APPENDIX G

MNES THREATENED AND MIGRATORY SPECIES

G1 MNES Species

The Commonwealth Department of Environment sought further advice about the status of all MNES that could be affected by the Project.

Table G1 provides a discussion of the likelihood of occurrence and assessment of impacts for all MNES species identified in the EPBC Act Protected Matters Search Tool (PMST) results for the Project. The far right column of Table G1 provides advice about whether a significant residual impact will or is likely to occur from the Project to this species (e.g. impacts following the application of mitigation measures and commitments outlined in the EIS and AEIS).

Table G1 should be read in conjunction with the commentary and commitments in this AEIS, the original Referral Documentation for the Project as well as Chapter B7 Terrestrial Flora, Chapter B8 Terrestrial Fauna, Chapter B9 Aquatic Ecology and Chapter B10 Marine Ecology as well as Appendix B8:A of the EIS which provided a description and assessment of all significant fauna species identified in PMST searches and considered to be potentially affected by the Project.

Table G1 Likelihood of occurrence of MNES threatened and migratory species and potential impacts

Species	Occurrence and assessment of impacts	Will a significant residual impact occur to this species?
Terrestrial Birds		
Regent honeyeater (*Anthochaera phrygia*)	Highly unlikely to occur – may visit site during flowering events, however local records limited and marginal habitat only on site NB – while this species is known to feed on mistletoe associated with *Casuarina cunninghamii*, there is no known link between regent honeyaters and *Allocasuarina emuina* (or other *Allocasuarina spp.*) so no impact is expected due to loss of *Allocasuarina emuina*.	No
Fork-tailed swift (*Apus pacificus*)	Known to occur but as an aerial forager has no reliance on any particular habitat type	No
Coxen's fig-parrot (*Cyclopsitta diophthalma coxeni*)	Highly unlikely to occur – only two records in proximity to Project area in the past 30 years and no suitable habitat	No
Red goshawk (*Erythrotriorchis radiatus*)	Highly unlikely to occur – a transient species that may at times inhabit the area, however only two records of the species in the past 15 years and marginal habitat only on site	No
White-bellied sea-eagle (*Haliaeetus leucogaster*)	**Known to occur** – often observed flying over the Maroochy River. The project will not impact on this species with no known nesting sites in close proximity to key project elements such as the dredge pipeline alignment. Light emissions on Marcoola Beach during pump-out operations are not expected to affect this or other coastal bird of prey species.	No
White-throated needletail (*Hirundapus caudacutus*)	Known to occur but as an aerial forager has no reliance on any particular habitat type	No
Rainbow bee-eater (*Merops ornatus*)	**Known to occur** – recorded within the Project area. Species known to be widespread and common within the region. Loss of terrestrial habitats will not affect local or regional populations of these species. Habitat offsets are expected to benefit the species. See Chapter B8, Section 8.16.8	No
Black-faced monarch (*Monarcha melanopsis*)	**Possible occurrence** – mesic forest habitats may have value as foraging and/or breeding habitat for the species which has been recorded nearby in the Maroochy Wetland Sanctuary. However, this species is uncommon in the local area (only one record within 10 km) and suitable habitat in the Project area is limited. Where species does occur, it is likely to be transient individuals. Habitat on site will not support a population of sufficient size to be considered an 'important' population under the EPBC Migratory Species Guideline.	No

APPENDIX G

Summary of the likelihood of occurrence and assessment for relevant MNES species (continued)

