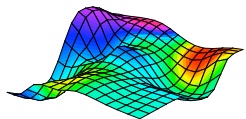


Prepared for the
Swan River Trust

Report on the applicability of a nutrient offset contributions scheme for the Peel-Harvey catchment

5 September 2008



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Despite every effort to verify data and clarify issues raised, any remaining errors or omissions are the responsibility of the authors. Accordingly this report does not necessarily reflect the views of the Swan River Trust, the Peel-Harvey Catchment Council or the Government of Western Australia.

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1 INTRODUCTION

In January 2008 the Swan River Trust (SRT) engaged BDA Group to advise on the potential for nutrient offsets to assist the management of water quality in the Swan-Canning catchment.

The project has four stages:

- Stage 1 – Scoping of a conceptual framework for the Swan Canning and consultation with key stakeholders;
- Stage 2 – Preparation of a Discussion Paper for the Swan Canning identifying key design parameters;
- Stage 3 – Preparation of an offset Policy Position Paper for the Swan Canning; and
- Stage 4 – Assessing the suitability of the nutrient offset policy for the Vasse Geographe and Peel-Harvey catchments.

This report presents the findings and recommendations in relation to the Peel-Harvey catchment as part of Stage 4 of the project.

The report provides a brief outline of the nutrient offset scheme proposed for the Swan Canning, the environmental and economic context in the Peel-Harvey catchment, an analysis of the applicability of the Swan Canning scheme proposal for the Peel-Harvey and sets out key differences that will need to be considered in developing a scheme in the Peel-Harvey.

The series of reports prepared during Stages 1 - 3 of the project provide more background on the range of frameworks used to implement offsets and experiences both within Australia and internationally, the legislative context for using offsets in Western Australia, and the key design issues considered during the development of the scheme proposed for the Swan Canning. These reports are included in the reference section and copies are available from the Swan River Trust.

2 PROPOSAL FOR THE SWAN CANNING

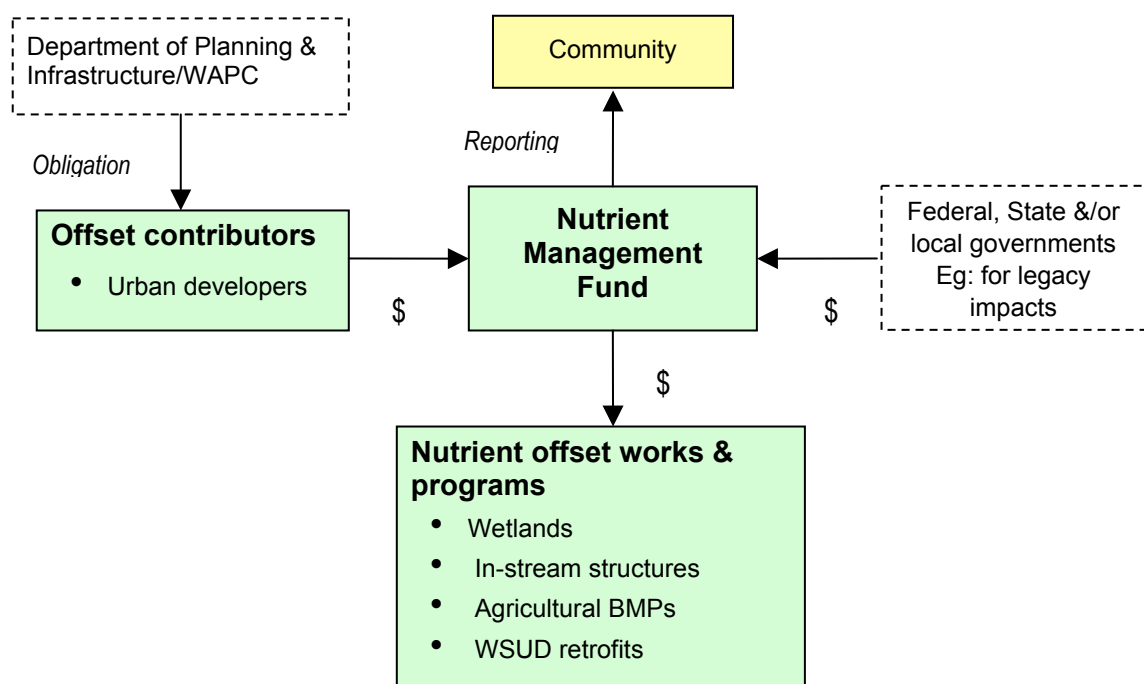
The objective of the nutrient offset contribution scheme proposed for the Swan Canning catchment is to offset residual loads of nutrients from new developments entering the waterways so as to improve *regional* water quality outcomes.

