Australian Government
Department of the Environment and Energy

Title of Proposal - Vasse Diversion Drain Upgrade

Section 1 - Summary of your proposed action

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

1.1 Project Industry Type

Transport - Water

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

The Vasse Diversion Drain (VDD) is a 6 km manmade channel within the City of Busselton, in the south-west of Western Australia. The VDD commences just north of the Busselton Golf Course with the diversion headworks, in the form of a barrier levee (Vasse River Diversion Dam) and extends to the ocean at Geographe Bay. The purpose of the drain is to divert the Vasse and Sabina River toward the west of Busselton and provide flood protection for the town.

The VDD was constructed in the 1920/30s using a steam driven dragline, as a rural drain. The material excavated from the drain was dumped as spoil banks on either side of the drain and were not engineered or constructed, nor required, to contain any drainage flow. These spoil banks have since “become” levee banks and are now required to contain the flow in the drain and function as “water retaining structures”. The section of the VDD downstream of the Queen Elizabeth Avenue Bridge has a concrete wall (lining) due to the high flow velocity of the drain.

Since the original construction of the drain, residential (urbanised) areas have been developed on both sides of the VDD structure downstream of the Busselton Bypass.

A project to upgrade the VDD was initiated in 2003, starting with a geotechnical and engineering assessment of the levees. This assessment concluded that the VDD is not capable of passing the 1% Annual Exceedance Probability (AEP) flood without a significant risk of a seepage induced failure of the levee banks.

In order to reduce the societal risk associated with failure of the VDD, the Water Corporation proposes to reconstruct the Vasse River Diversion Dam (VRDD) including an overflow structure together with the full reconstruction and replacement of the existing levee banks along the length of the VDD with an engineered levee.

The levee along the length of the VDD will be dug out in sections (e.g. 500 m long sections) down to the natural ground level, and reconstructed and compacted on a stable foundation using the original material.

The dam structure will be dug down to the foundations and rebuilt. During reconstruction of the VRDD a coffer dam will be constructed upstream to divert flows into the lower Vasse River. The Shire of Busselton operates a slide gate that controls flows to the lower Vasse River. It is

anticipated that the slide gate will be left open as required during the construction period to maximise flows that are diverted from the VDD to the lower Vasse River.

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
Vassed Diversion Drain Upgrade	1	-33.686407273161	115.36436568891
Vassed Diversion Drain Upgrade	2	-33.685693085284	115.36556731855
Vassed Diversion Drain Upgrade	3	-33.686264436061	115.36629687941
Vassed Diversion Drain Upgrade	4	-33.686907201144	115.36608230268
Vassed Diversion Drain Upgrade	5	-33.687657087667	115.36573897993
Vassed Diversion Drain Upgrade	6	-33.688835467555	115.36573897993
Vassed Diversion Drain Upgrade	7	-33.68869263449	115.36449443495
Vassed Diversion Drain Upgrade	8	-33.690549445826	115.36423694288
Vassed Diversion Drain Upgrade	9	-33.690442323186	115.36380778944
Vassed Diversion Drain Upgrade	10	-33.686907201144	115.36415111219
Vassed Diversion Drain Upgrade	11	-33.686300145358	115.36333572065
Vassed Diversion Drain Upgrade	12	-33.685228859982	115.35951625502
Vassed Diversion Drain Upgrade	13	-33.684300401857	115.35840045607
Vassed Diversion Drain Upgrade	14	-33.682229189903	115.35664092695
Vassed Diversion Drain Upgrade	15	-33.680149000086	115.35477410948
Vassed Diversion Drain Upgrade	16	-33.676077757705	115.35099755918
Vassed Diversion Drain Upgrade	17	-33.674827365916	115.34954115697
Vassed Diversion Drain Upgrade	18	-33.67411308184	115.34645125219

