

**Port of Gladstone
Gatcombe and Golding Cutting
Channel Duplication Project**

Environmental Impact Statement



Gladstone Ports Corporation
Growth, Prosperity, Community.

aurecon

**Appendix I3
Potential Project
impact on threatening
processes for conservation
significant and migratory
species and threatened
ecological communities**

Appendix I3

Potential Project impact on threatening processes for conservation significant and migratory species and threatened ecological communities

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Threatening processes for conservation significant and migratory species and Threatened Ecological Communities

Threatening processes which may lead to the progressive loss of conservation significant or migratory species, including ecologically significant habitat, or Threatened Ecological Communities have been assessed with regards to the potential Project impacts. Threatening processes for conservation significant and migratory species and Threatened Ecological Communities which have been confirmed to occur, or are considered to have a high or moderate likelihood of occurrence within the Project impact areas (refer Appendix I1 (Appendix B)), have been identified from the relevant species recovery plan, conservation listing advice and/or threat abatement plan.

The potential Project impacts which have been provided in the Project EIS (Chapter 9 (Nature Conservation)) have been assessed with regard to their potential contribution to the species threatening processes (refer Table I3.1). Potential Project impacts which will have a **very high** or **high level** of consequence on a value having a **very high** or **high** sensitivity rating are considered to have a residual impact on the species due to the level of impact consequence post implementation of mitigation measures.

Species and Threatened Ecological Communities for which potential Project impacts are considered to have a residual impact on a threatening process which may lead to the progressive loss of the species or ecologically significant habitat (refer Table 1) will be subject a significant residual adverse impact assessment. The significant residual adverse impact assessment is provided in the corresponding values impact assessment section (i.e. Project EIS (Chapter 9 (Nature Conservation))).

Table 1 Potential Project impact on threatening processes for conservation significant and migratory species and Threatened Ecological Communities

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
1 Intertidal and terrestrial flora species and TECs (Impact assessment provided in Project EIS, Section 9.5)								
1.1 <i>Bertya opponens</i> Conservation status: Vulnerable (EPBC Act)	<ul style="list-style-type: none"> Conservation Advice for <i>Bertya opponens</i> (TSSC 2016g) Recovery Plan for the <i>Bertya</i> sp. (Cobar-Coolabah) (NPWS 2002) Threat Abatement Plan for competition and land degradation by unmanaged goats (DEWHA 2008) 	<ul style="list-style-type: none"> Clearing Direct removal of seedlings and seedling cues 	<ul style="list-style-type: none"> The species has not been recorded within the Project direct impact areas (i.e. the species has not been recorded from database or literature sources or identified during EIS field investigations) The Project will not have a direct impact on the species 	Vegetation Management Plan Fauna Management Plan	No Loss of flora species = No direct loss	N/A	N/A	N/A
		<ul style="list-style-type: none"> Inappropriate fire regimes 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Grazing by feral goats 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Introduction of pest species into areas adjoining vehicle routes and the WB and WBE reclamation areas due to vehicle movements associated with the transport of reclamation bund wall material Stabilisation and maintenance activities – Introduction and/or spread of pest species into areas adjoining the WB and WBE reclamation areas during surface stabilisation and operational management works within the reclamation areas 	Pest and Weed Management Plan Vegetation Management Plan Fauna Management Plan	No	N/A	N/A	No
1.2 <i>Cycas megacarpa</i> (No common name) Conservation status: Endangered (EPBC Act and NC Act)	<ul style="list-style-type: none"> National Multi-species Recovery Plan for the cycads, <i>Cycas megacarpa</i>, <i>Cycas ophiolitica</i>, <i>Macrozamia cranei</i>, <i>Macrozamia lomandroides</i>, <i>Macrozamia pauli-guilielmi</i> and <i>Macrozamia platyrhachis</i> (Queensland Herbarium 2007) 	<ul style="list-style-type: none"> Destruction of habitat and individuals due to land clearing Loss of generic variation and insect pollinators 	<ul style="list-style-type: none"> The species has not been recorded within the Project direct impact areas (i.e. the species has not been recorded from database or literature sources or identified during EIS field investigations) The Project will not have a direct impact on the species 	Vegetation Management Plan Fauna Management Plan	No Loss of flora species = No direct loss	N/A	N/A	N/A
		<ul style="list-style-type: none"> Legal harvesting and commercial salvage 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	
		<ul style="list-style-type: none"> Illegal destruction and harvesting 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	
		<ul style="list-style-type: none"> Inappropriate fire regimes 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	
1.3 <i>Cycas ophiolitica</i> (Marlborough blue) Conservation status: Endangered (EPBC Act and NC Act)	<ul style="list-style-type: none"> National Multi-species Recovery Plan for the cycads, <i>Cycas megacarpa</i>, <i>Cycas ophiolitica</i>, <i>Macrozamia cranei</i>, <i>Macrozamia lomandroides</i>, <i>Macrozamia pauli-guilielmi</i> and <i>Macrozamia</i> 	<ul style="list-style-type: none"> Destruction of habitat and individuals due to land clearing Loss of generic variation and insect pollinators 	<ul style="list-style-type: none"> The species has not been recorded within the Project direct impact areas (i.e. the species has not been recorded from database or literature sources or identified during EIS field investigations) The Project will not have a direct impact on the species 	Vegetation Management Plan Fauna Management Plan	No Loss of flora species = No direct loss	N/A	N/A	N/A
		<ul style="list-style-type: none"> Legal harvesting and commercial salvage 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
	platyrhachis (Queensland Herbarium 2007)	<ul style="list-style-type: none"> Illegal destruction and harvesting Inappropriate fire regimes 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
1.4 <i>Dichanthium setosum</i> (Bluegrass) Conservation status: Vulnerable (EPBC Act)	<ul style="list-style-type: none"> Commonwealth Conservation Advice on <i>Dichanthium setosum</i> (Bluegrass) (TSSC 2008e) Commonwealth Listing Advice on <i>Dichanthium setosum</i> (Bluegrass) (TSSC 2010) Threat Abatement Plan for competition and land degradation by Rabbits (DEWHA 2008a) 	<ul style="list-style-type: none"> Heavy grazing by domestic stock 	<ul style="list-style-type: none"> Domestic grazing activities are not subject to the nature of Project activities 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Habitat loss due to clearing for pasture improvement and cropping Habitat loss and edge effects associated with road widening 	<ul style="list-style-type: none"> The species has not been recorded within the Project direct impact areas (i.e. the species has not been recorded from database or literature sources or identified during EIS field investigations) The Project will not have a direct impact on the species 	Vegetation Management Plan Fauna Management Plan	No Loss of flora species = No direct loss	N/A	N/A	N/A
		<ul style="list-style-type: none"> Inappropriate fire regimes 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Invasion by introduced grasses, such as Coolatai grass (<i>Hyparrhenia hirta</i>), Lippa (<i>Phyla canescens</i>) and African lovegrass (<i>Eragrostis curvula</i>) Grazing by rabbits 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Introduction of weed and/or pest species into areas adjoining vehicle routes and the WB and WBE reclamation areas due to vehicle movements associated with the transport of reclamation bund wall material Stabilisation and maintenance activities – Introduction and/or spread of weed and/or pest species into areas adjoining the WB and WBE reclamation areas during surface stabilisation and operational management works within the reclamation area 	Pest and Weed Management Plan Vegetation Management Plan Fauna Management Plan	No	N/A	N/A	No
1.5 <i>Germainia capitata</i> Conservation status: Vulnerable (EPBC Act and NC Act)	<ul style="list-style-type: none"> Commonwealth Conservation Advice on <i>Germainia capitata</i> (TSSC 2008) 	<ul style="list-style-type: none"> Clearing of Melaleuca wetland habitat Inappropriate agricultural practices in Melaleuca wetland habitat Modification of water flows in Melaleuca wetland habitat 	<ul style="list-style-type: none"> The species has not been recorded within the Project direct impact areas (i.e. the species has not been recorded from database or literature sources or identified during EIS field investigations) The Project will not have a direct impact on the species or areas of Melaleuca habitat 	Vegetation Management Plan Fauna Management Plan	No Loss of flora species and habitat = No direct loss	N/A	N/A	N/A
		<ul style="list-style-type: none"> Inappropriate fire regimes 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Invasive weeds, particularly exotic grasses 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Introduction of weed species into areas adjoining vehicle routes and the WB and WBE reclamation areas due to vehicle movements associated with the transport of reclamation bund wall material Stabilisation and maintenance activities – Introduction and/or spread of weed species into areas adjoining the WB and WBE reclamation areas during surface stabilisation and operational management works within the reclamation areas 	Pest and Weed Management Plan Vegetation Management Plan Fauna Management Plan	No	N/A	N/A	No
1.6 <i>Myrsine serpicicola</i> Conservation status: Endangered (NC Act)	<ul style="list-style-type: none"> There are no conservation advices, recovery plans or threat abatement plans for the species 	<ul style="list-style-type: none"> There is limited information available regarding the key threatening processes for <i>Myrsine serpicicola</i> Destruction of habitat and individuals due to land clearing is anticipated to be the key threat to the species 	<ul style="list-style-type: none"> The species has not been recorded within the Project direct impact areas (i.e. the species has not been recorded from database or literature sources or identified during EIS field investigations) The Project will not have a direct impact on the species 	Vegetation Management Plan Fauna Management Plan	No Loss of flora species = No direct loss	N/A	N/A	N/A

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
1.7 <i>Xylosma ovata</i> Conservation status: Near threatened (NC Act)	<ul style="list-style-type: none"> There are no conservation advices, recovery plans or threat abatement plans for the species 	<ul style="list-style-type: none"> There is limited information available regarding the key threatening processes for <i>Xylosma ovata</i> Destruction of habitat and individuals due to land clearing is anticipated to be the key threat to the species 	<ul style="list-style-type: none"> The species has not been recorded within the Project direct impact areas (i.e. the species has not been recorded from database or literature sources or identified during EIS field investigations) The Project will not have a direct impact on the species 	Vegetation Management Plan Fauna Management Plan	No Loss of flora species = No direct loss	N/A	N/A	N/A
1.8 Subtropical and temperate coastal saltmarsh Threatened Ecological Community Conservation status: Vulnerable (EPBC Act)	<ul style="list-style-type: none"> Conservation Advice for subtropical and temperate coastal saltmarsh (DSEWPAC 2013a) 	<ul style="list-style-type: none"> Clearing and fragmentation Land-claim/infilling Eutrophication Acid sulfate soils 	<ul style="list-style-type: none"> The TEC has not been recorded within the Project direct impact areas The Project will not have a direct impact on the TEC 	Vegetation Management Plan Fauna Management Plan	No	N/A	N/A	N/A
		<ul style="list-style-type: none"> Altered hydrology/tidal restriction 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Direct and permanent loss of TEC 	Vegetation Management Plan Fauna Management Plan	No	N/A	N/A	N/A
		<ul style="list-style-type: none"> Invasive species 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Introduction of pest species into areas adjoining vehicle routes and the WB and WBE reclamation areas due to vehicle movements associated with the transport of reclamation bund wall material Stabilisation and maintenance activities – Introduction and/or spread of pest species into areas adjoining the WB and WBE reclamation areas during surface stabilisation and operational management works within the reclamation areas 	Pest and Weed Management Plan Vegetation Management Plan Fauna Management Plan	No	N/A	N/A	No
		<ul style="list-style-type: none"> Climate change 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Dredging activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Removal and installation of navigational aids – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Stabilisation and maintenance activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation 	Air Quality Management Plan	No	No	No	No
		<ul style="list-style-type: none"> Mangrove encroachment 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Recreation 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Pollution/litter 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Smothering of coastal saltmarsh plants and introduction of contaminants from litter 	Vegetation Management Plan Water Quality Management Plan Waste Management Plan	No	N/A	N/A	N/A
		<ul style="list-style-type: none"> Grazing by domestic stock 	<ul style="list-style-type: none"> Domestic grazing activities are not subject to the nature of Project activities 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Insect control 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
<ul style="list-style-type: none"> Evaporative salt production and other mining 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A		