Existing requirements for new development to avoid, minimise and treat nutrients on-site in the first instance will continue. In those cases where approved development is likely to result in residual nutrient discharges, the use of environmental offset contributions will ‘make good’ potential impacts and protect water quality in the Swan and Canning catchments.

Under the proposed scheme, developers of all subdivisions in the Swan Canning catchment will be required to meet the capital, operating and maintenance costs of measures to offset nutrients equivalent to their residual loads through one-off developer charges. The charges will be payable to an independent nutrient management fund which will commission offset works and programs to deliver commensurate off-site reductions in nutrient loads.

Figure 2.1 shows the participants in the proposed scheme. As well as contributions from new developments, there is also potential for contributions from governments to fund additional works and programs to assist with the management of legacy¹ impacts or impacts arising from current landuses.

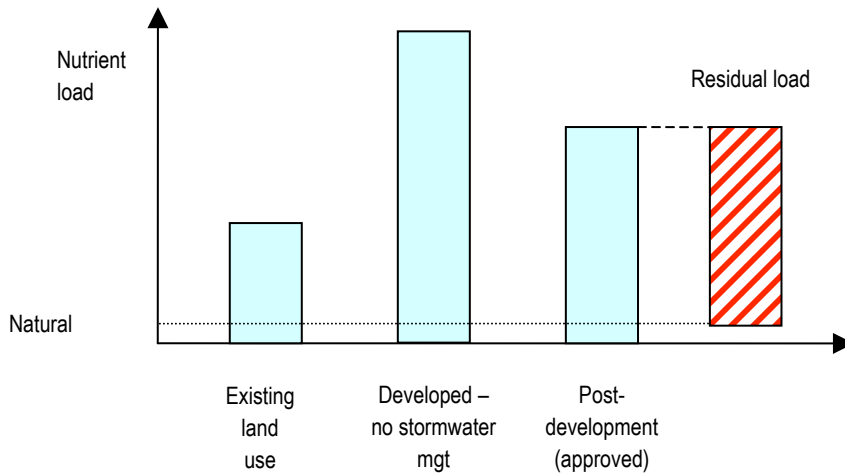
Figure 2.1 Nutrient offset contribution scheme participants



¹ Legacy impacts refer to the water quality impacts arising from nutrients deposited in the sediments of waterways from past landuse practices

The residual load of nutrients is defined as the load of nutrients from a developed site above the natural load that would be expected from the site, as shown in Figure 2.2.

