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Review of the Reef Trust Offsets Plan and Calculator

Review prepared for the Australian Government Department of the Environment and Energy

Dr Stuart M Whitten

Institutional and Environmental Economist, CSIRO Land and Water

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Review of the Reef Trust Offsets Plan and Calculator

Scope and terms of reference

***Aim**: Seek an independent peer review of the draft Reef Trust offsets plan and associated documents to ensure it meets the requirements of the Department of the Environment and Energy for a robust offsets calculator.*

***Focus**:*

Examine the supporting information and assumptions used to develop the draft offsets calculator to determine whether

- *the costings proposed to be used in the calculator are economically robust; and*
- *the surrogate condition factor proposed to be used is scientifically robust*

Identify additional relevant literature, if known.

Overarching comments

The stated purpose of the Reef Trust offsets plan (Plan) is to:

> "provide guidance to the Department [of the Environment and Energy] on determination of offset costs, actions and locations for the Great Barrier Reef offsets delivered through the Reef Trust on behalf of approval holders under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)."

The proposed offset framework is generally consistent with international offset design, noting that the steps to 'avoid' and 'mitigate' impacts of development lie outside of the scope of the Plan which relates specifically to delivery of offsets through the Reef Trust. That is, the Plan does not consider assessment of the residual impacts of a development proposal and is only intended to apply after the proponent has decided that they wish the Reef Trust to deliver the required offsets.

Consistent with almost all local and international experience the Plan specifically excludes impacts on cultural, social, heritage and other non-biodiversity values which are also assessed under the EPBC Act. The offset plan is structured as follows:

1. Calculation of a set of feasible offsets from impacts through the use of surrogates that are filtered through a tiered structure to avoid double counting and at the same time ensure that direct and indirect impacts are sufficiently accounted for. It is assumed that the 'residual impacts' determined through the EPBC assessment will be expressed through these surrogate measures.
2. Estimation of a physical area and location of offset:
    a. Success rate multiplier in order to account for the likelihood that a particular offset activity will be successful in delivering the surrogate outcome specified. For

example, the likelihood that mangrove restoration will result in (presumably healthy) mature mangroves in the future.

b. Surrogate condition reflecting the ability of the offset site to respond to rehabilitation.

c. Spatial locations in which the offset may be located. Noting the intended bias towards offsets closer to the damage site excepting perhaps for migratory species.

d. Time delay factor relating to the lag between the start of implementation of the offset and the predicted achievement of the offset benefits.

3. Calculation of a financial payment to Reef Trust which incorporates:

    a. Cost data confidence multiplier reflecting the level of confidence that the estimated cost will be sufficient to fund the achievement of no net loss.

    b. A fee for project design, contract management and engagement of delivery agents set at 10% of total costs.

    c. Administrative costs for delivery agents which comprise:

        - A monitoring fee set at 5% of total assessed costs (implying that more expensive projects will also be more expensive to monitor).
        - A delivery agent administration and reporting fee set at 10% of total assessed costs.

4. Review and adaptation steps to ensure that the Plan remains effective and efficient through time.

Comments, clarifications and potential improvements

After an overarching observation about the consistency between the Plan and the EPBC Act Environmental Offsets Policy the remainder of this review is structured according to the four elements of the Plan identified above.

Consistency between the Plan, the Environmental Offsets Policy and the calculators

The purposes of the Environmental Offsets Policy and Offset Assessment Guide (terrestrial offset calculator) and the Plan and Reef Trust Offsets Calculator are distinctly different. The Environmental Offsets Policy and related terrestrial offset calculator are intended to support proponent sourced and delivered offsets, while the Plan and Reef Trust Offsets Calculator are intended to support Reef Trust in delivering offsets on behalf of approval holders (i.e. to begin to facilitate a market). Despite the differences in their purpose there are benefits in clarifying the relationship between them, and in supporting consistency across the measures.