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
		<ul style="list-style-type: none"> Inappropriate fire regimes 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
1.9 Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community Conservation status: Endangered (EPBC Act)	<ul style="list-style-type: none"> Conservation advice (incorporating listing advice) for the Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community 	<ul style="list-style-type: none"> Clearing and fragmentation 	<ul style="list-style-type: none"> The TEC has not been recorded within the Project direct impact areas The Project will not have a direct impact on the TEC 	Vegetation Management Plan Fauna Management Plan	No	N/A	N/A	N/A
		<ul style="list-style-type: none"> Invasive species 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Introduction of pest species into areas adjoining vehicle routes and the WB and WBE reclamation areas due to vehicle movements associated with the transport of reclamation bund wall material Stabilisation and maintenance activities – Introduction and/or spread of pest species into areas adjoining the WB and WBE reclamation areas during surface stabilisation and operational management works within the reclamation areas 	Pest and Weed Management Plan Vegetation Management Plan Fauna Management Plan	No	N/A	N/A	No
		<ul style="list-style-type: none"> Impacts from agricultural activities, including grazing 	<ul style="list-style-type: none"> Domestic grazing or other agricultural activities are not subject to the nature of Project activities 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Changes to hydrology, including from flood mitigation and drainage works 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Direct and permanent loss of TEC 	Vegetation Management Plan Fauna Management Plan	No	N/A	N/A	N/A
		<ul style="list-style-type: none"> Inappropriate fire regimes 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Impacts resulting from recreational activity 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Climate change, particularly sea-level rise 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Dredging activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Removal and installation of navigational aids – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Stabilisation and maintenance activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation 	Air Quality Management Plan	No	No	No	No

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
2 Fish, sharks, rays and other marine reptile species (excluding marine turtles) (Impact assessment provided in Project EIS, Section 9.13)								
2.1 Estuary stingray (<i>Dasyatis fluviorum</i>) Conservation status: Near threatened (NC Act)	<ul style="list-style-type: none"> IUCN Red List of Threatened Species (Kyne et al 2016) Department of Environment and Science Estuary stingray species profile (DES 2017) 	<ul style="list-style-type: none"> Loss of estuarine wetlands Coastal development 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Loss and fragmentation of estuarine wetlands within the WB and WBE reclamation areas due to vegetation clearing and the placement of core, armour, earth material and geotextile fabric Establishment of the WBE reclamation area and BUF – Potential increase of edge effects to adjoining estuarine wetland environments, including the potential proliferation of invasive species Establishment of the WB and WBE reclamation areas – Hydrological and water quality impacts to adjoining wetland areas Dredging activities – Loss and fragmentation of estuarine wetlands within the area to be dredged Dredging activities – Potential impacts on estuarine wetland values due to the alteration of groundwater levels following placement of dredged material 	Vegetation Management Plan Fauna Management Plan Water Quality Management Plan	Yes	No	N/A	N/A
		<ul style="list-style-type: none"> Bycatch in commercial fisheries 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Persecution by shellfish farmers 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
2.2 Giant manta ray (<i>Manta birostris</i>) Conservation status: Migratory (EPBC Act)	<ul style="list-style-type: none"> Sharks and rays - A Vulnerability Assessment for the Great Barrier Reef (GBRMPA 2012) 	<ul style="list-style-type: none"> Commercial fishing 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Habitat modification through climate change 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Dredging activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Removal and installation of navigational aids – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Stabilisation and maintenance activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation 	Air Quality Management Plan	No	No	No	No
2.3 Great white shark (<i>Carcharodon carcharias</i>) Conservation status: Vulnerable, Migratory (EPBC Act)	<ul style="list-style-type: none"> Recovery Plan for the White Shark (<i>Carcharodon carcharias</i>) (DSEWPAC 2013) 	<ul style="list-style-type: none"> Mortality related to being caught accidentally (bycatch) or illegally (targeted) by commercial and recreational fisheries 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Mortality related to shark control activities such as beach meshing or drumlining (east coast population) 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
		<ul style="list-style-type: none"> Habitat modification 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Short-term decline in water quality in the marine environment Dredging activities – Short-term decline in water quality in the marine environment Dredging activities – Permanent loss and alteration of benthic habitat Stabilisation and maintenance activities – Short-term decline in water quality in the marine environment 	Acid Sulfate Soils Management Plan Vegetation Management Plan Fauna Management Plan Water Quality Management Plan Waste Management Plan	No	No	N/A	No
		<ul style="list-style-type: none"> Habitat modification through climate change 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Dredging activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Removal and installation of navigational aids – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Stabilisation and maintenance activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation 	Air Quality Management Plan	No	No	No	No
		<ul style="list-style-type: none"> Ecotourism, including cage diving. 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
2.4 Longfin mako (<i>Isurus paucus</i>) Conservation status: Migratory (EPBC Act)	<ul style="list-style-type: none"> There are no conservation advices, recovery plans or threat abatement plans for the species IUCN Red List of Threatened Species (Reardon et al 2006) 	<ul style="list-style-type: none"> Bycatch in fisheries 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
2.5 Porbeagle (<i>Lamna nasus</i>) Conservation status: Migratory (EPBC Act)	<ul style="list-style-type: none"> Sharks and rays - A Vulnerability Assessment for the Great Barrier Reef (GBRMPA 2012) 	<ul style="list-style-type: none"> Commercial fishing 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Habitat modification through climate change 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Dredging activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Removal and installation of navigational aids – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Stabilisation and maintenance activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation 	Air Quality Management Plan	No	No	No	No
		<ul style="list-style-type: none"> Declining water quality due to catchment run-off Coastal development 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Short-term decline in water quality in the marine environment Dredging activities – Short-term decline in water quality in the marine environment Dredging activities – Permanent loss and alteration of benthic habitat Stabilisation and maintenance activities – Short-term decline in water quality in the marine environment 	Acid Sulfate Soils Management Plan Vegetation Management Plan Fauna Management Plan Water Quality Management Plan Waste Management Plan	No	No	N/A	No

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
2.6 Reef manta ray (<i>Manta alfredi</i>) Conservation status: Migratory (EPBC Act), Vulnerable (NC Act)	<ul style="list-style-type: none"> Sharks and rays - A Vulnerability Assessment for the Great Barrier Reef (GBRMPA 2012) 	<ul style="list-style-type: none"> Commercial fishing 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Habitat modification through climate change 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Dredging activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Removal and installation of navigational aids – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Stabilisation and maintenance activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation 	Air Quality Management Plan	No	No	No	No
		<ul style="list-style-type: none"> Declining water quality due to catchment run-off Coastal development 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Short-term decline in water quality in the marine environment Dredging activities – Short-term decline in water quality in the marine environment Dredging activities – Permanent loss and alteration of benthic habitat Stabilisation and maintenance activities – Short-term decline in water quality in the marine environment 	Acid Sulfate Soils Management Plan Vegetation Management Plan Fauna Management Plan Water Quality Management Plan Waste Management Plan	No	No	N/A	No
2.7 Shortfin mako (<i>Isurus oxyrinchus</i>) Conservation status: Migratory (EPBC Act)	<ul style="list-style-type: none"> Listing Advice <i>Isurus oxyrinchus</i> (Shortfin mako shark) (TSSC 2014b) Sharks and rays - A Vulnerability Assessment for the Great Barrier Reef (GBRMPA 2012) 	<ul style="list-style-type: none"> Commercial fishing 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Habitat modification through climate change 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Dredging activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Removal and installation of navigational aids – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Stabilisation and maintenance activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation 	Air Quality Management Plan	No	No	No	No
		<ul style="list-style-type: none"> Declining water quality due to catchment run-off Coastal development 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Short-term decline in water quality in the marine environment Dredging activities – Short-term decline in water quality in the marine environment Dredging activities – Permanent loss and alteration of benthic habitat Stabilisation and maintenance activities – Short-term decline in water quality in the marine environment 	Acid Sulfate Soils Management Plan Vegetation Management Plan Fauna Management Plan Water Quality Management Plan Waste Management Plan	No	No	N/A	No

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
2.8 Whale shark (<i>Rhincodon typus</i>) Conservation status: Vulnerable, Migratory (EPBC Act)	<ul style="list-style-type: none"> Commonwealth Listing Advice on <i>Rhincodon typus</i> (Whale shark) (TSSC 2001c) Approved Conservation Advice for <i>Rhincodon typus</i> (Whale shark) (TSSC 2015e) 	<ul style="list-style-type: none"> Intentional and unintentional mortality from fishing outside of Australian waters 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Boat strike from large vessels 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Entrapment and direct contact with construction plant Dredging activities – Direct contact or entrapment with dredger Removal and installation of navigational aids – Direct contact with construction plant 	Fauna Management Plan	No	No	No	N/A
		<ul style="list-style-type: none"> Habitat disruption from mineral exploration, production and transportation 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Short-term decline in water quality in the marine environment Dredging activities – Short-term decline in water quality in the marine environment Dredging activities – Permanent loss and alteration of benthic habitat Stabilisation and maintenance activities – Short-term decline in water quality in the marine environment 	Acid Sulfate Soils Management Plan Vegetation Management Plan Fauna Management Plan Water Quality Management Plan Waste Management Plan	No	No	N/A	No
		<ul style="list-style-type: none"> Disturbance from domestic tourism operations 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Marine debris 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Injury and/or death as a result of ingestion or entanglement of waste materials and marine debris Dredging activities – Injury and/or death as a result of ingestion or entanglement of waste materials and marine debris 	Fauna Management Plan Water Quality Management Plan Waste Management Plan	No	No	N/A	N/A
		<ul style="list-style-type: none"> Habitat modification through climate change 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Dredging activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Removal and installation of navigational aids – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Stabilisation and maintenance activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation 	Air Quality Management Plan	No	No	No	No

