas of Damp Heathland are also present within Area A, including in the eastern corner.

These EVCs are all generally suitable for the Southern Brown Bandicoot depending on the groundstorey structural elements being present. However, Damp Sands Herb-rich Woodland and Damp Heathland (EVC 710) supports a slightly less suitable structure for the Southern Brown Bandicoot degree due to the more open structure of these EVCs in more intact states.

Area ‘A’ supports moderate to high quality habitat for the Southern Brown Bandicoot (Maps 1 and 5 in Practical Ecology 2015 – see attachments Map_1_2016 and Map_A3_2015). The highest quality habitat observed was between the landfill boundary fence and the boundary of the study area with the Yarraman Park (see attachment Map_A3_2015). Weed cover was very low in this area and indigenous floristic diversity relatively high. Indigenous understorey vegetation formed a dense groundstorey with high structural complexity, representing good quality habitat for the Southern Brown Bandicoot. McNeillys Road reserve within Area A also supported high quality habitat for the bandicoot with a dense groundcover of heath, bracken and sedges (see Figure 4 in Practical Ecology 2015). Swampy sections in the north-east corner of Area A are generally less favourable due to the more open structure of the vegetation.

3.4 Describe any outstanding natural features and/or any other important or unique values relevant to the project area.

There are no outstanding natural features.

3.5 Describe the status of native vegetation relevant to the project area.

The Portland landfill site supports modified remnants of EVCs Heathy Woodland/Damp Heathy Woodland/Damp Heathland Mosaic (EVC 650) and Damp Sands Herb-rich Woodland (EVC 3). A remnant of Damp Heathland occurs in the eastern corner of Area A while elements of Damp Heathy Woodland occur along the northern end of McNeillys Road. Weed invasion is relatively high across the majority of the site including exotic herbs and grasses such as Kikuyu* and Phalaris* Phalaris aquatica but also woody weeds such as Gorse*, Sallow Wattle, and English Ivy*.

The proposed bore drilling site is located with “Area A” of the Portland landfill site which largely

supports hihgly modified remnants of indigenous vegetation (Plate 4 in Practical Ecology 2016).

Vegetation within the footprint of the proposed drilling site and a short section of the access track is characterised as an open exotic shrub cover over a lower grassy exotic groundstorey (Plate 1 in Practical Ecology 2016). Vegetation along the larger part of the access track is dominated by dense low swards of exotic Kikuyu grass. There are only scattered occurrences of indigenous species amounting to <5% cover within the proposed area of impact.

3.6 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

The site and surrounding land is relatively flat but slopes downwards from the western corner at 50 metres above sea level (AHD) to 38 metres AHD at the north-east boundary with Derril Road.

3.7 Describe the current condition of the environment relevant to the project area.

The site has been subject to extensive vegetation clearing and modification. The majority of the landfill site outside of ‘Area A’ is composed of landfill, bare soil, stockpiles, and large expanses of exotic grasses. The bushland remnant of ‘Area A’ varies in quality and intactness but is generally of moderate to high quality. Area A supports moderate to high quality habitat for the Southern Brown Bandicoot (Figure 4; Map 3 – ‘Map_A3_2015’ and ‘Map_5_2016’ attached). The highest quality habitat observed was between the landfill boundary fence and the boundary of the study area with the Yarraman Park. Weed cover was very low and indigenous floristic diversity relatively high. Indigenous understorey vegetation formed a dense groundstorey with high structural complexity, representing good quality habitat for the Southern Brown Bandicoot. Southern sections of Area A were of lower quality, largely composed of indigenous shrub cover over and exotic and non-indigenous groundstorey.

The proposed area of impact has high levels of weed infestation and low cover of native vegetation. Feral animals, including foxes, House Cat* Felis catus, House Mouse* Mus musculus, Black Rat* Rattus rattus, and European Rabbit* Oryctolagus cuniculus were detected within the immediate area by camera traps and hair tubes and across the entire Portland landfill study area. Fox densities may be particularly high at the site based on camera trap survey results (Table 2 Practical Ecology 2015). Rabbit densities may be highest in Area A with some evidence of land degradation through low levels of erosion and groundstorey modification occurring as a result of digging and herbivory respectively.

3.8 Describe any Commonwealth Heritage Places or other places recognised as having heritage values relevant to the project area.

Unknown

3.9 Describe any Indigenous heritage values relevant to the project area.

Unknown.

3.10 Describe the tenure of the action area (e.g. freehold, leasehold) relevant to the project area.

The site is freehold land that is Council owned and managed.

3.11 Describe any existing or any proposed uses relevant to the project area.

The site is currently used for waste management. Environmental groundwater monitoring and vehicle access for said purpose is proposed for the proposed impact area.

