



SECTION 27
Offsets



27.0	Offsets	317
27.1	Introduction	317
27.2	Response to Submissions	317
27.2.1	Suitability of offsets to manage residual impacts	317
27.2.2	Suitability of offsets for marine megafauna and habitat	317
27.2.3	Extent to which offsets address operational phase impacts such as maintenance dredging	317
27.2.4	Suitability of Cleveland bay Fish Habitat Area offset proposal	318
27.2.5	Relevant of offset package in local setting	319
27.2.6	Suitability of inclusion of rock wall habitat as an offset and implication of lighting on this habitat	320
27.2.7	Consideration of offsets in terrestrial fauna species management	320
27.3	Revised Environmental Impact Assessment	321
27.3.1	Legislation and policy	321
27.3.2	Design refinement	322
27.3.3	Supporting studies	322
27.3.4	Revised assessment	322
27.4	Conclusion	323

27.0 Offsets

27.1 Introduction

Offsets proposed to counteract potential residual impacts of the Port of Townsville Limited (POTL) Port Expansion Project (PEP) on Matters of National Environmental Significance (MNES) and Matters of State Environmental Significance (MSES) are discussed in [Chapter B.23](#) (Summary of Key Risks, Impacts and Mitigations) of the Environmental Impact Statement (EIS). This proposal included a range of direct and indirect measures totalling \$6.15 million and including:

- financial and management contribution to expanding the declared Cleveland Bay Fish Habitat Area to protect an additional 1,240 ha of intertidal and sub-tidal benthic habitat in Cleveland Bay under the *Fisheries Act 1994* in partnership with the Queensland Government
- recognition of improving benthic habitat values indirectly through the establishment of rock walls and breakwaters around the perimeter of the land reclamation area
- committed funding to on-ground actions and research to improve water quality entering the Great Barrier Reef lagoon in the region through the North Queensland Dry Tropics Sustainable Agriculture Program
- committed funding to the establishment and operation of a long-term ecosystem health monitoring program for Cleveland Bay and core funding for associated surveys of seagrass, corals, and megafauna.

This section provides information to address submissions received in response to the PEP EIS relevant to offsets. More specifically, key matters raised from the submission process include:

- suitability of offsets to manage residual impacts
- suitability of offsets for marine megafauna and habitat
- extent to which offsets address operational phase impacts such as maintenance dredging
- suitability of Cleveland Bay Fish Habitat Area offset proposal
- relevance of offset package in local setting
- suitability of inclusion of rock wall habitat as an offset and implication of navigational lighting on this habitat
- consideration of offsets in terrestrial fauna species management.

27.2 Response to Submissions

27.2.1 Suitability of offsets to manage residual impacts

12 submissions raised the suitability of offsets to manage residual impacts. The policy framework for environmental offsets was under review at both a Commonwealth and State Government level at the time of the release of the original EIS. A new policy framework has since been established. The offsets policy framework under the EPBC Act and Queensland *Environmental Offsets Act 2014* (Offsets Act) and its application to the revised PEP is discussed in the [Section 27.3.1](#).

27.2.2 Suitability of offsets for marine megafauna and habitat

The Department of Environment and Heritage Protection (DEHP) highlighted the suitability of offsets for dolphin core habitat. The impacts from the revised PEP design on megafauna and the need for offsets are addressed in [Section 8.0](#) of the AEIS. Consistent with the findings in the EIS, a significant residual impact to marine megafauna and their habitat is not predicted to occur from the revised PEP proposal and an offset for this matter is not required to be imposed.

Notwithstanding, elements of the offset proposal as set out in the EIS (expansion of the Fish Habitat Area to include the waters offshore from the Ross River mouth), research projects and long term ecosystem health monitoring will contribute to better understanding and conservation of these species, and improved long term management.

27.2.3 Extent to which offsets address operational phase impacts such as maintenance dredging

As outlined in [Section 2.0](#) of the AEIS, the increase in annual maintenance dredging required to maintain the improved channels and berths associated with the PEP is a modest increase for the addition of 6 operational berths on existing annual maintenance dredging volumes.