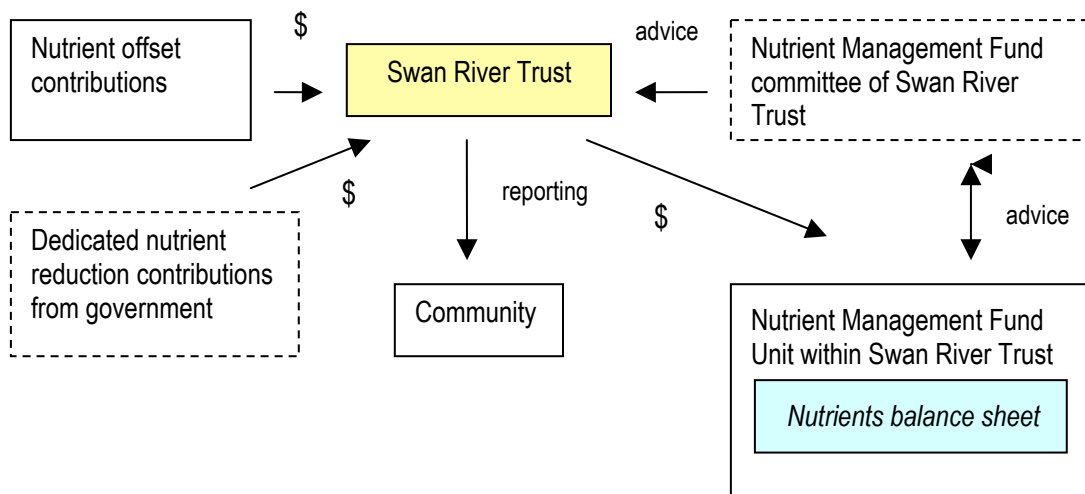
Figure 2.2 Definition of residual load



Modest legislative changes will be required to introduce the obligation for payment of contributions to an independent Nutrient Management Fund. The Fund would be established as a separate and accountable unit within the SRT to invest in nutrient reductions to deliver better regional water quality outcomes.

Figure 2.3 shows the proposed governance structure for the Fund. As shown in the figure, the SRT could delegate powers to a committee to manage the Nutrient Management Fund if desired. The Fund would adopt an investment portfolio approach to manage risk and allow investment in some higher risk but potentially lower cost programs, and for research and trials.

Figure 2.3 Governance structure for the Nutrient Management Fund



The scope of the scheme will cover the entire Swan Canning catchment, however three separate regions will be established so that contributions collected in each region will be spent in that region. This will provide significant flexibility for the siting of cost-effective works while ensuring communities in each region share in water quality improvements.

As shown in Figure 2.4, offset contributions for new development located in the upper / middle Swan region will be spent on works within that region, while contributions collected in the upper / middle Canning region will be spent within that region. However due to limitations on feasible offset sites in the lower reaches of both rivers, and the fact that in many cases improvements in the upper catchments will flow through to the lower Swan, contributions collected in the lower river and estuary region may be spent on works anywhere within the Swan-Canning catchment.