Area	Point	Latitude	Longitude
Vassed Diversion Drain Upgrade	19	-33.672827355551	115.34490629979
Vassed Diversion Drain Upgrade	20	-33.669255792782	115.34095808812
Vassed Diversion Drain Upgrade	21	-33.66582695299	115.33512160131
Vassed Diversion Drain Upgrade	22	-33.664826848971	115.32945677587
Vassed Diversion Drain Upgrade	23	-33.664398229404	115.3269676859
Vassed Diversion Drain Upgrade	24	-33.664255355741	115.32576605626
Vassed Diversion Drain Upgrade	25	-33.663826733326	115.324736088
Vassed Diversion Drain Upgrade	26	-33.663255233451	115.32413527318
Vassed Diversion Drain Upgrade	27	-33.662040783611	115.32370611974
Vassed Diversion Drain Upgrade	28	-33.658483063261	115.32370611974
Vassed Diversion Drain Upgrade	29	-33.658483063261	115.32413527318
Vassed Diversion Drain Upgrade	30	-33.661626439941	115.32439276525
Vassed Diversion Drain Upgrade	31	-33.66305520956	115.324736088
Vassed Diversion Drain Upgrade	32	-33.663698148147	115.32585188695
Vassed Diversion Drain Upgrade	33	-33.66426964508	115.32997176
Vassed Diversion Drain Upgrade	34	-33.664841138216	115.33486410924
Vassed Diversion Drain Upgrade	35	-33.66512688336	115.33572241613
Vassed Diversion Drain Upgrade	36	-33.667269941688	115.33906981298
Vassed Diversion Drain Upgrade	37	-33.672698783827	115.3463654215
Vassed Diversion Drain Upgrade	38	-33.673698796319	115.34773871251
Vassed Diversion Drain Upgrade	39	-33.674127369541	115.34928366491
Vassed Diversion Drain Upgrade	40	-33.677663012769	115.35297438451
Vassed Diversion Drain Upgrade	41	-33.67907365987	115.35424038717

Area	Point	Latitude	Longitude
Vassed Diversion Drain Upgrade	42	-33.684287496383	115.35934731313
Vassed Diversion Drain Upgrade	43	-33.686215821563	115.36423966237
Vassed Diversion Drain Upgrade	44	-33.686407273161	115.36436568891

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 VDD is located in the City of Busselton approximately 220 km south of Perth, Western Australia. The drain is a constructed watercourse, which runs into the ocean at Geographe Bay.

The development footprint for the proposed upgrade of the VDD encompasses a section of the existing VDD easement, approximately 5.6 km in length, commencing at the VRDD in the vicinity of the Busselton Golf Club where the drain joins the Vasse River and running northward to the northern side of New River (adjacent to the Queen Elizabeth Avenue bridge). The average width of the development footprint is approximately 70 m.

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

The total area of the development footprint is 39.62 ha, of which 6.34 ha is made up of the existing VDD channel. The total land

1.7 Is the proposed action a street address or lot?

Lot

1.7.2 Describe the lot number and title.see attached

1.8 Primary Jurisdiction.

Western Australia

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 11/2017

End date 05/2018

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

The Water Corporation has been granted a State-wide Clearing Purpose Permit for Water Corporation Project activities and maintenance of existing water services infrastructure.

The Water Corporation, under delegated authority, manages Clearing Permits under Part V of the Western Australian Environmental Protection Act 1986 (EP Act). If the project is referred under the EPBC Act and determined by the Minister of Environment as a controlled action, the Water Corporation cannot use their internal state wide clearing permit (Condition 2 iv), and a clearing permit through the Department of Environment and Regulation (DER) must be applied for. If agreed by both the Commonwealth and the Western Australia Government, the bilateral agreement assessment process is initiated.

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.

Biological assessments of the VDD were undertaken in 2009, September 2016 and March 2017 (GHD 2010, 2017a, 2017b), which covered the area from the ocean outfall at Geographe Bay in the north to the VRDD in the vicinity of the Busselton Golf Course in the south.

The potential long-term biological impacts associated with the proposal are linked to native vegetation clearing and loss of fauna habitat. Short-term impacts during the construction phase, such as reduced water quality or altered flow regimes within the drain, will be limited in duration and can be effectively managed through the implementation of appropriate controls and

monitoring during construction. The potential impacts from the loss of native vegetation and loss of fauna habitat can be effectively assessed through the Environmental Protection (Clearing of Native Vegetation) Regulations 2004. Therefore it is considered unlikely that the proposed action would require referral to the Western Australian Environmental Protection Authority (EPA) under Section 38 of the EP Act.

It is proposed clearing of native vegetation associated with the proposed action will be managed under Part V of the EP Act at a State level.

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?

No

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?

Yes

2.3.1 Impact table

Wetlands	Impact
Vasse Wonnerup System Ramsar Site	The proposed action will involve the reconstruction of the existing VDD levee where it traverses New River, which forms part of the Vasse-Wonnerup System Ramsar Site. The Vasse Estuary and the Broadwater were originally connected by New River, however these natural river systems are now divided by