In the interim development case, modelling predicts that the total quantity of siltation within all of the dredged areas in the port and the widened channel would be increased by around 17% relative to the present situation.

In the ultimate development case, the fully constructed reclamation and breakwaters act to significantly reduce suspended sediment transport into the outer and inner harbour areas. Modelling of the ultimate case indicates that the total quantity of siltation within all of the dredged areas in the port combined will be increased by about 14% relative to the present situation. This is not considered to represent a significant impact over the current impact from maintenance dredging and

noting that maintenance dredging is assessed progressively over time under a range of State and Commonwealth legislation including the *Environmental Protection Act 1994*, and under the Commonwealth *Sea Dumping Act 1981*.

In terms of other operational impacts from PEP, the additional volume of shipping expected at the port is not predicted to have a significant adverse impact on any matters of National or State environmental significance. Broader planning processes including the North East Shipping Management Plan have examined the implications of additional shipping in the Great Barrier Reef (GBR) region and sought to impose additional controls to protect the World Heritage Area and its values.

On the basis of these predicted residual impacts (none of which are considered significant), an additional offset for operational phase impacts from the PEP is not considered as required.

27.2.4 Suitability of Cleveland bay Fish Habitat Area offset proposal

Four submissions questioned the legitimacy of inclusion of the offset proposal in the EIS to extend the boundary of the Cleveland Bay Fish Habitat Area as a suitable offset on the basis that: (i) the Port does not own, lease or have management rights over the water and seabed in question, (ii) that the specific ecological values within the area of proposed additional Fish Habitat Area have not been surveyed; (iii) that the estimated value of the contribution to ecosystem services (\$142 million) from the initiative was overstated; and (iv) that the impacts from Port expansion would degrade this area, thereby cancelling out the merits of any offset.

In considering these submissions as part of the AEIS, it continues to be asserted that the expansion of the Cleveland Bay Fish Habitat Area represents a meaningful conservation outcome. The benefits of the proposal outlined on Page 829 of the EIS (Section B23) and do not change as part of the revised proposal.

Recognising that the Port is not the owner of the seabed and associated marine waters, POTL sought the concurrence of the Department of Agriculture and Fisheries (DAF) prior to making the proposal to extend the Fish Habitat Area as part of the EIS. The Department indicated strong support for the proposal at the time of the EIS. Much of the proposed offset area of 1240 ha was originally proposed to be part of the Cleveland Bay Fish Habitat Area when it was declared by the Department of Agriculture, Fisheries and Forestry. However it was removed as the Fish Habitat Area needed to take into account developments approved or being assessed at the time of establishment.

Noting the need to develop a marine offset for the PEP, POTL made a decision to forego any future development rights in the area by initiating a dialogue with the Department for its inclusion as part of the offset planning process in the PEP.

Of the 1240 ha that is proposed to be converted to FHA, about 620 ha of this area occurs within the existing Port Exclusion Area of the Great Barrier Reef Coast Marine Park at the mouth of the Ross River (See Figure 27.1).

Inclusion of this 620 ha area as a Fish Habitat Area provides additional conservation planning controls over the area and precludes future dredging or other tidal works in the area.



Figure 27.1 Proposed Fish Habitat Area Extension

Habitat surveys of the 1240 ha area proposed for inclusion into the Fish Habitat Area have not been undertaken as part of the EIS or AEIS on the basis that the area was considered suitable for inclusion when originally proposed by DAF. If required, additional more detailed marine ecological surveys can be carried out to the satisfaction of DAF who administer the *Fisheries Act 1994* as part of a future offset agreement. However, based on a desktop assessment, the following points support the legitimacy of the area's inclusion as a FHA.

- The intertidal areas proposed for inclusion on the eastern bank of Ross River include a mosaic of shallow sand banks, mud flats, mangroves and other marine plants that have known fish habitat value.
- The subtidal area for inclusion as part of the extended Fish Habitat Area was within the sampling area of the latest (2013) annual seagrass surveys of Cleveland Bay. Two of the monitoring sites in eastern Cleveland Bay as part of this survey showed the presence of ephemeral deepwater seagrass. Looking at the location of these monitoring sites and the location of the proposed extension area it is likely that a portion of the subtidal area for inclusion in the FHA would support deep water seagrass habitat.
- The majority of the remainder of the area would likely consist of subtidal soft bottom benthic mud environments similar to that which is being removed by the PEP reclamation or otherwise impacted by capital dredging.

