1. POLICY STATEMENT

This policy\(^1\) sets the requirements of Fisheries Queensland, of the Department of Agriculture, Fisheries and Forestry (DAFF), for environmental offset conditions to counterbalance permanent or temporary impacts or loss on fisheries resources or fish habitat relevant to fisheries development approval (FDA) decisions under the *Fisheries Act 1994* (the Fisheries Act) and *Sustainable Planning Act 2009* (the Planning Act).

The Fisheries Act regulates fish habitats. Fisheries Queensland has responsibility for protection and enhancement of the community’s fisheries resources and fish habitats using the principles of ecologically sustainable development (ESD). The head of power for protection of all marine plants and for the declaration and management of declared Fish Habitat Areas (FHAs), within which development is restricted, is under the Fisheries Act. Assessment of approvals for fisheries related development activities complies with the integrated development assessment system (IDAS) of the Planning Act.

Environmental offset conditions may be imposed on fisheries development approvals under Section 76IA of the Fisheries Act, and under the Planning Act Sections 346 and 346A (i.e. subject to cost-effective on-site mitigation measures for the development that avoid or minimise negative impacts of the development on the natural environment). Section 76(2)(e) of the Fisheries Act allows the chief executive to impose conditions in accordance with mitigation measures for any loss of fish habitat.

This policy is a specific-issue offset policy for marine fish habitats under the Queensland Government Environmental Offsets Policy (QGEOP)\(^2\) (see Attachment 1) and may be referenced to address requirements of specific-issue offset policies for coastal habitats (below highest astronomical tide) under the Biodiversity Offsets Policy.

2. BACKGROUND AND CONTEXT

This policy follows QGEOP policy principles that direct the way offsets must be used to contribute to ESD:

1. Offsets will not replace or undermine existing environmental standards or regulatory requirements, or be used to allow development in areas otherwise prohibited through legislation or policy.
2. Environmental impacts must first be avoided, then minimised, before considering the use of offsets for any remaining impact.
3. Offsets must achieve an equivalent or better environmental outcome.
4. Offsets must provide environmental values as similar as possible to those being lost.
5. Offset provision should minimise the time-lag between the impact and delivery of the offset.
6. Offsets must provide additional protection to environmental values at risk, or additional management actions to improve environmental values.
7. Offsets must be legally secured for the duration of the offset requirement.

Fish habitat offsets are determined by the delegated Fisheries Queensland officer where a development proposal to remove, damage or destroy marine plants or undertake works in a declared FHA is assessed as acceptable from a fisheries perspective. Merits of the development proposal are assessed against fisheries policies, and only then are proposed offsets agreed for any justified residual impacts. Offset proposals are formalised as a condition of the fisheries development approval. The offer of monetary payments as an offset does not secure the issue of an FDA.

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\(^1\) Replaces Fish Habitat Management Operational Policy (FHMOP 005) and is prepared by Fisheries Queensland (DAFF) as offset policy regulator and decision-maker for marine fish habitat offsets.

\(^2\) Queensland Government Environmental Offsets Policy

Fisheries Queensland considers approval or refusal of fish habitat impacts based on the assessment context of the legislative provisions (the Fisheries and Planning Acts), policies, the purpose proposed, rights of the applicant (e.g. existing approvals), benefits, impacts, alternatives, hardships and all approaches identified by the applicant to avoid, minimise and mitigate fish habitat loss (Figure 1). Note that FHMOP policies are the basis of Fisheries Queensland’s fisheries development approval decision making.

**Fisheries development approval application**

(Planning Act & Fisheries Act)

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**Avoid, minimise & mitigate fish habitat loss**

Fish Habitat Management Operational Policies (FHMOPs) & legislation e.g. address fish habitat best practice measures; site restoration

**Development assessment & specific FHMOPs**

FHMOP 001 - Marine plants & other tidal fish habitats
FHMOP 002 - Declared Fish Habitat Areas
FHMOP 004 - Dredged spoil disposal
FHMOP 010 - Reclamation of tidal fish habitats (e.g. removal of yabby banks, crab communities)

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**Approval**

In accordance with FHMOPs & legislation; Offsets triggered if fish habitat area $\geq 25 \text{ m}^2$ (public purpose) or $\geq 17 \text{ m}^2$ (private purpose)

**Refusal**

In accordance with FHMOPs & legislation. Offsets not triggered.

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**Offsets**

Offsets for marine fish habitat loss (remaining or unavoidable impacts of activities/works)

**Offsets negotiated & secured**

**Offset policies & metric**

QGEOP – framework and principles
Marine Fish Habitat Offsets Policy - marine fish habitat offsets selection and metric (fish habitat offset package calculator) to assign a marine fish habitat mosaic value based on fisheries specific ecosystem services

**Approval (plus Conditions)**

e.g. environmental offset conditions (Planning Act & Fisheries Act)

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**Figure 1 Fisheries development approval application process for assessment of marine fish habitats and offsets**

Development assessment by Fisheries Queensland addresses all impacts of proposed marine fish habitat losses and all fish habitat gains through a mitigation and offset hierarchy of ‘avoid, minimise, mitigate and offset’. All approved temporary or permanent fish habitat losses require the use of offsets to balance residual impacts.
2.1 USE AND SELECTION OF OFFSETS

Offsets may be direct offsets or indirect offsets. For direct offsets, spatial areas of fish habitat are used as a surrogate for loss or gain of fisheries productivity. Principles for selection of direct fish habitats offsets are:

- equivalent or better environmental outcomes (QGEOP Principle 3);
- similar environmental values (QGEOP Principle 4); and
- additional protection and management (QGEOP Principle 6).

Where the above principles can not be achieved (using direct offsets), indirect offsets are considered as financial reparation based on loss of values of function and services of fish habitats (a surrogate for loss based on habitat/ fisheries specific component adjustment of 'total ecosystem services' (TES) for estuaries extrapolated from Costanza et al 1997\(^3\)). In calculating offsets, fish habitat types are equivalent in value when based on the provision of similar/identical ecosystem services and functions supporting fisheries.

Fish habitat protection and management benefits supported by indirect offsets are again subject to QGEOP Principles 3, 4 and 6.

Use of offsets, either onsite or offsite, for residual or remaining fish habitat losses always follows the impact reduction approach to ‘avoid, minimise and mitigate’ (e.g. using best management practices; redesign and/or relocation to reduce impacts; providing replacement habitat or provision of artificial fish habitat).

Selection of offset proposals requires ‘like for like’ proposals as ‘marine fish habitat for ‘marine fish habitat’ being the first priority. Where proposed direct offsets are not possible, or use of proposed direct offsets does not fully address all residual development impacts, indirect offsets may then be considered.

Offset funding (in-kind or as a financial contribution) may be provided as an ‘indirect offset’ where a link with marine fish habitats and fisheries resources is identifiable (research etc). The Fisheries Research Fund\(^4\) is used where financial contributions are accepted as an indirect offset. Alternately, Fisheries Queensland may arrange for a third party (e.g. a tertiary institution or local natural resource management group) to deliver the offset under a Deed of Agreement or departmental contract.

Once offsets (direct and/or indirect) to address justified and unavoidable remaining impacts of the development proposal are assessed and negotiated, the agreed offsets are secured through reasonable and relevant conditions or in combination with an Offset Agreement (Deed of Agreement). In cases where state government agencies are required to deliver offsets, a ‘letter of obligation’ or Memorandum of Understanding, initiated by Fisheries Queensland, may be used to formally recognise the planned offset delivery. Fisheries Queensland monitors the delivery of fish habitat offsets and reports to the offset provider.


3. SCOPE

This policy is applied when Fisheries Queensland considers inclusion of environmental offset conditions on development approvals once a decision-maker has determined that not all development impacts to marine fish habitat can be avoided, minimised or mitigated. It applies in situations where a fisheries development approval is required for marine fish habitats, specifically:

1. marine plants and other tidal fish habitats; and/or
2. declared Fish Habitat Areas

for works related thresholds:

1. Public works – fish habitat impact ≥ 25m² (0.0025 ha); or
2. Private works – fish habitat impact ≥ 17m² (0.0017 ha); and

This policy is used to support:

- Fisheries Queensland marine fish habitat offsets decisions triggered by assessment of development approvals;
- Offset selection and use; and
- Development of legally binding Offset Agreements.

This policy does not apply to activities shown in Table 1:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Not applicable/ exempt</th>
<th>Refer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss of existing infrastructure that impacts the fishing industry or compensation for the removal of fishers' access</td>
<td>Not applicable</td>
<td>Fisheries Queensland fisheries management response e.g. implementation of input and output controls</td>
</tr>
<tr>
<td>Waterway barrier works in non-tidal areas</td>
<td>Not applicable</td>
<td>Waterway barrier works approvals policy FHMOP008</td>
</tr>
<tr>
<td>Self-assessable development code activities (excluding marine plant management strategies under MP06) or educational, research, monitoring, restoration and mosquito management activities authorised under a FDA approval</td>
<td>Exempt</td>
<td>Refer to code criteria of MP01 collection of dead marine wood MP02 maintenance of lawful structures on farm drain maintenance MP04 powerlines maintenance MP05 education, research, monitoring MP06 minor impact works Refer to policies FHMOP001 marine plants, tidal habitats FHMOP002 declared fish habitat areas</td>
</tr>
<tr>
<td>Declared Fish Habitat Area code of practice activities</td>
<td>Exempt</td>
<td>Refer to code criteria of FHACoP001</td>
</tr>
</tbody>
</table>

5 Development undertaken on Commonwealth land and waters is exempt from State agency approval e.g. Commonwealth airport lands. Specific exemptions from obtaining a fisheries development approval apply under legislation such as the Mineral Resources Act 1989, Biodiscovery Act 2004, Racing Act 2002 etc

6 The thresholds for fish habitat offset requirements are based on the maximum allowable disturbances permitted under current Fisheries Queensland fisheries self-assessable development codes.

7 Refer to Department of Agriculture, Fisheries and Forestry
Under (QGEOP)\(^8\), three (3) additional specific-issue offset policies currently exist:

- Policy for Vegetation Management Offsets (Vegetation Management Act 1999)
- Offsets for Net Gain of Koala Habitat in southeast Queensland Policy (May 2010)
- Queensland Biodiversity Offset Policy (2011)

Environmental offset policies of the Commonwealth Government (Environmental Protection and Biodiversity Conservation Act 1999\(^9\)) may require conditioning of an offset about a development impact involving marine fish habitat.

Where a decision maker (including the relevant Assessment Manager under the Planning Act or Queensland Co-ordinator General under the State Development and Public Works Organisation Act 1971) determines a development requires an offset under one or more of the specific-issue policies, including marine fish habitat, offsets are assessed and agreed concurrently by DAFF to address the impacted marine fish habitat values.

As a specific-issue offset regulator\(^10\) Fisheries Queensland may concurrently assess applications involving multiple offsets requirements under IDAS or as a referral agency for applications made under the State Development and Public Works Organisation Act 1971 (SDPWO Act). The QGEOP allows offset packages to be developed for multiple offset requirements\(^11\). Marine fish habitat offsets can be established locally within northern and southern Fisheries Queensland administrative regions under broader programs for a ‘Strategic Approach to Offsets’.

4. DEFINITIONS
Refer Attachment 2. Where any term is already defined in the Fisheries Act or the Planning Act, this offset policy does not redefine the term.

