

Balancing development impacts with offsets

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INTRODUCTION

The value and function of marine resources in supporting productive coastal ecosystems and fisheries are recognised through legislative provisions of the *Fisheries Act 1994*, primarily the protection of marine plants (tidal plants such as mangroves, saltmarsh plants and seagrasses) and the declaration and management of high value fish habitats as declared Fish Habitat Areas. The Department of Primary Industries and Fisheries (DPI&F) implements the fish habitat management program on behalf of the Queensland government and assesses development applications which propose to disturb protected fish habitats.

Loss of marine fish habitats is authorised through the granting or refusal of fisheries development approvals in accordance with planning legislation. Assessment is made on a case by case basis. Approvals are subject to conditions, such as managing the level of fish habitat impact, restoring tidal profiles following construction, or implementation of offset (mitigation) measures to balance unavoidable impacts on fish habitats. Consideration of offset measures for impacts forms a key component of assessment and decision-making undertaken by DPI&F. This supports the Queensland Government Policy of “protecting the environment for a sustainable future”. To standardise terminology for the purpose of this paper, the term ‘offset’ is used to describe mitigation of impacts, ‘on’ and ‘off’ site.

BACKGROUND

Administrative provisions relating to offsets have been contained within fisheries legislation in Queensland over a considerable time frame. Thirty years ago the *Queensland Fisheries Act 1976* established the Fisheries Research Fund to receive a proportion of applicable fees and charges towards meeting the cost of scientific or related research with respect to fishing activities. Later amendments to the *Act* in 1989, to the Fisheries Research Fund and to permit conditions for mangroves or marine plants, specified use of contributions for fish habitat related purposes. Other offset options were also introduced with respect to land exchange and rehabilitation. Since 1989, offset measures applied by DPI&F to balance authorised marine fish habitat loss have included the use of formal agreements regarding monetary support towards research on marine fish habitats. The Fisheries Research Fund continues today under Section 117 of the *Fisheries Act 1994*.

DPI&F assessment of development proposals against legislative provisions of the *Fisheries Act 1994*, *Fisheries Regulation 1995*, *Integrated Planning Act 1997* and DPI&F Fisheries policies FHMOP 001 (Couchman and Beumer 2002) and FHMOP 002 (Derbyshire *et al* in press) determines either support for, or refusal of, applications. Where a development application is supported, inclusion of appropriate offset conditions is determined using DPI&F Fisheries policy FHMOP 005 (Dixon and Beumer 2002).

Under the *Fisheries Act 1994*, offset conditions are assigned to a development approval in accordance with Section 76L (Sub section (2) (e) mitigation measures for any loss of fish habitat). Offset measures for marine fish habitats are considered only after it is accepted that the proposed loss is justifiable, unavoidable and acceptable under fisheries legislation and departmental policy.

In 2005/2006, DPI&F authorised 64 fisheries development approvals involving marine fish habitat, and each project was assessed for level of impact and incorporation of offset measures. All projects were individually assessed to meet DPI&F requirements to reduce fish habitat impacts (for example, design or location change) or were determined to be of low fisheries impact. Ten (10) of the 64 projects (15 per cent) required implementation of an offset measure for unavoidable impacts on fish habitats as a condition of the DPI&F approval.

DISCUSSION

Offset measures ('offsets') may be short-term and/or long-term management responses to lessen impacts of a proposed disturbance/ loss of fish habitats through a reduction in impacts, or to balance the level of these impacts. Offsets may be applied to all works proposed for fisheries development approvals where impacts cause loss of fisheries resources, fish habitats and fisheries production. Examples of development impacts to be addressed through avoidance, minimisation or other offset measures include: loss or change of tidal fish habitats (vegetated or unvegetated); removal and diversion of tidal influence; exposure of acid sulfate soils; and acid leachate in waterways.

DPI&F application of offsets for impacts to marine fish habitats seeks to:

- recognise the natural capital of fish habitats and the contribution of fish habitats and fisheries to the community;
- maintain fisheries and fish habitat values and ensure the costs associated with fish habitat losses are matched with or remain less than an agreed offset; and
- promote the importance of and create public awareness of fish habitats values.