As outlined elsewhere in the AEIS, the marine area being converted to FHA is also a core feeding habitat for inshore dolphin, dugong and turtle species of conservation significance (as outlined in [Chapter 9.0](#) of the AEIS) and used as feeding and resting habitat by migratory waterbirds protected under the EPBC Act. The designation of the area as a Fish Habitat Area and associated development controls will also contribute to the conservation of these species.

In terms of valuing the ecosystem services lost by the proposed Project (reclamation and dredging), and the offset provided by the expansion of the Fish Habitat Area, the monetary values identified in the EIS were based on a conservative estimate of lost or gained ecosystem services using the *Marine Fish Habitat Offset Policy FHMOP005.2* (DPIF, 2012).

Since the release of the EIS, the Queensland Government has reviewed and assimilated FHMOP005.2 into a more standardised Financial Settlement Offset Calculator for determining impacts and financial offsets under its new Environmental Offsets Act and Regulations. However, use of the Calculator to determine a financial settlement offset for the residual impacts from the revised PEP (and subsequent offset benefit from extension of the Fish Habitat Area) has limited relevance on the basis that the Calculator applies only to marine works that directly affect: (i) a protected marine park zone, (ii) a Fish Habitat Area, (iii) fish passage or (iv) damage to marine plants.

The revised PEP does not directly affect any of these prescribed areas. The reclamation and dredging will not impact on fish passage and the reclamation footprint and proposed expanded channel footprint are in areas that do not contain seagrass (based on the current sampling and previous surveys of Cleveland Bay by James Cook University).

Prevailing tide and wind in Cleveland Bay modelling does not predict any impacts on this area. On this basis, the impact of construction of the PEP and operational maintenance of the asset are not expected to affect the values of the Fish Habitat Area and subsequently, and the risk that the offset area would be compromised in the future are considered low.

27.2.5 [Relevant of offset package in local setting](#)

Three submissions commented that the proposed offset package that was put forward in EIS needed to be more focussed and localised on the resources and values of Cleveland Bay where the impacts from the Project would be centred. Several submissions noted that the offsets should be more focussed on direct, on-ground works as opposed to financial contributions to research and monitoring.

The intent of these submissions aligns with key principles for offsets established under both the EPBC Act and under the Queensland Offset Act that favour on ground actions and strategies. However, both offset regimes recognise that practically addressing these principles in a marine context is problematic. This results from a lack of tenure or ownership over the water and seabed in the marine environment and that traditional offset mechanisms that are undertaken on land - such as rehabilitation and restoration of habitats - are much more difficult in the marine environment, have much less certainty regarding flow on effects and is challenging to achieve legislatively in the GBRWHA.

Instead, the strategic direction of marine offsets that has emerged over the past five years has been to focus on building the resilience of marine habitats to both localised anthropogenic impacts as well as broader impacts such as future climate change and extreme weather events. This is consistent with the advice of numerous papers (Bartley *et al* 2013, De'ath *et al* 2012) and reports (Strategic Assessment, 2014, Great Barrier Reef Outlook Report 2014) which have documented the links between reduced coral cover in the inshore areas of the Reef and external factors such as cyclones, ocean warming and nutrients, pesticides and sediments from catchment runoff. Likewise, Coles *et al* 2014 (in press) and Davies *et al* (2014) have noted that seagrass declines in Cleveland Bay are more closely linked to flooding, storms and cyclones as opposed to port maintenance dredging or other anthropogenic activities.

The Port of Townsville recognised the need for and difficulty in developing marine offsets associated with the PEP prior to embarking on the EIS. It engaged with key Government and non-Government stakeholders about environmental offsets and potential marine offset proposals and initiatives prior to the release of the EIS through a combination of meetings, contacts, and email exchanges.

As part of this process, all parties recognised the preference for both direct offsets as well as highly localised solutions that would be of maximum local benefit to Cleveland Bay. The process also examined and discussed what other major marine infrastructure projects had proposed in terms of offsets as well as offset packages and requirements that had been approved for similar infrastructure projects in the region and elsewhere in Australia.

