walker

TOONDAH HARBOUR

APPENDIX 3 - A

MIGRATORY SPECIES
SIGNIFICANT IMPACT
TABLES

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Threatened Migratory Shorebirds Significant Impact Assessment Against the Migratory Species Criteria

Eastern Curlew Migratory Species Significant Impact Assessment

The Eastern Curlew (*Numenius madagascariensis*) is listed as migratory under the EPBC Act, therefore is required to be assessed against significant impact criteria for migratory species.

This section should be read in conjunction with Chapter 17 of the Draft EIS, which provides detailed information on existing Eastern Curlew populations at the project site, potential impacts resulting from the project and proposed management measures.

Relevant Conservation Advice and Recovery Plans

EPBC Act conservation advice for Eastern Curlew, listed as critically endangered and migratory under the EPBC Act, lists the primary conservation objectives, conservation and management actions and monitoring and research priorities for the species. These are:

Australian conservation objectives:

- Achieve a stable or increasing population.
- Maintain and enhance important habitat.
- Reduce disturbance at key roosting and feeding sites.
- Raise awareness of Eastern Curlew within the local community.

Conservation and management actions:

- Work with governments along the EAAF to prevent destruction of key migratory staging sites.
- Develop and implement an International Single Species Action Plan for Eastern Curlew with all range states.
- Support initiatives to improve habitat management at key sites.
- Maintain and improve protection of roosting and feeding sites in Australia.
- Incorporate requirements for Eastern Curlew into coastal planning and management.
- Manage important sites to identify, control and reduce the spread of invasive species.
- Manage disturbance at important sites when Eastern Curlew are present – e.g. discourage or prohibit vehicle access, horse riding and dogs on beaches, and implement temporary site closures.
- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.

Monitoring priorities:

- Enhance existing migratory shorebird population monitoring programmes, particularly to improve coverage across northern Australia.

Research priorities:

- More precisely assess Eastern Curlew life history, population size, distribution and ecological requirements particularly across northern Australia.
- Improve knowledge about dependence of Eastern Curlew on key migratory staging sites, and wintering sites to the north of Australia.
- Improve knowledge about threatening processes including the impacts of disturbance and hunting.

The Toondah Harbour Project is not in conflict with the objectives, actions or priorities outlined in the conservation advice for Eastern Curlew. Conservation and management actions listed in the conservation advice for Eastern Curlew are more relevant to Commonwealth and State Government planning, however a number of these actions could be delivered through the Project's offsets strategy. The proposed long-term monitoring of shorebird use of Toondah Harbour and the

surrounding area during construction and operation of the Project will add to population monitoring programs being carried out in Moreton Bay.

Assessment Against the EPBC Act Significant Impact Assessment Criteria

Potential impacts to Eastern Curlew from Project activities are addressed in Section 17.4 with adaptive management and monitoring measures outlined in Section 17.5. Assessment against the EPBC Act significant impact criteria for migratory species is provided in Table 1.

Habitats used by Eastern Curlew within or adjacent to the Project footprint include tidal flat feeding habitat and two roost sites, Nandeebie Claypan located 100 m south-west of the Project footprint and Oyster Point located 400 m south-west of the Project footprint. Eastern Curlew also roost on a sandbank 2 km east of the Project area. Eastern Curlew do not roost at Cassim Island. Tidal flat habitat within or adjoining the Project footprint was used by an average of 3.5 (maximum of five) Eastern Curlew at any point in time for feeding during the summer months within the past five years. Over the past five years, Eastern Curlew was recorded roosting at Nandeebie Claypan on 7% of summer high tide surveys, with an average of 9 and a maximum of 31 birds when present; however, the most recent survey data show that this roost site has now been abandoned. Over the past five years, Eastern Curlew was recorded roosting at Oyster Point on 21% of summer high tide surveys, with an average of 13 and a maximum of 45 birds when present.

Assessments of the likelihood of significant residual impacts of the Project on Eastern Curlew in accordance with significant impact criteria for a migratory species are summarised in *Table 1*. The loss of 28.9 ha of feeding habitat, which corresponds to 0.29 % of the approximately 10,000 ha of important tidal flat habitat within Moreton Bay reported by Fuller *et al*. (2021) is likely to have a significant residual impact on Eastern Curlew by adversely affecting feeding habitat and reducing the area of occupancy of the species in feeding habitat by 0.29% within Moreton Bay.

Table 1: Eastern Curlew Significant Impact Assessment.

Significant Impact Criteria for Migratory species	**Impact Assessment Summary**
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	**Significant residual impact likely**. Dredging and reclamation will destroy 28.9 ha of tidal flat feeding habitat that is characterised as important habitat for Eastern Curlew because it is located within the MBRS and is used by Eastern Curlew (average 3, maximum 5 birds).
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	**Significant residual impact unlikely.** No pathways have been identified for an invasive species that is harmful to Eastern Curlew becoming established in an area of important habitat.
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species	**Significant residual impact unlikely.** The Project is expected to cause short-term disruption to the feeding behaviour of an average of 3.5 and a maximum of 5 Eastern Curlew, corresponding to 0.01% of the EAAF population, which is not an ecologically significant proportion of the population, as explained in Section 17.4. The project is unlikely to seriously disrupt the roosting of Eastern Curlew.

Great Knot Migratory Species Significant Impact Assessment

Great Knot (*Calidris tenuirostris*) is listed as migratory under the EPBC Act, therefore is required to be assessed against significant impact criteria for migratory species.

This section should be read in conjunction with Chapter 17 of the Draft EIS, which provides detailed information on existing Great Knot populations at the Project site, potential impacts resulting from the Project and proposed management measures.

Relevant Conservation Advice and Recovery Plans

EPBC Act conservation advice for Great Knot, listed as migratory and critically endangered under the EPBC Act, lists the primary conservation and management actions and monitoring and research priorities for the species. These are:

Conservation and Management Actions

- Work with governments along the EAAF to prevent destruction of key breeding and migratory staging sites.
- Protect important habitat in Australia.
- Support initiatives to improve habitat management at key sites.
- Maintain and improve protection of roosting and feeding sites in Australia.
- Advocate for the creation and restoration of foraging and roosting sites.
- Incorporate requirements for Great Knot into coastal planning and management.
- Manage important sites to identify, control and reduce the spread of invasive species.
- Manage disturbance at important sites which are subject to anthropogenic disturbance when Great Knots are present – e.g. discourage or prohibit vehicle access, horse riding and dogs on beaches, implement temporary site closures.