5. KEY PRINCIPLES
All offsets must meet the four (4) key principles, for:

- Decision-making (How offset decisions are made)
- Direct and indirect offsets (Types of offsets allowed)
- Fish habitat offset package calculations (Offset calculations)
- Securing an offset and use of offset agreements (Conditions on a development approval, use of an offset agreement)

PRINCIPLE 1: DECISION-MAKING
Decision-making and agreement with offset proposals are subject to:

1. The decision to issue an FDA under the relevant Fish Habitat Management Operational Policy i.e. using information provided, including avoiding, minimising, and mitigating fish habitat impacts, the precautionary principle and ESD;

\(^8\) See Department of Environment and Heritage Protection
\(^9\) See Department of Sustainability, Environment, Water, Population and Communities
\(^10\) See Department of Environment and Heritage Protection
\(^11\) See Department of Environment and Heritage Protection
2. The remaining fish habitat impact approved i.e. once mitigation areas have been deducted from areas of temporary or permanent impacts;
3. The area of fish habitat impact approved under the FDA being equal to or above threshold triggers\textsuperscript{12} for private and public development impacts as follows:
   \[ \geq 17 \, \text{m}^2 (0.0025 \, \text{ha}) \quad \text{– (private); and} \]
   \[ \geq 25 \, \text{m}^2 (0.0017 \, \text{ha}) \quad \text{– (public);} \]
4. A Fisheries Queensland assessment to accept/ refuse proposed offsets using a hierarchy of direct and indirect offsets for the remaining fish habitat impact (Table 2);

Table 2 – Offsets considered acceptable

<table>
<thead>
<tr>
<th>Using one or a combination, of the following (A1, A2 and B)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A1. Direct Offsets</strong> (onsite and/or offsite); and/or</td>
</tr>
<tr>
<td>[Fish habitat enhancement/ restoration/ rehabilitation/ connectivity/ creation]</td>
</tr>
<tr>
<td><strong>A2. Direct Offsets</strong> (onsite and/or offsite); and/or</td>
</tr>
<tr>
<td>[Fish habitat exchange (increased protection via security and/or additional management benefits/ additional protection of nominated areas e.g. declared Fish Habitat Areas)]</td>
</tr>
<tr>
<td><strong>B. Indirect Offsets</strong> (in-kind or monetary payments).</td>
</tr>
<tr>
<td>[Associated costs of applied research (research funding for projects e.g. Fish Habitat Research and Management Program) or investigative resource inventories;]</td>
</tr>
<tr>
<td>Associated costs of education, training or extension (e.g. natural resource management programs; Marine Fish Habitat Scholarships Program; fish habitat signage);</td>
</tr>
<tr>
<td>Associated costs of fish habitat enhancement, restoration, rehabilitation, connectivity or creation (management and delivery costs of rehabilitation or fish habitat protection projects); or</td>
</tr>
<tr>
<td>Associated costs of fish habitat exchange (e.g. coastal land acquisition, additional protection of nominated areas)]</td>
</tr>
</tbody>
</table>

5. Specific exclusions, i.e. the following proposals, and their financial or in-kind expenditure or costs, are unacceptable as fish habitat offsets:
   - developing strategic management responses as fish habitat management plans, unless these incorporate development and implementation of operational plans and/or rehabilitation works (e.g. marine plant management strategies); or
   - searching for potential fish habitat offsets; or
   - fish habitat monitoring – e.g. proponent, government or community monitoring programs; and

6. Providing similar environmental values between losses and gains - ‘marine fish habitat’ for ‘marine fish habitat’ (i.e. ‘like for like’).

**PRINCIPLE 2: DIRECT AND INDIRECT OFFSETS**

Direct and indirect offset proposals are subject to:

1. Landholder, government agency and proponent written agreement on a case by case basis to use sites having habitat connectivity with, or found within the same bioregion as, the approved residual marine fish habitat impact, identified:
   - as a single fish habitat offset project;

\textsuperscript{12} The thresholds for fish habitat offset requirements are based on the maximum allowable disturbances permitted under current Fisheries Queensland fisheries self-assessable development codes.
• in the local region e.g. a Strategic Approach to Offsets (SATO);
• in a declared Fish Habitat Area;
• under a natural resource management plan/ program; or
• under a marine plant management strategy; and

2. Landholder, government agency and proponent written agreement (on a case by case basis) for projects goals and performance indicators, including an objective to commence prior to fish habitat loss and reduce delays in returning fisheries productivity, using:

a) **Fish habitat enhancement** – as a direct offset to improve fish habitats to increase fisheries productivity, by:
   • providing better fish access such as restoring tidal flow to a site; or
   • removing impacts or artificial barriers to restore fisheries connectivity between fish habitats e.g. including the removal of instream structures; or
   • using natural substrates that will assist natural mangrove colonisation; or
   • if appropriate, using artificial habitats or structures to replicate fish habitat functions; or
   • installing fish friendly structures e.g. environmentally friendly moorings; and/or

b) **Restoration and rehabilitation or creation of fish habitat** – as a direct offset to restore degraded habitats and return fish habitat values, ensuring:
   • existing (naturally occurring) marine fish habitats are not replaced with another habitat, unless severely degraded;
   • the function of existing fish habitats is not compromised by removing values, e.g. placement of dredged spoil on mud flats for creation of mangrove habitats;
   • the extent of fish habitat to be restored is an area equal to or greater than the impacted fish habitat (using one or multiple restoration or rehabilitation sites, or choosing a fish habitat greater in size than the development area), or if used in conjunction with other offsets, a smaller area i.e. site selection requires consideration of project costs; and

c) **Fish habitat exchange with increased security** – as a direct offset where the lands proposed for exchange contribute to the fish habitat mosaic and landholders or leaseholders may relinquish critical fish habitats to the state or local government to secure and protect the fish habitat from future development, using:
   • additional or new protection for an area e.g. declared Fish Habitat Area;
   • a tenure conversion - freehold to public land using landholder/ leaseholder written agreement to transfer tidal fish habitats i.e. from private tenure to public land as part of a government managed program or gazetted e.g. declared Fish Habitat Area network, or adjoins a declared Fish Habitat Area;
   • landholder covenants or public reserves with local government as trustee;
   • a minimum of five (5) times the impact area or if used in conjunction with other offsets, a smaller area of fish habitats for any permanent fish habitat losses (see Principle 3); and

d) **Contributions in-kind or as a ‘monetary payment’** – as an indirect offset using financial reparation for loss of fish habitats, as either: in-kind support committed by the proponent; payments from the proponent administered through the Fisheries Research Fund (the Fisheries Act); or in agreement between the proponent and third party offset providers in order to meet the associated costs for one or more of the following:
   • **Applied research**, investigative resource inventories, fish habitat mapping projects – projects conducted by an organisation or tertiary institute linked to Fish Habitat Research and Management Program research and management stream priorities to assist fish habitat management and research outcomes; or investigative resource inventories and habitat mapping to aid fish habitat management activities;
   • **Education, training or extension** – i.e. provision of signage or educational materials for marine fish habitat information/ management and associated costs for programs relating to

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13 See Department of Agriculture, Fisheries and Forestry for further information.
14 See Department of Agriculture, Fisheries and Forestry for further information.
16 Experimental research performed may improve technical application or innovative best practice e.g. fish friendly structures
fish habitat management, education and awareness for community benefit (including, for example: natural resource management programs; and Marine Fish Habitat Honours Scholarships Program), and/or

- **Enhancement, restoration, rehabilitation or creation** – associated management and delivery costs of rehabilitation or fish habitat protection projects as outlined in a) and b) (above) including costs of:
  - third party land stewardship payments or to improve freehold fish habitats adjoining a declared Fish Habitat Area, under a covenant;
  - fish habitat components of a natural resource management plan; and/or
- **Fish habitat exchange or increased security** – associated management and delivery costs, as outlined in c) above.

Note that costs associated for monitoring programs (e.g. community, developer or government fish habitat monitoring programs) are not valid as offsets.

**PRINCIPLE 3: FISH HABITAT OFFSET PACKAGE CALCULATIONS**

Fish habitat offset package calculations require:

1. Recognition and valuation of fish habitat types forming the fish habitat mosaic by:
   a) retaining bare areas, seagrasses, saltmarshes or mangrove dominated habitats to provide fisheries specific ecosystem services (FSES);
   b) assuming fish habitat types are equivalent in value when based on the provision of similar/identical ecosystem services and functions supporting fisheries; and
   c) adopting the ‘annual marine fish habitat mosaic value’ for FSES generated by all marine fish habitat types as the calculation of 11% of the annual economic value of the total ecosystem services (TES) for estuaries from Costanza et al 1997 (Attachment 3));

2. Replacement of fisheries function and services (‘assets’) changed or lost by temporary and permanent development impacts to fish habitat, using ‘spatial area’ and/or ‘value’ as surrogates for loss of fisheries productivity, recognising:
   a) direct offsets as spatial areas; and/or
   b) indirect offsets as financial reparation,
   and a requirement to meet the offset where a fish habitat offset package calculation has an indirect offset amount equal to, or above, an offset value threshold of $1,000 (GST exclusive amount);

3. An offset hierarchy and objectives, timeframes and land size based ratios (Table 3) for:
   A1. Direct Offsets – Enhancement, restoration, rehabilitation or creation as on-ground or in situ conservation actions; and/or
   A2. Direct Offsets – Fish habitat exchange or increased security e.g. providing security to suitable fish habitats through the declared Fish Habitat Area network or an equivalent management mechanism (covenant, reserve), and that component of administrative and management financial costs involved; and /or
   B. Indirect Offsets – in-kind contributions or a ‘monetary payment’;

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17 Comparable to other economic estimates reporting 11% of the total mangrove forest value estimated to contribute to fisheries in habitat-fishery linkage/habitat-production models (refer to Barbier, E.B (2007) in Attachment 1 and Attachment 3).