3 Marine turtles (Impact assessment provided in Project EIS, Section 9.19)

3.1 Marine turtle species <ul style="list-style-type: none"> Loggerhead turtle (<i>Caretta caretta</i>); Conservation status: Endangered, Migratory (EPBC Act); Endangered (NC Act) Green turtle (<i>Chelonia mydas</i>); Conservation status: Vulnerable, Migratory (EPBC Act); Vulnerable (NC Act) 	<ul style="list-style-type: none"> “Recovery Plan for Marine Turtles in Australia” (DoEE 2017) “Threat abatement plan for the impacts of marine debris on vertebrate marine life” (DEWPAC 2009) Threat Abatement Plan for Predation by the European Red Fox (DEWHA 2008b) “Threat Abatement Plan for predation by feral cats” (DOE 2015a) 	<ul style="list-style-type: none"> Loss of habitat Coastal development 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Permanent loss and alteration of habitat (i.e. seagrass and algae foraging habitat) during site establishment activities at the WBE reclamation area and BUF Dredging activities – Permanent loss and alteration of habitat (i.e. seagrass and algae foraging habitat) during dredging activities 	Fauna Management Plan Vegetation Management Plan	Yes	No	N/A	N/A
		<ul style="list-style-type: none"> Deteriorating water quality Coastal development 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Short-term decline in water quality in the marine environment Dredging activities – Short-term decline in water quality in the marine environment Stabilisation and maintenance activities – Short-term decline in water quality in the marine environment 	Acid Sulfate Soils Management Plan Water Quality Management Plan	No	No	N/A	No

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
<ul style="list-style-type: none"> ■ Hawksbill turtle (<i>Eretmochelys imbricata</i>); Conservation status: Vulnerable, Migratory (EPBC Act); Endangered (NC Act) ■ Flatback turtle (<i>Natator depressus</i>); Conservation status: Vulnerable, Migratory (EPBC Act); Vulnerable (NC Act) 	<ul style="list-style-type: none"> ■ "Threat Abatement Plan for predation, habitat degradation, competition and disease transmission by feral pigs (<i>Sus scrofa</i>) (DoEE 2017a) 	<ul style="list-style-type: none"> ■ Acoustic and light disturbance to marine turtle species ■ Coastal development 	<ul style="list-style-type: none"> ■ Establishment of the WBE reclamation area and BUF – Generation of underwater noise potentially leading to the displacement of fauna ■ Dredging activities – Generation of underwater noise from dredging vessels and plant ■ Removal and installation of navigational aids – Generation of underwater noise from piling (installation) activities 	Noise and Vibration Management Plan	No	No	No	N/A
		<ul style="list-style-type: none"> ■ Unknown levels of harvest by indigenous Australians and unsustainable levels of harvest by people in neighbouring countries of the Asia/Pacific region ■ International take 	<ul style="list-style-type: none"> ■ Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> ■ Predation of turtle eggs by native and introduced animals 	<ul style="list-style-type: none"> ■ Project activities will not involve direct disturbance in areas within or adjacent to turtle nesting beaches. Any potential Project impact in regards to species predation vulnerability is considered negligible 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> ■ Vessel disturbance and strike 	<ul style="list-style-type: none"> ■ Establishment of the WBE reclamation area and BUF – Entrapment and direct contact with construction plant ■ Dredging activities – Potential vessel strike ■ Removal and installation of navigational aids – Direct contact with construction plant 	Fauna Management Plan	No	No	No	N/A
		<ul style="list-style-type: none"> ■ Bycatch of marine turtles in fisheries 	<ul style="list-style-type: none"> ■ Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> ■ Injury and fatality to vertebrate marine life caused by harmful marine debris 	<ul style="list-style-type: none"> ■ Establishment of the WBE reclamation area and BUF – Injury and/or death as a result of ingestion or entanglement of waste materials and marine debris ■ Dredging activities – Injury and/or death as a result of ingestion or entanglement of waste materials and marine debris 	Fauna Management Plan Waste Management Plan	No	No	N/A	N/A
		<ul style="list-style-type: none"> ■ Climate variability and change 	<ul style="list-style-type: none"> ■ Establishment of the WBE reclamation area and BUF – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation ■ Dredging activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation ■ Removal and installation of navigational aids – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation ■ Stabilisation and maintenance activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation 	Air Quality Management Plan	No	No	No	No
		<ul style="list-style-type: none"> ■ Disease and pathogens 	<ul style="list-style-type: none"> ■ Establishment of the WBE reclamation area and BUF – Short-term decline in water quality in the marine environment ■ Dredging activities – Short-term decline in water quality in the marine environment ■ Stabilisation and maintenance activities – Short-term decline in water quality in the marine environment 	Acid Sulfate Soils Management Plan Water Quality Management Plan	No	No	N/A	No
		<ul style="list-style-type: none"> ■ Recreational activities 	<ul style="list-style-type: none"> ■ Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
4 Marine mammals (Impact assessment provided in Project EIS, Section 9.21)								
4.1 Dugong (<i>Dugong dugon</i>) Conservation status: Migratory (EPBC Act), Vulnerable (NC Act)	<ul style="list-style-type: none"> The Action Plan for Australian Mammals 2012 (Woinarski et al 2014) 'Threat abatement plan for the impacts of marine debris on vertebrate marine life' (DEWPAC 2009) 	<ul style="list-style-type: none"> Habitat degradation, including coastal development, port expansion and aquaculture 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Permanent loss and alteration of habitat (i.e. seagrass and algae foraging habitat) Dredging activities – Permanent loss and alteration of habitat (i.e. seagrass and algae foraging habitat) 	Water Quality Management Plan Vegetation Management Plan Fauna Management Plan	Yes	No	N/A	N/A
		<ul style="list-style-type: none"> Injury and fatality caused by harmful marine debris 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Injury and/or death as a result of ingestion or entanglement of waste materials and marine debris Dredging activities – Injury and/or death as a result of ingestion or entanglement of waste materials and marine debris 	Fauna Management Plan Waste Management Plan	No	No	N/A	N/A
		<ul style="list-style-type: none"> Entanglement and incidental bycatch in fisheries gear 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Entanglement in shark netting 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Indigenous hunting 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Vessel strike 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Injury and/or death as a result direct contact with construction plant Dredging activities – Injury and/or death as a result direct contact with dredging vessels and plant Removal and installation of navigational aids – Direct contact with construction plant 	Fauna Management Plan	No	No	No	N/A
		<ul style="list-style-type: none"> Anthropogenic noise and acoustic disturbance 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Generation of underwater noise potentially leading to the displacement of fauna Dredging activities – Generation of underwater noise from dredging vessels and plant Removal and installation of navigational aids – Generation of underwater noise from piling (installation) activities 	Noise and Vibration Management Plan Fauna Management Plan	No	No	No	N/A
		<ul style="list-style-type: none"> Climate variability and change 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Dredging activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Removal and installation of navigational aids – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Stabilisation and maintenance activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation 	Air Quality Management Plan	No	No	No	No

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
4.2 Australian humpback dolphin (<i>Sousa sahulensis</i>) Conservation status: Migratory (EPBC Act), Vulnerable (NC Act)	<ul style="list-style-type: none"> Indo-Pacific humpback and Australian snubfin dolphins - A Vulnerability Assessment for the Great Barrier Reef (GBRMPA 2011) The Action Plan for Australian Cetaceans (Bannister et al 1996) 	<ul style="list-style-type: none"> Direct loss of habitat (i.e. from coastal development) 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Permanent loss and alteration of habitat Dredging activities – Permanent loss and alteration of habitat 	Water Quality Management Plan Vegetation Management Plan Fauna Management Plan Waste Management Plan	Yes	Yes	N/A	N/A
		<ul style="list-style-type: none"> Commercial fishing (including entanglement in fishing nets and lines, bycatch, vessel strike, competition for prey resources) 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Oil spills 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Potential release of contaminants (eg spills and waste materials) during site establishment works Dredging activities – Potential release of contaminants (eg spills and waste materials) during dredging activities Stabilisation and maintenance activities – Potential short-term decline of water quality in the marine environment 	Water Quality Management Plan Vegetation Management Plan Fauna Management Plan Waste Management Plan	No	No	N/A	No
		<ul style="list-style-type: none"> Vessel strike 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Injury and/or death as a result direct contact with construction plant Dredging activities – Injury and/or death as a result direct contact with dredging vessels and plant Removal and installation of navigational aids – Direct contact with construction plant 	Fauna Management Plan	No	No	No	N/A
		<ul style="list-style-type: none"> Acoustic disturbance from ports and shipping activities 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Generation of underwater noise potentially leading to the displacement of fauna Dredging activities – Generation of underwater noise from dredging vessels and plant Removal and installation of navigational aids – Generation of underwater noise from piling (installation) activities 	Noise and Vibration Management Plan Fauna Management Plan	No	No	No	N/A
		<ul style="list-style-type: none"> Habitat modification through climate change 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Dredging activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Removal and installation of navigational aids – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Stabilisation and maintenance activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation 	Air Quality Management Plan	No	No	No	No
		<ul style="list-style-type: none"> Declining water quality due to catchment run-off 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF– Potential release of contaminants (eg spills and waste materials) during site establishment works Dredging activities – Potential release of contaminants (eg spills and waste materials) during dredging activities Stabilisation and maintenance activities – Potential short-term decline of water quality in the marine environment 	Water Quality Management Plan Vegetation Management Plan Fauna Management Plan Waste Management Plan	No	No	N/A	No