Survey and monitoring priorities

- Enhance existing migratory shorebird population monitoring programmes, particularly to improve coverage across northern Australia.
- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.

Information and research priorities

- Undertake work to more precisely assess Great Knot life history, population size, distribution and ecological requirements particularly across northern Australia.
- Improve knowledge about dependence of Great Knot on key migratory staging sites, and non-breeding sites to the in south-east Asia.
- Improve knowledge about threatening processes including the impacts of disturbance and hunting.

The Toondah Harbour Project is not in conflict with the objectives, actions or priorities outlined in the conservation advice for Great Knot. Conservation and management actions listed in the conservation advice for Great Knot are more relevant to Commonwealth and State Government planning, however a number of these actions could be delivered through the Project's offsets strategy. The proposed long-term monitoring of shorebird use of Toondah Harbour and the surrounding area during construction and operation of the Project will add to population monitoring programs being carried out in Moreton Bay.

Assessment Against the EPBC Act Significant Impact Assessment Criteria

Potential impacts to Great Knot from Project activities are addressed in Section 17.4 with adaptive management and monitoring measures outlined in Section 17.5. Assessment against the EPBC Act significant impact criteria for migratory species is provided in Table 2.

Habitats used by Great Knot include tidal flat feeding habitat in the Project footprint and two adjacent roost sites, Nandeebie Claypan located 100 m south-west of the Project footprint boundary and Oyster Point located 400 m south-west of the Project footprint boundary. Tidal flat habitat within or closely adjoining the Project footprint was used by only a single Great Knot detected on one of the 49 summer month surveys, in December 2014. No Great Knot has been observed using the tidal flat feeding habitat in the Project footprint within the past five years. Over the past five years, Great Knot was recorded roosting at Nandeebie Claypan on a single survey, representing 2% of summer high tide surveys, when two birds were present. Over the past five years, Great Knot was recorded roosting at Oyster Point on 12% of summer high tide surveys, with an average of 2 and a maximum of 6 birds when present. A single Great Knot has been recorded roosting on the sandbank 2 km east of the Project area on a single survey. Great Knot has not been recorded roosting at Cassim Island.

Assessments of the likelihood of significant residual impacts of the Project on Great Knot in accordance with significant impact criteria for a migratory species are summarised in *Table 2*. The loss of 28.9 ha of feeding habitat, which corresponds to 0.29 % of the approximately 10,000 ha of important tidal flat habitat within Moreton Bay reported by Fuller *et al*. (2021) is likely to have a significant residual impact on Great Knot by adversely affecting feeding habitat critical to the survival of the species and destroying feeding habitat that is characterised as important habitat for Great Knot because it is located within the MBRS and is used by Great Knot, albeit rarely.

Table 2: Great Knot Significant Impact Assessment.

Significant Impact Criteria for Migratory species	**Impact Assessment Summary**
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	**Significant residual impact likely**. Dredging and reclamation will destroy 28.9 ha of tidal flat feeding habitat that is characterised as important habitat for Great Knot because it is located within the MBRS and is used by Great Knot.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	**Significant residual impact unlikely.** No pathways have been identified for an invasive species that is harmful to Great Knot becoming established in an area of important habitat.
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species	**Significant residual impact unlikely.** The Project is unlikely to seriously disrupt the feeding behaviour of Great Knot since the species so rarely feeds in the Project area. The Project is unlikely to seriously disrupt the roosting behaviour of Great Knot if the recommended mitigation measures are successfully implemented, also noting that the roost sites are used occasionally by up to 0.001% of the EAAF population, which is not an ecologically significant proportion of the population, as explained in Section 17.4.

Curlew Sandpiper Migratory Species Significant Impact Assessment

Curlew Sandpiper (*Calidris ferruginea*) is listed as migratory under the EPBC Act, therefore is required to be assessed against significant impact criteria for migratory species.

This section should be read in conjunction with Chapter 17 of the Draft EIS, which provides detailed information on existing Curlew Sandpiper populations at the Project site, potential impacts resulting from the Project and proposed management measures.

Relevant Conservation Advice and Recovery Plans

EPBC Act conservation advice for Curlew Sandpiper, listed as critically endangered and migratory under the EPBC Act, lists the primary conservation objectives, conservation and management actions and monitoring and research priorities for the species. These are:

Australian conservation objectives:

- Achieve a stable or increasing population.
- Maintain and enhance important habitat.
- Reduce disturbance at key roosting and feeding sites.
- Raise awareness of Curlew Sandpiper within the local community.

Conservation and management actions:

- Work with governments along the EAAF to prevent destruction of key migratory staging sites
- Support initiatives to protect and manage key staging sites of Curlew Sandpiper.
- Maintain and improve protection of roosting and feeding sites in Australia.
- Incorporate requirements for Curlew Sandpiper into coastal planning and management.
- Manage important sites to identify, control and reduce the spread of invasive species.
- Manage disturbance at important sites when Curlew Sandpiper are present – e.g. discourage or prohibit vehicle access, horse riding and dogs on beaches, and implement temporary site closures
- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary

Monitoring priorities:

- Enhance existing migratory shorebird population monitoring programmes, particularly to improve coverage across northern Australia

Research priorities:

- More precisely assess Curlew Sandpiper population size, distribution and ecological requirements particularly across northern Australia
- Improve knowledge about dependence of Curlew Sandpiper on key migratory staging sites, and wintering sites to the north of Australia
- Improve knowledge about threatening processes including the impacts of disturbance and hunting

The Toondah Harbour Project is not in conflict with the objectives, actions or priorities outlined in the conservation advice for Curlew Sandpiper. Conservation and management actions listed in the conservation advice for Curlew Sandpiper are more relevant to Commonwealth and State Government planning, however a number of these actions could be delivered through the Project's offsets strategy. The proposed long-term monitoring of shorebird use of Toondah Harbour and the surrounding area during construction and operation of the Project will add to population monitoring programs being carried out in Moreton Bay.