A number of key challenges are to be met for decision-makers to incorporate offsets as part of an approval. These include recognition of the required time to achieve the outcomes of offset measures. An offset package may be negotiated for a project and contain both short-term and long-term offset outcomes. Some offset outcomes are achieved in the short-term (such as best management methodologies) while others require long-term implementation (such as rehabilitation projects and fish habitat exchange). Success in achieving the latter is also governed by the availability of staff and a required level of commitment from a proponent to undertake projects and an agency to oversee outcomes.

The benefits of having agreed offsets may also be limited by the level of certainty for successful completion of requisite outcomes. This follows a DPI&F expectation that short-term offsets have a higher level of certainty of being achieved than long-term offsets.

For large projects, long-term offsets and offsite offsets may be considered and a written agreement about offset implementation is sought by DPI&F and co-signed with the proponent. The agreement outlines responsibilities and milestones and in general becomes a condition of the fisheries development approval.

During project discussion and negotiation, DPI&F considers: 'like for like' offsets; offset location; offset type; and where it is proposed, an offset amount.

'Like for like' offsets

Fish habitats are diverse and form a mosaic, extending across tidal and sub-tidal lands in estuaries and inshore coastal waters. When offsets are being considered, the types of fish habitat likely to be lost are assessed in terms of their value, function and distribution in that region of the coast.

Where appropriate, the offset measure is based on accounting for 'like with like' at the fish habitat type level. For example, the loss of a mangrove habitat may be suitably offset by measures including those that replace the mangrove community, conduct research into mangroves and fisheries, erect habitat awareness signage about mangroves, etc.

In other circumstances it may be more appropriate to require offset measures that relate to other types of fish habitats, i.e. accounting for 'like for like' at the fish habitat level. For example, where part of the fish habitat mosaic is degraded, in decline, or has been lost entirely due to coastal subdivision, the offset measures would have a broader focus on one or more of these other habitats. This would see an offset process which is triggered by the loss of part of a mangrove community but results in the 'nett gain' of fish habitats such as saltmarsh, which has been the major habitat degraded by coastal development.

Offset location

With respect to the location of the loss, offsets may be conducted 'onsite' and/or 'offsite'. Local losses of habitat or habitat function may be addressed through local offset projects (rehabilitation of degraded sites). Offset proposals may reduce development threats to fish habitats through increased protection of local nearby high value habitats, for example, expanding an existing declared Fish Habitat Area. Retention of a local network of fish habitats in developed areas may assist fisheries connectivity between habitats and provide ongoing fisheries benefits.

Offset type

Primary consideration is given to 'Level 1' offset measures to avoid and minimise impacts. Consideration may then be given to 'Level 2' offset measures for projects, as assessed by DPI&F, and addressed through negotiation with the proponent (Figure 1).