The resultant offset package presented in the EIS reflects the advice and feedback obtained through this process.

The Port of Townsville has consistently indicated both as part of these pre-EIS offset discussions as well as during the public consultation process of the EIS that it would examine any proposals for potential investment as part of an offset package where such projects were considered to be directly relevant to the impacts from the PEP and therefore salient for inclusion as potential offsets. However, there was very little feedback provided in this regard from submitters, stakeholders or Agencies other than an indication that additional offsets should be investigated.

On that basis, the main elements of the offset package outlined in the EIS are proposed to be retained as commitments for consideration as part of the revised PEP, however it is recognised considerable work is currently being undertaken relating to offsetting and net benefit in the World Heritage Area. POTL will work closely with regulators to finalise the offsets package following the EIS assessment.

27.2.6 Suitability of inclusion of rock wall habitat as an offset and implication of lighting on this habitat

Three submitters raised the appropriateness of inclusion of the rock wall habitat that is created as a result of the reclamation and breakwaters as part of any offset package. A submitter also raised if this habitat and its offset values would be adversely affected by future navigational lighting.

The ecological values provided by the rock wall habitat are discussed in [Chapter B.6](#) of the EIS. Based on the survey of existing walls at the Port, the rock walls and breakwaters built as part of the PEP will be gradually recolonised over time by a range of sessile organisms (sponges, algae), which may provide some foraging opportunities for marine megafauna such as turtles, which have been observed to graze along the existing walls of the Port from time to time. The rock walls also represent a structurally complex and locally important habitat for a range of reef-associated fish and shellfish species of direct fisheries significance. As noted in [Chapter B.6](#) of the EIS, however, rock walls as populations of reef fish are not generally considered to be habitat limited (Sale 2006), it is unlikely that the increase in available rock wall habitat will lead to a commensurate increase in fish productivity. However, the rock wall habitats will attract fish to the port area and lead to an increase in the abundance of reef associated species at highly localised spatial scales (i.e. within the port area).

If the existing rock wall habitats at the Port are indicative, the rock wall habitat and the functions that they support are not adversely impacted by the existing light sources at the port including navigational lighting. As such, it would not be expected that required navigational lighting for new facilities would reduce the value or ecosystem services being provided by this habitat.

The inclusion of rock wall habitat within the overall package of offsets is appropriate and permissible to consider under State Government policies on fish habitat offsets and has been duly considered in other port expansion projects in the GBR region. However, it is acknowledged that this aspect of the offset proposal is not recognised under the EPBC and the Commonwealth requirements based upon agency feedback in submissions on the EIS.

27.2.7 Consideration of offsets in terrestrial fauna species management

DEHP requested additional information regarding offsets for impacts to State Significant Biodiversity Values, relevant to fauna species listed under the Queensland *Nature Conservation Act 1992* (NC Act), in accordance with the Queensland Biodiversity Offsets Policy.

The environmental offsets framework in Queensland has undergone significant changes since the preparation of the EIS. The Queensland Biodiversity Offsets Policy was replaced by the Queensland Environmental Offsets Policy in July 2014, with state significant biodiversity values revised and now referred to as MSES. Under this Policy, offset conditions apply where a prescribed activity is expected to have significant residual impact on MSES, i.e. a direct or indirect adverse impact on all or part of MSES, which remains or is likely to remain (whether temporarily or permanently), regardless of the application of mitigation measures, and is, or is likely to be, significant.

MSES include protected wildlife habitat for fauna species listed as endangered or vulnerable or special least concern under the NC Act. With recent changes to the NC Act, the existing reclamation area (adjacent to the Project area) is considered to support opportunistic habitat for one species, Beach Stone-curlew (*Esacus magnirostris*), considered a MSES i.e. listed as vulnerable under the NC Act.

The extent of MSES species populations utilising or preferred habitat present within the Project area is discussed in [Chapter 9.0](#) of the AEIS. One pair of Beach Stone-curlew were observed, on one occasion only, roosting at high tide, in the marine precinct within the existing reclamation area (adjacent to the Project area). A larger population (up to 320 individuals per count) was recorded foraging and roosting, outside and to the south of the Project area on the Ross River sand spit.