Wetlands	Impact
	the VDD which forms a barrier between the two systems (GHD 2013). Due to the historical separation of these wetlands through the construction of the VDD in the 1920/30s, the proposed upgrade works is unlikely to result in measurable changes to current hydrological flow regimes. There is potential for changes to water quality within New River, for example sedimentation, during the reconstruction of the VDD levees. These impacts will be managed through the implementation of a Construction Environmental Management Plan and will be limited to the duration of construction activities. An acid sulphate soil investigation for the proposed VDD upgrade identified areas of acid sulphate soil within the development footprint (GHD 2009). An acid sulphate soil management plan was prepared for the proposed upgrade of the VDD in 2009, in line with DER guidelines. This management plan will be reviewed following completion of detailed design for the project and amended as required, to the satisfaction of the DER. The acid sulphate soil management plan will establish the appropriate treatment and/or management options for the material identified as containing acidity or potential acidity. The acid sulphate soils management plan will incorporate a dewatering management plan that will be implemented in the event that dewatering (defined as extraction of groundwater, rather than dewatering of surface water from within the drain) is required during construction. The DotEE (2013) Matters of National Environmental Significance - Significant Impact Guidelines 1.1 (DoE 2013) establishes criteria to assist proponents in determining when an action is likely to have a significant impact on a declared Ramsar wetland. These include: — areas of the wetland being destroyed or substantially modified — a substantial and measurable change in the hydrological regime of the wetland, for example, a substantial change to the volume, timing, duration and frequency of ground and surface water flows to and within the wetland — the habitat or lifecycle of native species, including

Wetlands	Impact
	invertebrate fauna and fish species, dependent upon the wetland being seriously affected — a substantial and measurable change in the water quality of the wetland – for example, a substantial change in the level of salinity, pollutants, or nutrients in the wetland, or water temperature which may adversely impact on biodiversity, ecological integrity, social amenity or human health, or — an invasive species that is harmful to the ecological character of the wetland being established (or an existing invasive species being spread) in the wetland. With consideration of these criteria, the proposed action is not deemed likely to have a significant impact on the Vasse-Wonnerup System Ramsar Site. A more detailed assessment against the Significant Impact Guidelines 1.1 criteria for wetlands of international importance is attached.

2.3.2 Do you consider this impact to be significant?

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
Carnaby’s Black Cockatoo (Endangered) Forest Red-tailed Black Cockatoo (Vulnerable) Baudin’s Black Cockatoo (Vulnerable) Western Ringtail Possum (Endangered) Balston’s Pygmy Perch (Vulnerable)	Likely to be present in development footprint. Foraging and breeding habitat present. Up to 7.88 ha of potential Black Cockatoo foraging habitat will be cleared as a result of the project. Seventy four (74) potential breeding trees were identified during baseline surveys and may be cleared as a result of the proposed action. No breeding was observed at the time of the biological survey. Three trees contained large hollows currently suitable for breeding. Two

Species	Impact
	trees contained two medium hollows and six small hollows that could provide suitable breeding habitat in the future. No roosting sites were recorded during the field survey, however 3.64 ha of potential roosting habitat occurs within the development footprint in the form of Marri and Flooded Gum woodland. A more detailed assessment against the Significant Impact Guidelines 1.1 criteria for threatened species is attached. Known to be present within the development footprint. Dreys and scats were recorded within the development footprint and sightings of this species were recorded during the assessment in 2009 (GHD 2010). Peppermint woodland and Marri and Flooded Gum woodland within the development footprint provides high value breeding and foraging habitat for this species. The proposed action will involve clearing of up to 7.88 ha of primary corridor and supportive habitat for Western Ringtail Possums. A more detailed assessment against the Significant Impact Guidelines 1.1 criteria for threatened species is attached. Desktop database searches identified one record of Balston's Pygmy Perch within approximately 5 km of the development footprint. There are no known records from the Vasse River or VDD. Balton's Pygmy Perch is thought to have been lost from its northern range from Moore River to the Swan Coastal Plain south of Perth. The species has been captured in low numbers in the Scott, Donnelly, Shannon, Gardener, Deep, Kent and Denmark Rivers, along with Quitjup, Smith, Doggerup, Maringup and Moates Lakes (Morgan et al 1995 in DotEE 2016). Previous records are also known from Bokanup and Mulgarnup Swamps, Kulunilup Lake and Lake Unicup in the Lake Muir and Unicup catchments (Storey 1998 in DotEE 2016). Construction is scheduled to take place during the summer dry season when flows within the drain are relatively low. Any potential impacts to this species would be short term in nature, for the duration of construction. No Balston's Pygmy Perch were recorded during the baseline fauna survey. Impacts to

Species	Impact
	Balston's Pygmy Perch associated with the proposed action are not considered to be significant.

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

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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.

The VDD is situated in the South-West Botanical Province (Beard 1990), within the Swan Coastal Plain bioregion and Perth subregion as described by the Interim Biogeographic Regionalisation of Australia (IBRA).