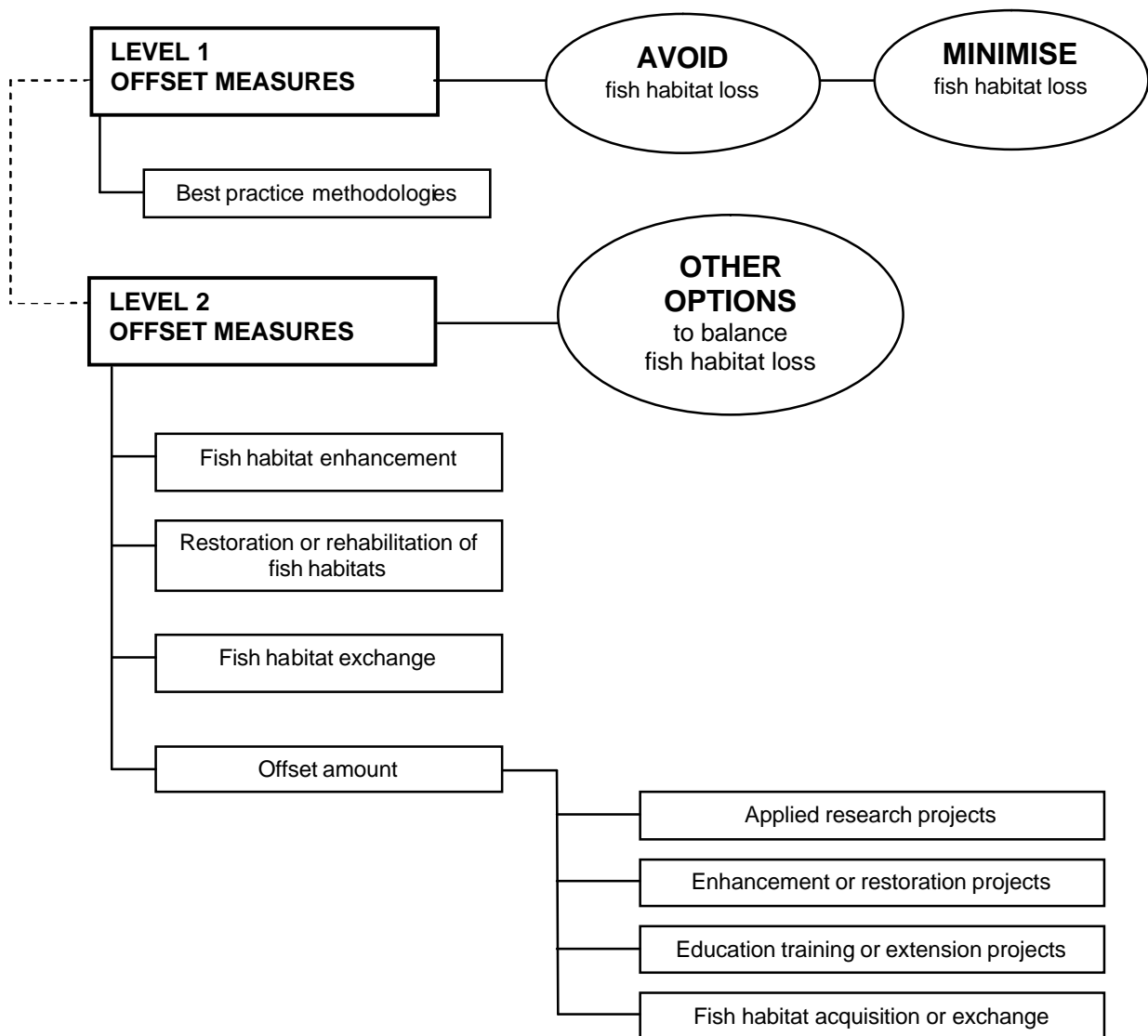


Figure 1 Level 1 and Level 2 offset measures considered by DPI&F

Offset amount

Where contribution of an offset amount is negotiated, the monetary value of offset amounts for impacts and losses is determined by DPI&F using environmental service values (Costanza *et al* 1997) for areas of fish habitats lost. The contribution of each habitat type is calculated from the monetary estimates provided by Costanza *et al* (1997). This allows an economic evaluation of the

contribution that these habitats are making and would continue to make to the local and regional fisheries and environmental services if left undisturbed. A 20 year production cycle is built into the final DPI&F economic estimate to recognise the long-term contribution that these habitats make or would continue to make. This cycle is also considered to allow for restored or re-habilitated sites to attain the levels of value and function of the fish habitat lost through authorising the coastal development. The DPI&F Fisheries formula is shown below.

$$\text{Offset Amount} = \text{EV/ hectare/ year} \times \text{CP}$$

EV = Estimated value of habitat [\$31,000/ha/year for total marine ecosystem services (Costanza et al 1997)]

CP = Cycle of production [20 years, based on marine plant/ faunal community development]

Adjustments to the above formula may be necessary on a case by case basis, to address existing fish habitat condition and site disturbance. Spatial area of fish habitats is considered in the calculation, with use of a minimum ratio of 1:1 (proportion of habitat loss to habitat gain) and minimum ratio of 1:2 for a 'nett gain'. Where offsets are spatially limited or unavailable, offset measures can include proposals to improve fish habitat condition and restore fish habitat functions (e.g. restoring tidal flow to degraded areas).