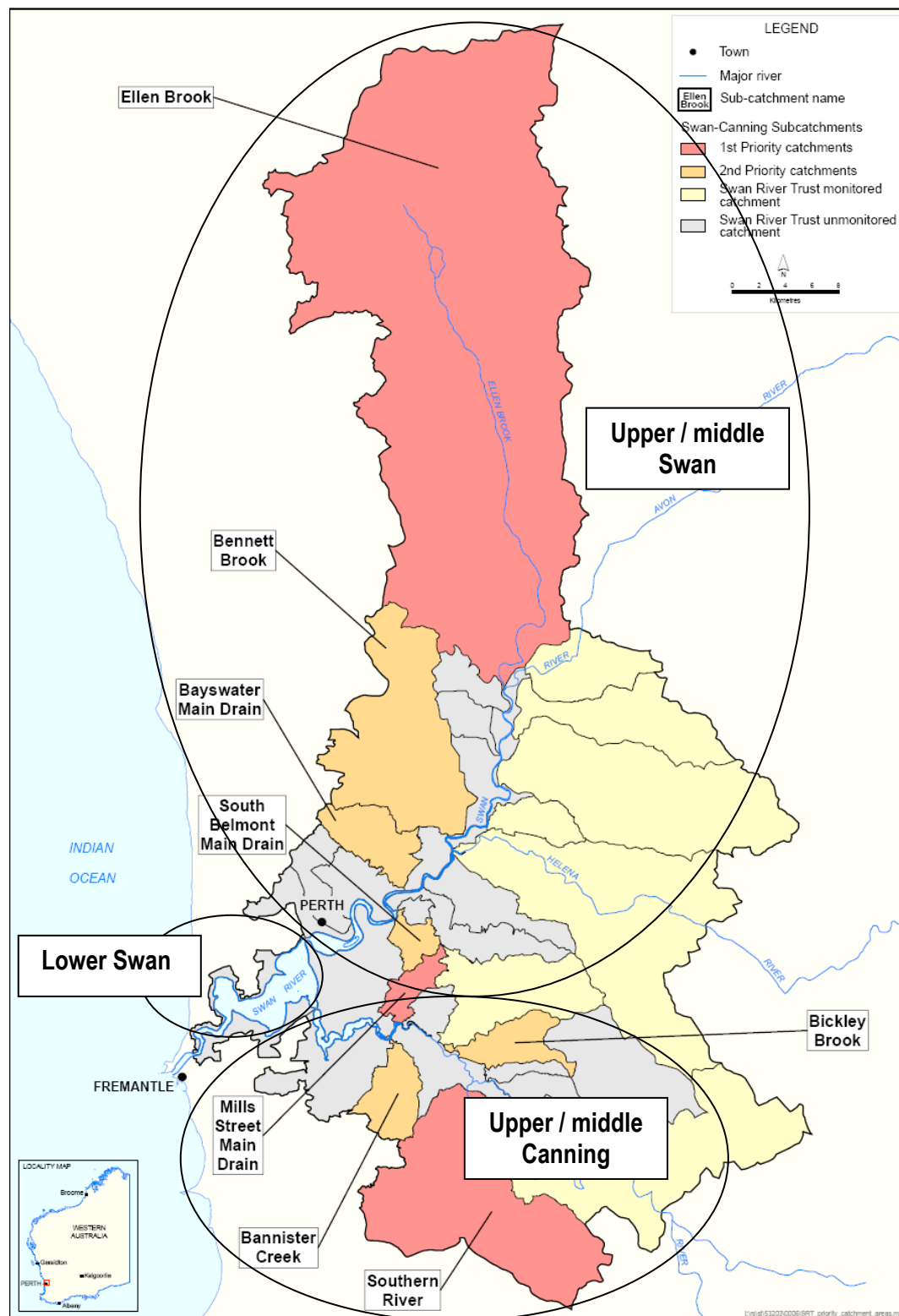
In seeking the best nutrient reduction opportunities within these locational constraints, the Nutrient Management Fund will need to establish environmental equivalence ratios taking into account the level of confidence in different abatement measures, the nature of the different sources of nutrients, and regional priorities for water quality improvement.

The initial contribution rates for nitrogen and phosphorus will be based on the costs of proven nutrient abatement works and will include margins for administration, monitoring and risk. The one-off contribution will cover the cost of equivalent offsets for a 30 year period.

The scheme will rely on estimation methods and models that are currently used as part of development approvals for subdivisions for determining residual loads. For smaller subdivisions that are not currently required to determine residual loads, standard contribution rates will be set according to the type, density and location of development. The standard rates will take into account key characteristics across different locations such as rainfall and soil type.

For more detail on the scheme proposed for the Swan Canning catchment see BDA Group 2008c.

Figure 2.4 Offset regions in proposed Swan Canning scheme



3 ENVIRONMENTAL AND ECONOMIC CONTEXT IN THE PEEL-HARVEY

This section discusses the environmental and economic context in the Peel-Harvey Coastal Catchment. The information has been drawn from the draft Water Quality Improvement Plan (EPA 2007) developed under the Coastal Catchments Initiative and supporting projects including the predictive water quality modelling undertaken by the Department of Water and the decision support systems for phosphorus reduction developed by the Department of Agriculture and Food.

The Peel-Harvey system comprises two shallow lagoons, the Peel Inlet and the Harvey Estuary, into which three major rivers, the Murray, Serpentine and Harvey discharge. The system is of considerable ecological, recreational, commercial and scientific interest. After decades of declining water quality and subsequent severe algal blooms, the Dawesville Channel was constructed in 1994. This has improved water quality in the main body of the Peel Inlet and Harvey Estuary, however water quality and environmental problems remain and have become more prevalent in the upper river reaches.