The development footprint comprises three broad floristic formations, containing six vegetation types (excluding the drain itself and highly disturbed areas) (GHD 2017a, 2017b). Native vegetation is located throughout the development footprint in the form of Eucalyptus woodland on plain and damplands in the south, Melaleuca shrublands associated with New River and Agonis flexuosa tall shrublands to woodlands on the dunes.

Vegetation within the development footprint has been impacted by historical clearing and weed invasion and ranges from Good to Completely Degraded condition. Over 97% (32.47 ha) of the total land area within the development footprint (excluding the existing VDD channel) is in Degraded or Completely Degraded condition. Vegetation in Good or Good to Degraded condition is limited to a total area of 0.80 ha (approximately 2.5% of the land component of the development footprint, excluding the existing VDD channel) (GHD 2017b).

A search of the Naturemap database identified 934 plant taxa, representing 102 families, which have previously been recorded within 5 km of the development footprint. This total comprised 782 native taxa and 152 naturalised (non-native) flora taxa. Dominant families included Fabaceae (110 species), Proteaceae (70 species) and Myrtaceae (68 species). Desktop searches of the EPBC Act PMST database and the NatureMap database identified the presence/potential presence of 61 conservation significant flora taxa within 5 km of the development footprint.

A search of the Naturemap database identified 690 fauna species that have been previously recorded within 5 km of the survey area of which 680 species are native and 10 are introduced species. This total included 209 birds, 28 mammals, 25 reptiles and four amphibians. The

remainder are invertebrates or misnamed species. Desktop searches of the EPBC Act PMST database and the Naturemap database identified the presence/potential presence of 52 conservation significant fauna species within 5 km of the development footprint.

Seventy-three flora taxa (including subspecies and varieties) representing 32 families and 62 genera were recorded from the survey area during the 2016 field survey. This total comprised 35 native taxa and 38 introduced flora taxa. No EPBC Act, WC Act or DPaW priority flora were recorded during the 2016 assessment of the survey area.

Five habitat types occur within the development footprint, including Marri and Flooded Gum woodland, Peppermint woodland, Tall Melaleuca shrubland, the VDD and highly disturbed areas.

The field survey recorded a total of 37 fauna species, consisting of 22 bird species, three reptiles, eight mammals, three amphibians and one mollusc. Seven introduced fauna species were identified within the survey area. During the survey, evidence of four species of conservation significance was recorded. They included:

Western Ringtail Possum (Pseudocheirus occidentalis) listed as Endangered under the EPBC and Critically Endangered under the WC Act

Carter’s Freshwater Mussel (Westralunio carteri) listed as Vulnerable under the WC Act

Quenda (Isoodon obesulus subsp. fusciventer) listed as Priority 4 by DPaW

Osprey (Pandion haliaetus), listed under Schedule 5 of the WC Act.

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

The Vasse River Catchment is located approximately 220 km south of Perth, in the south-west region

of Western Australia. It borders the Buayanyup and Abba River catchments and flows into

Geographe Bay in the Indian Ocean. The largest catchment is the VDD, which is approximately

283 km2 in area. The VDD collects water from two river catchments, the larger Vasse River and the

Sabina River, through the Vasse and Sabina Diversion Drains (GHD 2013).

Before diversion, the Vasse and Sabina Rivers flowed into the Vasse Estuary and the Broadwater

where the fresh water provided a breeding ground for wildlife as well as flood water storage. Vasse

Estuary and the Broadwater were originally connected by New River but are now divided by the VDD

(GHD 2013).

In the early 1900s flood gates were installed on the estuary outlet, converting the estuary to a fresh

water environment. The floodgates act as a partial barrier to upstream/downstream movement of

fish and reduce flushing flows. As such, excessive algal blooms, anoxia and fish deaths are not

uncommon (Wetland Research and Management 2007).

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

The Perth subregion is composed of colluvial and Aeolian sands, alluvial river flats, coastal limestone.

Heath and/or Tuart woodlands occur on limestone, Banksia and Jarrah- Banksia woodlands on

Quaternary marine dunes of various ages, and Marri on colluvial and alluvials.

The geology of the catchment is characterised by a foreshore area with relatively recent mobile sand

dunes (Safety Bay Sand) near the coast with minor clayey estuary deposits underlain by Tamala

Limestone. South-east of the coast, Bassendean Sands of windblown (aeolian) origin and alluvial

deposits of the Guildford Formation dominate (GHD 2013).