Assessment Against the EPBC Act Significant Impact Assessment Criteria

Potential impacts to Curlew Sandpiper from Project activities are addressed in Section 17.4 with adaptive management and monitoring measures outlined in Section 17.5. Assessment against the EPBC Act significant impact criteria for migratory species is provided in Table 3.

The Curlew Sandpiper has not been recorded foraging within or adjacent to the Project footprint and has not been recorded roosting at the Nandeebie Claypan or Oyster Point roost sites within the past ten years. There are also no records of the species using either Cassim Island or the sandbank 2 km east of the Project area for roosting.

An assessment of the likelihood of significant residual impacts of the Project on Curlew Sandpiper in accordance with significant impact criteria for a migratory species is summarised in *Table 3*. The Project is unlikely to have a significant residual impact on Curlew Sandpiper.

Table 3: Curlew Sandpiper Significant Impact Assessment.

Significant Impact Criteria for Migratory species	**Impact Assessment Summary**
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	**Significant residual impact unlikely.** Dredging and reclamation will destroy 28.9 ha of tidal flat shorebird feeding habitat. While this habitat is characterised as important habitat for migratory shorebirds, it is not used by Curlew Sandpiper, a species that uses other areas of Moreton Bay.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	**Significant residual impact unlikely.** No pathways have been identified for an invasive species that is harmful to Curlew Sandpiper becoming established in an area of important habitat.
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species	**Significant residual impact unlikely.** The Project is unlikely to seriously disrupt the feeding behaviour of Curlew Sandpiper since the species does not feed in the Project footprint or adjoining tidal flat feeding habitat. Curlew Sandpiper has not used roost sites adjacent to the Project within the past ten years, and not by an ecologically significant proportion of the population; therefore, the Project is unlikely to seriously disrupt the resting behaviour of Curlew Sandpiper.

Lesser Sand Plover Migratory Species Significant Impact Assessment

Lesser Sand Plover (*Charadrius mongolus*) is listed as migratory under the EPBC Act, therefore is required to be assessed against significant impact criteria for migratory species.

This section should be read in conjunction with Chapter 17 of the Draft EIS, which provides detailed information on existing Lesser Sand Plover populations at the Project site, potential impacts resulting from the Project and proposed management measures.

Relevant Conservation Advice and Recovery Plans

EPBC Act conservation advice for Lesser Sand Plover, listed as endangered under the EPBC Act, lists the primary conservation and management actions and monitoring and research priorities for the species. These are:

Conservation and Management Actions

- Work with governments along the EAAF to prevent destruction of key breeding and migratory staging sites.
- Protect important habitat in Australia.
- Support initiatives to improve habitat management at key sites.
- Maintain and improve protection of roosting and feeding sites in Australia.
- Advocate for the creation and restoration of foraging and roosting sites.
- Incorporate requirements for Lesser Sand Plover into coastal planning and management.
- Manage important sites to identify, control and reduce the spread of invasive species.
- Manage disturbance at important sites which are subject to anthropogenic disturbance when Lesser Sand Plovers are present – e.g. discourage or prohibit vehicle access, horse riding and dogs on beaches, implement temporary site closures.

Survey and monitoring priorities

- Enhance existing migratory shorebird population monitoring programmes, particularly to improve coverage across northern Australia.
- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.

Information and research priorities

- Undertake work to more precisely assess Lesser Sand Plover life history, population size, distribution and ecological requirements particularly across northern Australia.
- Improve knowledge about dependence of Lesser Sand Plover on key migratory staging sites, and non-breeding sites to the in south-east Asia.
- Improve knowledge about threatening processes including the impacts of disturbance and hunting.

The Toondah Harbour Project is not in conflict with the objectives, actions or priorities outlined in the conservation advice for Lesser Sand Plover. Conservation and management actions listed in the conservation advice for Lesser Sand Plover are more relevant to Commonwealth and State Government planning, however a number of these actions could be delivered through the Project's offsets strategy. The proposed long-term monitoring of shorebird use of Toondah Harbour and the surrounding area during construction and operation of the Project will add to population monitoring programs being carried out in Moreton Bay.

Assessment Against the EPBC Act Significant Impact Assessment Criteria

Potential impacts to Lesser Sand Plover from Project activities are addressed in Section 17.4 with adaptive management and monitoring measures outlined in Section 17.5. Assessment against the EPBC Act significant impact criteria for migratory species is provided in Table 4.

Habitat used by Lesser Sand Plover comprises tidal flat feeding habitat within or adjacent to the Project footprint. Tidal flat habitat within the Project footprint was used by two Lesser Sand Plover on only one of 49 surveys during the summer months in the past five years.

While the Nandeebie Claypan and Oyster Point roost sites are potentially suitable for the species, it has not been recorded roosting at these sites over the past 25 years. There are no records of the species roosting at Cassim Island or the sandbank 2 km east of the Project area.

An assessment of the likelihood of significant residual impacts of the Project on Lesser Sand Plover in accordance with significant impact criteria for a migratory species is summarised in *Table 4*. The loss of 28.9 ha of feeding habitat, which corresponds to 0.29 % of the approximately 10,000 ha of important tidal flat habitat within Moreton Bay reported by Fuller *et al*. (2021) is likely to have a significant residual impact on Lesser Sand Plover by adversely affecting feeding habitat critical to the survival of the species and destroying feeding habitat that is characterised as important habitat for Lesser Sand Plover because it is located within the MBRS and is used by Lesser Sand Plover, albeit rarely.

Table 4: Lesser Sand Plover Significant Impact Assessment.