Prior to the opening of the Dawesville Channel the estuary had limited tidal exchange with marine waters resulting in a high level of retention of nutrients from catchment run-off. This nutrient enrichment led to large accumulations of macro-algae in the Peel Inlet in summer and autumn, and massive algal blooms in the Harvey Estuary in late spring/early summer.

Ecological collapse occurred across the estuarine reaches with regular and extensive toxic phytoplankton and macroalgal blooms, de-oxygenation events and fish kills. Socio-economic problems also emerged caused by physical impediments for commercial fishermen; recreational users being unable to have physical contact with estuarine waters and the presence of a mosquito-borne virus posing a health risk for people living within 10 kilometres of estuarine waters.

The draft WQIP states that while there have been improvements in parts of the estuary closest to the Dawesville Channel, weed-harvesting operations are still required for nuisance algae in the eastern portions. Significant macroalgal growth occurs in Austin and Robert Bay. Significant algal blooms and associated symptoms occur frequently in the estuarine reaches of the Serpentine and Murray Rivers.

Some of the current key water quality issues across the system include:

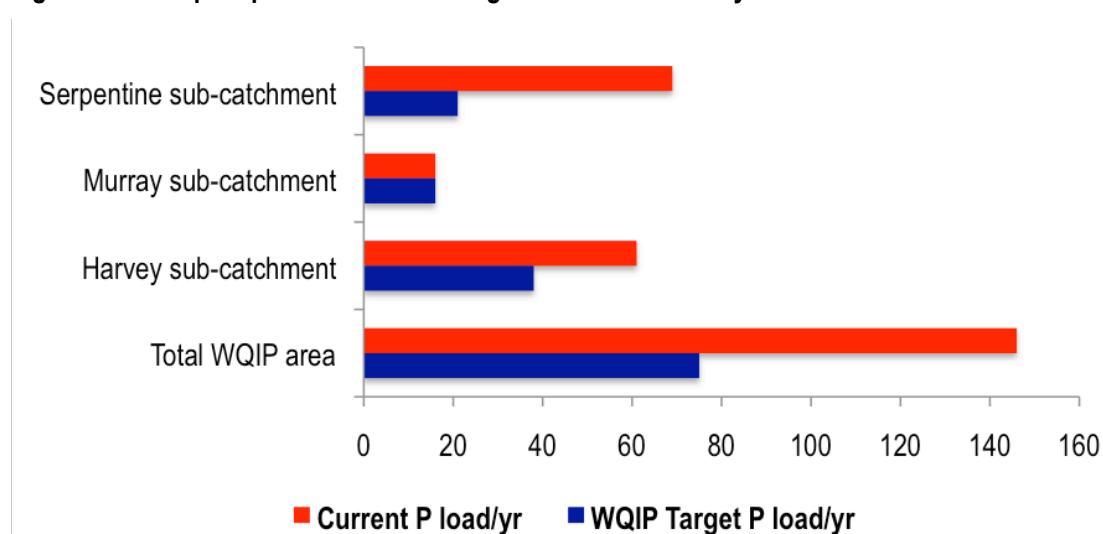
- Nutrient enrichment
- Algal blooms (occasionally toxic)
- Microbial contamination
- Occasional fish kills
- Odours from decaying algae
- Potential remobilisation of pollutants from sediments
- Loss of seagrass meadow

3.1 Nutrient loads and sources

This section provides a discussion of loads and sources of phosphorus as this has been the focus of water quality management in the Peel-Harvey system to date. Nitrogen loads are also a concern with some reports suggesting that the growth of algae in much of the Peel-Harvey is now more likely to be nitrogen limited than phosphorus (Ecotones & Associates 2006).

A reduction of around 50% in phosphorus loads is being sought with the most significant reductions required from the Serpentine and Harvey sub-catchments. Figure 3.1 sets out the phosphorus reduction targets for each sub-catchment in the draft WQIP.