Table 3 Offset hierarchy and objectives for fish habitat offset package calculations (Attachment 4)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Objectives</th>
</tr>
</thead>
</table>
| **A1. Direct Offset**<br>(Enhancement, restoration, rehabilitation, connectivity or creation) | 1) To rehabilitate an area to agreed project stages (i.e. stages for progressive or full rehabilitation) within agreed time frames and provide consistent productivity gain. Maximum productivity gain of 18 years out of 20 years (for temporary losses) and 45 years out of 50 years (for permanent losses) (allowing for a lead time to achieve the rehabilitation/ restoration gain that is 10% of the maximum time frame [2 year lead time (20 year temporary cycle) and 5 year lead time (50 year permanent cycle)];
2) To reach an offset: impact area ratio of 1:1 for fish habitat connectivity restoration, unless the agreed sum of all area(s) restored is greater than the impact area (resulting in a higher offset: impact area ratio) or when ‘A1. Direct Offsets’ are used in conjunction with A2. and B. offsets (resulting in a lower offset : impact area ratio) as agreed;
3) To achieve an equivalent or better environmental outcome, specifically for fish habitat connectivity, function, protection, research or threat removal;
4) To provide similar environmental values between losses and gains - ‘marine fish habitat’ gains for ‘marine fish habitat’ losses;
5) To achieve additional protection or management to improve environmental values beyond other environmental measures already required; and
6) The proponent:
   a. funds the cost of delivery of offsets including ongoing management of the rehabilitation/restoration sites; and
   b. meets the cost of delivery of offsets under the Offset Package with an allowance for offset project administration (capped at 10% of total offset amount) and ongoing management costs of the rehabilitation site over the agreed period (the defined time frame, up to 10 years); and
   c. monitors and reports on the offset site. |
| **A2. Direct Offset**<br>(Fish habitat exchange or increased security) | 1) To satisfy objectives 3), 4) and 5) in A1. (above);
2) To provide increased protection (exchange or increased security) for an area for a time frame of 50 years (temporary and permanent losses);
3) To reach an offset: impact area ratio of 5:1 for losses unless ‘A2. Direct Offsets’ are to be used in combination with A1. and B. offsets (therefore resulting in a lower offset: impact ratio) as agreed;
4) To use a legislative instrument for the security and management benefits with the lead agency e.g. declared Fish Habitat Area gazettal; and
5) The proponent funds:
   a. the purchase or property resurvey, if appropriate; and
   b. initial establishment management costs under the Offset Package with an allowance for administration (capped at 10% of total offset amount) and costs of site management, up to ten (10) years. |
| **B. Indirect Offset**<br>(in-kind or as a monetary payment) | 1) To address the remaining area (i.e. the area that is less the: mitigated impact area footprint; and both the areas and costs agreed for A1. and/or A2. Direct Offsets) using financial reparation;
2) To reduce the annual marine fish habitat mosaic value based on tidal zone and the impact and offset site location within Zone B (HAT plus 20 metre separation distance) (refer Fig 2-1, Attachment 2);
3) To use present value calculations and a 0% discount rate applied to the annual marine fish mosaic value over a minimum 2 year and maximum 20 year time frame (for temporary losses) and over a fixed 50 year time frame (for permanent losses); and
4) The proponent makes a monetary payment, plus GST, for financial reparations to DAFF under the Fisheries Research Fund, or a third party for: research; natural resource management programs; management and delivery costs to achieve rehabilitation or additional fish habitat protection. |
4. Use of the Fish Habitat Offset Package Calculator (Attachment 4) and areas\textsuperscript{20} reported in hectares to compare the proposed impact and offset sites. Marine fish habitat types (bare, seagrass, mangroves, or saltmarsh areas) are considered to have the same fisheries specific ecosystem services value\textsuperscript{21} referred to as the ‘marine fish habitat mosaic value’ (expressed in Australian dollars)\textsuperscript{22}, which is the annually updated fish habitat value (11\%\textsuperscript{23} of TES value for estuaries), estimated in January each year, from:

- the global value of total ecosystem services (TES) for estuaries estimated by Costanza \textit{et al} (1997)\textsuperscript{24} and adjusted using annual purchasing power parity rates of the previous year (figures available from the OECD)\textsuperscript{25} (see Attachment 4);

5. A tidal elevation adjusted value reduction is applied to the marine fish habitat mosaic value for fisheries contributions based on fish habitat tidal position\textsuperscript{26}. The reduction is solely applied to marine fish habitats within Zone B (HAT plus 20 metre separation distance). Annual values (ha\textsuperscript{-1} yr\textsuperscript{-1}) applied to impact and offset areas relative to HAT are as follows:

- **Zone A** (below HAT): 100% marine fish habitat mosaic value;
- **Zone B** (HAT + 20 metre separation distance): 50 % marine fish habitat mosaic value;

6. Use of Zone B marine fish habitat mosaic value in fish habitat offset package calculations is subject to the level of existing disturbance, for example:
   a) Zone B annual value applies, where:
      - Undisturbed terrestrial environments contain remnant marine habitats (including marine plants) to be impacted; or
      - Offset proposals include modified marine habitats to be restored to their former state, including through tidal re-connection with freshwater/brackish habitats; and
   b) Zone B annual value is not applied to proposed impact areas already occupied by existing land uses, for example:
      - agriculture activities (e.g. cane farming, grazing); or
      - residential or industrial development;

7. Use of an annual discount rate of 0\%\textsuperscript{27} to determine the present value of the marine fish habitat mosaic value lost or gained over a maximum time frame of 20 years (temporary losses) and fixed time frame of 50 years (permanent losses) (Attachment 4);

\textsuperscript{20} No weightings currently apply to regional fish habitat variation, fish habitat condition or fish habitat scarcity.
\textsuperscript{21} This approach will be reviewed as models of fish habitat value per hectare and/or evidence of a non-linear relationship between fish habitat and fisheries productivity in Queensland become available. In the interim, a fish habitat offset package calculator for present value calculations uses a 0\% discount rate (Attachment 4).
\textsuperscript{22} The adjusted fish habitat mosaic value is AUD 61,846 ha\textsuperscript{-1} yr\textsuperscript{-1} in 2012 for total ecosystem services for estuaries, as extrapolated from Costanza \textit{et al} (1997)
\textsuperscript{23} Comparable to other economic estimates reporting 11\% of the total mangrove forest value estimated to contribute to fisheries in habitat-fishery linkage/habitat-production models (refer to Barbier, E.B (2007) in Attachment 1) (Attachment 3).
\textsuperscript{25} Annual revision of per hectare value is undertaken in accordance with purchasing power parity based on annual rates determined for the last year - OECD publishes purchasing power parity rates (http://stats.oecd.org/index.aspx?datasetcode=SNA_TABLE4)
\textsuperscript{26} See Figure 2-1 in Attachment 2 for tidal elevation diagram
\textsuperscript{27} For offset determination, Fisheries Queensland assigns a 0 \% annual discount rate to (surrogate) fisheries specific ecosystem services for calculations of fish habitat value expressed in $ha\textsuperscript{-1} year\textsuperscript{-1}, for up to 20 years (temporary losses) and 50 years (permanent losses). A 0\% discount rate recognises that natural resources do not depreciate in value. The assigned 0\% discount rate selected for use in all indirect financial offset calculations holds the value of marine fish habitats over time and recognises the importance of fish habitats to all fishers, the fishing industry and community. Similarly, a 0\% discount rate applies to any direct offsets proposed and generated as rehabilitation or enhanced fish habitat protection, thus avoiding depreciation of the direct offset value achieved by a proponent.
8. Use of eligible financial component deductions for offset project delivery where an offset delivery cost is recognised in the fish habitat offset calculator if it is equal or less than 10% of the calculated marine fish habitat mosaic value offset amount i.e. agreed indirect offsets have costs associated to administer or implement the offset project and these may be used to meet offset requirements;

9. Exclusion of any ineligible financial component that may be triggered: prior to the development approval (expenditure for offset searches or identification); or resulting from required monitoring conditions or in support of other monitoring programs (e.g. community, proponent or government fish habitat monitoring programs) i.e. these amounts may not be used to meet offset requirements; and

10. Consideration of the total impact area for temporary and permanent impacts (in Zone A, Zone B or a combination of both Zones), and applying an administrative threshold to limit the use of an offset condition to situations where the indirect offset for total impact area (all zones) is equal to or above an administrative threshold value of $1,000 (GST exclusive) (Attachment 4).

**PRINCIPLE 4: SECURING AN OFFSET AND USE OF OFFSET AGREEMENTS**

1. Securing an offset requires:
   a) a FDA condition and/or legally binding Offset Deed of Agreement (Attachment 5) arranged as:
      - FDA condition & Offset Deed of Agreement (for financial contributions to be allocated to the Fisheries Research Fund28 under agreement with Fisheries Queensland (DAFF) or for in-kind contributions to be recognised as a FDA condition; or
      - FDA condition & Fisheries Queensland initiated letter of obligation/ Memorandum of Understanding (MoU) (state government agencies only) covering agreed offsets; or
      - FDA condition & Multiple Offsets Package (jointly addressing vegetation, biodiversity, marine fish habitat, koala offsets for a development); or
      - FDA condition & Strategic Approach to Offsets program (integrating new & existing offset projects for multiple development projects within a pre-determined region); or
      - FDA & Advance Offset Deed of Agreement;

   b) timing of any offsets to be considered to allow:
      - offsets to be addressed in a timely manner from the date of the approval or where permitted, in advance of the proposed loss; and
      - finalisation of the legally binding Offset Deed of Agreement before operational works involving marine fish habitat loss (refer template, Attachment 5);

   c) monitoring to document the success of the approved offsets and/or projects to:
      - minimise delay in completion of and compliance with the offset requirement; and

   d) reporting and review including:
      - agreed offsets registered by Fisheries Queensland (via the conditioned approval or regional offset requirements database);
      - offset outcomes assessed against performance criteria and time frames specified in: the FDA; Deed of Agreement; letter of obligation; Multiple Offsets Package; or Strategic Approach to Offsets program;
      - annual monitoring of fish habitat values and outcomes for approved offsets and/or projects to assist general habitat management review of offsets;
      - compliance with delivery of offset projects; and
      - projects and research outcomes identified in the Fish Habitat Research and Management Program (FHRMP) reported annually online.

2. Use of an Offset Agreement for financial offsets requires:
   a) a FDA offset condition ensuring preparation of a Deed of Agreement (Offset Agreement) to satisfy the default IDAS timeframes, and ensuring an Offset Deed of Agreement is entered into for:

---

• receipt of the stated financial contribution (Offset Amount) within a reasonable and relevant timeframe for the proposed offset activities;
• offset delivery with milestone options beyond one (1) financial year or overlapping two (2) or more financial years (e.g. contributions to research);

b) DAFF Offset Deed of Agreement Template (refer Attachment 5):
• independent of the default IDAS timeframe for DAFF to draft for a proponent’s perusal and agreement; and
• for each party to sign and retain a copy; and

c) identification of roles and risks etc using Table 6-1 (Attachment 6)\(^{29}\) where a financial contribution is made, including a proponent credit check (by Fisheries Queensland) prior to tax invoice issue (or not, when payment without issue of a tax invoice is made and a reciprocal Fisheries Queensland tax invoice is issued instead).

3. Use of offset funds (Fisheries Research Fund) by a third party requires:
   a) a contract between a third party (e.g. natural resource management group or tertiary institution) and Fisheries Queensland, prepared using DAFF contract templates and independently of the default IDAS timeframe (for selected projects, based on priorities in the Fish Habitat Research and Management Program) to stipulate:
      • the terms of use of all project and research findings and distribution of information, including publication of research findings and intellectual property rights;
      • milestones for offset delivery beyond one financial year or overlapping two or more financial years,
      and for the contract to be forwarded for the third party’s perusal and agreement prior to each party signing (and retaining a copy); or
   b) a Letter of Agreement between Fisheries Queensland and a tertiary institution for the DAFF Marine Fish Habitat Scholarships Program; and
   c) selection of fish habitat projects that demonstrate a local connectivity with the fish habitat that is approved for disturbance.

4. Use of an in-kind contribution (by proponent) requires:
   a) a FDA condition ensuring an in-kind contribution within a reasonable and relevant timeframe and in accordance with the proposed offset activities and any agreed Offset Plan (submitted by the Proponent) and:
      • any selected milestones for offset project delivery that extend beyond one (1) financial year or overlap two (2) or more financial years (e.g. for proponent’s research, rehabilitation etc); and
      • the offset outcomes being assessed against agreed milestones of an Offset Plan (submitted by the Proponent) for projects extending over a number of years (e.g. rehabilitation or habitat creation) and regular interim reporting detailing offset outcomes being submitted to Fisheries Queensland; and
   b) DAFF Offset Deed of Agreement Template (refer Attachment 5) where a proponent is seeking to achieve offsets using both financial and in-kind contributions, and all in-kind contributions may be recognised in the Annexure of the Deed of Agreement (refer to Table 6-1 and 6-2, Attachment 6\(^{30}\));
   c) identification of roles and risks etc using Table 6-2 (Attachment 6) where an in-kind contribution is made; and
   d) ensuring offsets are delivered against agreed milestones and if the agreed fish habitat outcome is not achieved or addressed by the proponent, the offset will not be signed off by Fisheries Queensland as complete, and:

\(^{29}\) Table 6-1 - Financial contribution to Fisheries Queensland (DAFF) (i.e. arrangements, delivery, reporting, completion/enforcement and monitoring of offset outcomes)

\(^{30}\) Table 6-2 Attachment 6 - Financial Contribution OR In-kind contribution to a third party (i.e. arrangements, delivery, reporting, completion/enforcement and monitoring of offset outcomes)
Fisheries Queensland may seek to vary an FDA condition requiring an in-kind contribution including an option to seek a financial contribution (payment to the Fisheries Research Fund or a third party) to secure and complete the delivery of the offset and arrange delivery of an indirect offset (e.g. research funding etc) to achieve the intended fish habitat outcome; and the offset funding amount is determined from the original fish habitat offset package calculation less the offsets already performed under the FDA.