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
4.3 Whale species <ul style="list-style-type: none"> Humpback whale (<i>Megaptera novaeangliae</i>); Conservation status: Vulnerable, Migratory (EPBC Act), Vulnerable (NC Act) 	<ul style="list-style-type: none"> The Action Plan for Australian Cetaceans (Bannister et al 1996) Threat abatement plan for the impacts of marine debris on vertebrate marine life (DEWPAC 2009) Approved Conservation Advice for <i>Megaptera novaeangliae</i> (Humpback whale) (TSSC 2015c) 	<ul style="list-style-type: none"> Habitat modification through climate change 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Dredging activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Removal and installation of navigational aids – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Stabilisation and maintenance activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation 	Air Quality Management Plan	No	No	No	No
		<ul style="list-style-type: none"> Commercial whaling 	<ul style="list-style-type: none"> Not relevant to the nature of Project activities 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Entanglement and bycatch in fishing nets and long-lines 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Noise interference (i.e. seismic surveys, acute and chronic industrial noise, shipping noise, aircraft noise) 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Generation of underwater noise potentially leading to the displacement of fauna Dredging activities – Generation of underwater noise from dredging vessels and plant Removal and installation of navigational aids – Generation of underwater noise from piling (installation) activities 	Noise and Vibration Management Plan Fauna Management Plan	No	No	No	N/A
		<ul style="list-style-type: none"> Vessel strike 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Injury and/or death as a result direct contact with construction plant Dredging activities – Injury and/or death as a result direct contact with dredging vessels and plant Removal and installation of navigational aids – Direct contact with construction plant 	Fauna Management Plan	No	No	No	N/A
		<ul style="list-style-type: none"> Overharvesting of prey (i.e. competition with commercial fisheries) 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Oil spills and acute/chronic chemical discharge 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Potential release of contaminants (eg spills and waste materials) during site establishment works Dredging activities – Potential release of contaminants (eg spills and waste materials) during dredging activities Stabilisation and maintenance activities – Potential short-term decline of water quality in the marine environment 	Water Quality Management Plan Vegetation Management Plan Fauna Management Plan Waste Management Plan	No	No	N/A	No
		<ul style="list-style-type: none"> Wildlife tourism (ie feeding wild dolphins, whale watching) 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
<ul style="list-style-type: none"> Injury and fatality to vertebrate marine life caused by harmful marine debris 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Injury and/or death as a result of ingestion or entanglement of waste materials and marine debris Dredging activities – Injury and/or death as a result of ingestion or entanglement of waste materials and marine debris 	Fauna Management Plan Waste Management Plan	No	No	N/A	N/A		

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?						
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities			
5 Conservation significant and/or migratory shorebirds, seabirds and aerial bird species (Impact assessment provided in Project EIS, Section 9.17)											
5.1 Conservation significant shorebirds <ul style="list-style-type: none"> ■ Bar-tailed godwit (<i>Limosa lapponica baueri</i>); Conservation status: Vulnerable and Migratory (EPBC Act); Vulnerable (NC Act) ■ Great knot (<i>Calidris tenuirostris</i>); Conservation status: Critically endangered and Migratory (EPBC Act); Endangered (NC Act) ■ Greater sand plover (<i>Charadrius leschenaultii</i>); Conservation status: Vulnerable and Migratory (EPBC Act); Vulnerable (NC Act) ■ Lesser sand plover (<i>Charadrius mongolus</i>); Endangered and Migratory (EPBC Act); Endangered (NC Act) ■ Northern Siberian bar-tailed godwit (<i>Limosa lapponica menzbieri</i>); Conservation status: Critically endangered and Migratory (EPBC Act); Endangered (NC Act) ■ Red knot (<i>Calidris canutus</i>); Conservation status: Endangered and Migratory (EPBC Act); Endangered (NC Act) ■ Curlew sandpiper (<i>Calidris ferruginea</i>); Conservation status: Critically endangered and Migratory (EPBC Act); Endangered (NC Act) ■ Eastern curlew (<i>Numenius madagascariensis</i>); Conservation status: Critically endangered and Migratory (EPBC Act); Endangered (NC Act) ■ <i>Ardenna pacifica</i> (Wedge-tailed shearwater); 	<ul style="list-style-type: none"> ■ Commonwealth Conservation Advice on <i>Limosa lapponica baueri</i> (Bar-tailed godwit) (TSSC 2016a) ■ Approved Conservation Advice for <i>Calidris tenuirostris</i> (Great knot) (TSSC 2016b) ■ Approved Conservation Advice for <i>Limosa lapponica menzbieri</i> (Northern Siberian bar-tailed godwit) (TSSC 2016c) ■ Approved Conservation Advice for <i>Calidris canutus</i> (Red knot) (TSSC 2016d) ■ Approved Conservation Advice for <i>Calidris ferruginea</i> (Curlew Sandpiper)" (TSSC 2015a) ■ Approved Conservation Advice for <i>Charadrius mongolus</i> (Lesser sand plover) (TSSC 2016e) ■ Approved Conservation Advice for <i>Charadrius leschenaultii</i> (Greater sand plover) (TSSC 2016f) ■ Approved Conservation Advice for <i>Numenius madagascariensis</i> (Eastern Curlew) (TSSC 2015b) ■ Wildlife Conservation Plan for Migratory Shorebirds (DoE 2015b) ■ Threat abatement plan for the impacts of marine debris on vertebrate marine life (DEWPAC 2009) ■ Threat Abatement Plan for Predation by the European Red Fox (DEWHA 2008b) ■ "Threat Abatement Plan for predation by feral cats" (DOE 2015a) 	<ul style="list-style-type: none"> ■ Habitat loss and habitat modification, including impacts from changes in water regimes ■ Pollution/contamination 	<ul style="list-style-type: none"> ■ Establishment of the WBE reclamation area and BUF – Direct and permanent loss of habitat ■ Establishment of the WBE reclamation area and BUF– Hydrological and water quality impacts resulting in alteration to habitat quality ■ Establishment of the WBE reclamation area and BUF– Contaminant and sediment releases resulting in impacts on habitat ■ Establishment of the WBE reclamation area and BUF – Injury and/or death as a result of ingestion or entanglement of waste materials and marine debris ■ Dredging activities – Loss of food sources and prey items as a result of dredging activities ■ Dredging activities – Potential mobilisation of contaminants in the plume from area to be dredged ■ Dredging activities – Accidental release of contaminants (eg spills and waste materials) during dredging activities ■ Dredging activities – Release of contaminants due to failure of reclamation bund wall and release of fine sediments ■ Dredging activities – Erosion and sedimentation impacts ■ Stabilisation and maintenance activities – Erosion and sedimentation of material within the final landform and excessive deposition of dust resulting in decreased water quality 	Vegetation Management Plan Fauna Management Plan Water Quality Management Plan Waste Management Plan	Yes	Yes	N/A	No			
					<ul style="list-style-type: none"> ■ Human disturbance of feeding and roosting behaviours 	<ul style="list-style-type: none"> ■ Establishment of the WBE reclamation area and BUF – Disturbance as a result of increased noise, dust and/or vibration ■ Dredging activities – Disturbance as a result of increased noise, dust and/or vibration ■ Removal and installation of navigational aids – Generation of underwater noise from piling (installation) activities 	Fauna Management Plan Noise and Vibration Management Plan	Yes	Yes	No	N/A
					<ul style="list-style-type: none"> ■ Habitat modification through climate change 	<ul style="list-style-type: none"> ■ Establishment of the WBE reclamation area and BUF – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation ■ Dredging activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation ■ Removal and installation of navigational aids – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation ■ Stabilisation and maintenance activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation 	Air Quality Management Plan	No	No	No	No
					<ul style="list-style-type: none"> ■ Direct mortality 	<ul style="list-style-type: none"> ■ Establishment of the WBE reclamation area and BUF – Injury and/or death as a result direct contact with construction plant ■ Dredging activities – Injury and/or death as a result direct contact with dredging vessels and plant ■ Removal and installation of navigational aids - injury and/or death as a result direct contact with construction vessels 	Vegetation Management Plan Fauna Management Plan	Yes	Yes	No	N/A

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
Conservation status: Migratory (Jamba) (EPBC Act); Vulnerable (NC Act)		<ul style="list-style-type: none"> Habitat loss and habitat degradation from invasive plants and predation by feral animals Diseases 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Reduced suitability of habitat due to the introduction and/or spread of introduced species Dredging activities – Reduced suitability of habitat due to the introduction and/or spread of introduced species Stabilisation and maintenance activities – Introduction and/or spread of introduced species into areas adjoining vehicle routes within the final landform area due to vehicle movements associated with the rehabilitation and operational maintenance 	Pest and Weed Management Plan Fauna Management Plan	No	No	N/A	No
5.2 Migratory shorebirds <ul style="list-style-type: none"> Bar-tailed godwit (<i>Limosa lapponica</i>) Black-tailed godwit (<i>Limosa limosa</i>) Broad-billed sandpiper (<i>Limicola falcinellus</i>) Common greenshank (<i>Tringa nebularia</i>) Common sandpiper (<i>Actitis hypoleucos</i>) Double-banded plover (<i>Charadrius bicinctus</i>) Grey plover (<i>Pluvialis squatarola</i>) Grey-tailed tattler (<i>Tringa brevipes</i>) Wandering tattler (<i>Tringa incana</i>) Little curlew (<i>Numenius minutus</i>) Marsh sandpiper (<i>Tringa stagnatilis</i>) Pacific golden plover (<i>Pluvialis fulva</i>) Red-necked stint (<i>Calidris ruficollis</i>) Ruddy turnstone (<i>Arenaria interpres</i>) Sharp-tailed sandpiper (<i>Calidris acuminata</i>) Terek sandpiper (<i>Xenus cinereus</i>) Whimbrel (<i>Numenius phaeopus</i>) Pectoral sandpiper (<i>Calidris melanotos</i>) Sanderling (<i>Calidris alba</i>) 	<ul style="list-style-type: none"> Wildlife Conservation Plan for Migratory Shorebirds (DoE 2015b) Threat Abatement Plan for Predation by the European Red Fox (DEWHA 2008b) 	<ul style="list-style-type: none"> Habitat loss and modification 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Direct and permanent loss of habitat 	Vegetation Management Plan Fauna Management Plan	Yes	N/A	N/A	N/A
		<ul style="list-style-type: none"> Habitat modification via chronic and acute pollution 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Hydrological and water quality impacts resulting in alteration to habitat quality Establishment of the WBE reclamation area – and BUF Contaminant and sediment releases resulting in impacts on habitat Establishment of the WBE reclamation area and BUF – Injury and/or death as a result of ingestion or entanglement of waste materials and marine debris Dredging activities – Loss of food sources and prey items as a result of dredging activities Dredging activities – Potential mobilisation of contaminants in the plume from area to be dredged Dredging activities – Accidental release of contaminants (eg spills and waste materials) during dredging activities Dredging activities – Release of contaminants due to failure of reclamation bund wall and release of fine sediments Dredging activities – Erosion and sedimentation impacts Stabilisation and maintenance activities – Erosion and sedimentation of material within the final landform and excessive deposition of dust resulting in decreased water quality 	Fauna Management Plan Water Quality Management Plan Vegetation Management Plan Waste Management Plan	Yes	No	N/A	No
		<ul style="list-style-type: none"> Anthropogenic disturbance 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Disturbance as a result of increased noise, dust and/or vibration Establishment of the WBE reclamation area and BUF – Injury and/or death as a result direct contact with construction plant Dredging activities – Disturbance as a result of increased noise, dust and/or vibration Dredging activities – Injury and/or death as a result direct contact with dredging vessels and plant Removal and installation of navigational aids – Generation of underwater noise from piling (installation) activities Removal and installation of navigational aids – Injury and/or death as a result direct contact with construction vessels 	Fauna Management Plan Noise and Vibration Management Plan Vegetation Management Plan	Yes	No	No	N/A