Species	Occurrence and assessment of impacts	Will a significant residual impact occur to this species?
Spectacled monarch (*Monarcha trivirgatus*	Unlikely to occur – no known records within 50 km of the SCA within publically accessible databased or literature; woody vegetation on site provides sub-optimal habitat for this species; not expected to occur or represented by scarce transient individuals only.	No
Satin flycatcher (*Myiagra cyanoleuca*)	**Possible occurrence**– Despite the presence of some records of this species within the local area, there is a small amount of suitable habitat present within the project area. In south-east Queensland preferred habitat is mangrove forests/shrubland and tidal Coastal She-oak *Casuarina equisetifolia* wetlands. This species is considered to be quite rare in the local area of the Airport, with evidence that historic species records are incorrect and usually reflect the more common Leaden Flycatcher *Myiagra rubecula* The loss of habitat will not affect local or regional populations of Satin Flycatchers.	No
Swift parrot (*Lathamus discolour*)	Highly unlikely to occur – local records limited, not seen in past 20 years, and very marginal habitat only on site	No
Black-throated finch (*Poephila cincta cincta*)	Unlikely to occur – no longer inhabits the local region	No
Rufous fantail (*Rhipidura rufifrons*)	**Known to occur** – recorded within the Project area. Species known to be widespread and common within the region. Loss of terrestrial habitats will not affect local or regional populations of these species. Habitat offsets are expected to benefit the species. See Chapter B8, Section 8.16.8	No
Black-breasted button-quail (*Turnix melanogaster*)	Unlikely to occur – local records limited, habitat marginal	No
Shorebirds		
All migratory shorebirds	A number of migratory shorebirds are known from the Maroochy River and utilise the sandbars and intertidal area here. Birds may also occur along Marcoola Beach. However, the following shorebirds known from the Maroochy River do not occur upstream of the Sunshine Motorway: • Ruddy turnstone • Sharp-tailed sandpiper (reported in Avisure monthly bird strike reports but uncertainty if this is predicted or observed individuals) • Curlew sandpiper • Red-necked stint • Great knot • Double-banded plover • Greater sand plover • Lesser sand plover • Grey-tailed tattler • Bar-tailed godwit • Black-tailed godwit	No

Summary of the likelihood of occurrence and assessment for relevant MNES species (continued)

Species	Occurrence and assessment of impacts	Will a significant residual impact occur to this species?
	• Eastern curlew • Whimbrel • Pacific golden plover • Terek sandpiper • Sanderling • Oriental plover • Wandering tattler • Common greenshank As no significant water quality (that could affect feeding or roosting habitat quality of these species) or noise impacts are expected from the Project to the Maroochy River, no impacts have been identified for these species. For shorebird species that forage or occasionally inhabit Marcoola Beach, the impacts from the dredge pipeline will be temporary (primarily during the establishment and decommissioning stages), noting the area of beach where the pipeline is proposed is already modified by normal human use and access. Other shorebird species identified in the PMST that are not known to occur in the Maroochy River of within 50 km of the Project area are: • Common sandpiper • Broad-billed sandpiper • Little curlew • Grey plover • Red knot • Pectoral sandpiper • Marsh sandpiper See Chapter B8 for discussion of each of these species.	
Latham's snipe (*Gallinago hardwickii*)	**Known to occur** – individuals have been recorded within the SCA, predominantly restricted to a small area of vegetation to the east of the existing 18/36 RWY. While the area of habitat is not to be directly affected by Project activities noise and movement impacts are expected to cause this area to lose its existing value for the species. The area of habitat identified in the Project area is potentially a location of one-off abundance and is not expected to support 18 or more birds on a regular basis. For this reason, the impact is not considered to be significant. See Chapter B8, Sections 8.16.8 and 8.18.2	No
Little tern (*Sterna albifrons*)	Unlikely to occur – known only from the mouth of the Maroochy River with no records west of Goat Island. No nesting of this species is known to occur within the area of the pipeline alignment or along Marcoola Beach where staging works are proposed.	No

APPENDIX G

Summary of the likelihood of occurrence and assessment for relevant MNES species (continued)