5. Use of Advance Offsets for future projects requires:
   a) the provision of on-ground (direct offsets) only;
   b) a FDA condition debiting offsets created through a proponent’s program of advance offsets to match anticipated future impacts associated with their development activities over an agreed life span, e.g. of ten (10) years or more, where:
      - offsets nominated for one or more parcels of land, or for indirect offsets (e.g. financial contributions) to achieve a fish habitat outcome, that are credited as ‘advance offsets’ under a prior agreement (‘Advance Offset Deed of Agreement’) between Fisheries Queensland and the proponent;
      - offsets are credited for access by the proponent for future fisheries development approvals within a specified region; and
      - future impacts are matched with the advance offset and trigger offset debits on a case by case basis approved by Fisheries Queensland at the time of FDA application assessment, in consultation with the proponent;
   c) reference to ongoing infrastructure programs (future corridors) causing multiple impacts, or where development activities are controlled by the proponent through operation or staging of multiple developments in a designated area (such as strategic port lands);
   d) identification of roles and risks etc using Table 6-3 (Attachment 6);31
   e) the proponent determining and submitting to Fisheries Queensland:
      - the total area of impact based on the region of operation for proposed development activities;
      - the timeframe for project delivery;
      - the advance offset proposal; and
      - a request that an Advanced Offset Deed of Agreement be prepared; and
   f) the Advance Offset Deed of Agreement developed in accordance with QGEOP32 and this policy, specifically for fish habitat management purposes, including:
      - a description of the impacts to be offset (i.e. the multiple future fish habitat impacts in ‘hectares of fish habitat’ for the specified purpose);
      - the offsets provided (the offset type(s) the proponent is seeking to establish, including on-ground program in ‘hectares of fish habitat’ as a direct offset and/ or any indirect offsets addressing fish habitat outcomes e.g. rehabilitation);
      - offset timeframes and milestones;
      - when the environmental impact can commence (subject to assessment of any future FDA applications submitted and Fisheries Queensland authorisation of the work and use of offset debits);
      - the duration of the offset requirement (specified in years and subject to the frequency and amount of offset debits accrued as ‘hectares or fish habitat’);
      - the offset management plan (to assist: delivery of offsets; match offsets to approved fish habitat impacts; and ensure fish habitat impacts are promptly and appropriately addressed);
      - the monitoring and reporting plan (to evaluate progress and report outcomes and milestones, and report the remaining balance of the available hectares of fish habitat as offset credits);

31 Table 6-3 Attachment 6 - Advance Offset Deed of Agreement (DoA) with Fisheries Queensland (DAFF) (i.e. arrangements, delivery, reporting, completion/enforcement and monitoring of offset outcomes)
any payments and contributions allocated for the offset, management plan and monitoring and reporting plan (specifically those agreed by the proponent or where the proponent seeks to engage a third party to deliver the program);

reference to the mechanism for legally securing the offset (in the case of land-based offsets seeking to extend the declared Fish Habitat Area network, the land as an offset will be protected via a legally binding mechanism including, for example, a statutory declaration of a Fish Habitat Area (FHA) or fish habitat inclusions to an existing declared FHA under the Fisheries Act or Fisheries Regulation; and

when and how the proponent’s responsibility for the offset will be extinguished (the proponent’s responsibility for offset delivery is extinguished within three (3) years of completion of the offset program, or in the event that the offset program is no longer required by the parties, the proponent’s responsibility is extinguished at a mutually agreed time as determined by the parties to the Agreement).

6. Use of a letter of obligation/MoU:

a) a FDA condition about a letter of obligation or MoU initiated by Fisheries Queensland for financial or in-kind contributions (state government agencies only) for:

• a Queensland government agency to deliver an offset e.g. for agreed research related Offset Projects requiring collaboration between government agencies (where parties do not wish to (or cannot) be legally bound, but seek to record a shared understanding of purpose);

• agreed specific-issue environmental offsets under a Multiple Offsets Package (jointly addressing vegetation, biodiversity, marine fish habitat, koala offsets for a development) to satisfy offset requirements;

• a Strategic Approach to Offsets program (integrating new & existing offset projects for multiple development projects within a pre-determined region) for a particular environmental outcome (e.g. rehabilitation of all disturbed fish habitats within a given region); or

• Multiple Offsets Packages e.g. Queensland Government agencies agree to jointly initiate a Program to co-ordinate numerous offsets within a specified region;

b) a FDA condition requiring completion of offsets within a reasonable and relevant timeframe as outlined in a letter of obligation/MoU from Fisheries Queensland sent to a state government agency confirming:

• the state agency’s agreement to deliver the offset as the proponent;

• confirmation of a third party (offset provider); or

• agreement under a Multiple Offsets Package or Strategic Approach to Offsets program; and

• agreement to provide reports to Fisheries Queensland outlining the offset outcomes;

• milestones for offset project delivery that may extend beyond one (1) financial year or overlap two (2) or more financial years (e.g. for proponent’s research, rehabilitation of an area etc); and

• offset outcomes being assessed against agreed milestones of an Offset Plan (submitted by the Proponent) for projects extending over a number of years (e.g. rehabilitation) and regular interim reporting detailing offset outcomes being submitted to Fisheries Queensland; and

c) ensuring offsets are delivered against agreed milestones and if the agreed fish habitat outcome is not achieved or addressed by the proponent, the offset will not be signed off by Fisheries Queensland as complete and:

• Fisheries Queensland may vary the Letter of Obligation/MoU including an option to seek a financial contribution (payment to the Fisheries Research Fund or a third party) to secure the delivery of the offset and arrange delivery of an indirect offset (e.g. research funding etc) to achieve the intended fish habitat outcome; and

• the offset funding amount is determined from the original fish habitat offset package calculation less the offsets already performed under the Letter of Obligation/MoU.
6. RESPONSIBILITIES AND ACCOUNTABILITIES
This policy is to be applied by delegated Fisheries Queensland officers.

7. SOURCE DOCUMENTATION
Fisheries Act 1994
Fisheries Regulation 2008
Sustainable Planning Act 2009
Sustainable Planning Regulation 2009

8. RELATED DOCUMENTS
This policy applies generally and is to be read and applied in conjunction with all other relevant policies of Fisheries Queensland.
9. ATTACHMENT 1

References


## 10. ATTACHMENT 2

### Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAFF</td>
<td>Department of Agriculture, Fisheries and Forestry</td>
</tr>
<tr>
<td>DEEDI</td>
<td>The former Department of Employment, Economic Development and Innovation now ‘DAFF’</td>
</tr>
<tr>
<td>DERM</td>
<td>The former Department of Environment and Resource Management</td>
</tr>
<tr>
<td>DoA</td>
<td>Deed of Agreement</td>
</tr>
<tr>
<td>DTMR</td>
<td>Department of Transport and Main Roads</td>
</tr>
<tr>
<td>EPA</td>
<td>The former Environmental Protection Agency, Queensland</td>
</tr>
<tr>
<td>ESD</td>
<td>Ecologically sustainable development</td>
</tr>
<tr>
<td>FDA</td>
<td>Fisheries development approval</td>
</tr>
<tr>
<td>FHA</td>
<td>Declared Fish Habitat Area</td>
</tr>
<tr>
<td>FHRMP</td>
<td>Fish Habitat Research and Management Program</td>
</tr>
<tr>
<td>FRF</td>
<td>Fisheries Research Fund</td>
</tr>
<tr>
<td>GST</td>
<td>Goods and services tax or any similar tax, levy or impost imposed by the Commonwealth of Australia.</td>
</tr>
<tr>
<td>HAT</td>
<td>Highest astronomical tide</td>
</tr>
<tr>
<td>IDAS</td>
<td>Integrated development assessment system</td>
</tr>
<tr>
<td>MoU</td>
<td>Memorandum of Understanding (between state government agencies)</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
</tr>
<tr>
<td>QBFP</td>
<td>Queensland Boating and Fisheries Patrol</td>
</tr>
<tr>
<td>QGEOP</td>
<td>Queensland Government Environmental Offsets Policy</td>
</tr>
</tbody>
</table>

### Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>additional</td>
<td>See QGEOP (EPA 2008).</td>
</tr>
<tr>
<td>avoidance</td>
<td>No impact on fish habitat is incurred from the proposed development.</td>
</tr>
<tr>
<td>best practice measures for fish habitats</td>
<td>Actions to reduce the overall impact to fish habitats and fisheries resources including minimisation through modifying work methods using fish habitat best practice measures to avoid and minimise impacts on marine fish habitats either off-site or on-site. Technologies or strategies within development proposals to avoid or minimise impacts on fish habitats located either on-site or off-site. These methods apply to all stages of the development and its operations and may also be contained within an agreed Plan.</td>
</tr>
</tbody>
</table>
Strategies designed to protect fish habitats through avoidance of any impact, or use of technologies to minimise impacts including:

- physical protection against bank erosion to enhance mangrove establishment (selective placement of gabions);
- controlling impacts on water quality (placement of storm water pollution traps; managing acid sulfate soils);
- use of buffers to reduce edge effects of the development areas (clear separation between developments and fish habitats);
- works are timed to reduce impacts on fisheries (seasonality of spawning or recruitment periods of fisheries resources or seagrass flowering periods); or
- minimal trimming of mangrove branches instead of complete tree removal.