The economic contribution of the fish habitats to the community is a key consideration for the final package of offset measures submitted. Offset amounts administered through the Fisheries Research Fund have been used to fund research projects including projects selected for DPI&F's Marine Fish Habitat Research Scholarship Program for Honours students. Other government and non-government projects targeting research and management priorities of DPI&F's Urban Fish Habitat Management Research Program have received partial funding from offset amounts.

Case study: The removal of Kerkins levee by Gold Coast City Council (GCCC) in 2005 preceded the final negotiations for subdivision of an 81 hectare (ha) freehold property fronting the declared Pimpama Fish Habitat Area, in southern Moreton Bay, Queensland. Negotiations lead to the transfer of 77 ha of tidal land and wetland buffers from the property to Council ownership. The land transfer and tidal land management (including rehabilitation) are recognised by DPI&F as offsets to balance future fisheries impacts of a nearby associated development site.

The transferred portion of land contains degraded mangrove fish habitat resulting from construction of a flood mitigation levee (Kerkins levee), around 1988. The levee removed tidal influence to 27 ha of upstream fish habitat. The upstream land also formed acid sulfate soils, with acid runoff leaching through the levee and causing fish kills downstream.

A committee (canegrowers, GCCC, Department of Natural Resources and Water, Environmental Protection Agency, and DPI&F) was formed in 1997 to address removal and relocation of the levee away from tidal lands, the installation of new floodgates and site rehabilitation. A DPI&F Restoration Notice for the area, originally negotiated with Council in 1997, lead to commencement of site remediation and eventual levee removal. When fully rehabilitated, the transferred land should return ongoing fisheries benefits, with restrictions to future development in respect of the adjoining declared Pimpama Fish Habitat Area and Council managed Pimpama River Conservation Area.

FUTURE CONSIDERATIONS

In Queensland, the use of environmental offsets is increasing with offsets policies also in existence for vegetation management and koala habitat. These policies are administered by different state agencies, based on the relevance to their portfolio. In addition, offsets may be required by the federal Department of the Environment and Water Resources for 'matters of national environmental significance'.

Coordination between agencies administering offsets could be improved and may be guided by an overarching Queensland Government Environmental Offsets Policy. A draft policy is under

development and has scope to better assist agencies and proponents to implement offset proposals within 'offset packages'.

An overarching framework would set out the principles and guidelines for the development of new offsets policies for specific issues and this would ensure a consistent approach across agencies. The rationale is also supported by the development industry, which has signalled a need for a flexible approach to offsets, timely delivery and upfront certainty to ensure offsets consideration in the early stages of project planning and budgeting.

The current DPI&F Fisheries offset amount formula may be revised, with potential to move from a 'sole focus' fisheries approach to include offset requirements addressed by other agencies. Review of the DPI&F Fisheries formula could assign multipliers, as used in the policy for offsets for nett benefit to koalas and koala habitat outlined in the Nature Conservation (Koala) Conservation Plan 2006 and Management Program 2006-2016 (Environmental Protection Agency 2006). Multipliers based on the habitat condition type and impact duration period would be key considerations.

Similarly, the Policy for Vegetation Management Offsets (Department of Natural Resources and Water 2006) applies to development applications where an applicant proposes offsets to meet Regional Vegetation Management Code performance requirements. That policy, delivered through the Green Invest program, defines minimum standards for offsets on a regional ecosystem status basis and will be considered by DPI&F (Fisheries) in future revision of suitable offsets that may be applied.

CONCLUSIONS

DPI&F fisheries development approvals seek to manage development impacts and use offset measures to reduce and balance impacts on fish habitats where appropriate. Offsets need to be considered on a site by site basis. Better outcomes may be achieved if suitable offsets are managed using a Whole of Government approach.

TAKE HOME MESSAGE

Primarily, impacts from new development are managed through measures such as avoiding and minimising adverse fish habitat impacts. Where these can not occur and the development is to proceed, suitable offsets to balance environmental impacts may be applied. The critical DPI&F objective is to ensure maintenance and protection of diverse fish habitats which are essential to good fisheries productivity. Fish habitats and sustaining fisheries are to be taken into account within coastal planning and associated future developments.

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