Species	Occurrence and assessment of impacts	Will a significant residual impact occur to this species?
Wetland Birds (non-tidal)		
Great egret (*Ardea alba*)	**Known to occur** – often recorded in open paddocks and grasslands. Species is common within the local area and region, frequenting highly disturbed agricultural and grazing land. Loss of cleared habitats where this species has been observed will not affect local populations. See Chapter B8, Section 8.16.8	No
Cattle egret (*Ardea ibis*)	**Known to occur** – observed on Finland Road swamp and often recorded along the Maroochy River. Species is common within the local area and region, frequenting highly disturbed agricultural and grazing land. Loss of cleared habitats where this species has been observed will not affect local populations. See Chapter B8, Section 8.16.8	No
Australasian bittern (*Botaurus poiciloptilus*)	Unlikely to occur – species occurs rarely on Bribie Island to the south; no other records exist within 50 km of the SCA as identified in publically accessible databases or literature. While areas of low swampy vegetation occur within SCA and surrounds, it is unlikely to provide habitat.	No
Glossy ibis (*Plegadilis falcinellus*)	Unlikely to occur – species has previously been recorded nearby at Finland Road swamp but no suitable habitat occurs within the Project area or downstream impact area. While Glossy Ibis may not have been identified in the MNES protected matters search tool, the species is listed as Migratory in the Sprat database. Glossy Ibis have been located within a short distance from the SCA Airport, though outside the impact area (including downstream or indirect impacts). In light of the species status and of nearby records, the EIS terrestrial fauna report was thorough and considered this species in the assessment.	No
Australian painted snipe (*Rostratula australis*)	Highly unlikely to occur – lack of recent records and very marginal habitat	No
Terrestrial Mammals		
Large-eared pied bat (*Chalinolobus dwyeri*)	Highly unlikely to occur – no recent or local records and no suitable habitat	No
Northern quoll (*Dasyurus hallucatus*)	Highly unlikely to occur – local records limited, habitat marginal, no records in past 22 years	No
Spot-tailed quoll (*Dasyurus maculatus maculatus*)	Highly unlikely to occur – local records limited, habitat marginal, no records in past 21 years	No
Koala (*Phascolarctos*	Unlikely to occur – suitable feed trees are rare with all	No

Summary of the likelihood of occurrence and assessment for relevant MNES species (continued)

Species	Occurrence and assessment of impacts	Will a significant residual impact occur to this species?
cinereus)	observations likely to represent dispersing or roaming individuals rather than resident population; no evidence of koalas identified during EIS surveys As outlined in section E2.10 of Chapter E2 of the EIS, koala records are common 10-15 km west of the study area in Parklands Forest Reserve, Ferntree National Park and Panorama Drive Koala Park. Records in Bli Bli support the premise that Koala are probably able to move from these areas east toward the Maroochy River corridor. However, Koala movement over the River seems unlikely. No vegetation within, or immediately adjacent, the area of focus is mapped as 'Koala habitat' or as 'assessable Koala development area' under the South East Queensland Koala State Planning Regulatory Provisions 2010, and no koalas have been seen during this or previous surveys.	
Long-nosed potoroo (*Potorous tridactylus*)	Highly unlikely to occur – local records limited, habitat marginal, only two records in past 35 years	No
Grey-headed flying-fox (*Pteropus poliocephalus*)	**Known to occur** – foraging in remnant vegetation adjacent to existing airport confirmed during EIS surveys. While there are 21 flying-fox camps known within 50 km of the Project area, no GHFF camps will be directly affected by the proposed action. The assessment provided in Section 8.16.5.1 of Chapter B8 (and reiterated in this AEIS) shows that the loss of foraging habitat represents ~0.65% of the resource within a 15 km radius of SCA. Considering GHFF can forage up to 50 km from roosts each night, this represents a negligible loss of foraging habitat in the broader context. While not required for GHFF as there is no significant residual impact to the species, it is noted that the proposed offsets set out in the BOS (Appendix B) for Wallum sedgefrog and Mount Emu She Oak will also be beneficial to GHFF. In terms of impacts from plane strike, Sunshine Coast Airport currently has a very low bat strike rate. However, the EIS (Chapter B8-416) noted that proposed increased in air traffic and extended airport operation hours will allow planes to arrive and depart over an extended period compared with current flight times, and as such an increase in strike rate may occur. Ultimately strike rate will be influenced by the number of GHFF within the local area. On balance, the EIS concluded that residual impacts from plane strike are not expected to significantly impact the local population.	No
Water mouse (*Xeromys myoides*)	**Known to occur** – surveys by Queensland Parks and Wildlife Service identified 62 nest locations along	No