Figure 3.1 Draft phosphorus reduction targets for the Peel Harey

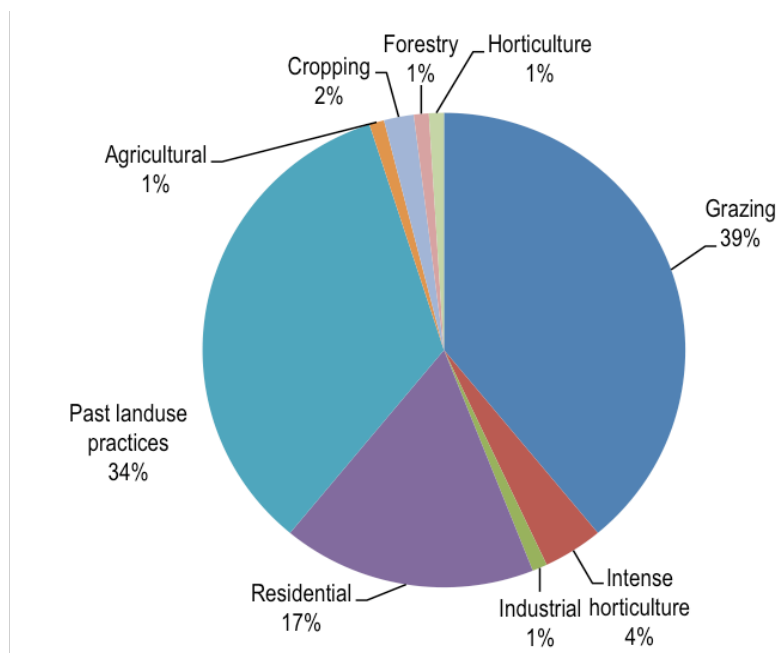


Source: EPA 2007

Almost half the phosphorus loads in the Peel-Harvey system come from agriculture and around 20% comes from urban areas. The remainder of the load is from past landuse practices (referred to as “rundown” in the draft WQIP). Figure 3.2 shows a breakdown of the contribution of phosphorus loads in the Peel-Harvey.

In the preceding discussion, no distinction has been made between nutrient loads from different sources in terms of how they may ultimately impact on environmental issues and water quality goals. To the extent that differences exist, they must be accounted for in policy design as offset trading requires a metric that defines the good being traded.

The term environmental equivalence refers to the difference between the impacts of pollution from different sources on an environment issue. The environmental equivalence is often stated as a ratio – for example an environmental equivalence ratio of 1:3 for two sources means that 1 tonne of pollutant from the first source is expected to have a similar impact on environmental amenities to 3 tonnes from the second source.

Figure 3.2 Breakdown of phosphorus loads by land use for Peel-Harvey system

Source: EPA 2007

The reason for the difference in impacts between two sources may be due to:

- their location;
- the types of discharges;
- the timing of the discharges; or
- hotspot or spillover impacts.

Summers et al (1999) discuss the most important factors influencing the impact of nutrient loads on the Peel-Harvey estuary. They are:

- Proximity to waterway; and
- Catchment characteristics – amount of vegetation in catchment, amount of catchment susceptible to waterlogging

All these factors represent high risks on floodplains adjacent to the estuary.

3.2 Expected impacts of new development

New urban development is expected to increase nutrient loads to waterways in the Peel-Harvey region. The draft WQIP reports the results of catchment modelling that upcoming land use changes are likely to increase phosphorus loads to the estuary by 20% with significant localised increases in areas next to the estuary (Zammit et al 2005). The main land use changes modelled include new urban areas between Mandurah and Pinjarra as well as the Northern Serpentine catchment.