Significant Impact Criteria for Migratory species	**Impact Assessment Summary**
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	**Significant residual impact likely.** Dredging and reclamation will destroy 28.9 ha of tidal flat feeding habitat that is characterised as important habitat for Lesser Sand Plover because it is located within the MBRS and is used by Lesser Sand Plover, albeit rarely.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	**Significant residual impact unlikely.** No pathways have been identified for an invasive species that is harmful to Lesser Sand Plover becoming established in an area of important habitat.
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species	**Significant residual impact unlikely.** The Project is unlikely to seriously disrupt the feeding behaviour of Lesser Sand Plover since the species so rarely feeds in the Project area and in small numbers that are not an ecologically significant proportion of the population. The Project is unlikely to seriously disrupt the resting behaviour of Lesser Sand Plover since the species has not used nearby roost sites over the past 25 years.

Red Knot Migratory Species Significant Impact Assessment

Red Knot (*Calidris canutus*) is listed as migratory under the EPBC Act therefore is required to be assessed against significant impact criteria for migratory species.

This section should be read in conjunction with Chapter 17 of the Draft EIS, which provides detailed information on existing Red Knot populations at the Project site, potential impacts resulting from the Project and proposed management measures.

Relevant Conservation Advice and Recovery Plans

EPBC Act conservation advice for Red Knot, listed as endangered under the EPBC Act, lists the primary conservation and management actions and monitoring and research priorities for the species. These are:

Conservation and Management Actions

- Work with governments along the EAAF to prevent destruction of key breeding and migratory staging sites.
- Protect important habitat in Australia.
- Support initiatives to improve habitat management at key sites.
- Maintain and improve protection of roosting and feeding sites in Australia.
- Advocate for the creation and restoration of foraging and roosting sites.
- Incorporate requirements for Red Knot into coastal planning and management.
- Manage important sites to identify, control and reduce the spread of invasive species.
- Manage disturbance at important sites which are subject to anthropogenic disturbance when Red Knots are present – e.g. discourage or prohibit vehicle access, horse riding and dogs on beaches, implement temporary site closures.

Survey and monitoring priorities

- Enhance existing migratory shorebird population monitoring programmes, particularly to improve coverage across northern Australia.
- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.

Information and research priorities

- Undertake work to more precisely assess Red Knot life history, population size, distribution and ecological requirements particularly across northern Australia.
- Improve knowledge about dependence of Red Knot on key migratory staging sites, and non-breeding sites to the in south-east Asia.
- Improve knowledge about threatening processes including the impacts of disturbance and hunting.

The Toondah Harbour Project is not in conflict with the objectives, actions or priorities outlined in the conservation advice for Red Knot. Conservation and management actions listed in the conservation advice for Red Knot are more relevant to Commonwealth and State Government planning, however a number of these actions could be delivered through the Project's offsets strategy. The proposed long-term monitoring of shorebird use of Toondah Harbour and the surrounding area during construction and operation of the Project will add to population monitoring programs being carried out in Moreton Bay.

Assessment Against the EPBC Act Significant Impact Assessment Criteria

Potential impacts to Red Knot from Project activities are addressed in Section 17.4 with adaptive management and monitoring measures outlined in Section 17.5. Assessment against the EPBC Act significant impact criteria for migratory species is provided in Table 5.

Red Knot has not been recorded foraging within or adjacent to the Project footprint and has not been recorded roosting at the Nandeebie Claypan or Oyster Point roost sites within the past ten years, besides a single record of a single bird at Oyster Point in 2021. Similarly, Red Knot has been recorded only once roosting on the offshore sandbank, when two birds were recorded. Red Knot does not roost at Cassim Island.

An assessment of the likelihood of significant residual impacts of the Project on Red Knot in accordance with significant impact criteria for a migratory species is summarised *Table 5*. The Project is unlikely to have a significant residual impact on Red Knot.

Table 5: Red Knot Significant Impact Assessment.

Significant Impact Criteria for Migratory species	**Impact Assessment Summary**
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	**Significant residual impact unlikely.** Dredging and reclamation will destroy 28.9 ha of tidal flat shorebird feeding habitat. While this habitat is characterised as important habitat for migratory shorebirds, it is not used by Red Knot, a species that uses other areas of Moreton Bay. The Project will have no direct impacts that could modify, destroy or isolate roosting habitat used very rarely by very small numbers of Red Knot.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	**Significant residual impact unlikely.** No pathways have been identified for an invasive species that is harmful to Red Knot becoming established in an area of important habitat.
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species	**Significant residual impact unlikely.** The Project is unlikely to seriously disrupt the feeding behaviour of Red Knot since the species does not feed in the Project area. Red Knot has used roost sites adjacent to the Project very rarely by very small numbers that are not an ecologically significant proportion of the population. The Project is unlikely to seriously disrupt the resting behaviour of Red Knot at roost sites if the recommended mitigation measures are successfully implemented.

Bar-tailed Godwit Migratory Species Significant Impact Assessment

Bar-tailed Godwit (*Limosa lapponica baueri*) is listed as migratory under the EPBC Act therefore is required to be assessed against significant impact criteria for migratory species.

This section should be read in conjunction with Chapter 17 of the Draft EIS, which provides detailed information on existing Bar-tailed Godwit populations at the Project site, potential impacts resulting from the Project and proposed management measures.

Relevant Conservation Advice and Recovery Plans

EPBC Act conservation advice for Bar-tailed Godwit, listed as vulnerable under the EPBC Act, lists the primary conservation and management actions and monitoring and research priorities for the species. These are:

Conservation and Management Actions

- Work with governments along the EAAF to prevent destruction of key breeding and migratory staging sites.
- Protect important habitat in Australia.
- Support initiatives to improve habitat management at key sites.
- Maintain and improve protection of roosting and feeding sites in Australia.
- Advocate for the creation and restoration of foraging and roosting sites.
- Incorporate requirements for Bar-tailed Godwit into coastal planning and management.
- Manage important sites to identify, control and reduce the spread of invasive species.
- Manage disturbance at important sites which are subject to anthropogenic disturbance when Bar-tailed Godwits are present – e.g. discourage or prohibit vehicle access, horse riding and dogs on beaches, implement temporary site closures.

Survey and monitoring priorities

- Enhance existing migratory shorebird population monitoring programmes, particularly to improve coverage across northern Australia.
- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.

Information and research priorities

- Undertake work to more precisely assess Bar-tailed Godwit life history, population size, distribution and ecological requirements particularly across northern Australia.
- Improve knowledge about dependence of Bar-tailed Godwit on key migratory staging sites, and non-breeding sites to the in south-east Asia.
- Improve knowledge about threatening processes including the impacts of disturbance and hunting.