Section 4 - Measures to avoid or reduce impacts

Provide a description of measures that will be implemented to avoid, reduce, manage or offset any relevant impacts of the action. Include, if appropriate, any relevant reports or technical advice relating to the feasibility and effectiveness of the proposed measures.

Examples of relevant measures to avoid or reduce impacts may include the timing of works, avoidance of important habitat, specific design measures, or adoption of specific work practices.

4.1 Describe the measures you will undertake to avoid or reduce impact from your proposed action.

See attached table (attachment portland_sbb_measures_to_avoid_or_reduce_impacts.pdf) for measures to avoid or reduce impacts. Also see corresponding Table 3 in Practical Ecology 2016.

4.2 For matters protected by the EPBC Act that may be affected by the proposed action, describe the proposed environmental outcomes to be achieved.

The proposed Portland Landfill Borehole Installation will maintain the long-term extent and quality of habitat within the area affected so there is no net loss in the extent and quality of habitat available to the Southern Brown Bandicoot. The environmental outcomes of the project for the Southern Brown Bandicoot are:

a) a native grassy groundcover established within the proposed developed footprint which can be used by the Southern Brown Bandicoot for foraging and movements. Southern Brown Bandicoots are known to forage in open areas of vegetation adjacent to more dense areas of vegetation which provide shelter, nesting sites, and protection from predators. This outcome has a high likelihood of successful implementation.

b) impacts avoided on and retention of all adjacent areas of dense vegetation to provide shelter and nesting sites for the Southern Brown Bandicoot and reduce risks of increased predation risk. Implemented mitigation measures during the construction phase will ensure a high likelihood of successful implementation

c) hygiene controls implemented to ensure no further weed or pathogens are spread into habitat. Implemented mitigation measures during the construction phase will ensure a high likelihood of successful implementation

d) ensure that water quality within Southern Brown Bandicoot within ‘Area A’ is not contaminated by leachates from the landfill site through ongoing monitoring.

Australian Government
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Section 5 – Conclusion on the likelihood of significant impacts

A checkbox tick identifies each of the matters of National Environmental Significance you identified in section 2 of this application as likely to be a significant impact.

Review the matters you have identified below. If a matter ticked below has been incorrectly identified you will need to return to Section 2 to edit.

5.1.1 World Heritage Properties

No

5.1.2 National Heritage Places

No

5.1.3 Wetlands of International Importance (declared Ramsar Wetlands)

No

5.1.4 Listed threatened species or any threatened ecological community

No

5.1.5 Listed migratory species

No

5.1.6 Commonwealth marine environment

No

5.1.7 Protection of the environment from actions involving Commonwealth land

No

5.1.8 Great Barrier Reef Marine Park

No

5.1.9 A water resource, in relation to coal/gas/mining

No

5.1.10 Protection of the environment from nuclear actions

No

5.1.11 Protection of the environment from Commonwealth actions

No

5.1.12 Commonwealth Heritage places overseas

No

5.2 If no significant matters are identified, provide the key reasons why you think the proposed action is not likely to have a significant impact on a matter protected under the EPBC Act and therefore not a controlled action.

The proposed action should not be considered a controlled action, as it will not cause a significant impact on any matter of national environmental significance. Matters of national environmental significance considered relevant to the proposed action is the listed threatened species, the Southern Brown Bandicoot.

The Southern Brown Bandicoot occurs within the Portland landfill site and may be restricted to ‘Area A’ as identified by targeted surveys for the species (Practical Ecology 2015). Habitat within the proposed affected area is of low quality within minimal dense cover and a more open structure dominated with low exotic grasses and an open shrub layer. Based on the habitat resources available and number of overall number of detections with camera traps and hair tubes in 2015 surveys, it is considered that population density is likely low in the proposed bore area. Animals may be foraging in open habitat around the proposed affected area from a patch of exotic vines and bracken immediately to the north which affords some protection from predators (e.g. Red Fox and Domestic Cat). In this way the proposed area does provide opportunity for foraging close to dense cover. However, the proposed action avoids this higher quality habitat immediately to the north which meets thresholds of greater than 50% foliage density as detailed in the draft significant impact guidelines (see attached Map_7_2016).

There is some potential for the proposed action to have a significant impact through a number of processes as identified in Sections 4.1 and 4.3 of this referral including habitat alteration and fragmentation and increased predation risk. The nature of the impact will be in the short-term removal of vegetation and long-term modification within the proposed footprint to a grassed lawn to allow ongoing access for routine monitoring of water quality at the proposed bore holes. There is likely to be some short-term impacts through the process of the access track and borehole construction. However, with the implementation of the proposed avoidance and mitigation measures as detailed in Sections 4.1 and attachment in Section 4.3 of this referral, it is considered that the proposed action will not result in a significant impact on this Matter of National Environmental Significance.