I suggest making clear that the Plan, so far as is practicable, is intended to be consistent with the Environmental Offsets Policy. Although consistency between these measures is not the focus of this review, the following elements have been identified which may benefit from clarification:

- Strengthen the link in Figure 1 (Reef Trust Offsets Plan and Calculator) to reflect that the approval process for offsets determined through the calculator remains as per the Environmental Offsets Policy and the minister must still make a decision: "Having regard to the likely impact on environmental matters protected, together with economic and social factors, is the proposed action acceptable?" (Figure 1 in *Environmental Protection and Biodiversity Conservation Act 1999* Environmental Offsets Policy, Oct 2012 version).
- In my opinion it would be more consistent with existing approaches to separate the biophysical aspects of the offset calculator from the financial aspects of the calculator. The biophysical aspects could form a GBR Offset Assessment Guide as a supplement to the Environmental Offsets Policy. This would be consistent with the existing Offset Assessment Guide. The financial aspects relate specifically to Reef Trust in delivering offsets and are best managed directly by Reef Trust.
- Note that proponent liability in relation to offsets will be discharged by contracting with Reef Trust to deliver offsets on their behalf.

Feasible offsets through the use of surrogates

The use of the three tiered offset filter clarifies the differential damage vectors and impacts. The proposed approach is robust. It is structured to include six surrogates for which there are sufficient data within the Reef Trust Offsets Calculator while remaining surrogates are periodically reviewed for inclusion. The three tiers have been structured to avoid double counting of impacts in the way that they are defined though care in estimation will continue to be required for double counting to be avoided.

A minor comment relating to those surrogates for which there is insufficient data in Tiers 2 and 3 and which are not included in the calculator (Table 1). I suggest clarifying that these surrogates may still be offset through Reef Trust but that they will be ad hoc offsets through a negotiated delivery arrangement.

Estimation of a physical area and location of offset

The Plan encompasses most of the key elements of offset equivalency that are represented in the literature, if not always in application. I have identified some definitional issues and in particular the absence of clarity around offset baselines and additionality.

Offset baselines and additionality

The Plan identifies the importance of the 'no net loss' target for an offset program. 'No net loss' can only be assessed from a relevant baseline. Typically this baseline will be the quantum of the relevant surrogate at some point in the future in the absence of the proponent's development taking place, and less often the quantum of the surrogate at the point in time at which the development is proposed. The offset is then 'additional' to the quantum of surrogate.

In the case of nutrient and sediment exports to the GBR lagoon (and less obviously for other surrogates) the baseline is particularly complicated by the Reef Plan targets. Achieving the Reef Plan targets would mean that many of the potential activities available for offsets would already

have been undertaken and no longer available for offsets. If offsets are applied inside of the envelope of practice change necessary to reach the Reef Plan target for a particular region then additional activities would be required to meet the target. That is, offsets would not just be competing with Reef Plan investments for the low cost improvement options, but additional improvements would be required to deliver the desired water quality outcomes (because offsets represent no net loss rather than entirely a net improvement). For example, if all landholders were required to implement a particular grazing management practice (say halve their stocking rate) in order to meet a water quality target, then any offset would need to be an improvement beyond that grazing practice (i.e. reduce stocking rate by more than half). Allowing the halving of stocking rates to be considered an offset would require some landholders to more than halve their stocking rates in the future (and presumably at greater expense) in order to meet the desired water quality target (or some other similarly more expensive activity to be undertaken). In a nutshell, the suggestion that offsets may be drawn from underfunded activities in the Water Quality Improvement Plans (WQIPs) necessary to deliver on water quality targets would lead to offsets that make it more difficult and higher cost to achieve the desired water quality targets thus imposing a cost on the rest of the community (rather than no net financial loss).

The obvious baseline in the case of nutrients and sediments is to only calculate improvements that are not included in those necessary to achieve the GBR water quality targets. Unfortunately these targets remain 'aspirational', and the actions to meet them are not yet fully defined. Furthermore, activities which deliver in excess of the targeted reductions will usually also require also delivering improvements on the offset site sufficient to meet the target (for example halving the stocking rate would be needed before any benefit is counted as an offset).