The Beach Stone-curlew is not solely restricted to the existing reclamation area nor does this artificial area support preferred habitat for this species due to its constructed and operational nature. Beach Stone-curlerws may utilise the marine precinct and revetments opportunistically for foraging or roosting purposes however, the area does not form part of

any habitat area considered essential or critical to the long-term viability of this species. With the presence of more preferred, less disturbed habitat in the vicinity (in the form of the Ross River sand spit and other intertidal areas of Cleveland Bay and Magnetic Island) and existing disturbed nature of the Project area, the impact to Beach Stone-curlews as a result of the PEP is considered to be low.

With the implementation of mitigation measures outlined in the Construction and Operational Environmental Management Plans, the PEP is not expected to have a significant residual impact on this species, or other MSES, and therefore, an offset is not deemed to be required. POTL however, have committed to implementing a range of offset initiatives outlined in 27.3.4 if the Project is approved on the basis of the PEP delivering positive conservation outcomes and a net environmental benefit. This will include consideration of the additional rock wall habitat as a result of the revised design.

27.3 Revised Environmental Impact Assessment

27.3.1 Legislation and policy

Environmental offsets for the Project are governed by the following documents:

- Commonwealth EPBC Act Environmental Offset Policy (October, 2012)
- Queensland Environmental Offsets Policy - Version 1.0 (July, 2014) and associated *Environmental Offsets Act 2014* and Regulations.

As outlined in these documents, environmental offsets become applicable when the residual impacts from a development or action on a relevant Matter of National or State Environmental Significance are significant and cannot be fully avoided or minimised and where all other Government standards are met.

Offset principles from the two documents concur that suitable offsets must:

1. deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by environment law and affected by the proposed action
2. be built around direct offsets but may include other compensatory measures
3. be in proportion to the level of statutory protection that applies to the protected matter
4. be of a size and scale proportionate to the residual impacts on the protected matter
5. effectively account for and manage the risks of the offset not succeeding
6. be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs
7. be efficient, effective, timely, transparent, scientifically robust and reasonable
8. have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.

It is important to note that offsets are not required for all approvals under the EPBC Act or under the Queensland *State Development and Public Works Organisation Act 1971*. Offsets requirements can be imposed by the approving authorities where the residual impacts (e.g. after the application of reasonable and practicable mitigation) of a proposed action are predicted or likely to be 'significant' and relevant to prescribed matters of National or State Environmental Significance.

Guidance about determining the significance of impacts to matters of National and State significance are outlined in the following documents:

- Department of the Environment (2013) Matters of National Environmental Significance: Significant impact guidelines 1.1
- Department of the Environment (2014) EPBC Act referral guidelines for the Outstanding Universal Value of the Great Barrier Reef World Heritage Area
- Queensland Government (2014) Significant Residual Impact Guideline. Prepared under the Queensland Environmental Offsets Policy.

Offset packages under these documents can comprise a combination of 'direct' offsets and 'other compensatory measures'. Other compensatory measures are those actions that do not directly offset the impacts on the protected matter, but are anticipated to lead to benefits for the impacted protected matter, for example funding for research or educational programs.

In general, offsets should align with conservation priorities for the impacted protected matter and be tailored specifically to the attribute of the protected matter that is impacted in order to deliver a net conservation gain.

Given the difficulty and complexity of implementing direct offsets in the marine environment, compensatory measures tend to be an important component of offsets for marine works.

As outlined in the section previous, under the new Queensland offset policy framework, a financial settlement for marine areas can also be determined based on a financial settlement offset calculator. The calculator provides prospective financial offsets based on spatial impact (ha) to prescribed marine areas including fish habitat areas, protected marine park zones, fish passage areas and marine plants. However, the PEP is not having a direct impact on any of these prescribed MSES.

27.3.2 Design refinement

The project design has been refined as described in [Section 2.0](#) of the AEIS. The PEP footprint of works will no longer occur directly within the boundaries of the Great Barrier Reef Marine Park or Commonwealth Marine Area.