Fisheries Queensland’s recognition of best practice measures to minimise fish habitat disturbance is also covered in self-assessable development codes and Fisheries Guidelines.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>buffer zone</td>
<td>A separation area designated to moderate adverse influences from development construction and operation activities on fish and fish habitats. Refer also to Wetland Buffer Planning Guideline (Department of Environment and Resource Management)</td>
</tr>
<tr>
<td>creation of replacement fish habitat</td>
<td>Created fish habitat proposed at another location, e.g. creation of new saltmarsh habitat to replace fish habitat lost.</td>
</tr>
<tr>
<td>declared Fish Habitat Area</td>
<td>As defined in the Fisheries Act, section 4, Schedule Dictionary.</td>
</tr>
<tr>
<td>Deed of Agreement</td>
<td>A signed agreement about the agreed delivery of the offset. See also ‘Offset Agreement’ and ‘legally binding offset agreement’.</td>
</tr>
<tr>
<td>development</td>
<td>See QGEOP (EPA 2008).</td>
</tr>
<tr>
<td>direct offset</td>
<td>See Principle 2 of this policy. (See QGEOP (EPA 2008))</td>
</tr>
<tr>
<td>ecologically sustainable development (ESD)</td>
<td>As defined in the Fisheries Act, section 3(5).</td>
</tr>
<tr>
<td>ecosystem services</td>
<td>Ecosystem services form the range of direct and indirect benefits that the community derives as either the products or functions of the ecosystem.</td>
</tr>
<tr>
<td>enhancement</td>
<td>Improvement of a site’s fish habitat connectivity or fish habitat function, as a fish habitat outcome.</td>
</tr>
<tr>
<td>environmental offset conditions</td>
<td>As defined in the Planning Act, sections 346 and 346A and Fisheries Act, section 76IA.</td>
</tr>
<tr>
<td>equivalent</td>
<td>See QGEOP (EPA 2008).</td>
</tr>
<tr>
<td>fish</td>
<td>As defined in the Fisheries Act, section 5.</td>
</tr>
<tr>
<td>fish habitat</td>
<td>As defined in Fisheries Act, section 4, Schedule Dictionary.</td>
</tr>
<tr>
<td>fish habitat disturbance</td>
<td>Any activity in a fish habitat that damages or has the potential to damage fisheries resources and fish habitats and alters the natural function of the habitat.</td>
</tr>
<tr>
<td>fish habitat mosaic</td>
<td>Collection of unvegetated fish habitats, marine plants, seagrasses, saltmarshes, mangroves which together comprise a larger fish habitat mosaic, thereby providing connectivity for fisheries resources.</td>
</tr>
<tr>
<td>fish habitat offset package calculator</td>
<td>See Attachment 4.</td>
</tr>
</tbody>
</table>
**Fish habitat outcome**

A fish habitat outcome achieved through offsets including:

- Fish habitat **connectivity** - between sites comprising the fish habitat mosaic; or
- Fish habitat **function** - Improving or enhancing degraded fish habitat to restore fish habitat function (condition improved) within a site; or replacement of a fish habitat function through artificial means (fish friendly structures); or
- Fish habitat **protection** - Additional protection of fish habitats as declared Fish Habitat Area or other protected estate; or
- Fish habitat **research** – improving knowledge to advance fish habitat management outcomes to benefit fisheries resources; or
- Fish habitat **threat removal** – removal of threats through habitat management (e.g. buffers, fencing).

**Fisheries development approval**

As defined in the Fisheries Act, section 4, Schedule Dictionary.

**Fisheries productivity**

The biomass of fish produced in a given area over a given time that is supported by the fish habitat mosaic.

**Fisheries Research Fund**

As defined in the Fisheries Act, section 117.

**Fisheries resources**

As defined in the Fisheries Act, section 4, Schedule Dictionary.

**Fisheries specific ecosystem services value**

Includes the values reported for disturbance regulation, biological control, recreation, habitat refugia, food production services by Costanza et al (1997). (Excludes non-fisheries specific ecosystem services such as nutrient cycling, cultural and raw material value). A fisheries specific ecosystem services value is approximately 7% of the total ecosystem services value for estuaries reported by Costanza et al 1997 (see Attachment 3).

**Indirect offset**

See Principle 2 of this policy. (See also QGEOP (EPA 2008).

**Legally binding offset agreement**

See Principle 4 of this policy. (See QGEOP (EPA 2008).

**Like for like direct offsets**

Like for like direct offsets are subject to the availability of suitable offset sites and direct offset opportunities and projects (management) within the fish habitat mosaic. Use of either an ‘equivalent’ or ‘fish habitat mosaic’ approach is acceptable. The use of an equivalent approach to ‘like for like’ is a fisheries priority and circumstances will dictate whether an equivalent or fish habitat mosaic approach is adopted.

‘Equivalent’ approach to the selection of direct marine fish habitat offset projects (e.g. rehabilitation) for marine fish habitat impacts specifically requires fish habitat type for fish habitat type, and species selections are subject to tidal elevation/levels of tidal inundation, for example:

- mangrove forest for mangrove forest;
- saltmarsh area for saltmarsh area;
- seagrass meadow for seagrass meadow; and
- unvegetated fish habitats for unvegetated fish habitats

‘Fish habitat mosaic’ approach to the selection of direct marine fish habitat offset projects (e.g. rehabilitation) for marine fish habitat impacts is broad and uses one or more fish habitat types to address the fish habitat impact, and species selections are subject to tidal elevation/levels of tidal inundation, for example:

- saltmarsh area to replace removal of unvegetated fish habitats, seagrass
meadow or mangrove forest;
• mangrove area to replace removal of unvegetated fish habitats, seagrass meadow or saltmarsh;
• unvegetated fish habitats to replace removal of mangrove area, seagrass meadow or saltmarsh; and
• inclusion of new fish habitat types in the declared FHA network regardless of the impacted habitat type.

The approach also allows consideration of habitats that may be threatened e.g. there may only be 2% of saltmarsh remaining in a given area (bioregion) and the decision is taken to replace existing mangroves with saltmarsh to have a more representative mosaic.

**like for like indirect offsets**

Like for like *indirect* offsets are selected subject to the availability of suitable offset sites and projects (related research and management) within the fish habitat mosaic. Use of either an ‘*equivalent*’ or ‘*fish habitat mosaic*’ approach is acceptable. The use of an equivalent approach to ‘like for like’ is a fisheries priority and circumstances will dictate whether an equivalent or fish habitat mosaic approach is adopted.

‘*Equivalent*’ approach to the selection of indirect marine fish habitat offset projects (e.g. research and management) for marine fish habitat impacts and uses the FHRMP and specifically requires fish habitat type for fish habitat type:

• mangrove forest for mangrove forest;
• saltmarsh area for saltmarsh area;
• seagrass meadow for seagrass meadow; and
• unvegetated fish habitats for unvegetated fish habitats.

‘*Fish habitat mosaic*’ approach to the selection of indirect marine fish habitat offset projects (e.g. research and management) for marine fish habitat impacts uses the FHRMP and may include one or more fish habitat types to address the fish habitat impact, for example:

• saltmarsh priorities for unvegetated fish habitats, seagrass meadow or mangrove forest removal;
• mangrove priorities for unvegetated fish habitats, seagrass meadow or saltmarsh removal;
• unvegetated fish habitat priorities for mangrove area, seagrass meadow or saltmarsh removal;
• priorities within the declared FHA network regardless of the impacted habitat type.

**marine fish habitat mosaic value**

The estimated value of the marine fish habitat mosaic is for fisheries specific ecosystem services (disturbance regulation, biological control, recreation, habitat refugia, food production services) that may be lost during development or gained through offsets. When used in Fish Habitat Offset Package Calculations the annual value is capped at 11% of the total ecosystem services for estuaries (reported by Costanza et al 1997). See Attachments 3 and 4.

**marine plant**

As defined in the Fisheries Act, section 8.

**mitigation**

See QGEOP (EPA 2008).

**offsets**

See Principle 2 of this Policy. See also QGEOP (EPA 2008).

**offset deed of agreement**

See ‘legally binding offset agreement’ and Principle 4 of this Policy. See also QGEOP (EPA 2008).

**offset package**

An offset package is one or more offsets (direct and/or indirect) that are used
| **offsite** | Offsite relates to offsets achieved outside the fisheries development approval area due to limitations of available on-site offsets opportunities. |
| **onsite** | Onsite relates to offsets achieved within the fisheries development approval area. |
| **performance indicators** | Observations or measures of particular aspects of a site used to determine if offsets are meeting the agreed objectives. |
| **precautionary principle** | As defined in the Fisheries Act, Part 1 section 3(5). |
| **rehabilitation** | Returning a site to a state where natural succession can continue the recovery process and allow fish habitat values of the site to be returned (no time-frame). |
| **remaining fish habitat impact** | ‘Remaining fish habitat impact’ is ‘remaining environmental impact’ defined in the QGEOP (EPA 2008) |
| **reparation** | As financial reparation to make account for the loss of fish habitats, including restoration to a required habitat condition. |
| **restoration** | Returning a site to an agreed pre-existing condition - implies a final objective to return all aspects of the previous system (in a specific time frame). |
| **self assessable development code** | As defined in the Fisheries Act, section 4, Schedule Dictionary. |
| **tidal elevation adjusted value reduction** | A marine fish habitat mosaic value reduction as shown in Fig 2-1 (below) applied to annual value calculations. The adjustment is made relative to highest astronomical tide (HAT) to recognise different fisheries contributions when applying the marine fish habitat mosaic value. For riparian habitats within Zone B (‘HAT + 20 metre separation distance’) tidal influence is restricted to infrequent levels of inundation. The contribution of habitats within Zone B and fisheries productivity is recognised (e.g. buffering adjoining habitats below HAT from runoff and physical disturbance). Where offsets are proposed to restore modified Zone B habitats (having lost regular tidal influence through natural or artificial means) the fisheries value is also recognised in offset calculations (e.g. proposals to restore connectivity with remnant marine habitats and brackish and freshwater habitats). |

Annual marine fish habitat mosaic value in Zones A – B in reference to highest astronomical tide (HAT)

<table>
<thead>
<tr>
<th>Zone A (&lt; HAT)</th>
<th>Zone B (HAT + 20 metre separation distance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% annual value</td>
<td>50% annual value</td>
</tr>
</tbody>
</table>

Figure 2-1 Marine plant removal or development in a declared Fish Habitat Area may trigger fish habitat impact and offset assessments within Zones A - B. The annual marine fish habitat mosaic value decreases by 50 % within Zone B (‘highest astronomical tide (HAT) plus 20 metre separation distance’).
11. ATTACHMENT 3
Queensland based marine fish habitat mosaic value assessment

Offset requirements are addressed through direct offsets (using spatial areas of fish habitat as a surrogate for loss of fisheries productivity) and/or indirect offsets as financial reparation based on loss of values of functions and services (the surrogate for loss is based on habitat/fisheries specific components adjustment of ‘total ecosystem services’ (TES) for estuaries as extrapolated from Costanza et al 1997). Fish habitat types are considered equivalent in value when based on the provision of similar/identical ecosystem services and functions supporting fisheries.

**Determining direct offsets using hectares of habitat (on ground)**

The Fish Habitat Offset Package Calculator (Attachment 4) is used for both direct and indirect offset calculations. Ecosystem services values reported as ‘hectares of habitat’ are applied to the calculation of direct offsets. Spatial area is used as a surrogate fish habitat measure at both the impact and offset sites to address offset principles of ‘like for like’, ‘equivalence of habitats’ and ‘additionality’. The approach used shall be reviewed as models of fish habitat value per hectare and/or evidence of a non-linear relationship between fish habitat and fisheries productivity in Queensland become available.

**Determining a Queensland based marine fish habitat mosaic value for financial offset calculations using Total Ecosystem Services (TES)**

Fisheries Queensland has adopted the global value of TES for marine fish habitats through extrapolation and adjustment of the estimated value for estuaries (Costanza et al 1997), with fish habitat and fisheries specific components (Figure 3-1) of direct use (food, recreation) and non-use (disturbance regulation, biological control, habitat refugia). The fisheries specific ecosystem services (FSES) component of approximately 7% of the TES for estuaries (extrapolates to 3,703 AUD ha\(^{-1}\) yr\(^{-1}\) in 2010) is adopted as the minimum ecosystem services value (Table 3-1).