The drain has been constructed through approximately eight different soil types and their associated

geological formations, which include estuarine deposits, silty alluvial soils and clays of the Guildford

formation which are considered to have a strong association with acid sulphate soils. An acid sulphate soil investigation for the proposed upgrade has been undertaken (GHD 2009) which identified areas of acid sulphate soil within the development footprint. An acid sulphate soil management plan will be prepared in line with DER guidelines to devise the appropriate treatment and/or management options for the material identified as containing acidity or potential acidity.

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

The development footprint intersects the Vasse-Wonnerup Wetlands Ramsar site. The site covers an area of 1,115 ha including Wonnerup Inlet, the Vasse and Wonnerup estuaries and lower reaches along the Sabina and Abba rivers (Wetland Research and Management 2007).

The wetland system has been historically modified as described in Section 3.2. Regardless of these past disturbances, the wetlands provide important habitat for waterbirds while also providing flood and storm protection for low-lying coastal communities, including the township of Busselton.

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

Broad scale (1:250,000) pre-European vegetation mapping of the region was completed by Smith (1973) at an association level. The mapping indicates that three vegetation associations are present within the development footprint :

? Vegetation association 1000- Mosaic: Mosaic: Medium forest; jarrah-marri / Low woodland; banksia / Low forest; teatree (Melaleuca spp.)

? Vegetation association 27: Low woodland; paperbark (Melaleuca sp.)

? Vegetation association 949: Low woodland; banksia

The pre-European mapping has been adapted and digitised by Shepherd et al. (2002). The extent of

the vegetation associations has been determined by the state-wide vegetation remaining extent

calculations maintained by the DPaW (Current as of October 2016 – Government of Western

Australia (GoWA) 2016). The current extents remaining of vegetation association 1000 are less than

the 30% threshold level at both the State and Local Government Area (LGA) level. The remaining

extent of Vegetation association 27 is below the 30% threshold at the IBRA bioregion level and LGA

level. Vegetation association 949 is below the 30% threshold level at the LGA level only.

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

The proposed development is located on the Swan Coastal Plain, which typically has a relatively flat

gradient.

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

Remanent native vegetation within the development footprint ranges from Very Good to Completely

Degraded condition. The majority of vegetation within the development footprint is in Degraded to

Completely Degraded condition, with little to no understorey remaining. Approximately 0.26 ha of

the vegetation within the development footprint is in Very Good to Good in condition. The

vegetation structure within areas mapped as Very Good to Good condition has been significantly

altered by obvious signs of disturbance, largely weeds and clearing, however retained basic

vegetation structure.

Disturbances throughout the development footprint include the presence of weeds at varying densities, historical clearing for agriculture and vehicle tracks.

A breakdown of vegetation condition within the development footprint is included below:

? Very Good to Good – 0.26 ha

? Good to Degraded – 0.53 ha

? Degraded – 1.77 ha

? Degraded to Completely Degraded – 2.16 ha

? Completely Degraded – 28.53 ha

? Watercourse (existing VDD) – 6.34 ha

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

Not applicable

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

The New River heritage site (Site 16807) registered under the Aboriginal Heritage Act 1972 occurs on either side of the VDD where it crosses river system. The site is recognised as having historical and mythological values as well as being a hunting place and water source.

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

The development footprint traverses a large number of land parcels (75 in total) with a range of tenures, including freehold, crown land, reserves, road reserves, easements and ‘other’

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

Land use in the catchment is largely agricultural. The development footprint is located within and

adjacent to the existing VDD. There is no change to land usage of the project 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.

Threatened Species

The development footprint represents the maximum area to be cleared. Within the development

footprint opportunities to further reduce clearing will be considered, where practicable.

The clearing boundary will be clearly marked on the ground and well controlled during the

construction process to ensure no additional vegetation will be impacted.

The proposed action will be undertaken in the dry season, commencing in approximately November

2017, with anticipated completion by the end of May 2018. Three trees with hollows suitable for

breeding by Black Cockatoo were recorded during the biological survey however no evidence of

breeding was recorded. There is a very small possibility that breeding by Black Cockatoo species in

areas adjacent to the development footprint could be indirectly impacted.

The following management measures will be implemented to avoid or reduce the likelihood of

impacts to threatened species resulting from the proposed action:

? All trees with hollows suitable for Black Cockatoos will be inspected prior to clearing. If Black

Cockatoos are present, a qualified ecologist is to be engaged to relocate them outside the

clearing area.

? If possible clearing operations will be scheduled to avoid peak breeding times of threatened species (July to January).

? Direct fauna impacts will be managed via fauna relocation (to nearby vegetated areas) prior to clearing commencing.

? The extent of the clearing footprint will be clearly delineated with coloured pegs.

? Habitat areas within the clearing footprint will be surveyed by a qualified ecologist prior to clearing.