The Toondah Harbour Project is not in conflict with the objectives, actions or priorities outlined in the conservation advice for Bar-tailed Godwit. Conservation and management actions listed in the conservation advice for Bar-tailed Godwit are more relevant to Commonwealth and State Government planning, however a number of these actions could be delivered through the Project's offsets strategy. The proposed long-term monitoring of shorebird use of Toondah Harbour and the surrounding area during construction and operation of the Project will add to population monitoring programs being carried out in Moreton Bay.

Assessment Against the EPBC Act Significant Impact Assessment Criteria

Potential impacts to Bar-tailed Godwit from Project activities are addressed in Section 17.4 with adaptive management and monitoring measures outlined in Section 17.5. Assessment against the EPBC Act significant impact criteria for migratory species is provided in Table 6.

The population of Bar-tailed Godwit in the MBRS is characterised as an important population under the EPBC Act. Important habitats used by Bar-tailed Godwit within or adjacent to the Project footprint include tidal flat feeding habitat and two roost sites, Nandeebie Claypan located 100 m south-west of the Project footprint and Oyster Point located 400 m south-west of the Project footprint. Tidal flat habitat within or closely adjoining the Project footprint was used by an average of 13 (maximum of 24) Bar-tailed Godwit at any point in time for feeding during the summer months within the past five years. Mangrove trees in the interior of the Cassim Island roost site were used occasionally by up to two Bar-

tailed Godwit. This is an unusual roost site for this species, but a sandbar in the interior of the roost site was used as a mid-tide roost and by up to 25 Bar-tailed Godwit as a high tide roost on the occasional lowest neap high tides. Over the past five years, Bar-tailed Godwit was recorded roosting at Nandeebie Claypan on only a single summer survey, representing 2% of summer high tide surveys, when 97 birds were present, but 640 Bar-tailed Godwit were recorded roosting in March 2019. Nandeebie Claypan has since been abandoned as a roost site. Over the past five years, Bar-tailed Godwit was recorded roosting at Oyster Point on 30% of summer high tide surveys, with an average of 405 and a maximum of 825 birds when present.

An assessment of the likelihood of significant residual impacts of the Project on Bar-tailed Godwit in accordance with significant impact criteria for a migratory species is summarised in *Table 6*. The loss of 28.9 ha of feeding habitat, which corresponds to 0.29 % of the approximately 10,000 ha of important tidal flat habitat within Moreton Bay reported by Fuller *et al*. (2021) is likely to have a significant residual impact on Bar-tailed Godwit by adversely affecting feeding habitat and reducing the area of occupancy of the species in feeding habitat by 0.29% within Moreton Bay.

Table 6: Bar-tailed Godwit Significant Impact Assessment.

Significant Impact Criteria for Migratory species	**Impact Assessment Summary**
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	**Significant residual impact likely.** Dredging and reclamation will destroy 28.9 ha of tidal flat feeding habitat that is characterised as important habitat for Bar-tailed Godwit because it is located within the MBRS and is used by Bar-tailed Godwit.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	**Significant residual impact unlikely.** No pathways have been identified for an invasive species that is harmful to Bar-tailed Godwit becoming established in an area of important habitat.
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species	**Significant residual impact unlikely.** The Project is expected to cause short-term disruption to the feeding behaviour of an average of 13 and a maximum of 24 Bar-tailed Godwit, corresponding to up to 0.01% of the EAAF population, which is not an ecologically significant proportion of the population, as explained in Section 17.4. The potential for short-term impacts to roosting behaviour at roost sites adjoining the Project from noise during stage 1 construction activities will be minimised by scheduling activities that generate noise levels exceeding 60 dB(A) in the receiving environment to the winter months when fewer migratory shorebirds are present. Noise impacts after the completion of stage 1 activities are not likely due to the reduced predicted noise levels associated with further works. Longer-term operational impacts are not likely if the recommended mitigation measures are successfully implemented to minimise the risk of increased disturbance to roost sites.

Greater Sand Plover Migratory Species Significant Impact Assessment

Greater Sand Plover (*Charadrius leschenaultii*) is listed as migratory under the EPBC Act therefore is required to be assessed against significant impact criteria for migratory species.

This section should be read in conjunction with Chapter 17 of the Draft EIS, which provides detailed information on existing Greater Sand Plover populations at the Project site, potential impacts resulting from the Project and proposed management measures.

Relevant Conservation Advice and Recovery Plans

EPBC Act conservation advice for Greater Sand Plover, listed as vulnerable under the EPBC Act, lists the primary conservation and management actions and monitoring and research priorities for the species. These are:

Conservation and Management Actions

- Work with governments along the EAAF to prevent destruction of key breeding and migratory staging sites.
- Protect important habitat in Australia.
- Support initiatives to improve habitat management at key sites.
- Maintain and improve protection of roosting and feeding sites in Australia.
- Advocate for the creation and restoration of foraging and roosting sites.
- Incorporate requirements for Greater Sand Plover into coastal planning and management.
- Manage important sites to identify, control and reduce the spread of invasive species.
- Manage disturbance at important sites which are subject to anthropogenic disturbance when Greater Sand Plovers are present – e.g. discourage or prohibit vehicle access, horse riding and dogs on beaches, implement temporary site closures.

Survey and monitoring priorities

- Enhance existing migratory shorebird population monitoring programmes, particularly to improve coverage across northern Australia.
- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.

Information and research priorities

- Undertake work to more precisely assess Greater Sand Plover life history, population size, distribution and ecological requirements particularly across northern Australia.
- Improve knowledge about dependence of Greater Sand Plover on key migratory staging sites, and non-breeding sites to the in south-east Asia.
- Improve knowledge about threatening processes including the impacts of disturbance and hunting.

The Toondah Harbour Project is not in conflict with the objectives, actions or priorities outlined in the conservation advice for Greater Sand Plover. Conservation and management actions listed in the conservation advice for Greater Sand Plover are more relevant to Commonwealth and State Government planning, however a number of these actions could be delivered through the Project's offsets strategy. The proposed long-term monitoring of shorebird use of Toondah Harbour and the surrounding area during construction and operation of the Project will add to population monitoring programs being carried out in Moreton Bay.