Section 6 – Environmental record of the person proposing to take the action

Provide details of any proceedings under Commonwealth, State or Territory law against the person proposing to take the action that pertain to the protection of the environment or the conservation and sustainable use of natural resources.

6.1 Does the person taking the action have a satisfactory record of responsible environmental management? Please explain in further detail.

Glenelg Shire Council has not been subject to any known prosecution for environmental breaches.

6.2 Provide details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources.

none applicable

6.3 Will the action be taken in accordance with the corporation's environmental policy and planning framework?

No

6.4 Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?

No

Section 7 – Information sources

You are required to provide the references used in preparing the referral including the reliability of the source.

7.1 List references used in preparing the referral (please provide the reference source reliability and any uncertainties of source).

Reference Source	Reliability	Uncertainties
Brown, G. W. & Main, M. L. (2010) National recovery plan for the southern brown bandicoot Isoodon obesulus obesulus. Department of Sustainability and Environment, Victoria, pp. 2005-2009.	High - based on scientific peer reviewed literature	Knowledge of species ecology is incomplete
Practical Ecology (2016) Southern Brown Bandicoot EPBC Risk Assessment and Mitigation Plan, Portland Transfer Station, Portland, Victoria. Report prepared for Glenelg Shire Council by Practical Ecology P/L. Practical Ecology (2015) Targeted Southern Brown Bandicoot for the Portland Landfill and Transfer Station. Report prepared for Glenelg Shire Council by Practical Ecology P/L.	High - based on detailed surveys and analysis	Specific knowledge for the subject site on absolute animal densities and individual animal movements and home ranges is limited.
Coates, T. & Wright, C. (2003) Predation of southern brown bandicoots Isoodon obesulus by the European red fox Vulpes vulpes in south-east Victoria. Australian Mammalogy, 25, pp. 107-110.	High - based on scientific peer reviewed literature	Knowledge of species ecology is incomplete
DEC (2006) Southern Brown Bandicoot Isoodon obesulus Recovery Plan. NSW Department of Environment and Conservation.	High - government resource	Knowledge of species ecology is incomplete
DELWP, (2016a). Biodiversity	High - government resource	Knowledge of species ecology

Reference Source	Reliability	Uncertainties
Interactive Map 3.2. Retrieved 12 July 2016, from http://mapshare2.dse.vic.gov.au/MapShare2EXT/imf.jsp?site=bim [online]. Victorian State Government, Department Environment and Primary Industries, Melbourne.		is incomplete
DELWP, (2016b). Victorian Biodiversity Atlas. Biodiversity Info. Victorian State Government, Department of Environment and Primary Industries, East Melbourne.	High - government resource	Knowledge of species ecology is incomplete
DSEWPC (2011) Environment Protection and Biodiversity Conservation Act 1999 draft referral guidelines for the endangered southern brown bandicoot (eastern), Isoodon obesulus obesulus. Department of Sustainability, E., Water, Population and Communities, Commonwealth of Australia.	High - government resource	Knowledge of species ecology is incomplete
Maclagan, S. (2016) Ecology and conservation of the Southern Brown Bandicoot in an urbanising landscape. Victorian Naturalist, The, 133, p. 103.	High - based on scientific peer reviewed literature	Knowledge of species ecology is incomplete
Rees, M. & Paull, D. (2000) Distribution of the southern brown bandicoot (Isoodon obesulus) in the Portland region of south-western Victoria. Wildlife Research, 27, pp. 539-545.	High - based on scientific peer reviewed literature	Knowledge of species ecology is incomplete
Southwell, D. M., Lechner, A. M., Coates, T. & Wintle, B. A. (2008) The sensitivity of population viability analysis to uncertainty about habitat requirements: implications for the management of the endangered southern brown bandicoot. Conservation Biology, 22, pp. 1045-1054.	High - based on scientific peer reviewed literature	Knowledge of species ecology is incomplete

Reference Source	Reliability	Uncertainties
Valentine, L. E., Anderson, H., Hardy, G. E. S. & Fleming, P. A. (2013) Foraging activity by the southern brown bandicoot (Isoodon obesulus) as a mechanism for soil turnover. Australian Journal of Zoology, 60, pp. 419-423.	High - based on scientific peer reviewed literature	Knowledge of species ecology is incomplete
Zenger, K. R., Eldridge, M. D. & Johnston, P. G. (2005) Phylogenetics, population structure and genetic diversity of the endangered southern brown bandicoot (Isoodon obesulus) in south-eastern Australia. Conservation Genetics, 6, pp. 193-204	High - based on scientific peer reviewed literature	Knowledge of species ecology is incomplete

Section 8 – Proposed alternatives

You are required to complete this section if you have any feasible alternatives to taking the proposed action (including not taking the action) that were considered but not proposed.