Conservation significant fauna encountered during the clearing process shall be relocated out of the approved clearing area if there is no threat to the person's safety in doing so.

? If Black Cockatoos are present, a qualified ecologist to relocate them to outside the clearing area.

? Rope bridges will be installed across the VDD at key locations to re-establish habitat connectivity between habitat patches for Western Ringtail Possums.

? Revegetation of cleared areas using Western Ringtail Possum preferred species to replace lost habitat.

Vasse-Wonnerup System Ramsar Site

Effective erosion and sediment control measures shall be implemented during reconstruction of the

VDD levees to mitigate potential runoff and sedimentation within the adjacent Vasse-Wonnerup system. Controls may include one or more of the following:

? Silt curtains

? Mulch sausages/socks

? Sand bags

? Silt fences

Hay bails (wrapped in geotextile material)

? Geotextile placement.

A monitoring program will be implemented during the reconstruction of levees across New River to

monitor the effectiveness of controls in maintaining water quality. The water quality monitoring

program will include daily visual monitoring and weekly sampling and analysis during removal and

reconstruction of the levees across New River.

Acid sulphate soil investigations have been undertaken and have confirmed the presence of actual

or potential acid sulphate soils within the development footprint. An acid sulphate soil management

plan including a dewatering management plan for the project have been developed in line with DER

guidelines. This management plan will be reviewed following completion of detailed design and

amended if required. The revised acid sulphate soil management plan will be submitted to the DER

for approval prior to the commencement of construction activities.

Additional management measures to minimise potential impacts to the adjacent Vasse-Wonnerup

System Ramsar site will include:

? Clearly flagging clearing lines in the vicinity of watercourse areas prior to the

commencement of clearing activities.

? Minimising clearing of riparian vegetation and maintaining water flow direction and flow

volume.

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.

Clearing of up to 33.28 ha of land, of which 32.47 ha is in Degraded or Completely Degraded condition.

? Clearing of up to 7.88 ha of Black Cockatoo foraging habitat, of which 3.64 ha is high value, (all in Degraded to Completely Degraded condition) and 4.24 ha is low value (3.94 is in Degraded to Completely Degraded condition, 0.28 ha is in Good to Degraded condition and 0.01 ha is in Very Good to Good condition).

? Removal of approximately 74 potential Black Cockatoo breeding trees recorded during baseline surveys.

? Clearing of up to 7.88 ha of primary corridor and supportive Western Ringtail Possum habitat, of which 7.59 ha is in Degraded or Completely Degraded condition, 0.28 ha is in Good to Degraded condition and 0.01 ha is in Very Good to Good Condition.

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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.

See attached assessments against Significant Impact Criteria

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.

The magnitude of the Water Corporation's operations across the State of Western Australia and

diversity of the natural environment in which it operates is vast. This is reflected in the range of

evidence for excellence in environment performance, including the climate adaptation award from

the Banksia Environmental Foundation (2013), the Earth awards (2011) for the Walkington Avenue

Community Verge Garden Project (Margaret River), the Prime Minister's Award (2004) for

environmental excellence in Public Sector Management, the WA Premiers Award (2004), the 2003

Australian Greenhouse Office Gold Award, and the United Nations Association of Australia World

Environment Day Award 2004 for excellence in Marine and Coastal Management.

6.2 Provide details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b) if a permit has been applied for in relation to the action – the person making the application.

The Water Corporation has had no actions brought against it in relation to its environmental

performance under Commonwealth legislation, but has received two modified penalty notices from

WA State authorities. Note that under the applicable WA legislation modified penalty notices do

not

represent an admission for the purposes of criminal or civil proceedings.

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

Yes

6.3.1 If the person taking the action is a corporation, please provide details of the corporation's environmental policy and planning framework.

The Water Corporation's visions of Water Forever, Great Place and Zero Footprint can be supported through the implementation of sustainable business practices that consider environmental impacts for current and future generations. We will strive to achieve this by:

1. Managing risks – We are all responsible for identifying and addressing environmental risks and potential incidents.

2. Taking personal responsibility – We are all responsible for protecting the environment and understanding and meeting our environmental obligations.

3. Improving performance – Our environmental objectives include reducing native vegetation clearing, reducing greenhouse gas emissions, reducing water use and increasing recycling of wastewater. We set targets to continually reduce our environmental impact and improve our environmental performance. We regularly review our performance against these targets.

4. Maintaining an effective system – Our Environmental Management System provides the framework for setting and reviewing our environmental objectives and targets and continually improving our environmental performance.

We will provide the necessary resources, systems, training and mechanisms to improve our environmental performance.