APPENDIX G

Summary of the likelihood of occurrence and assessment for relevant MNES species (continued)

Species	Occurrence and assessment of impacts	Will a significant residual impact occur to this species?
	Maroochy River mangrove and supralittoral communities between Bli Bli and Mt Coolum drain; while EIS surveys failed to locate nesting sites, a probable feeding midden was identified south of the Marcoola Drain. As no significant impacts to water quality or habitat are expected in the Maroochy River from the Project (including during the tailwater discharge phase), no impacts to the water mouse are expected. This assessment conclusion from the EIS was confirmed in comments received from the Queensland Department of Science, Information, Technology, Innovation and the Arts. In terms of operational phase impacts, the ultimate drainage solution for the Project (the new Northern Perimeter Drain connecting to the artificial Marcoola Drain) does not impact on the potential habitat of this species along the Maroochy River. See Chapter B8, Sections 8.11 and 8.16.6	
Amphibians		
Wallum sedgefrog (*Litoria olongburensis*)	**Known to occur** – identified during EIS surveys throughout sedge habitats in Project area. The Project will lead to the clearing and filling of wallum sedgefrog habitat, including: • 1.67 ha of wet heath and sedgeland mapped as known or likely breeding habitat permanently cleared • 47.07 ha of essential habitat of which <4% supports breeding, foraging and shelter permanently cleared • 2.52 ha of habitat temporarily cleared for pipe laydown during construction This is to be mitigated through establishment of compensatory habitat. Clearing and filling is also expected to lead to mortality of wallum sedgefrogs in the clearing zone (<200). Excessive noise during breeding season could affect reproductive success. Some areas near the dredge booster pump are expected to be impacted during pump-out operations. Operational noise of the new runway is unlikely to have an impact due to no increase in air traffic at night. Mitigation measures to prevent upward migration of salinity and lateral sub-surface water flow are expected to control any impacts related to altered water hydrology and quality. Offsets are proposed to compensate for impacts to these species as outlined in the Biodiversity Offset Strategy (Appendix B). See Chapter B8, Sections 8.7 and 8.16.2	Yes – matter for environmental offset as outlined in the BOS (Appendix B)

Summary of the likelihood of occurrence and assessment for relevant MNES species (continued)

Species	Occurrence and assessment of impacts	Will a significant residual impact occur to this species?
Giant barred frog (*Mixophyes iteratus*) (including Southern Barred Frog)	Unlikely to occur – closest records of these species are 20 km from the Project area and are associated with rainforest habitats	No
Terrestrial Reptiles		
Three-toed snake-tooth skink (*Coeranoscincus reticulatus*)	Unlikely to occur – local records limited	No
Collared delma (*Delma torquata*)	Unlikely to occur – a single record (1956) indicates the species does not commonly inhabit the region	No
Dunmall's snake (*Furina dunmalli*)	Highly unlikely to occur – species does not occur within the region; no suitable habitat is present	No
Terrestrial Flora		
Attenuate wattle (*Acacia attenuata*)	Unlikely to occur – while habitat suitability identified potential for species to occur in Project area targeted surveys did not identify any plants; distinctive morphology of species and extent and number of survey sites indicates species not present in the Project area.	No
Dwarf heath casuarina (*Allocasuarina defungens*)	Unlikely to occur – not within or close proximity to known distribution (although RE 12.2.12 and RE 12.2.15 represent suitable habitat within the Project area)	No
Mt Emu she-oak (*Allocasuarina emuina*)	**Known to occur** – Wildlife Online data, HERBRECS data, the Atlas of Living Australia, various studies as documented in the Recovery Plan (Environmental Protection Agency 2007) and site investigations conducted for the EIS identified the species as common within areas of the Project area. Direct removal of 4.4 ha (~550 individual plants) of Mount Emu she-oak habitat is expected to cause a significant impact to the species. Offsets are proposed to compensate for these impacts as outlined in the Biodiversity Offset Strategy (Appendix B). See Chapter B7, Sections 7.4.5 and 7.6.2	Yes – matter for environmental offset as outlined in the BOS (Appendix B)
Mt Coolum she-oak (*Allocasuarina thalassoscopica*)	Unlikely to occur – known populations occur on the montane heath communities on the summit of Mt Coolum; no suitable habitat within the Project area.	No
Hairy-joint grass (*Arthraxon hispidus*)	Unlikely to occur – the Atlas of Living Australia reports that this species has been observed in the study area; there is a low likelihood that the species could exist in the Project area due to the habitat type present	No
Marbled balogia (*Baloghia marmorata*)	Unlikely to occur – not within known species distribution	No
Heart-leaved bosistoa (*Bosistoa selwynii*)	Unlikely to occur – no suitable habitat is present within the Project area	No
Three-leaved bosistoa (*Bosistoa transversa*)	Unlikely to occur – no suitable habitat is present within the Project area	No
Miniature moss-orchid (*Bulbophyllum glubliforme*)	Unlikely to occur – no suitable habitat is present within the Project area	No