The solution to this dilemma is not obvious. Although the recent Alluvium study (Skull *et al.* 2016) does allow costs at or beyond water quality targets to be identified, these do not exist in all catchments. Furthermore the cost of achieving reductions beyond these targets may also be excessive. I suggest that consideration be given to a baseline that reflects the upcoming revised water quality targets which are to be related to ecological outcomes rather than the current load reduction target. As these targets are not yet set it would be appropriate to consider baseline and target consistency in future reviews of the Reef Trust Offsets Plan. Nevertheless, as there is a large difference between likely outcomes under ecologically relevant baselines and current conditions it may be prudent to set a baseline in excess of current management requirements.

Surrogate condition

The surrogate condition is defined as reflecting the ability of the offset site to respond to rehabilitation. This is not what I expected given both the name 'surrogate condition' and the use of condition measures in other offset contexts. Generally condition surrogates refer to the potential for additionality, that is, the available ecological gain available given the starting condition of the area where rehabilitation is undertaken. For example, rehabilitating a sea grass meadow in poor condition to good condition gives greater benefit (addition to benefits) than rehabilitating a similar meadow that is in medium condition.

I suggest that this confusion can be clarified by clarifying the intention and naming in the Reef Offsets Plan. First, the likelihood of the site responding to the restoration activity should be

captured in the success rate multiplier rather than duplicated and confused by the surrogate condition. Second, the 'additional' benefit from the restoration action should be clearly captured using this variable as is the case for terrestrial offsets which incorporate a start quality and future quality measure into their assessment.

Time delay factors

A specific, albeit minor concern relates to the time delay factor being defined as relating to the lag between the start of *implementation of the offset* and the predicted *achievement of the offset benefits*. In my view it should rather reflect the lag between the time of damage/loss of benefits and predicted achievement of benefits. At present an offset could deliver benefits prior to the damaging activity and yet still incur a time delay factor. Similarly, an offset could be implemented well after the damaging activity and there would be a longer time delay factor than included in the calculator.

A technicality you should be aware of is that the time delay factor is actually intended to represent the scale of the *values* lost. If a highly valued asset were damaged (say a high value recreational fishery) and that asset were cheap but slow to restore the time delay method would significantly underestimate the value loss to the community (see for example Dunford *et al.* 2004). Nevertheless, this concern may be minor and is difficult to incorporate into the metric because it requires a values assessment as well as the biophysical assessments.

Finally, the 5% discount rate is lower than the current guidance from the Department of Prime Minister and Cabinet (which is 7%).[1] A 7% rate is high when compared against international capital markets at present (often close to zero) and certainly higher than current (2017) capital return rates. Therefore, I do not see a strong argument for revising the 5%. Rather this is an area which could be checked in future reviews.

Success rate multipliers

The project success is a result of the likelihood that the project is successfully implemented multiplied by the likelihood the desired outcome is actually delivered. As noted above this will be dependent on other factors as well, such as the responsiveness of the site where activities are undertaken, on the type of technique applied, on the climatic conditions and so on. Moilanen *et al.* (2009) offer a clear distinction in the different risks and their consequences, and in particular identify that some risks are correlated while others are not. Only uncorrelated risks can be effectively taken into account using a success rate multiplier.

A minor comment is that there is always a failure rate in environmental rehabilitation projects in practice. Some failures are attributable to manageable factors in contracting and implementation while others are due to climatic or other events. If data is available on the success of DIN and sediment projects to date this would provide a useful way of updating the current success rate multiplier of 1.

While only some dimensions of success risk can practically be taken into account it may be worth considering adjusting the success factor depending on the restoration technique given the wide

[1] https://www.dpmc.gov.au/sites/default/files/publications/006-Cost-benefit-analysis.pdf

range in successes indicated by Bayraktarov *et al.* (2016). This is only sensible if the offset calculations are separated from the cost calculation because the success rate relevant to Reef Trust would depend on their own proposed investment (not a pick and choose type menu). This would require different rows in the biophysical offset calculator depending on the method proposed for restoration (or limiting the restoration method available). One of these rows would be the Reef Trust portfolio success rate.

Calculation of a financial payment to Reef Trust

Cost data confidence multiplier

The title of this multiplier does not clearly reflect the definition in the text. The cost data multiplier is defined as "the confidence that the cost data underlying the calculator will be sufficient to fund the achievement of no net loss". This implies that the multiplier is intended to incorporate: 1) an insurance factor that the project fails (in part or whole) and additional investment is needed; and 2) an uncertainty factor, intended to reflect the possibility that the payment will be insufficient to deliver the desired quantity of offsets. The insurance element has already been incorporated into the success rate multipliers and should not be duplicated in the cost data confidence multiplier.