Assessment Against the EPBC Act Significant Impact Assessment Criteria

Potential impacts to Greater Sand Plover from Project activities are addressed in Section 17.4 with adaptive management and monitoring measures outlined in Section 17.5. Assessment against the EPBC Act significant impact criteria for migratory species is provided in Table 7.

The Greater Sand Plover has not been recorded foraging within the Project footprint, has been recorded rarely foraging adjacent to the Project footprint in small numbers and has not been recorded roosting at the Nandeebie Claypan or Oyster Point roost sites within the past 25 years.

An assessment of the likelihood of significant residual impacts of the Project on Greater Sand Plover in accordance with significant impact criteria for a vulnerable species is summarised in *Table 7*. The Project is unlikely to have a significant residual impact on Greater Sand Plover.

Table 7: Greater Sand Plover Significant Impact Assessment.

Significant Impact Criteria for Migratory species	**Impact Assessment Summary**
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	**Significant residual impact unlikely.** Dredging and reclamation will destroy 28.9 ha of tidal flat shorebird feeding habitat. While this habitat is characterised as important habitat for migratory shorebirds, it is not used by Greater Sand Plover, a species that uses other areas of Moreton Bay. The Project will have no direct impacts that could modify, destroy or isolate roosting habitat used by Greater Sand Plover.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	**Significant residual impact unlikely.** No pathways have been identified for an invasive species that is harmful to Greater Sand Plover becoming established in an area of important habitat.
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species	**Significant residual impact unlikely.** The Project is unlikely to seriously disrupt the feeding behaviour of Greater Sand Plover since the species does not feed in the Project area. The Project is unlikely to seriously disrupt the roosting behaviour of Greater Sand Plover if the recommended mitigation measures are successfully implemented, also noting that Greater Sand Plover has not used roost sites adjacent to the Project within the past 25 years, and not by an ecologically significant proportion of the population.

Marine Migratory Species Significant Impact Assessment Against the Migratory Species Criteria

Southern Right Whale Migratory Species Significant Impact Assessment

Southern Right Whale (*Eubalaena australis*) is listed as migratory under the EPBC Act therefore is required to be assessed against significant impact criteria for migratory species.

This section should be read in conjunction with Chapter 16 of the Draft EIS, which provides detailed information on existing Southern Right Whale populations at the Project site, potential impacts resulting from the Project and proposed management measures.

Relevant Conservation Advice and Recovery Plans

There is no approved conservation advice for this species (DAWE 2022). The Conservation Management Plan for the Southern Right Whale (DSEWPC 2012) lists interim recovery objectives (2011-2021) and key threats for this species.
The interim recovery objectives are:

- Demonstrate that the number of southern right whales occurring off south-west Australia (nominally south-west Australian population) is increasing at or near the maximum biological rate.
- Demonstrate that the number of southern right whales occurring off south-east Australia (nominally south-east Australian population) is showing signs of increase.
- The nature and degree of difference between the south-eastern and south-western Australian populations of southern right whales is clearly understood.
- Current levels of legal and management protection for southern right whales are maintained or improved and an appropriate adaptive management regime is in place.
- Anthropogenic threats are demonstrably minimised.

Key threats are entanglement, vessel disturbance, whaling, climate variability and change, noise interference, habitat modification and overharvesting of prey, with seismic surveys and climate change the highest risks to the south-east population (DSEWPC 2012). The proposed development will not increase the risk to this species through entanglement, whaling, climate change, over harvesting of prey, or habitat modification.

Assessment Against the EPBC Act Significant Impact Assessment Criteria

Potential impacts to Southern Right Whale from Project activities are addressed in Section 16.5 with adaptive management and monitoring measures outlined in Section 16.6. Assessment against the EPBC Act significant impact criteria for migratory species is provided in *Table 8*.

The Southern Right Whale migrates between the Southern Ocean and Australian waters, with most of the population using southern Australian waters to breed, calve and rest in the winter months. This species only occasionally uses Moreton Bay. It usually only migrates as far north as Sydney, in NSW, although it occasionally migrates as far north as Hervey Bay. It generally occurs within 2 km offshore of the coast (DSEWPC 2012). Moreton Bay is not considered to be core habitat for the southern right whale, however, individuals have been sighted in Moreton Bay on rare occasions.

The likelihood of vessel collisions on the south east population of this species is considered possible, the consequence minor, and the overall risk high (DSEWPC 2012). However, it is considered that this risk will increase as shipping traffic grows. Further, the impact on an individual, especially in south-east Australia, may have a significant, potentially population-scale effect, if further evidence confirms this as a small demographically discrete population (DSEWPC 2012).

The new marina berths and facilities will address existing community demand, and will not increase boat usage on their own. However, the proposed development will facilitate an increase in ferry trips, and allow larger vessels to use the channel (EIS Chapter: Marine Traffic). The risk to this species from increased vessel disturbance is low during construction (Section 16.5.1) and operation (Section 16.5.3) and will be further reduced by the mitigation outlined in Section 16.6.

The likelihood of an impact of risk from shipping noise on the south east population of this species is considered to be almost certain, the consequence minor, and the overall risk moderate (DSEWPC 2012). The risk from noise from the proposed development is considered to be low (16.5), and will be further reduced by the mitigation outlined in Section 16.6.

Assessments of the likelihood of significant residual impacts of the Project on Southern Right Whale in accordance with significant impact criteria for migratory species are summarised in *Table 8*.

Table 8: Southern Right Whale Significant Impact Assessment.