APPENDIX G

Summary of the likelihood of occurrence and assessment for relevant MNES species (continued)

Species	Occurrence and assessment of impacts	Will a significant residual impact occur to this species?
Stinking cryptocarya (*Cryptocarya foetida*)	Unlikely to occur – no suitable habitat is present within the Project area	No
Leafless tongue-orchid (*Cryptostylis hunteriana*)	Unlikely to occur – while suitable habitat was identified for the species in the Project area, no plants were detected during surveys in the flowering period.	No
Swamp stringybark (*Eucalyptus conglomerata*)	Unlikely to occur – while habitat suitability identified potential for species to occur in Project area targeted surveys did not identify any plants; distinctive morphology of species and extent and number of survey sites indicates species not present in the Project area.	No
Small-fruited Queensland nut (*Macadamia ternifolia*)	Unlikely to occur – no suitable habitat within the Project area	No
Lesser swamp orchid (*Phaius australis*)	**Known to occur** – suitable habitat within wetter areas of the broad-leaved paperbark forest and sedgeland with a shaded canopy overstorey; 42 plants identified in targeted survey conducted in the Project area (refer Appendix E). Recommendations made to exclude plants from clearing areas, as described in Appendix E. As no clearing or disturbance is proposed to these areas, there will be no impact to the species.	No
Mt Berryman Phebalium (*Phebalium distans*)	Unlikely to occur – outside of known population range and no suitable habitat present within the Project area	No
Plectranthus torrenticola	Unlikely to occur – no suitable habitat within the Project areas	No
Wallum leek-orchid (*Prasophyllum wallum*)	**Possible occurrence**– suitable habitat identified for species in Project area though no species identified during targeted surveys; as species is cryptic it is possible plants may occur in the Project area. Pre-clearing surveys will assist in identification of species within clearing footprints to advise clearing alignments. If Wallum Leek Orchid is identified during pre-clearing surveys, options to avoid clearing will be examined initially. If it is not possible due to design and/or operational constraints to retain any populations or plants of this species, the plants will be salvaged for translocation into an area of suitable habitat. This approach will be followed if any endangered, vulnerable or near threatened plants are recorded in pre-clearing surveys. [1]	No
Siah's backbone (*Streblus pendulinus*)	Unlikely to occur – no suitable habitat present within the Project area	No
Minute orchid	Unlikely to occur – no suitable habitat is present within	No

[1] There are also requirements for permits and management plans for the taking of protected plants under Queensland legislation. Under the Queensland *Nature Conservation (Wildlife Management) Regulation 2006* a permit is required for taking protected plants that are endangered, vulnerable or near threatened. The clearing footprint for the airport expansion project is within the high risk trigger area for protected plants, and a flora survey and permit application or exemption notification is required prior to clearing. Part of the permit application will be an Impact Management Plan that outlines measures to avoid and mitigate impacts if any endangered, vulnerable or near-threatened plants are recorded.