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
		<ul style="list-style-type: none"> Habitat modification through climate change 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Dredging activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Removal and installation of navigational aids – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Stabilisation and maintenance activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation 	Air Quality Management Plan	No	No	No	No
		<ul style="list-style-type: none"> Fisheries by-catch 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Hunting Harvesting of shorebird prey 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Predation by the European Red Fox 	<ul style="list-style-type: none"> Establishment of the WBE reclamation are and BUF a – Reduced suitability of migratory shorebird habitat due to the introduction and/or spread of introduced species Dredging activities –Reduced suitability of migratory shorebird habitat due to the introduction and/or spread of introduced species Stabilisation and maintenance activities – Introduction and/or spread of introduced species into areas adjoining vehicle routes within the final landform area due to vehicle movements associated with the rehabilitation and operational maintenance 	Pest and Weed Management Plan Fauna Management Plan	No	No	N/A	No
5.3 Albatross species <ul style="list-style-type: none"> Black-browed albatross (<i>Thalassarche melanophrys</i>); Conservation status: Vulnerable, Migratory (EPBC Act) Campbell albatross (<i>Thalassarche impavida</i>); Conservation status: Vulnerable, Migratory (EPBC Act) Chatham albatross (<i>Thalassarche eremita</i>); Conservation status: Endangered, Migratory (EPBC Act) Salvin's albatross (<i>Thalassarche salvinii</i>); Conservation status: 	<ul style="list-style-type: none"> Commonwealth Listing Advice on Black-browed Albatross (<i>Thalassarche melanopris</i>) (TSSC 2005) National recovery plan for threatened albatrosses and giant petrels 2011-2016 (DSEWPAC 2011a) Threat Abatement Plan 2014 for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations (DoE 2014) Threat abatement plan to reduce the impacts of exotic rodents on biodiversity on Australian offshore islands of 	<ul style="list-style-type: none"> Incidental catch of seabirds resulting from fishing operations, including direct mortality or injury associated with oceanic longline fishing in the Australian Fishing Zone Competition with fisheries for marine resources Dependence on discards from fisheries Ingestion of and/or entanglement with marine debris 	<ul style="list-style-type: none"> The Project works will not involve fishing operations. The species has the potential to be disturbed by humans due to vehicle collision Establishment of the WBE reclamation area and BUF – Injury and/or death as a result direct contact with construction plant Dredging activities – Injury and/or death as a result direct contact with dredging vessels and plant Removal and installation of navigational aids - injury and/or death as a result direct contact with construction vessels Not relevant to the nature of the Project activities. The Project will not contribute to this species threat Not relevant to the nature of the Project activities. The Project will not contribute to this species threat Establishment of the WBE reclamation area and BUF – Injury and/or death as a result of ingestion or entanglement of waste materials and marine debris 	Vegetation Management Plan Fauna Management Plan	Yes	Yes	No	N/A
		<ul style="list-style-type: none"> Competition with fisheries for marine resources 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Dependence on discards from fisheries 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Ingestion of and/or entanglement with marine debris 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Injury and/or death as a result of ingestion or entanglement of waste materials and marine debris 	Fauna Management Plan Waste Management Plan	Yes	N/A	N/A	N/A

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
Vulnerable, Migratory (EPBC Act) <ul style="list-style-type: none"> Shy albatross (<i>Thalassarche cauta cauta</i>); Conservation status: Vulnerable, Migratory (EPBC Act); Vulnerable (NC Act) Sooty albatross (<i>Phoebastria fusca</i>); Conservation status: Migratory (EPBC Act), Light-mantled sooty albatross (<i>Phoebastria palpebrata</i>); Conservation status: Migratory (Bonn) (EPBC Act) White-capped albatross (<i>Thalassarche cauta steadi</i>); Conservation status: Vulnerable, Migratory (EPBC Act), Vulnerable (NC Act) 	less than 100 000 hectares (DSEWPAC 2009a)	<ul style="list-style-type: none"> Habitat modification through climate change 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Dredging activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Removal and installation of navigational aids – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Stabilisation and maintenance activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation 	Air Quality Management Plan	No	No	No	No
		<ul style="list-style-type: none"> Intentional shooting/killing 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Feral pest species including exotic rodents Parasites and diseases 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Reduced suitability of habitat due to the introduction and/or spread of introduced species Dredging activities – Reduced suitability of habitat due to the introduction and/or spread of introduced species Stabilisation and maintenance activities – Introduction and/or spread of introduced species into areas adjoining vehicle routes within the final landform area due to vehicle movements associated with the rehabilitation and operational maintenance 	Pest and Weed Management Plan Fauna Management Plan	No	No	N/A	No
		<ul style="list-style-type: none"> Human disturbance at the nest sites Loss of nesting habitat Competition for nest space 	<ul style="list-style-type: none"> The species do not nest within proximity to the Project impact areas. The Project activities will not directly or indirectly impact on the species nesting habitat 	N/A	N/A	N/A	N/A	N/A
5.4 Petrel species <ul style="list-style-type: none"> Kermadec petrel [western] (<i>Pterodroma neglecta neglecta</i>); Conservation status: Vulnerable (EPBC Act) Southern giant-petrel (<i>Macronectes giganteus</i>); Conservation status: Endangered, Migratory (EPBC Act), Endangered (NC Act) White bellied storm petrel (<i>Fregetta grallaria</i>); Conservation status: Vulnerable (EPBC Act) Wilson's storm-petrel (<i>Oceanites oceanicus</i>); Conservation status: Migratory (JAMBA) (EPBC Act) 	<ul style="list-style-type: none"> National recovery plan for threatened albatrosses and giant petrels 2011-2016 (DSEWPAC 2011a) Commonwealth Listing Advice on <i>Macronectes giganteus</i> (Southern giant-petrel) (TSSC 2001b) Threat abatement plan to reduce the impacts of exotic rodents on biodiversity on Australian offshore islands of less than 100 000 hectares (DSEWPAC 2009a) Threat Abatement Plan 2014 for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations (DoE 2014) Lord Howe Island Biodiversity Management Plan (DECC 2007) 	<ul style="list-style-type: none"> Anthropogenic threats on Lord Howe Island where the Kermadec petrel breeds 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Threatening processes on Norfolk Island including habitat loss, pathogens and invasive species 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Incidental catch of seabirds resulting from fishing operations, including direct mortality or injury associated with oceanic longline fishing in the Australian Fishing Zone 	<ul style="list-style-type: none"> The nature of Project works will not fishing operations. The species has the potential to be disturbed by humans due to vehicle collision Establishment of the WBE reclamation area and BUF – Injury and/or death as a result direct contact with construction plant Dredging activities – Injury and/or death as a result direct contact with dredging vessels and plant Removal and installation of navigational aids - injury and/or death as a result direct contact with construction vessels 	Vegetation Management Plan Fauna Management Plan	Yes	Yes	No	N/A
		<ul style="list-style-type: none"> Competition with fisheries for marine resources 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Dependence on discards from fisheries 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Ingestion of and/or entanglement with marine debris 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Injury and/or death as a result of ingestion or entanglement of waste materials and marine debris 	Pest and Weed Management Plan Fauna Management Plan	Yes	N/A	N/A	N/A

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
		<ul style="list-style-type: none"> Climate change 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Dredging activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Removal and installation of navigational aids – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Stabilisation and maintenance activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation 	Air Quality Management Plan	No	No	No	No
		<ul style="list-style-type: none"> Intentional shooting/killing 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Loss and competition for nesting habitat Disturbance of breeding sites associated with development and human visitation 	<ul style="list-style-type: none"> The species do not nest within proximity to the Project impact areas. The Project activities will not directly or indirectly impact on the species nesting habitat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Predation by introduced species Parasites and diseases 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Reduced suitability of habitat due to the introduction and/or spread of introduced species Dredging activities – Reduced suitability of habitat due to the introduction and/or spread of introduced species Stabilisation and maintenance activities – Introduction and/or spread of introduced species into areas adjoining vehicle routes within the final landform area due to vehicle movements associated with the rehabilitation and operational maintenance 	Pest and Weed Management Plan Fauna Management Plan	No	No	N/A	No
5.5 Shearwater species <ul style="list-style-type: none"> Flesh-footed shearwater (<i>Ardenna carneipes</i>) Conservation status: Migratory (JAMBA, ROKAMBA) (EPBC Act) Short-tailed shearwater (<i>Ardenna tenuirostris</i>) Conservation status: Migratory (JAMBA, ROKAMBA) (EPBC Act) Sooty shearwater (<i>Ardenna grisea</i>) Conservation status: Migratory (JAMBA) (EPBC Act) 	<ul style="list-style-type: none"> Commonwealth Listing Advice on <i>Ardenna carneipes</i> (Flesh-footed shearwater) (TSSC 2014a) Threat Abatement Plan 2014 for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations (DoE 2014) Threat abatement plan for Predation by the European Red Fox (DEWHA 2008b) Threat abatement plan to reduce the impacts of exotic rodents on biodiversity on Australian offshore islands of less than 100 000 hectares (DSEWPAC 2009a) Threat Abatement Plan for predation by feral cats (DOE 2015a) 	<ul style="list-style-type: none"> Direct mortality or injury associated with oceanic longline fishing in the Australian Fishing Zone Direct mortality or injury associated with trawl and gillnet fisheries 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Over-extraction of prey species by fisheries and dependence on fishery discards 	<ul style="list-style-type: none"> The nature of Project works will not involve trawl and gillnet fisheries. The species has the potential to be disturbed by humans due to vehicle collision Establishment of the WBE reclamation area and BUF – Injury and/or death as a result direct contact with construction plant Dredging activities – Injury and/or death as a result direct contact with dredging vessels and plant Removal and installation of navigational aids - injury and/or death as a result direct contact with construction vessels Mortality or injury of shearwater species as a result of fishing operations is not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	Vegetation Management Plan Fauna Management Plan	No	No	No	N/A
			<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
		<ul style="list-style-type: none"> Predation pressures from introduced species Exposure to avian parasites and disease 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Reduced suitability of habitat due to the introduction and/or spread of introduced species Dredging activities –Reduced suitability of habitat due to the introduction and/or spread of introduced species Stabilisation and maintenance activities – Introduction and/or spread of introduced species into areas adjoining vehicle routes within the final landform area due to vehicle movements associated with the rehabilitation and operational maintenance 	Pest and Weed Management Plan Fauna Management Plan	No	No	N/A	No
5.6 Common noddy (<i>Anous stolidus</i>) Conservation status: Migratory (CAMBA, JAMBA) (EPBC Act)	<ul style="list-style-type: none"> Threat Abatement Plan for predation by feral cats (DOE 2015a) 	<ul style="list-style-type: none"> Predation, in particular by Feral cats and foxes 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Reduced suitability of habitat due to the introduction and/or spread of introduced species Dredging activities –Reduced suitability of habitat due to the introduction and/or spread of introduced species Stabilisation and maintenance activities – Introduction and/or spread of introduced species into areas adjoining vehicle routes within the final landform area due to vehicle movements associated with the rehabilitation and operational maintenance 	Pest and Weed Management Plan Fauna Management Plan	No	No	N/A	No
5.7 Tern species Little tern (<i>Sterna albifrons</i>) Conservation status: Migratory (Bonn, CAMBA, JAMBA, ROKAMBA) (EPBC Act) White-winged black tern (<i>Chlidonias leucopterus</i>) Conservation status: Migratory (CAMBA, JAMBA, ROKAMBA) (EPBC Act) Gull-billed tern (<i>Gelochelidon nilotica</i>) Conservation status: Migratory (CAMBA) (EPBC Act) Caspian tern (<i>Hydroprogne caspia</i>) Conservation status: Migratory (CAMBA) (EPBC Act) Bridled tern (<i>Onychoprion anaethetus</i>) Conservation status: Migratory (CAMBA, JAMBA) (EPBC Act) Roseate tern (<i>Sterna dougalli</i>) Conservation status: Migratory (CAMBA, JAMBA) (EPBC Act) Common tern (<i>Sterna hirundo</i>)	Commonwealth Listing Advice on <i>Sterna albifrons sinensis</i> (Little Tern (western Pacific)) (TSSC 2001a) Threat Abatement Plan for predation by feral cats (DOE 2015a) Threat Abatement Plan for Predation by the European Red Fox (DEWHA 2008b)	<ul style="list-style-type: none"> Loss or degradation of estuarine habitats (ie through development or changes to estuarine morphology and hydrology) Anthropogenic disturbance of nesting sites Potential or actual impacts on the quantity and quality of food supplies (ie through pesticide residues and other pollutants, over-fishing, and oiling of both birds and beaches) 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Direct and permanent loss of habitat Establishment of the WBE reclamation area and BUF – Hydrological and water quality impacts resulting in alteration to habitat quality Establishment of the WBE reclamation area and BUF – Contaminant and sediment releases resulting in impacts on habitat Establishment of the WBE reclamation area and BUF – Injury and/or death as a result of ingestion or entanglement of waste materials and marine debris Dredging activities – Loss of food sources and prey items as a result of dredging activities Dredging activities – Potential mobilisation of contaminants in the plume from area to be dredged Dredging activities – Accidental release of contaminants (eg spills and waste materials) during dredging activities Dredging activities – Release of contaminants due to failure of reclamation bund wall and release of fine sediments Dredging activities – Erosion and sedimentation impacts Stabilisation and maintenance activities – Erosion and sedimentation of material within the final landform and excessive deposition of dust resulting in decreased water quality 	Vegetation Management Plan Fauna Management Plan Fauna Management Plan Vegetation Management Plan Water Quality Management Plan Waste Management Plan	Yes	N/A	N/A	N/A
					Yes	No	N/A	No