The Project will reduce the size of the WHA property through the reclamation by an area of 152 ha. This represents 0.0004% of the overall property. Given the overall size of the property relative to the disturbance by the Project, the fact that the Project is proposed in an existing port area and the absence of sensitive receptor values in the development footprints, the assessment conclusion is that this impact from the Project is not having a significant impact to any matters of National or State significance. The temporary impacts of the PEP on water quality and marine ecology is expected to be reduced with the revised staging of the Project, use of alternative plant (that generates less turbidity) and the avoidance of at marine placement of dredge material.

27.3.3 Supporting studies

Additional field studies of the marine environment (benthic communities) were undertaken and are discussed in [Section 8.0](#) of the AEIS.

27.3.4 Revised assessment

Impacts associated with the design refinement are expected to be less than that identified in EIS and are discussed in further detail in [Sections 6.0, 8.0](#) and [9.0](#) of the AEIS.

Mitigation measures to manage MNES and MSES are summarised in [Sections 8.0-9.0](#) and [Appendix A1](#) and [A7](#) of the AEIS. With the application of these mitigation measures, the PEP is not expected to have a significant residual impact on any MNES or MSES.

In this circumstance, environmental offsets proposed for the PEP are not strictly required to be implemented within the meaning and scope of Commonwealth and Queensland offset policies. POTL however, have committed to implementing the offset initiatives outlined in this Section if the Project is approved on the basis that:

- 1) The offset proposal will contribute to the PEP delivering positive conservation outcomes and a net environmental benefit, recognising the current condition and low resilience of the GBRWHA.
- 2) This forms part of a contingency offsets plan. That is offsets that are to be implemented as a contingency measure if unexpected impacts occur during Project construction or operational phases. In this context, the proactive implementation of offsets under the PEP as outlined in the EIS and this chapter of the AEIS provides a 'banked' offset for future use should it ever be required and improved understanding and resilience for Cleveland Bay.

Based on the response to submissions, the key offset initiative from the EIS that are proposed to be carried forward in the AEIS for consideration as part of the Final EIS as follows.

- In partnership with DAF, instigating and supporting a proposal to provide additional legislative protection to an area of 1,240 ha of intertidal and subtidal benthic habitat in Cleveland Bay through a proposed amendment to the Cleveland Bay Fish Habitat Area under the *Fisheries Act 1994* (including over 620 ha of habitat outside of the marine park in the Port Exclusion Area).
- Contribution of a one off administrative grant to the Queensland Government to accommodate the expansion of the FHA as well as funding for the management and enforcement of the expanded FHA (with a total funding commitment of \$150,000).
- Committing funding to on-ground actions and research to improve water quality entering the GBR lagoon in the region (through the NQ Dry Tropics Sustainable Agriculture Program and other projects that are recognised under the Reef Water Quality Protection Plan 2013).
- Committing funding to the establishment and operation of a long term ecosystem health monitoring program for Cleveland Bay and core funding for associated surveys of seagrass, corals, and megafauna.

As outlined in the EIS, the offset funding commitments for the above actions remains at a total of \$6.15 million.

If the Project is approved, it is expected the Port will discuss with regulators, confirm the offsets package or modify accordingly to achieve best outcomes and develop a legally binding offset agreement with the relevant regulatory agencies to clarify the offset commitments set out above as well as develop a timetable and implementation plan for delivery.

This will include consideration of appropriate staging of offset commitments given the long term focus of the proposed Project over a 20+ year horizon. This may include the 'banking' of offset investment made in the short term to ensure such actions and activities are included for consideration as part of future stages of the work.

Where required, the offset agreement will also include any additional requirements or commitments imposed as part of any conditions of approval for the Project.

27.4 Conclusion

The key elements of the offset proposal outlined in the [Chapter 23.3](#) of the EIS continue to be relevant to the impacts of the revised PEP proposal. The measures described in the EIS and summarised above serve to provide additional environmental safeguards to offset the unavoidable impacts from the Project and seek to achieve a net environmental benefit.

These initiatives are carried forward and submitted for consideration by the duly delegated authorities under the *Queensland State Development and Public Works Organisation Act 1971* and EPBC Act.

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