Summary of the likelihood of occurrence and assessment for relevant MNES species (continued)

Species	Occurrence and assessment of impacts	Will a significant residual impact occur to this species?
(*Taeniophyllum muelleri*)	the Project area	
Glossy spice bush (*Triunia robusta*)	Unlikely to occur – the Atlas of Living Australia shows that this species has been recorded in the Project area however the accuracy of the coordinate point is 26 km and therefore this observation may not have been in the Project area; it may exist within the small rainforest patches near the Project area but unlikely to exist in the Project area	No
Fish and Sharks		
Grey nurse shark (*Carcharias taurus*)	**Possible occurrence** – Most of the east coast population spend much of its time in New South Wales although records exist as far north as Mackay. Aggregation sites occur across the east coast, including Rainbow Beach, Moreton Island and Stradbroke Island. Mudjimba Island while not an aggregation site provides rocky reef habitat that is utilised by the species and rare sightings occur at the island. Key risks of impact to species are vessel strike, noise and entrainment. Expected occasions of vessel strike or entrainment are low due to sharks being highly mobile and the dredge vessel is slow-moving. Noise from operations is expected to cause behavioural avoidance which will have low impact as no marine megafauna species are known to feed or breed in the dredging area. The use of megafauna exclusion zones around dredge operations and visual monitoring is expected to decrease risk of vessel strike further. See Chapter B10, Sections 10.2.9 and 10.4 and Chapter C4, Sections 4.2.8 and 4.4	No
Black rockcod (*Epinephelus daemelli*)	Highly unlikely to occur – Species has highly restricted distribution in New South Wales; may occur in southern Queensland but records are rare	No
Great White Shark *(Carcharodon carcharias)*	**Possible occurrence –** may occur in oceanic pelagic waters as a transient visitor but no critical habitat represented in the Project area. Key risks of impact to species are vessel strike, noise and entrainment. Expected occasions of vessel strike or entrainment are low due to sharks being highly mobile and the dredge vessel is slow-moving. Noise from operations is expected to cause behavioural avoidance.. The use of megafauna exclusion zones around dredge operations and visual monitoring is expected to decrease risk of vessel strike further.	No
Porbeagle (*Lamna nasus*)	**Possible occurrence –** may occur in oceanic pelagic waters as a transient visitor but no critical habitat represented in the Project area. Key risks of impact to species are vessel strike, noise and entrainment. Expected occasions of vessel strike or entrainment are low due to sharks being highly mobile and the dredge vessel is slow-moving. Noise from operations is expected to cause behavioural avoidance.. The use of megafauna exclusion zones around dredge	No

APPENDIX G

Summary of the likelihood of occurrence and assessment for relevant MNES species (continued)