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
<p>Conservation status: Migratory (CAMBA, JAMBA, ROKAMBA) (EPBC Act)</p> <p>Black-naped tern (<i>Sterna sumatrana</i>) Conservation status: Migratory (CAMBA, JAMBA) (EPBC Act)</p> <p>Crested tern (<i>Thalasseus bergii</i>) Conservation status: Migratory (JAMBA) (EPBC Act)</p>		<ul style="list-style-type: none"> Predation, in particular by Feral cats and foxes 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Reduced suitability of habitat due to the introduction and/or spread of introduced species Dredging activities –Reduced suitability of habitat due to the introduction and/or spread of introduced species Stabilisation and maintenance activities – Introduction and/or spread of introduced species into areas adjoining vehicle routes within the final landform area due to vehicle movements associated with the rehabilitation and operational maintenance 	<p>Pest and Weed Management Plan</p> <p>Fauna Management Plan</p>	No	No	N/A	No
<p>5.8 Frigatebird species</p> <ul style="list-style-type: none"> Lesser frigatebird (<i>Fregata ariel</i>) Conservation status: Migratory (CAMBA, JAMBA, ROKAMBA) (EPBC Act) Giant frigatebird (<i>Fregata minor</i>) Conservation status: Migratory (CAMBA, JAMBA, ROKAMBA) (EPBC Act) 	<ul style="list-style-type: none"> The DoEE SPRAT species profiles for the Lesser frigatebird and the Giant frigatebird do not identify any approved recovery plans, conservation advice or listing advice documents for the species Offshore and foraging pelagic seabirds - A Vulnerability Assessment for the Great Barrier Reef (DSEWPac 2012b) 	<ul style="list-style-type: none"> Loss and disturbance of habitat, including coastal development 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Direct and permanent loss of habitat 	<p>Vegetation Management Plan</p> <p>Fauna Management Plan</p>	Yes	N/A	N/A	N/A
		<ul style="list-style-type: none"> Disturbance by humans due to uncontrolled tourism activities and recreational activities within areas of habitat 	<ul style="list-style-type: none"> The nature of Project works will not involve tourism or recreational activities. The species has the potential to be disturbed by humans due to vehicle collision Establishment of the WBE reclamation area and BUF – Injury and/or death as a result direct contact with construction plant Dredging activities – Injury and/or death as a result direct contact with dredging vessels and plant Removal and installation of navigational aids - injury and/or death as a result direct contact with construction vessels Persecution of the Osprey by humans is not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	<p>Vegetation Management Plan</p> <p>Fauna Management Plan</p>	No	No	No	N/A
		<ul style="list-style-type: none"> Predation by introduced species 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Reduced suitability of habitat due to the introduction and/or spread of introduced species Dredging activities –Reduced suitability of habitat due to the introduction and/or spread of introduced species Stabilisation and maintenance activities – Introduction and/or spread of introduced species into areas adjoining vehicle routes within the final landform area due to vehicle movements associated with the rehabilitation and operational maintenance 	<p>Pest and Weed Management Plan</p> <p>Fauna Management Plan</p>	No	No	N/A	No
		<ul style="list-style-type: none"> Habitat modification through climate change 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Dredging activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Removal and installation of navigational aids – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Stabilisation and maintenance activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation 	<p>Air Quality Management Plan</p>	No	No	No	No
		<ul style="list-style-type: none"> Ingestion of and/or entanglement with marine debris 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Injury and/or death as a result of ingestion or entanglement of waste materials and marine debris 	<p>Pest and Weed Management Plan</p> <p>Fauna Management Plan</p>	Yes	N/A	N/A	N/A

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?				
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities	
		<ul style="list-style-type: none"> Water quality degradation due to catchment run-off and pollution, with associated impacts on the food web (ie contaminated prey items) 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Hydrological and water quality impacts resulting in alteration to habitat quality Establishment of the WBE reclamation area and BUF – Contaminant and sediment releases resulting in impacts on habitat Dredging activities – Loss of food sources and prey items as a result of dredging activities Dredging activities – Potential mobilisation of contaminants in the plume from area to be dredged Dredging activities – Accidental release of contaminants (eg spills and waste materials) during dredging activities Dredging activities – Release of contaminants due to failure of reclamation bund wall and release of fine sediments Dredging activities – Erosion and sedimentation impacts Stabilisation and maintenance activities – Erosion and sedimentation of material within the final landform and excessive deposition of dust resulting in decreased water quality 	Fauna Management Plan Water Quality Management Plan Vegetation Management Plan	No	No	N/A	No	
5.9 Brown booby (<i>Sula leucogaster</i>) Conservation status: Migratory (CAMBA, JAMBA, ROKAMBA) (EPBC Act)	<ul style="list-style-type: none"> The DoEE SPRAT species profile for the Brown booby does not identify any approved recovery plans, conservation advice or listing advice documents for the species. The species profile does note key threats to the species (DoEE 2018d) 	<ul style="list-style-type: none"> Predation by humans 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A	
		<ul style="list-style-type: none"> Visitation or disturbance of breeding sites by humans 	<ul style="list-style-type: none"> The Project activities will not have a direct impact on breeding habitat for the species 	N/A	N/A	N/A	N/A	N/A	N/A
		<ul style="list-style-type: none"> Predation 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Reduced suitability of habitat due to the introduction and/or spread of introduced species Dredging activities – Reduced suitability of habitat due to the introduction and/or spread of introduced species Stabilisation and maintenance activities – Introduction and/or spread of introduced species into areas adjoining vehicle routes within the final landform area due to vehicle movements associated with the rehabilitation and operational maintenance 	Pest and Weed Management Plan Fauna Management Plan	No	No	N/A	No	
		<ul style="list-style-type: none"> Oil spills 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Contaminant and sediment releases resulting in impacts on habitat Dredging activities – Accidental release of contaminants (eg spills and waste materials) during dredging activities 	Water Quality Management Plan Vegetation Management Plan Fauna Management Plan	No	No	N/A	N/A	
		<ul style="list-style-type: none"> Habitat modification through climate change 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Dredging activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Removal and installation of navigational aids – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation Stabilisation and maintenance activities – Generation of greenhouse gas emissions from the combustion of diesel for equipment and vehicle operation 	Air Quality Management Plan	No	No	No	No	