Significant Impact Criteria for Migratory Species	**Impact Assessment Summary**
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	**Significant residual impact unlikely.** This species only occasionally uses Moreton Bay. It usually only migrates as far north as Sydney, in NSW, although it occasionally migrates as far north as Hervey Bay. It generally occurs within 2 km offshore of the coast (DSEWPC 2012). Using the definition of important habitat in the Guidelines, the MIA does not provide important habitat for this species as it does not support an ecologically significant proportion of the population, the habitat is not of critical importance at a particular life-cycle stage, it is not at the limit of the species range, and the population of this species is not declining in the MIA or Moreton Bay. Further, the Project will not significantly impact any habitat used by this species.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	**Significant residual impact unlikely.** The MIA does not provide important habitat for this species. The project will not result in a harmful invasive species being established.
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species	**Significant residual impact unlikely.** An ecologically significant proportion of the population of this species does not use Moreton Bay, or the MIA.

Loggerhead Turtle Migratory Species Significant Impact Assessment

Loggerhead Turtle (*Caretta caretta*) is listed as migratory under the EPBC Act therefore is required to be assessed against significant impact criteria for migratory species.

This section should be read in conjunction with Chapter 16 of the Draft EIS, which provides detailed information on existing Loggerhead Turtle populations at the Project site, potential impacts resulting from the Project and proposed management measures.

Relevant Conservation Advice and Recovery Plans

There is no approved conservation advice for this species (DAWE 2022). The Recovery plan for Marine Turtles in Australia (DEE 2017) lists interim recovery objectives (20117-2027) and key threats for marine turtles, including this species.

Interim recovery objectives comprise:

- Current levels of legal and management protection for marine turtle species are maintained or improved, both domestically and throughout the migratory range of Australia's marine turtles.
- The management of marine turtles is supported.
- Anthropogenic threats are demonstrably minimised.
- Trends in nesting numbers at index beaches and population demographics at important foraging grounds are described.

Key threats comprise: climate change and variability, marine debris, habitat modification, indigenous take, vessel disturbance, noise interference, recreation and offroad vehicles, diseases and pathogens. The most significant threats for the south west Pacific stock of this species, which include turtles using south east Queensland waters, are fisheries bycatch, marine debris, light pollution and climate change (DEE 2017).

The Project will not increase the risk from these most significant threats, nor from indigenous take, recreation and offroad vehicles. Risks from habitat modification, vessel disturbance, marine debris, light noise are unlikely, and summarised in Section 16.5. Risk from diseases and pathogens are addressed in Table 9.

Assessment Against the EPBC Act Significant Impact Assessment Criteria

Potential impacts to Loggerhead Turtle from Project activities are addressed in Section 16.5 with adaptive management and monitoring measures outlined in Section 16.6. Assessment against the EPBC Act significant impact criteria for migratory species is provided in Table 9.

While Moreton Bay is listed on the National Conservation Values Atlas as a biologically important area for loggerhead turtle nesting and inter nesting, this is limited to low density and infrequent nesting on the sand islands of Moreton, North and Bribie on the eastern side of Moreton Bay. These islands and Caloundra Beaches on the Sunshine coast have been identified as peripheral sites of interest with changing climate are (DAWE 2022, Ha). There are no records of marine turtles nesting within the MIA. Loggerhead turtles nest on open sandy beaches, which do not occur in the MIA, and consequently there is no suitable nesting habitat in the MIA. Moreton Bay is an important foraging habitat for loggerhead turtles, with the main foraging habitat on the Eastern Banks. No "Critical Habitat" as defined under Section 207A of the EPBC Act (Register of Critical Habitat) has been identified and listed for marine turtles, including this species (DEE 2017).

Assessments of the likelihood of significant residual impacts of the Project on loggerhead turtle in accordance with significant impact criteria for migratory species are summarised in *Table 9*.

Table 9: Loggerhead Turtle Significant Impact Assessment.

Significant Impact Criteria for Migratory Species	Impact Assessment Summary
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	**Significant residual impact unlikely.** Using the definition of important habitat in the Guidelines, the MIA does not provide important habitat for this species as it does not support an ecologically significant proportion of the population, the habitat is not of critical importance at a particular life-cycle stage, it is not at the limit of the species range, and the population of this species is not declining in the MIA or Moreton Bay. Further, the Project will not significantly impact any habitat used by this species. While loggerhead turtles are known to use the area in the vicinity of the proposes project, the majority of the population for this species is on the Eastern Banks of Moreton Bay. The Project will not substantially modify, destroy or isolate an area of important habitat for loggerhead turtles.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	**Significant residual impact unlikely.** The Project is unlikely to result in an invasive species becoming established, nor is the area important habitat for loggerhead turtles, with the movement pattens mostly concentrated on the Eastern and Southern shoreline of Moreton Bay.
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species	**Significant residual impact unlikely.** The Project Footprint is not an important breeding, feeding, migratory or resting habitat for loggerhead turtles. Although, some habitat will be lost, it is not considered significant and is therefore unlikely to seriously disrupt the lifecycle of a significant proportion of the loggerhead turtle population.

Green Turtle Migratory Species Significant Impact Assessment

Green Turtle (*Chelonia mydas*) is listed as migratory under the EPBC Act therefore is required to be assessed against significant impact criteria for migratory species.

This section should be read in conjunction with Chapter 16 of the Draft EIS, which provides detailed information on existing Green Turtle populations at the Project site, potential impacts resulting from the Project and proposed management measures.

Relevant Conservation Advice and Recovery Plans

There is no approved conservation advice for this species (DAWE 2022). The Recovery plan for Marine Turtles in Australia (DEE 2017) lists interim recovery objectives (20117-2027) and key threats for marine turtles, including this species.

Interim recovery objectives comprise:

- Current levels of legal and management protection for marine turtle species are maintained or improved, both domestically and throughout the migratory range of Australia's marine turtles.
- The management of marine turtles is supported.

- Anthropogenic threats are demonstrably minimised.
- Trends in nesting numbers at index beaches and population demographics at important foraging grounds are described.

Key threats comprise: climate change and variability, marine debris, habitat modification, indigenous take, vessel disturbance, noise interference, recreation and offroad vehicles, diseases and pathogens. The most significant threats for the southern Great Barrier Reef stock of this species, including green turtles in Moreton Bay (DES 2018), are chemical discharge, ingestion of marine debris and climate change (DEE 2017).