8.0 Provide a description of the feasible alternative?

The bore holes must be installed at a point which corresponds with the flow of ground water drainage from the landfill site and as close as possible to the future capped landfill site to increase detection of leachates. This corresponds to the hydrological flow of the water table from the south-western corner of the current landfill to the north-east (see direction shown in attached Map_4_2016).

Installation of boreholes in alternate locations outside of Area A were proposed by Council officers to the Victorian Environmental Protection Agency (EPA) but were deemed by the EPA not satisfactory to meet environmental monitoring requirements for the landfill capping process (David Hol, Glenelg Shire Council, pers. comm.).

8.1 Select the relevant alternatives related to your proposed action.

8.27 Do you have another alternative?

No

Section 9 – Contacts, signatures and declarations

Where applicable, you must provide the contact details of each of the following entities: Person Proposing the Action; Proposed Designated Proponent and; Person Preparing the Referral. You will also be required to provide signed declarations from each of the identified entities.

9.0 Is the person proposing to take the action an Organisation or an Individual?

Organisation

9.2 Organisation

9.2.1 Job Title

Project Planning & Facilities

9.2.2 First Name

David

9.2.3 Last Name

Hol

9.2.4 E-mail

dhol@glenelg.vic.gov.au

9.2.5 Postal Address

Cliff Street
Portland VIC 3305
Australia

9.2.6 ABN/ACN

ABN

48217289490 - GLENELG SHIRE COUNCIL

9.2.7 Organisation Telephone

1300453635

9.2.8 Organisation E-mail

enquiry@glenelg.vic.gov.au

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

Not applicable

Small Business Declaration

I have read the Department of the Environment and Energy's guidance in the online form concerning the definition of a small a business entity and confirm that I qualify for a small business exemption.

Signature:..... Date: .....

9.2.9.2 I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations

No

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

Declaration

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

Signature:..... Date: 27 Feb 2017

I, David Hol, the person proposing the action, consent to the designation of _____ as the proponent of the purposes of the action describe in this EPBC Act Referral.

Signature:..... Date: 27 - Feb 2017

9.3 Is the Proposed Designated Proponent an Organisation or Individual?

Organisation

9.5 Organisation

9.5.1 Job Title

Project Planning & Facilities Manager

9.5.2 First Name

David

9.5.3 Last Name

Hol

9.5.4 E-mail

dhol@glenelg.vic.gov.au

9.5.5 Postal Address

Cliff Street
Portland VIC 3305
Australia

9.5.6 ABN/ACN

ABN

48217289490 - GLENELG SHIRE COUNCIL

9.5.7 Organisation Telephone

1300453635

9.5.8 Organisation E-mail

enquiry@glenelg.vic.gov.au

Declaration

I, David Hy, the proposed designated proponent, consent to the designation of myself as the proponent for the purposes of the action described in this EPBC Act Referral.

Signature: ..... Date: 27 Feb 2017

9.6 Is the Referring Party an Organisation or Individual?

Organisation

9.8 Organisation

9.8.1 Job Title

Senior Zoologist

9.8.2 First Name

Austin

9.8.3 Last Name

O'Malley

9.8.4 E-mail

austino@practicalecology.com

9.8.5 Postal Address

2 Stott Street
Preston VIC 3072
Australia

9.8.6 ABN/ACN

ABN

88082911377 - PRACTICAL ECOLOGY PTY LTD

9.8.7 Organisation Telephone

0394841555

9.8.8 Organisation E-mail

enquiries@practicalecology.com.au

Declaration

Australian Government
Department of the Environment and Energy

I, AUSTIN O'MALLEY, I declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence.

Signature: ..... Date: 24/02/2017

Australian Government
Department of the Environment and Energy

Appendix A - Attachments

The following attachments have been supplied with this EPBC Act Referral:

1. fig.1_2016_ghd_rehab_plan_portland_landfill_reduced.jpg
2. gis.zip
3. gis.zip
4. map_1_2016.jpg
5. map_2_2016.jpg
6. map_3_2016.jpg
7. map_4_2016.jpg
8. map_5_2016.jpg
9. map_7_2016.jpg
10. map_7_2016.jpg
11. map_a1.jpg
12. map_a2_2015.jpg
13. map_a3_2015.jpg
14. map_a4_2015.jpg
15. portland_sbb_measures_to_avoid_or_reduce_impacts.pdf
16. practical_ecology_2015.pdf
17. practical_ecology_2016.pdf
18. practical_ecology_2016.pdf