![Figure 3-1 Fish habitat & fisheries specific ecosystem services component (estuaries)](image)

Table 3-1

<table>
<thead>
<tr>
<th>Ecosystem Service</th>
<th>Value (AUD ha(^{-1}) yr(^{-1}) in 2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food production</td>
<td>31.1%</td>
</tr>
<tr>
<td>Recreation</td>
<td>22.7%</td>
</tr>
<tr>
<td>Disturbance regulation</td>
<td>33.8%</td>
</tr>
<tr>
<td>Biological control</td>
<td>4.6%</td>
</tr>
<tr>
<td>Habitat refugia</td>
<td>7.8%</td>
</tr>
<tr>
<td>Total Ecosystem Services</td>
<td>7.7%</td>
</tr>
</tbody>
</table>

*In keeping with Finding 2 main report and Attachment A Issue 7 in Independent Review of Fish Habitat Policy and Process in Queensland (refer Enram Enterprises 2010).*
Table 3-1 Fish habitat & fisheries specific ecosystem services using 2010 TES estuaries estimates

<table>
<thead>
<tr>
<th>Ecosystem services contributing to 'fisheries specific component' AUD 2010 (ha⁻¹ yr⁻¹)*</th>
<th>Fish habitat &amp; Fisheries specific component (as %) of TES for estuaries in 2010* (AUD 52,895)</th>
</tr>
</thead>
<tbody>
<tr>
<td>disturbance regulation</td>
<td>1,314 (33.8%)</td>
</tr>
<tr>
<td>biological control</td>
<td>182 (4.6%)</td>
</tr>
<tr>
<td>habitat refugia</td>
<td>303 (7.8%)</td>
</tr>
<tr>
<td>food production</td>
<td>1,205 (31.1%)</td>
</tr>
<tr>
<td>recreation</td>
<td>883 (22.7%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,703 (100%)</strong></td>
</tr>
</tbody>
</table>

*Non-fisheries specific ecosystem services such as nutrient cycling, cultural and raw material value excluded.

TES = Total Ecosystem Services using Costanza et al (1997)

AUD = Australian dollars extrapolated from values reported in Costanza et al (1997)

Historic Fisheries Queensland assessments (using one or more habitat types) compared with TES

Five (5) recent Queensland development project assessments are compared with the estimated FSES value of 7 % of TES for estuaries (Costanza et al 1997). Projects using values extrapolated from Costanza et al (1997) ranging from $8,224 ha⁻¹ for bare areas, $20,275 ha⁻¹ for mangroves and up to $38,569 ha⁻¹ for seagrasses (2009 values and lower values for 2005 and 2007 values) are reported.

Annual values of marine fish habitat types for each project footprint are reported for project comparison on a ‘per hectare basis’ for each assessment year. Annual marine fish habitat values of the impacted habitats ranged between 12.9% and 26.1 % of the TES estuaries value (see Table 3-2 and Figure 3-2), each greater than the estimated 7% FSES value.

Table 3-2 Annual TES for estuaries and selected Fisheries Queensland assessments using one or more habitat type values extrapolated from Costanza et al (1997).

<table>
<thead>
<tr>
<th>Project (Year)</th>
<th>Annual TES value for estuaries (estimate)* based on assessment year</th>
<th>Annual value* of fish habitats impacted for each project and expressed as a % of the annual TES value (shown in parentheses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (2005) riverside residential</td>
<td>30,828</td>
<td>3,975 (12.9%)</td>
</tr>
<tr>
<td>2 (2007) dredging tidal creek residential lock</td>
<td>34,553</td>
<td>6,459 (18.7%)</td>
</tr>
<tr>
<td>3 (2009) dredging tidal private marina</td>
<td>41,767</td>
<td>5,767 (13.8 %)</td>
</tr>
<tr>
<td>4 (2009) dredging tidal mudflat</td>
<td>41,767</td>
<td>6,325 (15.1 %)</td>
</tr>
<tr>
<td>5 (2009) riverside commercial/public access</td>
<td>41,767</td>
<td>10,918 (26.1 %)</td>
</tr>
</tbody>
</table>

*AUD value ha⁻¹ yr⁻¹ (AUD = Australian dollars extrapolated from values reported in Costanza et al (1997)) using fish habitat type and estuary values

TES = Total Ecosystem Services using Costanza et al (1997)

A median value of 15.1% of the TES estuaries value (or AUD 6,325 ha⁻¹ yr⁻¹ in 2009) was determined for habitats within the marine fish habitat mosaic for the five (5) projects across all assessment years (2005-2009), as shown in Figure 3-2.
Marine fish habitat mosaic value ($\text{ha}^{-1}\text{yr}^{-1}$)

Financial offsets (indirect offsets) are calculated using one ‘marine fish habitat mosaic value’ for all fish habitat types. One ‘marine fish habitat mosaic value’ (as a percentage of TES estuaries value) representing a standard value ($\text{Sha}^{-1}\text{yr}^{-1}$) is used in financial calculations. The FSES value of ‘7% of TES for estuaries’ and the project median of the five (5) projects reviewed for historic assessments (Table 3-2 and Figure 3-2) are used to determine the ‘marine fish habitat mosaic value’. The ‘marine fish habitat mosaic value’ ($\text{Sha}^{-1}\text{yr}^{-1}$) is used over a minimum 2 year period and a maximum period of 20 years for temporary losses and fixed period of 50 years for permanent losses within present value calculations (refer Attachment 4). A midpoint value of ‘11 % of TES estuaries value’ lies between the median value ‘15.1% of TES’ (upper bound) across all marine fish habitat types (mosaic) and an estimated ‘7% of TES (lower bound)’ for FSES (Figure 3-3). The midpoint value of 11% of TES for estuaries has been adopted as the standard ‘marine fish habitat mosaic value’ in all Fish Habitat Offset Package Calculations from 1 July 2012, with annual marine fish habitat mosaic value fluctuations subject to purchasing power parity.

---

34 The OECD publishes purchasing power parity rates see <stats.oecd.org/Index.aspx?datasetcode=SNA_TABLE4> (see also Attachment 4 of this policy).
Selection of a surrogate percentage for financial fish habitat offsets determined from median value (5 projects) and fisheries specific component of total ecosystem services for estuaries (using Costanza et al (1997)).

The marine fish habitat mosaic value is comparable to other economic estimates reporting 11 % of the total mangrove forest value estimated to contribute to fisheries in habitat-fishery linkage/ habitat-production models (Barbier et al, 2007). For 2012 calculations, the value is based on 11% of AUD 61,846 ha⁻¹ yr⁻¹ at $6,800 per hectare using a 2011 value for TES estuaries value extrapolated from Costanza et al (1997). Annual values are determined in January each year based on annual purchasing power parity figures from the previous year (expressed in Australian dollars) (see Attachment 4). This approach shall be reviewed as a Queensland costing model for loss of fisheries productivity becomes available. In the interim DAFF uses the Fish Habitat Offset Package Calculator and a 0% discount rate in present value calculations (Attachment 4)).

## 12. ATTACHMENT 4
Fish Habitat Offset Package Calculator

<table>
<thead>
<tr>
<th>DEVELOPMENT NAME (below)</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### DIRECT OFFSETS

<table>
<thead>
<tr>
<th>TEMPORARY LOSSES &amp; DIRECT OFFSETS (Step 1)</th>
<th>Zone A (&lt; HAT)</th>
<th>Zone B (HAT+20 m separation distance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area lost in each impact zone (ha)</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Years of loss in each impact zone out of 20 years (i.e. between 2 years min and up to 20 years max)</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>View hypothetical rehabilitation area (ha) [needed to give 18 years productivity gain after 2 years]</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Actual area of proposed on-ground rehabilitation offset/s (ha)</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Actual years to complete rehabilitation out of 20 years ('2' = highest productivity gain; '20' = no productivity gain)</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Actual costs - works; management; administration &amp; monitoring (AUD inc GST) (max 10 years)</td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>View increased protection area (ha) [with/out rehabilitation and to achieve 5:1 ratio]</th>
<th>Zone A (&lt; HAT)</th>
<th>Zone B (HAT+20 m separation distance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual area proposed for increased protection site (ha)</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Actual costs - land valuation/ re-survey; administration; management (AUD inc GST) (max 10 years)</td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>

### PERMANENT LOSSES & DIRECT OFFSETS (Step 2)

<table>
<thead>
<tr>
<th>Actual area lost in each impact zone (ha) - [years of loss set at 50 yrs for all permanent impacts]</th>
<th>Zone A (&lt; HAT)</th>
<th>Zone B (HAT+20 m separation distance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>View hypothetical rehabilitation area (ha) [needed to give 45 years productivity gain after 5 years]</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Actual area of proposed on-ground rehabilitation offset/s (ha)</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Actual years to complete rehabilitation out of 50 years ('5' = highest productivity gain; '50' = no productivity gain)</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Actual costs - works; management; administration &amp; monitoring (AUD inc GST) (max 10 years)</td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>View increased protection area (ha) with/out rehabilitation and to achieve 5:1 ratio</th>
<th>Zone A (&lt; HAT)</th>
<th>Zone B (HAT+20 m separation distance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual area proposed for increased protection site (ha)</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Actual costs - land valuation/ re-survey; administration; management (AUD inc GST) (max 10 years)</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

**TEMPORARY & PERMANENT DIRECT OFFSETS BALANCE (all zones)**

<table>
<thead>
<tr>
<th>AREA (ha)</th>
<th>VALUE (AUD inc GST)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total temporary impacts (nominated period)</td>
<td>0.0000</td>
</tr>
<tr>
<td>Total permanent impacts (50 year period)</td>
<td>0.0000</td>
</tr>
<tr>
<td>Total rehabilitation offsets (temporary &amp; permanent losses)</td>
<td>0.0000</td>
</tr>
<tr>
<td>Total protection offsets (temporary &amp; permanent losses)</td>
<td>0.0000</td>
</tr>
<tr>
<td>Total direct offsets (habitat value)</td>
<td>0.0000</td>
</tr>
<tr>
<td>Total direct offsets (delivery costs)</td>
<td>0.0000</td>
</tr>
<tr>
<td>Balance required as indirect financial offset</td>
<td>0.0000</td>
</tr>
<tr>
<td>Balance available as offset credit</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

**INDIRECT OFFSETS**

<table>
<thead>
<tr>
<th>AREA (ha)</th>
<th>VALUE (AUD inc GST)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 3 Indirect Financial Offset (temporary &amp; permanent losses)</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

### Fish Habitat Offset Package Calculator Protocols

- Annual marine fish habitat mosaic value is 11% of the total ecosystem services estuaries value, accounting for the value of disturbance regulation, biological control, recreation, habitat refugia, food production services, using Costanza et al (1997).36
- Microsoft Excel spreadsheet Present Value (PV) formula is used to determine financial offsets. The discount rate applied to the annual value in PV calculations is 0%. PV formula is set at minimum of 2 years and a maximum 20 year period for temporary losses and a fixed 50 year period for permanent losses. (GST is applied.)
- Tidal elevation adjusted value reductions apply within Zone B (highest astronomical tide (HAT) plus 20 metre separation distance). The adjustment made to financial offset calculations recognises a reduced fisheries productivity in the marine fish habitat mosaic value in Zone B (a 50% reduction) i.e. values used from 1 July 2012 for Zone A ($6,800 (ha⁻¹ yr⁻¹)) and Zone B ($3,400 (ha⁻¹ yr⁻¹)). Note that Zone B marine fish habitat mosaic value is not applied to those areas already occupied by existing land uses having extended into the zone (for example residential, industrial, or agricultural).
- The resultant productive area (ha) achieved from undertaking a rehabilitation project as an offset (e.g. area of marine fish restored using tidal flow restoration) may be considerably larger than the actual works area (removal of a barrier/bund). The size of the area restored should be entered, not the area of work (Step1a and Step 2a).

---

Annual marine fish habitat mosaic value (estimate) assessment

The estimated annual marine fish habitat mosaic value recognises the fisheries specific ecosystem services that may be lost during development or gained through offsets. The annual marine fish habitat mosaic value is capped at 11% of the economic value of total ecosystem services (TES) for estuaries (Costanza et al 1997)\(^{37}\) (Attachment 3). The value is reviewed annually in January (Table 4-1) and adjusted using purchasing power parity rates\(^{38}\).