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?

Yes

6.4.1 EPBC Act No and/or Name of Proposal.

The Water Corporation is Western Australia's main provider and operator of water and

wastewater infrastructure. The Water Corporation understands its environmental duties and

responsibility to mitigate any potential impacts on the surrounding environment.

Water Corporation WA has undertaken previous EPBC referrals for the following projects:

? Stirling to Harris Dam Pressure Main (2014/7277)

? Mt Barker to Albany Water Supply Pipeline (2013/6720)

? Millstream to Greenbushes Link Mains (2012/6632)

? Millstream 20GL Pipeline, Bungaroo, Borefield Integration (2012/6379)

? Samson Brook Dam Remedial Works (2012/6329)

? Mundaring Weir Outlet Works Upgrade – Stage 1 (2012/6315)

? Rockingham and Peron, Sepia Depression Ocean Outlet Landline Duplication (2012/6248)

? Mundaring Fire Access Control Access Track (2011/6096)

Water Corporation/Water management and use/South Dandalup Dam to Dwellingup, WA/WA/Dwellingup Water Supply New Source and Supply Pipeline (2011/6077)

? Water Corporation/Water management and use/Lot 1 near Tuia Road, Southampton, approx 260 km SE of Perth/WA/Millstream Dam Expansion (2010/5614)

? Water Corporation/Water management and use/Mundaring/WA/Perth Hills District Office and Depot Relocation (2010/5345)

? Water Corporation/Water management and use/Mundaring/WA/Mundaring Water Treatment Plant and Mundaring C Pump Station Project (2009/5193)

? Water Corporation/Waste management and use/East Rockingham/WA/Wastewater Treatment Plant (2009/4970)

? Water Corporation/Waste Management (sewerage)/Broome/WA/Wastewater Treatment Plant (2008/4545)

? Water Corporation/Water management and use/Lots 32, 33 and part Lot 8 Taranto Rd, Binningup/WA/Southern Seawater Desalination Plant (2008/4173)

? Water Corporation/Transportwater/Armadale/Gosnells/WA/Wungong Transfer Mains Project (2007/3532)

? Water Corporation of Western Australia/Waste management (sewerage) /Alkimos/WA/Development of new Alkimos Wastewater Treatment Plant (2007/3259)

? Water Corporation WA/Water transport/Port Hedland/WA/Bugarene Borefield (2006/2507)

? Water Corporation/Water transport/Blackwood Plateau, southwest WA/WA/Yarragadee Water Supply Development (2005/2073)

? Water Corporation of Western Australia/Water management and use/Perth/WA/Perth Seawater Desalination Project: Thomsons Lake to Kogolup Pipeline (2005/2073).

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
Department of the Environment 2016, Nannatherina balstoni in Species Profile and Threats Database, Department of Environment, Canberra. Available from http://www.environment.gov.au/sprat. Accessed December 2016 GHD 2017b, Vasse Diversion Drain, Fauna and vegetation Assessment – Additional Survey Area, April 2017 GHD 2017a, Vasse Diversion Drain Upgrade Flora and Fauna Study. Prepared for Water Corporation, April 2017. GHD 2013, Hydrologic Review of Busselton Flood Protection – Vasse Diversion Drain Catchment Area. Prepared for Water Corporation, October 2013. GHD 2009 Busselton Flood Protection Project Vasse Diversion Drain Upgrade - Acid Sulphate Soils Investigation. Prepared for Water Corporation, September 2009. GHD 2009 Busselton Flood Protection Project Vasse Diversion Drain Upgrade – Acid Sulphate Soils Management Plan. Prepared for Water Corporation, September 2009. Wetland Research and Management 2007, Ecological Character Description Vasse-	A fauna field survey was undertaken by a qualified and experienced zoologist. The survey area included additional areas around the VDD (southern part of the development area A flora field survey was undertaken by a qualified and experienced botanist and the fauna survey was undertaken by qualified and experienced ecologists The flora survey involved an assessment of the vegetation types and condition of the vegetation, noting or collecting all flora species visible at the time of survey. The survey methodology (GHD 2016) employed was consistent with the EPA guidelines for flora surveys as outlined in Guidance Statement No. 51: Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia and Terrestrial Biological Surveys as an Element of Biodiversity Protection, Position Statement No. 3.	The survey area encompassed a corridor approximately 40-60 m wide along the length of the VDD, as shown in figures included within the Flora and Fauna Study report (GHD 2016). The disturbance footprint for the length of the corridor is approximately 70 m in width and includes additional land outside of the surveyed area in the vicinity of the VRDD (adjacent to Busselton Golf Course). For the purpose of this referral, vegetation type, vegetation condition and habitat types for areas outside of the surveyed area have been extrapolated based on review of data, existing mapping and aerial photography. GHD 2013,

Reference Source	Reliability	Uncertainties
Wonnerup Wetlands Ramsar Site South-west Western Australia. Prepared for Department of Environment and Conservation and Geographe Catchment Council		

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?