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
5.10 South polar skua (<i>Stercorarius maccormicki</i>) Conservation status: Migratory (JAMBA) (EPBC Act)	<ul style="list-style-type: none"> The DoEE SPRAT species profiles for the South polar skua does not identify any approved recovery plans, conservation advice or listing advice documents for the species 	<ul style="list-style-type: none"> There are no significant threats to the South polar skua believed to occur in Australia 	<ul style="list-style-type: none"> The South Polar Skua is a non-breeding migrant to Australia, with the species breeding throughout the Antarctic coast. The species occurs as a vagrant in Australia (Birdlife international 2017) The Project activities will not have a direct impact on important habitat for the species. The Project activities will not have a residual impact on the species. 	N/A	N/A	N/A	N/A	N/A
5.11 Red-tailed tropicbird (<i>Phaethon rubricauda</i>) Conservation status: Migratory (CAMBA, JAMBA) (EPBC Act), Vulnerable (NC Act)	<ul style="list-style-type: none"> Threat abatement Plan for predation by feral cats (2015) Department of the Environment 	<ul style="list-style-type: none"> Predation by feral cats 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Reduced suitability of habitat due to the introduction and/or spread of introduced species Dredging activities –Reduced suitability of habitat due to the introduction and/or spread of introduced species Stabilisation and maintenance activities – Introduction and/or spread of introduced species into areas adjoining vehicle routes within the final landform area due to vehicle movements associated with the rehabilitation and operational maintenance 	Pest and Weed Management Plan Fauna Management Plan	No	No	N/A	No
5.12 Osprey (<i>Pandion haliaetus</i>) Conservation status: Migratory (Bonn) (EPBC Act)	<ul style="list-style-type: none"> 'Referral guideline for 14 birds listed as migratory species under the EPBC Act' (DoE 2015d) 	<ul style="list-style-type: none"> Degradation or alteration of habitat The referral guidelines (DoE 2015d) assess impacts on the species due to the substantial loss or modification of important habitat The referral guidelines (DoE 2015d) assess mortality impacts on the species due to the serious disruption to an ecologically significant proportion of a population 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Direct and permanent loss of habitat 	Fauna Management Plan Vegetation Management Plan	Yes	N/A	N/A	N/A
		<ul style="list-style-type: none"> Ingestion of prey items containing pollutants 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Hydrological and water quality impacts resulting in alteration to habitat quality Establishment of the WBE reclamation area and BUF – Contaminant and sediment releases resulting in impacts on habitat Establishment of the WBE reclamation area and BUF – Injury and/or death as a result of ingestion or entanglement of waste materials and marine debris Dredging activities – Loss of food sources and prey items as a result of dredging activities Dredging activities – Potential mobilisation of contaminants in the plume from area to be dredged Dredging activities – Accidental release of contaminants (eg spills and waste materials) during dredging activities Dredging activities – Release of contaminants due to failure of reclamation bund wall and release of fine sediments Dredging activities – Erosion and sedimentation impacts Stabilisation and maintenance activities – Erosion and sedimentation of material within the final landform and excessive deposition of dust resulting in decreased water quality 	Fauna Management Plan Water Quality Management Plan Waste Management Plan Vegetation Management Plan	Yes	No	N/A	No
		<ul style="list-style-type: none"> Competition for food with commercial and recreational fisheries 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
		<ul style="list-style-type: none"> Reduced water quality at foraging grounds caused by discharge of effluent or runoff 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF a – Hydrological and water quality impacts resulting in alteration to habitat quality Establishment of the WBE reclamation area and BUF – Contaminant and sediment releases resulting in impacts on habitat Dredging activities – Potential mobilisation of contaminants in the plume from area to be dredged Dredging activities – Accidental release of contaminants (eg spills and waste materials) during dredging activities Dredging activities – Release of contaminants due to failure of reclamation bund wall and release of fine sediments Dredging activities – Erosion and sedimentation impacts Stabilisation and maintenance activities – Erosion and sedimentation of material within the final landform and excessive deposition of dust resulting in decreased water quality 	<p>Fauna Management Plan</p> <p>Water Quality Management Plan</p> <p>Vegetation Management Plan</p>	No	No	N/A	No
		<ul style="list-style-type: none"> Disturbance or persecution by humans 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Injury and/or death as a result direct contact with construction plant Dredging activities – Injury and/or death as a result direct contact with dredging vessels and plant Removal and installation of navigational aids - injury and/or death as a result direct contact with construction vessels Persecution of the Osprey by humans is not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	<p>Vegetation Management Plan</p> <p>Fauna Management Plan</p>	No	No	No	N/A
		<ul style="list-style-type: none"> Accidental mortality arising from collisions with powerlines 	<ul style="list-style-type: none"> Site establishment works may include the use of boundary fencing 	<p>Vegetation Management Plan</p> <p>Fauna Management Plan</p>	No	N/A	N/A	N/A
<p>5.13 Fork-tailed swift (<i>Apus pacificus</i>)</p> <p>Conservation status: Marine and Migratory (Bonn) (EPBC Act)</p>	<ul style="list-style-type: none"> 'Referral guideline for 14 birds listed as migratory species under the EPBC Act' (DoE 2015d) The DoEE SPRAT species profiles for the Fork-tailed swift does not identify any approved recovery plans, conservation advice or listing advice documents for the species (DoEE 2018b) 	<ul style="list-style-type: none"> There are no significant threats to the Fork-tailed Swift in Australia. Potential threats include habitat destruction and predation by feral animals. Due to the wide range of the species, the potential impacts are thought to be negligible (DoEE 2016b) 	<ul style="list-style-type: none"> The Fork-tailed swift is an aerial feeding species and a non-breeding migrant to Australia. The Fork-tailed swift is not considered to be subject to threatening processes in Australia (DoEE 2016b). The Project activities will not have a direct impact on important habitat for the species The Project activities will not have a residual impact on the species. 	N/A	N/A	N/A	N/A	N/A
<p>5.14 White-throated needletail (<i>Hirundapus caudacutus</i>)</p> <p>Conservation status: Marine and Migratory (CAMBA, JAMBA, ROKAMBA) (EPBC Act)</p>	<ul style="list-style-type: none"> 'Referral guideline for 14 birds listed as migratory species under the EPBC Act' (DoE 2015d) The DoEE SPRAT species profiles for the White-throated needletail does not identify any approved recovery plans, conservation advice or listing advice documents for the species (DoEE 2018c) 	<ul style="list-style-type: none"> There are no significant threats to the White-throated needletail in Australia. In Australia there is the constant threat of collision with overhead wires, windows and lighthouses, though this only affects a few individuals (DoEE 2016c) 	<ul style="list-style-type: none"> The White-throated needletail is a non-breeding migrant to Australia. The species is found across a range of habitats, more often over wooded areas, where it is almost exclusively aerial (DoEE 2016c). The White-throated needletail is not considered to be subject to threatening processes in Australia (DoEE 2016c). The Project activities will not have a direct impact on important habitat for the species The Project activities will not have a residual impact on the species. 	N/A	N/A	N/A	N/A	N/A

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
6 Intertidal and terrestrial fauna species (Impact assessment provided in Project EIS, Section 9.7)								
6.1 Beach stone-curlew (<i>Esacus magnirostris</i>) Conservation status: Vulnerable (NC Act)	<ul style="list-style-type: none"> Department of Environment and Heritage Protection Species Profile for the Beach stone curlew (DEHP 2013) Threat abatement plan for predation by feral cat (DoE 2015) 	<ul style="list-style-type: none"> Habitat loss and degradation, including impacts from pollution 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Permanent loss of habitat and connectivity Establishment of the WBE reclamation area and BUF – Potential impact of hydrological changes on fauna habitat Establishment of the WBE reclamation area and BUF – Potential impacts to species assemblages and habitat due to contaminant and sediment releases Establishment of the WBE reclamation area and BUF – Increased edge effects on adjacent habitat as a result of vegetation clearing, reducing the condition and/or quality of adjacent environments Dredging activities – Potential impact on habitat due to altered groundwater levels Dredging activities – Potential impacts to species assemblages and habitat due to contaminant and sediment releases Dredging activities – Potential water quality impacts due to bund wall failure or seepage Removal and installation of navigational aids – Potential impacts to species assemblages and habitat due to contaminant and sediment releases Stabilisation and maintenance activities operational management – Potential decrease in water quality due to contaminant release Stabilisation and maintenance activities operational management – Potential decrease in water quality due to erosion and sedimentation 	Fauna Management Plan Water Quality Management Plan Acid Sulfate Soils Management Plan Waste Management Plan Pest and Weed Management Plan Vegetation Management Plan Noise and Vibration Management Plan Air Quality Management Plan	Yes	No	No	No
		<ul style="list-style-type: none"> Anthropogenic disturbances including walking dogs through habitat areas, boating, use of off-road vehicles and beach combing 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Injury and/or death of the Beach stone-curlew as a result of increased vehicle movements Establishment of the WBE reclamation area and BUF – Potential displacement of species due to noise, vibration, dust and/or artificial lighting Dredging activities – Potential displacement of species due to noise, vibration, dust and/or artificial lighting Stabilisation and maintenance activities operational management – Injury and/or death of the Beach stone-curlew as a result of increased vehicle movements Stabilisation and maintenance activities operational management – Potential displacement of species due to noise, vibration, dust and/or artificial lighting 	Fauna Management Plan Noise and Vibration Management Plan Air Quality Management Plan	No	No	N/A	No
		<ul style="list-style-type: none"> Predation by feral cats, dogs and pigs 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Displacement of fauna due to introduction and spread of weed and pest species Stabilisation and maintenance activities operational management – Potential displacement of fauna due to the introduction and spread of weed and pest species 	Pest and Weed Management Plan	No	N/A	N/A	No

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
6.2 Coastal sheath-tailed bat (<i>Taphozous australis</i>) Conservation status: Near threatened (NC Act)	<ul style="list-style-type: none"> IUCN Red List of Threatened Species Profile for the Coastal sheath-tailed bat (Hall et al 2008) Department of Environment and Science Species Profile for the Coastal sheath-tail bat (DEHP 2017a) 	<ul style="list-style-type: none"> Loss of foraging habitat 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Increased edge effects on adjacent habitat as a result of vegetation clearing, reducing the condition and/or quality of adjacent environments Establishment of the WBE reclamation area and BUF – Potential impact of hydrological changes on fauna habitat Establishment of the WBE reclamation area and BUF – Potential impacts to species assemblages and habitat due to contaminant and sediment releases Dredging activities – Potential impact on habitat due to altered groundwater levels Dredging activities – Potential impacts to species assemblages and habitat due to contaminant and sediment releases Dredging activities – Potential water quality impacts due to bund wall failure or seepage Removal and installation of navigational aids – Potential impacts to species assemblages and habitat due to contaminant and sediment releases 	Fauna Management Plan Water Quality Management Plan Pest and Weed Management Plan Vegetation Management Plan Noise and Vibration Management Plan Air Quality Management Plan Acid Sulfate Soils Management Plan Waste Management Plan	No	No	N/A	No
		<ul style="list-style-type: none"> Disturbance to roost sites 	<ul style="list-style-type: none"> No roost sites (ie sea caves, mines, concrete bunkers, rock fissures) for the species were identified within the Project impact areas during the EIS field investigations 	N/A	N/A	N/A	N/A	N/A
Common death adder (<i>Acanthophis antarcticus</i>) Conservation status: Vulnerable (NC Act)	<ul style="list-style-type: none"> QPWS (2001). Acanthophis antarcticus Common Death Adder. Species Management Profile, Species Management Manual Vol. 2. Queensland Parks & Wildlife Service, Forest Management: Brisbane. 	<ul style="list-style-type: none"> Poisoning by cane toads 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – potential increase in cane toad abundance and/or cane toad habitat 	Pest and Weed Management Plan Fauna Management Plan	No	N/A	No	No
		<ul style="list-style-type: none"> Inappropriate grazing and fire regimes, which can degrade and destroy their habitat and food sources Clearing of vegetation, including loss of habitat through coastal development 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
6.3 Powerful owl (<i>Ninox strenua</i>) Conservation status: Vulnerable (NC Act)	<ul style="list-style-type: none"> IUCN Red List of Threatened Species Profile for the Powerful Owl (Birdlife International 2012) 	Habitat modification leading to decreased hollows	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A
6.4 Salt-water crocodile (<i>Crocodylus porosus</i>) Conservation status: Marine and Migratory (Bonn) (EPBC Act), Vulnerable (NC Act)	<ul style="list-style-type: none"> Department of Environment and Heritage Protection Species Profile for the Salt-water crocodile (DEHP 2016) 	Predation pressure on eggs	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Displacement of fauna due to introduction and spread of weed and pest species Stabilisation and maintenance activities operational management – Potential displacement of fauna due to the introduction and spread of weed and pest species 	Pest and Weed Management Plan	No	N/A	N/A	No
		Flooding pressure on eggs	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Potential impact of hydrological changes on fauna habitat Dredging activities – Potential impact on habitat due to altered groundwater levels 	Fauna Management Plan	No	No	N/A	N/A