Species	Occurrence and assessment of impacts	Will a significant residual impact occur to this species?
	operations and visual monitoring is expected to decrease risk of vessel strike further.	
Mary River cod (*Macculochella peelii mariensis*)	Unlikely to occur – preferred habitat not supported in Project area (large deep streams)	No
Oxleyan pygmy perch (*Nannoperca oxleyana*)	**Possible occurrence** – while optimal structural habitat conditions are not known to exist at the Project area, water quality conditions appear to be near the maximum tolerance limits of the species. An assessment of available habitat of water bodies in the Project area identified that utilisation of these waterways is expected to be minimal, with no critical spawning, sheltering or foraging habitat to be impacted by the Project. See Chapter B9, Section 9.6	No
Honey blue-eyes (*Pseudomugil mellis*)	**Possible occurrence** – while optimal structural habitat conditions are not known to exist at the Project area, water quality conditions appear to be near the maximum tolerance limits of the species. An assessment of available habitat of water bodies in the Project area identified that utilisation of these waterways is expected to be minimal, with no critical spawning, sheltering or foraging habitat to be impacted by the Project. See Chapter B9, Section 9.6	No
Green sawfish (*Pristis zijsron*)	Unlikely to occur – present day distribution of species thought to be only as far south as Cairns though historic distribution to southern Queensland and northern New South Wales	No
Whale shark (*Rhincodon typus*)	**Possible occurrence** – may occur in oceanic pelagic waters as a transient visitor but no critical habitat represented in the Project area. Key risks of impact to species are vessel strike, noise and entrainment. Expected occasions of vessel strike or entrainment are low due to sharks being highly mobile and the dredge vessel is slow-moving. Noise from operations is expected to cause behavioural avoidance.. The use of megafauna exclusion zones around dredge operations and visual monitoring is expected to decrease risk of vessel strike further. See Chapter B10, Sections 10.2.9 and 10.4 and Chapter C4, Sections 4.2.8 and 4.4	No
Marine Megafauna		
Cetaceans	Cetaceans (i.e. whales and dolphins) **known or highly likely to occur** in the Project area include: • Humpback whale (*Megatera novaeangliae*) – species is common near Moreton Bay during the winter-spring migration; and • Indo-Pacific humpback dolphin (*Sousa chinensis*)	No

Summary of the likelihood of occurrence and assessment for relevant MNES species (continued)

Species	Occurrence and assessment of impacts	Will a significant residual impact occur to this species?
	– significant population(s) for the species are known in Moreton Bay. Other species are known to frequent marine waters near to Moreton Bay and the Project area and may **possibly occur** within the Project area: • Bryde's whale (*Balaenoptera edeni*) • Southern right whale (*Eubalaena australis*) – typically known from deeper waters but calves in shallower coastal waters during winter months; • Dusky dolphin (*Lagernorhynchus obscurus*) • Irrawaddy dolphin (*Orcaella brevirostris*) • Killer whale (*Orcinus orca*) The blue whale (*Balaenoptera musculus*) is unlikely to occur in the Project area as the species occurs more frequently in deeper waters offshore. Key risks of impact to cetaceans are vessel strike, noise and entrainment. Expected occasions of vessel strike or entrainment are low due to cetaceans being highly mobile and the dredge vessel is slow-moving. Noise from operations is expected to cause behavioural avoidance which will have low impact as no marine megafauna species are known to feed or calve in the dredging area. The use of megafauna exclusion zones around dredge operations and visual monitoring is expected to decrease risk of vessel strike further. See Chapter B10, Sections 10.2.9 and 10.4 and Chapter C4, Sections 4.2.8 and 4.4	
Marine turtles	The loggerhead turtle (*Caretta caretta*) and green turtle (*Chelonia mydas*) are both considered **likely to occur** within the Project area. The loggerhead turtle is known to frequent marine waters of the Project area and to nest on Marcoola Beach and adjacent beaches in low numbers. Foraging, feeding and related behaviour of the green turtle is known in the marine waters of the Project area with potential nesting behaviour also occurring on Marcoola Beach and adjacent beaches. The leatherback turtle (*Dermochelys coriacea*), hawksbill turtle (*Eretmochelys imbricata*), olive Ridley turtle (*Lepidochelys olivacea*) and flatback turtle (*Natator depressus*) may **possibly occur** foraging in marine waters of the Project area or as transient visitors. The key risks to marine turtles are vessel strike, noise, entrainment and artificial light. Vessel strike, noise impacts and entrainment may occur during dredging operations and are to be mitigated through use of megafauna exclusion zones and ongoing visual monitoring. Mitigation is proposed in the EIS to ensure no works associated with the dredge pipeline occur during the	No

APPENDIX G

Summary of the likelihood of occurrence and assessment for relevant MNES species (continued)