Not applicable. The proposed action involves the upgrade of existing infrastructure for the purpose

of flood protection. As such, the location of the proposed activity is fixed. Construction has been

scheduled to coincide with the dry season, there are no feasible alternative timeframes.

8.1 Select the relevant alternatives related to your proposed action.

8.27 Do you have another alternative?

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 Manager

9.2.2 First Name

Steve

9.2.3 Last Name

Ellwood

9.2.4 E-mail

steve.ellwood@watercorporation.com.au

9.2.5 Postal Address

PO Box 100
Leederville WA 6007
Australia

9.2.6 ABN/ACN

ABN

28003434917 - WATER CORPORATION

9.2.7 Organisation Telephone

9420 3562

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 Manager

9.2.2 First Name

Steve

9.2.3 Last Name

Ellwood

9.2.4 E-mail

steve.ellwood@watercorporation.com.au

9.2.5 Postal Address

PO Box 100
Leederville WA 6007
Australia

9.2.6 ABN/ACN

ABN

28003434917 - WATER CORPORATION

9.2.7 Organisation Telephone

9420 3562

9.2.8 Organisation E-mail

steve.ellwood@watercorporation.com.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

Person proposing the action - Declaration

I, PETER HARDING - PROJECT DIRECTOR, 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: 12/5/17

SIGNED FOR AND ON BEHALF OF STEVE ELLWOOD

I, PETER HARDING, the person proposing the action, consent to the designation of PROJECT DIRECTOR as the proponent of the purposes of the action describe in this EPBC Act Referral.

Signature: ..... Date: 12/5/17

SIGNED FOR AND ON BEHALF OF STEVE ELLWOOD

9.3 Is the Proposed Designated Proponent an Organisation or Individual?

Organisation

9.5 Organisation

9.5.1 Job Title

Project Manager

9.5.2 First Name

Steve

9.5.3 Last Name

Ellwood

9.5.4 E-mail

steve.ellwood@watercorporation.com.au

9.5.5 Postal Address

PO Box 100
Leederville WA 6007
Australia

9.5.6 ABN/ACN

ABN

28003434917 - WATER CORPORATION

9.5.7 Organisation Telephone

(089420 2793

9.5.8 Organisation E-mail

steve.ellwood@watercorporation.com.au

Proposed designated proponent - Declaration

I, PETER HARDING - PROJECT DIRECTOR, 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.

Australian Government
Department of the Environment and Energy

Signature:..... Date: 12/5/17

SIGNED FOR AND ON BEHALF OF STEVE ELLWOOD

9.6 Is the Referring Party an Organisation or Individual?

Organisation

9.8 Organisation

9.8.1 Job Title

Project Manager

9.8.2 First Name

Steve

9.8.3 Last Name

Ellwood

9.8.4 E-mail

steve.ellwood@watercorporation.com.au

9.8.5 Postal Address

PO Box 100
Leederville WA 6007
Australia

9.8.6 ABN/ACN

ABN

28003434917 - WATER CORPORATION

9.8.7 Organisation Telephone

(08) 9420 2793

9.8.8 Organisation E-mail

steve.ellwood@watercorporation.com.au

Referring Party - Declaration

Australian Government
Department of the Environment and Energy

I, PETER HARDING, 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: 12/5/17

SIGNED FOR AND ON BEHALF OF STEVE ELLWOOD

Australian Government
Department of the Environment and Energy

Appendix A - Attachments

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

1. 160652_rev0_revised_development_area_letter_20170407_opt_1.pdf
2. appendices_rev1_flora_fauna_report_20170407_opt_-.pdf
3. body_rev1_flora_fauna_report_20170407_opt.pdf
4. epbc_referral_figures.zip
5. hydrological_review_vdd_-_section_3.pdf
6. hydrological_review_vdd_-_section_4.pdf
7. hydrological_review_vdd_-_section_5.pdf
8. hydrological_review_vdd_section_1.pdf
9. hydrological_review_vdd_section_2_y.pdf
10. pm-6547166-v3a-pcy230_environment_policy.pdf
11. revised_project_area.zip
12. shapefiles.zip
13. significant_impact_criteria_for_black_cockatoo_rev0_20170407.pdf
14. significant_impact_criteria_for_western_ringtail_possum_rev0_20170407.pdf