The marine fish habitat mosaic value is used in present value calculations with a 0% discount rate over a minimum of 2 years and a maximum of 20 years for temporary losses and a fixed period of 50 years for permanent losses, when using the Fish Habitat Offset Package Calculator.

The 2012 value (April 2012) is 11% of $61,846 or $6,800 ha\(^{-1}\)yr\(^{-1}\) (rounded).

Table 4-1 Annual value for marine fish habitat mosaic, indexed against annual Purchasing Power Parity\(^{39}\), using the global value of total ecosystem services for estuaries of Costanza et al 1997.

<table>
<thead>
<tr>
<th>Year</th>
<th>US (ha(^{-1})yr(^{-1}))</th>
<th>AUD (ha(^{-1})yr(^{-1}))</th>
<th>PPP adjusted figures are used in the assessment year</th>
<th>11% TES value (rounded) applied from 1 July 2012 (GST exclusive amount)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>$22,832</td>
<td>$30,042</td>
<td>for 1995</td>
<td>NA</td>
</tr>
<tr>
<td>1995</td>
<td>$30,065</td>
<td>$30,099</td>
<td>for 1996</td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td>$30,099</td>
<td>$29,963</td>
<td>for 1997</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>$29,963</td>
<td>$29,510</td>
<td>for 1998</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>$28,965</td>
<td>$28,754</td>
<td>for 2001</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>$28,754</td>
<td>$28,928</td>
<td>for 2002</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>$28,928</td>
<td>$29,260</td>
<td>for 2003</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>$29,260</td>
<td>$29,840</td>
<td>for 2004</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>$29,840</td>
<td>$30,828</td>
<td>for 2005</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>$30,828</td>
<td>$32,392</td>
<td>for 2006</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>$32,392</td>
<td>$34,553</td>
<td>for 2007</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>$34,553</td>
<td>$37,312</td>
<td>for 2008</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>$37,312</td>
<td>$41,767</td>
<td>for 2009</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>$41,767</td>
<td>$45,907</td>
<td>for 2010</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>$45,907</td>
<td>$52,895</td>
<td>for 2011</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>$52,895</td>
<td>$61,846</td>
<td>for 2012</td>
<td>$6,800</td>
</tr>
</tbody>
</table>

---


\(^{38}\) Annual revision of per hectare value is undertaken in accordance with purchasing power parity based on annual rates determined for the last year - OECD publishes purchasing power parity rates <stats.oecd.org/Index.aspx?datasetcode=SNA_TABLE4>

\(^{39}\) The OECD defines purchasing power parities (PPPs) as the rates of currency conversion that eliminate the differences in price levels between countries <www.oecd.org/std/ppp>
Administrative Threshold for Offset provision

Proponents are required to meet the offset where a fish habitat offset package calculation addressing the total impact has an indirect offset amount equal to, or above, an offset value threshold of $1,000 (GST exclusive amount). The administrative threshold for offset provision is based on the impacts for all zones (combined) as one indirect offset value. For situations where the total impacts of a development are confined to only one zone, reference can also be made to areas thresholds triggering the offset value threshold of $1,000 (GST exclusive amount). The area thresholds for temporary and permanent impacts in each zone are shown in Tables 4-2 to 4-5 (tables only refer to 2012 values and will be updated annually in reference to annual marine fish habitat mosaic value).

**Table 4-2** $1,000 (exc GST) administrative threshold for offset provision is reached for the area (ha) of temporary impact shown below (Zone A only) in 2012. Indirect offset value is shown (GST inclusive).

<table>
<thead>
<tr>
<th>Temporary loss (years)</th>
<th>Zone A (below HAT) (ha)</th>
<th>2012 Indirect Offset (GST inclusive)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0735</td>
<td>$1,100</td>
</tr>
<tr>
<td>2</td>
<td>0.0735</td>
<td>$1,100</td>
</tr>
<tr>
<td>3</td>
<td>0.0490</td>
<td>$1,100</td>
</tr>
<tr>
<td>4</td>
<td>0.0368</td>
<td>$1,100</td>
</tr>
<tr>
<td>5</td>
<td>0.0294</td>
<td>$1,100</td>
</tr>
<tr>
<td>6</td>
<td>0.0245</td>
<td>$1,100</td>
</tr>
<tr>
<td>7</td>
<td>0.0210</td>
<td>$1,100</td>
</tr>
<tr>
<td>8</td>
<td>0.0184</td>
<td>$1,100</td>
</tr>
<tr>
<td>9</td>
<td>0.0163</td>
<td>$1,100</td>
</tr>
<tr>
<td>10</td>
<td>0.0147</td>
<td>$1,100</td>
</tr>
<tr>
<td>11</td>
<td>0.0134</td>
<td>$1,100</td>
</tr>
<tr>
<td>12</td>
<td>0.0123</td>
<td>$1,100</td>
</tr>
<tr>
<td>13</td>
<td>0.0113</td>
<td>$1,100</td>
</tr>
<tr>
<td>14</td>
<td>0.0105</td>
<td>$1,100</td>
</tr>
<tr>
<td>15</td>
<td>0.0098</td>
<td>$1,100</td>
</tr>
<tr>
<td>16</td>
<td>0.0092</td>
<td>$1,100</td>
</tr>
<tr>
<td>17</td>
<td>0.0087</td>
<td>$1,100</td>
</tr>
<tr>
<td>18</td>
<td>0.0082</td>
<td>$1,100</td>
</tr>
<tr>
<td>19</td>
<td>0.0077</td>
<td>$1,100</td>
</tr>
<tr>
<td>20</td>
<td>0.0074</td>
<td>$1,100</td>
</tr>
</tbody>
</table>
Table 4-3 $1,000 (exc GST) administrative threshold for offset provision is reached for the area (ha) of temporary impact (Zone B only), in 2012 (below). Indirect offset value is shown (GST inclusive).

<table>
<thead>
<tr>
<th>Temporary loss (years)</th>
<th>Zone B (HAT+20m separation distance) (ha)</th>
<th>2012 Indirect Offset (GST inclusive)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.1471</td>
<td>$1,100</td>
</tr>
<tr>
<td>2</td>
<td>0.1471</td>
<td>$1,100</td>
</tr>
<tr>
<td>3</td>
<td>0.0980</td>
<td>$1,100</td>
</tr>
<tr>
<td>4</td>
<td>0.0735</td>
<td>$1,100</td>
</tr>
<tr>
<td>5</td>
<td>0.0588</td>
<td>$1,100</td>
</tr>
<tr>
<td>6</td>
<td>0.0490</td>
<td>$1,100</td>
</tr>
<tr>
<td>7</td>
<td>0.0420</td>
<td>$1,100</td>
</tr>
<tr>
<td>8</td>
<td>0.0368</td>
<td>$1,100</td>
</tr>
<tr>
<td>9</td>
<td>0.0327</td>
<td>$1,100</td>
</tr>
<tr>
<td>10</td>
<td>0.0294</td>
<td>$1,100</td>
</tr>
<tr>
<td>11</td>
<td>0.0267</td>
<td>$1,100</td>
</tr>
<tr>
<td>12</td>
<td>0.0245</td>
<td>$1,100</td>
</tr>
<tr>
<td>13</td>
<td>0.0226</td>
<td>$1,100</td>
</tr>
<tr>
<td>14</td>
<td>0.0210</td>
<td>$1,100</td>
</tr>
<tr>
<td>15</td>
<td>0.0196</td>
<td>$1,100</td>
</tr>
<tr>
<td>16</td>
<td>0.0184</td>
<td>$1,100</td>
</tr>
<tr>
<td>17</td>
<td>0.0173</td>
<td>$1,100</td>
</tr>
<tr>
<td>18</td>
<td>0.0163</td>
<td>$1,100</td>
</tr>
<tr>
<td>19</td>
<td>0.0155</td>
<td>$1,100</td>
</tr>
<tr>
<td>20</td>
<td>0.0147</td>
<td>$1,100</td>
</tr>
</tbody>
</table>

Table 4-4 $1,000 (exc GST) administrative threshold for offset provision is reached for the area (ha) of permanent impact (Zone A only), in 2012 (below). Indirect offset value is shown (GST inclusive).

<table>
<thead>
<tr>
<th>Permanent loss (years)</th>
<th>Zone A (below HAT) (ha)</th>
<th>2012 Indirect Offset (GST inclusive)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>0.003</td>
<td>$1,122</td>
</tr>
</tbody>
</table>

Table 4-5 $1,000 (exc GST) administrative threshold for offset provision is reached for the area (ha) of permanent impact (Zone B only), in 2012 (below). Indirect offset value is shown (GST inclusive).

<table>
<thead>
<tr>
<th>Permanent loss (years)</th>
<th>Zone B (HAT+20m separation distance) (ha)</th>
<th>2012 Indirect Offset (GST inclusive)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>0.006</td>
<td>$1,122</td>
</tr>
</tbody>
</table>
13. ATTACHMENT 5
Offset Deed of Agreement Template (Financial contribution to Fisheries Queensland (DAFF))

This Deed is made this day of 20year.

BETWEEN

THE STATE OF QUEENSLAND, acting through the Department of Agriculture, Fisheries and Forestry (ABN 66 934 348 189) of 80 Ann Street, Brisbane, in the State of Queensland, GPO Box 46, Brisbane QLD 4001.

AND

INSERT NAME OF COMPANY OR ENTITY (ABN insert number or ACN number), insert physical address and postal address details (‘the Proponent’).

RECITALS

A. The Proponent intends to insert proposal details (the ‘Development’) at insert the location, on land insert description eg adjacent or adjoining a particular river creek etc.

B. The Development will involve the removal, destruction or damage of marine plants and fish habitats within an area of tidal land of insert area in m² or ha.

C. The Proponent sought approval for a development permit under Section 238 of the Sustainable Planning Act 2009 (‘SPA’) to remove, destroy or damage marine plants, protected under section 123 of the Fisheries Act 1994 (‘the Act’), for the construction of the Development.

D. Under Schedule 3 of the Sustainable Planning Regulation the approval of the chief executive, DAFF, is required for operational work that is the removal, destruction or damage of marine plants if it is not self-assessable development (a ‘fisheries development approval’). Section 76IA of the Act allows for conditions about environmental offsets for any loss of fish habitat to be included in a fisheries development approval.

   The Proponent has been issued a development permit (NUMBER) under Section 238 of SPA to remove, destroy or damage marine plants for the construction of the Development.

E. The parties agree that this Deed (the ‘Deed’) satisfies the offset condition (Condition number of development permit NUMBER) imposed by the chief executive in issuing a development permit to remove, destroy or damage marine plants for the construction of the Development.

F. The parties agree that this Deed does not limit any other powers or obligations the chief executive may have under the Act, including but not limited to the power to amend conditions on a fisheries development approval on the grounds stated in the Act.
G. To offset the impacts set out in Recital D, the Proponent has agreed to offset those impacts as outlined in the terms and conditions of the Deed including the Annexure.

OPERATIVE PART

The parties agree that

1. Financial component

1.1. An amount of $insert amount (inclusive of GST) (the ‘Offset Amount’) for the fish habitat projects (the ‘Projects’) outlined in paragraphs 1 to 4 of the Annexure, will be paid to DAFF in accordance with the Payment Schedule in the Annexure.

2. Expenditure of Financial Component

2.1. The Offset Amount will be used to fund the services described in paragraph 2 of the Annexure to the Deed (the ‘Services’), being the Project/s as outlined in the Annexure to this Deed.