Species	Occurrence and assessment of impacts	Will a significant residual impact occur to this species?
	main (Loggerhead) turtle nesting season for the Sunshine Coast beaches (November to March). Hatching turtles may be present up to as late as May but are unlikely to be confused by artificial lighting as this lighting would not guide hatchlings landward. Impacts to foraging resources (i.e. seagrass) from dredge plumes are not expected due to low turbidity and sedimentation rates comparative to natural processes and the lack of seagrass density at and adjacent to the Spitfire Channel Realignment Area. See Chapter B10, Sections 10.2.9 and 10.4 and Chapter C4, Sections 4.2.8 and 4.4	
Dugong (*Dugong dugon*)	**Likely to occur** – potential vagrant occurrence; significant populations known to occur in Moreton and Hervey Bays Potential impacts relate to vessel strike, noise and entrainment. These risks will be mitigated through the use of megafauna exclusion zones and ongoing visual monitoring. Noise is expected to cause behavioural avoidance which is unlikely to cause any impact to the species as no known calving or feeding areas occur within the vicinity of the dredging operations. Impacts to foraging resources (i.e. seagrass) from dredge plumes are not expected due to low turbidity and sedimentation rates comparative to natural processes and the lack of seagrass density at and adjacent to the Spitfire Channel Realignment Area. See Chapter B10, Sections 10.2.9 and 10.4 and Chapter C4, Sections 4.2.8 and 4.4	No
Oceanic/Pelagic Birds		
Streaked shearwater (*Calonectris leucomelas*)	Highly unlikely to occur – annual migration occurs along coast but no suitable nesting habitat in the Project area	No
Tristan albatross (*Diomedea dabbenena*)	Highly unlikely to occur –potential vagrants in small numbers	No
Wandering albatross (*Diomedea exulans*)	Highly unlikely to occur –potential vagrants in small numbers	No
Antipodean albatross (*Diomedea exulans antipodensis*)	Highly unlikely to occur – species typically occurs offshore of New Zealand	No
Gibson's albatross (*Diomedea exulans gibsonii*)	Highly unlikely to occur –potential vagrants in small numbers	No
White-bellied storm petrel (*Fregetta grallaria grallaria*)	Highly unlikely to occur –potential vagrants in small numbers	No
Southern giant-petrel (*Macronectes giganteus*)	Highly unlikely to occur –potential vagrants in small numbers	No
Northern giant-petrel (*Macronectes halli*)	Highly unlikely to occur –potential vagrants in small numbers	No
Flesh-footed shearwater	Highly unlikely to occur –potential vagrants in small	No

Summary of the likelihood of occurrence and assessment for relevant MNES species (continued)

Species	Occurrence and assessment of impacts	Will a significant residual impact occur to this species?
(*Puffinus carneipes*)	numbers	
Wedge-tailed shearwater (*Puffinus pacificus*)	**Known to occur** – species known to transit the coastal waters of the Sunshine Coast during the annual migration and nest on Mudjimba Island in numbers. Mudjimba Island supports one of only two colonies occurring on Queensland's mainland islands. No direct impacts are expected to Mudjimba Island nesting sites. Transiting individuals will likely have behavioural avoidance of dredging operations.	No
Kermadec petrel (*Pterodroma neglecta neglecta*)	Highly unlikely to occur –potential vagrants in small numbers	No
Shy albatross (*Thalassarche cauta cauta*)	Highly unlikely to occur –potential vagrants in small numbers	No
Chatham albatross (*Thalassarche cauta eremita*)	Highly unlikely to occur – species typically occurs offshore of New Zealand and Tasmania	No
White-capped albatross (*Thalassarche cauta steadi*)	Highly unlikely to occur –potential vagrants in small numbers	No
Black-browed albatross (*Thalassarche melanophris*)	Highly unlikely to occur –potential vagrants in small numbers	No
Campbell albatross (*Thalassarche melanophris impavida*)	Highly unlikely to occur –potential vagrants in small numbers	No
Salvin's albatross (*Thalassarche salvini*)	Highly unlikely to occur –potential vagrants in small numbers	No