With respect to these most significant threats, the Project will not result in an increase in chemical discharge (EIS Chapter 9), an increase in debris (Sections 16.5 and 16.6), or increase the risk from climate change. Further, the project will not increase risks from indigenous take. Risks from habitat modification, vessel disturbance, marine debris, light noise are unlikely, and summarised in Section 16.5. Risk from diseases and pathogens are addressed in Table 10.

Assessment Against the EPBC Act Significant Impact Assessment Criteria

Potential impacts to Green Turtle from Project activities are addressed in Section 16.5 with adaptive management and monitoring measures outlined in Section 16.6. Assessment against the EPBC Act significant impact criteria for migratory species is provided in Table 10.

Moreton Bay is identified as a Biologically Important Area for the Green Turtle, listed as vulnerable under the EPBC Act. No "Critical Habitat" as defined under Section 207A of the EPBC Act (Register of Critical Habitat) has been identified and listed for marine turtles, including this species (DEE 2017).

Assessments of the likelihood of significant residual impacts of the Project on Green Turtle in accordance with significant impact criteria for a migratory species are summarised in *Table 10*.

Table 10: Green Turtle Significant Impact Assessment.

Significant Impact Criteria for Migratory Species	**Impact Assessment Summary**
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	**Significant residual impact unlikely.** Using the definition of important habitat in the Guidelines, the MIA does not provide important habitat for this species as it does not support an ecologically significant proportion of the population, the habitat is not of critical importance at a particular life-cycle stage, it is not at the limit of the species range, and the population of this species is not declining in the MIA or Moreton Bay. Further, the Project will not significantly impact any habitat used by this species. While green turtles are known to use the area in the vicinity of the proposes project, the majority of the population for this species is on the Eastern Banks of Moreton Bay. The Project will not substantially modify, destroy or isolate an area of important habitat for green turtles.
Result in an invasive species that is harmful to the migratory species becoming established in an area of	**Significant residual impact unlikely.** The Project is unlikely to result in an invasive species becoming established that is harmful to this species, with the majority of the population occurring on the Eastern banks.

Significant Impact Criteria for Migratory Species	Impact Assessment Summary
important habitat for the migratory species	
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species	**Significant residual impact unlikely.** The Project Footprint is not an important breeding, feeding, migratory or resting habitat for green turtles. Although, some forging habitat will be lost, it is not considered significant and is therefore unlikely to seriously disrupt the lifecycle of a significant proportion of the green turtle population.

Hawksbill Turtle Migratory Species Significant Impact Assessment

Hawksbill Turtle (*Eretmochelys imbricata*) is listed as migratory under the EPBC Act therefore is required to be assessed against significant impact criteria for migratory species.

This section should be read in conjunction with Chapter 16 of the Draft EIS, which provides detailed information on existing Hawksbill Turtle populations at the Project site, potential impacts resulting from the Project and proposed management measures.

Relevant Conservation Advice and Recovery Plans

There is no approved conservation advice for this species (DAWE 2022). The Recovery plan for Marine Turtles in Australia (DEE 2017) lists interim recovery objectives (20117-2027) and key threats for marine turtles.

Interim recovery objectives comprise:

- Current levels of legal and management protection for marine turtle species are maintained or improved, both domestically and throughout the migratory range of Australia's marine turtles.
- The management of marine turtles is supported.
- Anthropogenic threats are demonstrably minimised.
- Trends in nesting numbers at index beaches and population demographics at important foraging grounds are described.

Key threats comprise: climate change and variability, marine debris, habitat modification, indigenous take, vessel disturbance, noise interference, recreation and offroad vehicles, diseases and pathogens. The most significant threats for the southern Great Barrier Reef stock of this species, including green turtles in Moreton Bay (DES 2018), are chemical discharge, ingestion of marine debris and climate change (DEE 2017).

With respect to these most significant threats, the Project will not result in an increase in chemical discharge (EIS Chapter 9), an increase in debris (Sections 16.5 and 16.6), or increase the risk from climate change. Further, the project will not increase risks from indigenous take. Risks from habitat modification, vessel disturbance, marine debris, light noise are unlikely, and summarised in Section 16.5. Risk from diseases and pathogens are addressed in Table 11.

Assessment Against the EPBC Act Significant Impact Assessment Criteria

Potential impacts to Hawksbill Turtle from Project activities are addressed in Section 16.5 with adaptive management and monitoring measures outlined in Section 16.6. Assessment against the EPBC Act significant impact criteria for migratory species is provided in Table 11.

Hawksbill turtles have a global distribution, with a small resident population in Moreton Bay (McPhee 2017). Hawksbill turtles in Moreton Bay primarily feed on sponges, seagrass and algae. No "Critical Habitat" as defined under Section 207A of the EPBC Act (Register of Critical Habitat) has been identified and listed for marine turtles, including this species (DEE 2017).

Assessment of the likelihood of significant residual impacts of the Project on Hawksbill Turtle in accordance with significant impact criteria for a migratory species is summarised in *Table 11*. The Project is unlikely to have a significant residual impact on Hawksbill Turtle.

Table 11: Hawksbill Turtle Significant Impact Assessment.

Significant Impact Criteria for Migratory Species	**Impact Assessment Summary**
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	**Significant residual impact unlikely.** Using the definition of important habitat in the Guidelines, the MIA does not provide important habitat for this species as it does not support an ecologically significant proportion of the population, the habitat is not of critical importance at a particular life-cycle stage, it is not at the limit of the species range, and the population of this species is not declining in the MIA or Moreton Bay. Further, the Project will not significantly impact any habitat used by this species. While hawksbill turtles use the area in the vicinity of the proposed project the main habitat use in Moreton Bay are the reefs on the eastern side of Moreton Bay, which will not be significantly impacted by the project. The Project will not substantially modify, destroy or isolate an area of important habitat for hawksbill turtles.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	**Significant residual impact unlikely.** The Project is unlikely to result in an invasive species becoming established that is harmful to this species, with the majority of this species found on eastern banks.
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species	**Significant residual impact unlikely.** The Project Footprint is not an important breeding, feeding, migratory or resting habitat for hawksbill turtles. Although, some habitat will be lost, it is not considered significant and is therefore unlikely to seriously disrupt the lifecycle of a significant proportion of the hawksbill turtle population.