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
		Habitat destruction	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Permanent loss of habitat and connectivity Establishment of the WBE reclamation area and BUF – Potential impact of hydrological changes on fauna habitat Establishment of the WBE reclamation area and BUF – Potential impacts to species assemblages and habitat due to contaminant and sediment releases Establishment of the WBE reclamation area and BUF – Increased edge effects on adjacent habitat as a result of vegetation clearing, reducing the condition and/or quality of adjacent environments Dredging activities – Potential impact on habitat due to altered groundwater levels Dredging activities – Potential impacts to species assemblages and habitat due to contaminant and sediment releases Dredging activities – Potential water quality impacts due to bund wall failure or seepage Removal and installation of navigational aids – Potential impacts to species assemblages and habitat due to contaminant and sediment releases 	Fauna Management Plan Water Quality Management Plan Pest and Weed Management Plan Vegetation Management Plan Noise and Vibration Management Plan Air Quality Management Plan Acid Sulfate Soils Management Plan Waste Management Plan	Yes	No	N/A	No
6.5 Water mouse (<i>Xeromys myoides</i>) Conservation status: Vulnerable (EPBC Act and NC Act)	<ul style="list-style-type: none"> “National Recovery plan for the Water mouse (false water rat) <i>Xeromys myoides</i>” (DERM 2010) “Threat Abatement Plan for predation by feral cats” (DOE 2015a) “Threat Abatement Plan for Predation by the European Red Fox” (DEWHA 2008b) “Threat Abatement Plan for predation, habitat degradation, competition and disease transmission by feral pigs (<i>Sus scrofa</i>) (DoEE 2017a) 	<ul style="list-style-type: none"> Loss, degradation and fragmentation of freshwater and inter-tidal wetland communities utilised by the species Reclamation of inter-tidal and terrestrial habitats as a result of deposition of dredge spoil Changes in soil chemistry, for instance the development of acid sulphate soils as a result of disturbance and exposure to air of ‘at risk’ soils, may disrupt mangrove habitat Physical changes to saltmarsh such as runnelling or bundwall construction that modify tidal amplitude and frequency of inundation Changes in hydrology, including increased freshwater inflows and sedimentation from stormwater runoff as a result of adjacent residential development Drainage of coastal and terrestrial wetlands for urban and industrial developments Modified water levels and salinity in tidal waterways resulting from installation of flow control gates for flood mitigation 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Permanent loss of habitat and connectivity Establishment of the WBE reclamation area and BUF – Potential impact of hydrological changes on fauna habitat Establishment of the WBE reclamation area and BUF – Potential impacts to species assemblages and habitat due to contaminant and sediment releases Establishment of the WBE reclamation area – and BUF Increased edge effects on adjacent habitat as a result of vegetation clearing, reducing the condition and/or quality of adjacent environments Dredging activities – Potential impact on habitat due to altered groundwater levels Dredging activities – Potential impacts to species assemblages and habitat due to contaminant and sediment releases Dredging activities – Potential water quality impacts due to bund wall failure or seepage Removal and installation of navigational aids – Potential impacts to species assemblages and habitat due to contaminant and sediment releases 	Fauna Management Plan Water Quality Management Plan Pest and Weed Management Plan Vegetation Management Plan Noise and Vibration Management Plan Air Quality Management Plan Acid Sulfate Soils Management Plan Waste Management Plan	Yes	No	N/A	No

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
		<ul style="list-style-type: none"> Use of recreational vehicles in inter-tidal areas due to the long-lasting damage they cause through destruction and degradation of habitat 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Injury and/or death of Water mouse as a result of increased vehicle movements Stabilisation and maintenance activities operational management – Injury and/or death of Water mouse as a result of increased vehicle movements 	Fauna Management Plan	No	N/A	N/A	No
		<ul style="list-style-type: none"> Predation pressures from native and introduced fauna, competition for food resources and modification of suitable habitat by feral and hard-hoofed animals such as pigs 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Displacement of fauna due to introduction and spread of weed and pest species Stabilisation and maintenance activities operational management – Potential displacement of fauna due to the introduction and spread of weed and pest species 	Pest and Weed Management Plan	No	N/A	N/A	No
		<ul style="list-style-type: none"> Inappropriate burning of sedgeland, grassland and adjacent Melaleuca wetland communities 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A

7 Migratory woodland and freshwater wetland bird species (impact assessment provided in Project EIS, Section 9.17)

<p>7.1 Black-faced monarch (<i>Monarcha melanopsis</i>) Conservation status: Migratory (Bonn) (EPBC Act)</p>	<ul style="list-style-type: none"> 'Referral guideline for 14 birds listed as migratory species under the EPBC Act' (DoE 2015d) "Threat Abatement Plan for predation by feral cats" (DOE 2015a) 	<ul style="list-style-type: none"> There are no significant threats to the Black-faced monarch in Australia. There is a threat of collision with windows and lighthouses which occasionally occurs with individuals (DoEE 2016d) The Black-faced monarch has been identified as a species which may be adversely affected by feral cats The referral guidelines (DoE 2015d) assess impacts on the species due to the substantial loss or modification of important habitat The referral guidelines (DoE 2015d) assess mortality impacts on the species due to the serious disruption to an ecologically significant proportion of a population 	<ul style="list-style-type: none"> Establishment of the WBE reclamation area and BUF – Increased edge effects on adjacent habitat as a result of vegetation clearing, reducing the condition and/or quality of adjacent environments Establishment of the WBE reclamation area and BUF – Direct mortality and injury of fauna during vegetation clearing works and vehicle movements associated with the establishment of the WBE reclamation area Establishment of the WBE reclamation area and BUF – Displacement of fauna due to noise, vibration, dust and artificial lighting Establishment of the WBE reclamation area and BUF – Potential impacts to fauna assemblages and habitat due to contaminant and sediment releases Establishment of the WBE reclamation area and BUF – Displacement of fauna due to introduction and spread of weed and pest species Stabilisation and maintenance activities operational management – Direct mortality and injury of fauna associated with the Stabilisation and maintenance activities operational management activities 	<p>Fauna Management Plan Water Quality Management Plan Noise and Vibration Management Plan Air Quality Management Plan Waste Management Plan Pest and Weed Management Plan Vegetation Management Plan</p>	No	N/A	N/A	No
<p>7.2 Oriental cuckoo (<i>Cuculus optatus</i>) Conservation status: Migratory (EPBC Act)</p>	<ul style="list-style-type: none"> 'Referral guideline for 14 birds listed as migratory species under the EPBC Act' (DoE 2015d) "Threat Abatement Plan for predation by feral cats" (DOE 2015a) 	<ul style="list-style-type: none"> The Oriental cuckoo has been identified as a species which may be adversely affected by feral cats The referral guidelines (DoE 2015d) assess impacts on the species due to the substantial loss or modification of important habitat The referral guidelines (DoE 2015d) assess mortality impacts on the species due to the serious disruption to an ecologically significant proportion of a population 	<ul style="list-style-type: none"> Stabilisation and maintenance activities operational management – Potential displacement of fauna due to increase in noise, vibration and/or dust Stabilisation and maintenance activities operational management – Potential displacement of fauna due to the introduction and spread of weed and pest species 					

Species	Relevant conservation advices, recovery plans and threat abatement plans	Species threats identified in relevant conservation advices, recovery plans and threat abatement plans	Unmitigated potential Project impacts	Project management measure	Residual impact? Trigger SI# assessment?			
					Western Basin Expansion reclamation area and BUF	Capital dredging footprint	Removal and installation of navigational aids	Stabilisation and maintenance activities
7.3 Rufous fantail (<i>Rhipidura ruffifrons</i>) Conservation status: Marine and Migratory (Bonn) (EPBC Act)	<ul style="list-style-type: none"> Referral guideline for 14 birds listed as migratory species under the EPBC Act' (DoE 2015d) The DoEE SPRAT species profiles for the Rufous fantail does not identify any approved recovery plans, conservation advice or listing advice documents for the species (DoEE 2018e) 	<ul style="list-style-type: none"> The referral guidelines (DoE 2015d) assess impacts on the species due to the substantial loss or modification of important habitat The referral guidelines (DoE 2015d) assess mortality impacts on the species due to the serious disruption to an ecologically significant proportion of a population 						
7.4 Satin flycatcher (<i>Myiagra cyanoleuca</i>) Conservation status: Marine and Migratory (Bonn) (EPBC Act)	<ul style="list-style-type: none"> Referral guideline for 14 birds listed as migratory species under the EPBC Act' (DoE 2015f) The DoEE SPRAT species profiles for the Satin flycatcher does not identify any approved recovery plans, conservation advice or listing advice documents for the species (DoEE 2018g) 	<ul style="list-style-type: none"> The referral guidelines (DoE 2015d) assess impacts on the species due to the substantial loss or modification of important habitat The referral guidelines (DoE 2015d) assess mortality impacts on the species due to the serious disruption to an ecologically significant proportion of a population 						
7.5 Latham's snipe (<i>Gallinago hardwickii</i>) Conservation status: Marine and Migratory (Bonn, JAMBA, ROKAMBA) (EPBC Act)	<ul style="list-style-type: none"> Threat Abatement Plan for Predation by the European Red Fox (DEWHA 2008b) Wildlife Conservation Plan for Migratory Shorebirds (DoE 2015b) 	<ul style="list-style-type: none"> Disruption to and ecological significant population Loss or modification of important habitat Predation by Red fox 	<ul style="list-style-type: none"> Not relevant to the nature of the Project activities. The Project will not contribute to this species threat 	N/A	N/A	N/A	N/A	N/A

Table note:

SI Assessment refers to self-assessment in accordance with the *EPBC Act Matters of National Environmental Significance Significant Impact Assessment Guidelines* (DoE 2013) for EPBC listed/MNES species and the Queensland Environmental Offsets Policy Significant Residual Impact Guideline (DEHP 2014) for NC Act listed/MSES species

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