There is also increasing confidence in the Australian data available for the sediment and nutrient costings (as reflected by the multiplier of 1 in the Reef Trust Offset Calculator). There is however considerable uncertainty in the cost data – both in the expert elicited costs, and in those reported in the key reference used throughout the costing section (Bayraktarov, Saunders et al. 2016).

Cost data

The cost data for the sediment and DIN elements has been taken from a recent review by (Rolfe and Windle 2016). The estimates reflect the actual process achieved by the Australian Government through various reef programs. Rolfe and Windle suggest GBR wide benchmarks (maximum prices to be paid) of $259/t (sediment) and $150/kg (DIN) rather than the use of the achieved costs to date. The use of an averaged price overcomes some of the criticisms of the costs and their calculation at an individual catchment level given different methods for benefit attribution and project selection.

Cross referencing my comments about the relevant baseline from which to estimate appropriate nutrient reduction activities the Alluvium report also identifies a suite of actions which would likely deliver on water quality targets. The recent Alluvium study of the costs of achieving the water quality targets provides estimates that in many cases are an order of magnitude lower than those presented in the Reef Trust Offsets Calculator (Skull, Weber et al. 2016). Selecting those activities which are at the margin of the water quality target would provide a basis for costs of offsets only in addition to the targets being achieved. For example, the lowest cost activities in the Burdekin were $3/tonne, while the last activities to achieve a 50% reduction in anthropogenic loads were $140 per tonne. The upper cost is broadly comparable with the benchmark price suggested by Rolfe and Windle.

The cost data provided for the four habitat surrogates is also highly uncertain, dependent in most cases on just a few observations, most of which relate to activities in other countries. In contrast with activities which reduce sediment and DIN pollutants there is much less familiarity with the

types of projects, fewer expert responses and lesser confidence in the cost estimates. Although these projects can be defined and implemented there remains great uncertainty about the costs.

Monitoring and administration fee

The clear separation of the monitoring and administration fee is important to identifying the real costs of offsetting. The use of a proportionate fee may not necessarily reflect the true costs incurred by Reef Trust in delivering offsets. For example, in the case of small offsets the fixed costs associated with setting up an appropriate offset contract may exceed the payment and vice-versa in large or expensive offset cases. I suggest that a set of cost components be identified for monitoring over time in order to establish which costs are fixed and similar across all offsets and which vary so that a more reflective cost across offset classes can be developed in the future.

Review and adaptation

As the Reef Trust Offsets Plan is intended to support participation in a market both the offset parameters and prices should be updated as new knowledge becomes available. Certainty is also highly valued in markets because it allows for decisions to be made while reducing the price or other risks to proponents. Use of a specified update period for the physical market parameters, in-line with other reviews is sensible. As prices are highly uncertain a more regular review may be appropriate in early years as new knowledge becomes available.

It may be beneficial to accommodate the potential for pooled or 'banking' of offsets in future setting offset prices as the portfolio of investments by Reef Trust develops. In this scenario the Reef Trust and its delivery agents may identify a pool of offsets which may be available at a known cost. This cost may be the default until the pool or 'bank' is exhausted. Such offset banks may be particularly useful where future offset demand is highly likely and projects that offer economies of scale are available. For example, larger scale salt marsh or mangrove restoration may provide opportunities to establish such an offset 'bank'. The Reef Trust may also choose to consider additional opportunities to support an offsets market into the future as the demand for offsets becomes clearer and a portfolio of offset investments develops.

Residual minor comment

Some of the appendices text still references actions to be completed which have now been finalised (for example see Appendix 1: Section 1.4.4, 1.4.5).

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CONTACT US

t 1300 363 400
+61 3 9545 2176
e csiroenquiries@csiro.au
w www.csiro.au

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Land & Water
Stuart Whitten
t +61 2 6246 4359
e Stuart.Whitten@csiro.au
w www.csiro.au/en/Research/LWF