3. Definitions and Interpretations

3.1. ‘GST’ means a goods and services tax or any other similar tax, levy or impost imposed by the Commonwealth of Australia.

4. DAFF’s Obligations

4.1 DAFF will ensure that the Offset Amount is expended in the manner agreed in this Deed, as detailed in the Annexure.

4.2 DAFF will manage the allocation of the Offset Amount as research funding and provide annual reports to the Proponent on the status of the Projects and their funding acquittal.

4.3 On expiration of the Deed or if the Deed is terminated for any reason, DAFF will immediately repay to the Proponent any part of the Offset Amount that is unexpended or uncommitted for the Services.

5. Miscellaneous

5.1 This Deed shall be construed and take effect in accordance with the laws of the State of Queensland. The rights, liabilities and obligations of the parties shall be governed by the laws of that State.

5.2 In the event that any, or any of the part of, the terms or conditions of the Deed shall be determined to be invalid, unlawful or unenforceable whether wholly or to any lesser extent, such term or condition, to the extent that it is invalid, unlawful or unenforceable shall be severed from the remainder of the Deed, with the remainders continuing to be valid and enforceable to the fullest extent permitted by law.
5.3 The scope of the Services in the Annexure to the Deed may be varied by agreement between the Proponent and DAFF provided the overall objective of offsetting the loss to fisheries, fish habitats and ecosystem services is achieved.

5.4 The terms of the Deed may be amended with the consent of both parties, in writing, at any time, and signed by both parties.

5.5 The Deed will commence upon execution by both parties and expire upon completion of the Services unless terminated earlier in accordance with clause 5.6.

5.6 The Deed may be terminated by mutual agreement, evidenced in writing and signed by both parties, at any time.

5.7 Nothing contained in this Deed is to be construed as creating any agency, partnership, trust or other form of joint enterprise between the parties.

In witness thereof, this Deed has been executed on the dates set out below:

Signed as an Agreement

Signed for and on behalf of the State of Queensland acting through the Department of Agriculture, Fisheries and Forestry (ABN 66 934 348 189) on the _________ day of__________ by

[a person duly authorised to act in that behalf in the presence of:

Signature of Witness

Name of Witness in full

If the Proponent is a company*:

Executed by the Proponent on the _________ day of__________ in accordance with section 127 of the Corporations Act 2001 or by a person duly authorised to act in that capacity by or in the presence of:

Signature of Secretary/other Director/or Authorised Representative

Signature of Director or Sole Director and Secretary/or Authorised Representative
Name of Secretary/other Director/or Authorised Representative in full

If the Proponent is another type of entity*:
Signed for and on behalf of the Proponent on the _______ day of ______________ by

a person duly authorised to act in that behalf in the presence of:

Signature

Signature of Witness

Name of Witness in full

*Delete whichever is inapplicable
ANNEXURE

The Services

1. The Fisheries Queensland (Department of Agriculture, Fisheries and Forestry) Fish Habitat Research and Management (FHRM) Program (and amended versions) identifies research streams which direct fish habitat research to provide applied outcomes for fish habitat management. The FHRM Program is available on DAFF’s website Retain/amend as required in reference to paragraph 2.

2. One or more marine fish habitat projects (the ‘Projects’) within and aligned to priority research areas of the FHRM Program will be negotiated by DAFF (Fisheries Queensland), including the delivery of the Project/s in collaboration with a tertiary institution participating under the FHRM Research Program. Retain/amend as required or amend to nominate the Project and tertiary institution if relevant

3. On completion of DAFF’s negotiations, details of the Project/s including those of any tertiary institution delivering the Project/s will be provided by DAFF to the Proponent. Retain/amend as required or amend to nominate the agreed Project and tertiary institution if relevant

4. The Project/s shall be completed by insert month and year and any agreed milestones.

5. On completion of the Project/s, DAFF (Fisheries Queensland) will forward a summary of the research findings to the Proponent.

The Payment Schedule

6. The Payment Schedule agreed by DAFF and the Proponent requires the total Offset Amount of $insert amount (inclusive of GST) is paid by the Proponent within 30 days of receipt of the tax invoice (standard terms for receipt of payment).

7. Written confirmation that the Proponent’s responsibility for the Offset Amount has been met will be provided by DAFF following receipt of payment of the Offset Amount by DAFF.
### 14. ATTACHMENT 6

**TABLE 6-1 Offset - Financial contribution\(^{40}\) to Fisheries Queensland (DAFF) for fish habitat research, rehabilitation, enhancement or creation projects**

<table>
<thead>
<tr>
<th>Proponent</th>
<th>Fisheries Queensland Role(s)</th>
<th>Formal Agreement for Indirect Offset delivery</th>
<th>Offset Outcome Report</th>
<th>Offset compliance</th>
<th>Offset Outcome monitored/risk of non-delivery</th>
</tr>
</thead>
</table>
| **Government Owned Corporation** (Deed of Agreement) | | FDA offset condition requires a Signed DoA for payment of an Offset Amount (inclusive of GST) to Fisheries Queensland for lodgement in FRF within specified timeframe. Fisheries Queensland initiates the DoA. The Deed shall describe the type of projects. Fisheries Queensland to report/acquit as projects are developed/supported. Project types:  
   a) The terms and conditions of the DoA shall describe use of the Offset Amount for a FHRMP research project run by Fisheries Queensland or a third party; or  
   b) The terms and conditions of the DoA shall describe use of the Offset Amount for a rehabilitation, enhancement or fish habitat creation project run by Fisheries Queensland or a third party.  
   Where a third party participates a secondary agreement is required between Fisheries Queensland and third party for Fisheries Queensland to pay the Offset Amount to that party. | | a) By Fisheries Queensland, for a Fisheries Queensland run project OR  
b) By a third party where Fisheries Queensland is broker for the project. | FDA offset condition is satisfied on receipt of payment by the FDA holder of the Offset Amount as per the DoA.  
Non-compliance with FDA condition will be referred to QBFP.  
In cases where there may be a failure of the FDA holder to comply with the FDA Offset Condition (e.g. payment of the Offset Amount is not made): the DoA would be enforced at common law  
Disturbance activities authorised by the FDA could be suspended due to failure to comply with the FDA offset condition.  
The agreement of the FDA holder and Fisheries Queensland is required to vary the DoA. | Fisheries Queensland  
Offset Delivery Risks  
- Fisheries Queensland/Third party carry risk of offset delivery  
Where a satisfactory offset outcome is not achieved, any unexpended amount is either returned to the Proponent or further steps are taken to prepare a Deed of Variation and to reassign the balance of the Offset Amount to another related fish habitat research, rehabilitation, enhancement or creation project.  
The agreement of the FDA holder and Fisheries Queensland is required to vary the DoA. |
| **Private** (Deed of Agreement) | | | | | |
| **Local Government** (Deed of Agreement) | | | | | |
| **State Government** (MoU) | | | | | |

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\(^{40}\) Note Offset Deed of Agreement is required for any financial amount to be paid to Fisheries Queensland, i.e. amounts > $1,000 (GST exclusive) administrative threshold for offset provision (Attachment 4).
TABLE 6-2 Financial Contribution OR In-kind contribution\(^{41}\) to a third party including (eg NRM Group, University Research etc) for fish habitat research, rehabilitation, enhancement or creation projects

<table>
<thead>
<tr>
<th>Proponent</th>
<th>Fisheries Queensland Role</th>
<th>Formal Agreement for Indirect Offset</th>
<th>Offset delivery</th>
<th>Offset Outcome report</th>
<th>Offset compliance</th>
<th>Offset Outcome monitored/ risk of non-delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Owned Corporation</td>
<td>Single role prior to the FDA: as broker for project delivery by a third party of agreed project/s</td>
<td>FDA condition requires the Proponent to deliver the offset contribution to a nominated third party in accordance with the agreed plan for fish habitat research, rehabilitation, enhancement or creation projects.</td>
<td>FDA holder for the offset contribution. Third party project</td>
<td>1. Annually by the third party to the FDA holder, to based on the performance of the offset actions as required in the agreed Plan</td>
<td>Fisheries Queensland reviews the performance of the offset actions and advises the FDA holder of the completion of the requirements.</td>
<td>Fisheries Queensland monitors and registers action (Offsets register)</td>
</tr>
<tr>
<td>Private</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Offset Delivery Risks</td>
</tr>
<tr>
<td>Local Government</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• FDA holder carries risk of offset delivery</td>
</tr>
<tr>
<td>State Government</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Where there is a failure to deliver a satisfactory offset outcome, Fisheries Queensland and FDA holder to negotiate for the balance of the unexpended amount to be used to achieve delivery of further related research, rehabilitation, enhancement or fish habitat creation projects.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The agreement of the FDA holder and Fisheries Queensland is required to vary the Offset Condition of the original FDA</td>
</tr>
</tbody>
</table>

\(^{41}\) Note: Required where the equivalent indirect offset financial amount is > $1,000 (GST exclusive), in keeping with administrative threshold for offset provision (Attachment 4).
<table>
<thead>
<tr>
<th>Proponent</th>
<th>Fisheries Queensland Role(s)</th>
<th>Formal Agreement for Advance Offset</th>
<th>Offset delivery</th>
<th>Offset Outcome Report</th>
<th>Offset compliance</th>
<th>Offset Outcome monitored/ risk of non-delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Owned Corporation</td>
<td>Receive proposals for an Advance Offset DoA; review to establish an Advance Offset DoA for the proponent; at lodgement of the subsequent FDA, assessment for an agreed quantity of hectares of fish habitat.</td>
<td>Fisheries Queensland initiates the Advance Offset DoA. The Deed shall describe the type of offset actions for land parcels and for Fisheries Queensland to report/ acquit as projects are developed/supported. The terms and conditions of the DoA shall describe the Advance Offset and the credits of hectares of fish habitats. Once signed, the Advance Offset is available for use.</td>
<td>Fisheries Queensland assesses FDA applications and identifies credits of hectares of fish habitat lost against the Advance Offset. FDA holder delivers the offset action through a FDA offset condition refers to actions (e.g. rehabilitation, threat removal) that are to be achieved under the signed Advance Offset DoA.</td>
<td>For each offset action described in hectares of fish habitat by the FDA holder</td>
<td>Fisheries Queensland reviews the performance of the offset actions as required under the Advance Offset DoA and advises the FDA holder of completion of the requirements. Fisheries Queensland reports available balance of remaining advance offset. Fisheries Queensland will maintain an audit of credits. Non-compliance with FDA condition will be referred to QBFP. In cases where there may be a failure of the FDA holder to comply with the FDA Offset Condition (e.g. actions are not undertaken): the Advance Offset DoA would be enforced at common law Disturbance activities authorised by the FDA could be suspended due to failure to comply with the FDA offset condition</td>
<td>Fisheries Queensland monitors and registers action (Offsets Register)</td>
</tr>
<tr>
<td>Private</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Offset Delivery Risks</td>
</tr>
<tr>
<td>State Government</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FDA holder carries risk of offset action delivery in accordance with the Advance Offset DoA</td>
</tr>
<tr>
<td>Local Government</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Where there is a failure to deliver a satisfactory offset outcome. Fisheries Queensland and FDA holder to negotiate alternate actions to achieve an equivalent hectares of fish habitat. The agreement of the FDA holder and Fisheries Queensland to vary the condition of FDA is required.</td>
</tr>
<tr>
<td>Government</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>To vary/ terminate the Advance Offset DoA to achieve additional offset outcomes, the approval of all parties to the Advance Offset DoA actions is required.</td>
</tr>
</tbody>
</table>