3.3 Opportunities for nutrient abatement

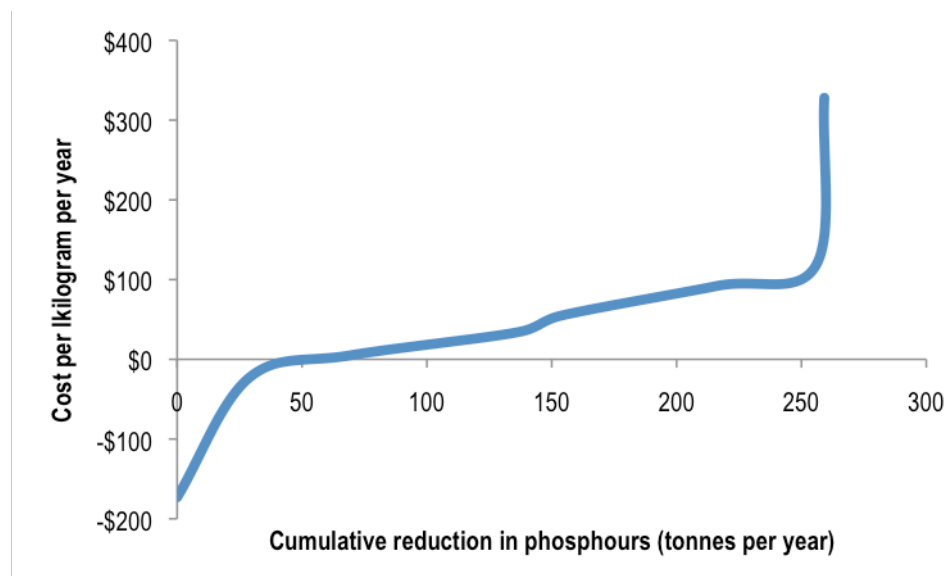
A range of measures could be used to reduce nutrients in the Peel-Harvey. The key types of works/programs include:

- Drainage intervention - from construction of wetlands to a number of in-stream structures which trap sediment including in-stream filters.
- Better agricultural management practices - such as improved waste management from dairies, piggeries, feedlots and poultry farms, improved fertiliser and irrigation management, adoption of perennial pastures and riparian fencing.
- Retrofitting of water sensitive urban design - technologies include the use of greater infiltration on-site, rainwater tanks, vegetated conveyance systems and constructed wetlands.

As part of the development of the draft WQIP a decision support system for phosphorus reduction for the Peel-Harvey catchment has been developed. The work has examined the costs, likely effectiveness and scope for implementation of a range of point and non-point source management practices to reduce phosphorus exports in the catchment. The reports have found there are a range of measures available, some of which would provide net financial benefits to landholders over time.

Figure 3.3 draws on this work and shows an indicative cost curve for reducing phosphorus loads in the Peel-Harvey. It should be noted that the curves are based on the maximum possible level of implementation for each individual BMP and do not include any program costs or incentives that may be needed to promote adoption.

Figure 3.3 Indicative cost curve for reducing phosphorus in the Peel-Harvey Coastal Catchment



Source: Derived from Ecotones & Associates 2005 & 2006 based on most cost-effective individual BMP performance

The most cost-effective abatement measures for reducing phosphorus include conversion to perennial pastures, soil amendment through the application of bauxite residue (also known as Alkaloam™) on suitable soils, fertiliser reduction from agricultural, peri-urban and urban lands, riparian management and effluent management (at dairies and piggeries).

Ecotones & Associates (2006) recommend that restoration efforts are not confined just to best management practices that deal cost-effectively with phosphorus (such as soil amendment using Alkaloam™) as other practices such as riparian management are likely to be the most effective for nitrogen.

4 APPLICABILITY OF SCHEME FOR PEEL-HARVEY

The key considerations for determining the suitability of a nutrient offset contribution scheme for the Peel-Harvey are:

- *Contribution from new development* - Is new development a significant contributor to the nutrient problem? Is there a compelling need for preventing an increase in nutrient loads from these sources?
- *Nature of nutrient problem* – If nutrient offsets from new development are sought, would they be to manage a regional water quality problem or would they need to be crafted to protect local water quality impacts?
- *Nature of new development* - If nutrient offsets from new development are sought, will there be a large enough number of new developments each year to warrant setting up a 'rules based' scheme (rather than case by case assessment)?

4.1 Contribution from new development

New urban development is expected to be a significant contributor to nutrient loads in the Peel-Harvey region. Some reports suggest it could be responsible for increasing nutrient loads by up to 80-400% (URS 2007).

Given the significant reductions in phosphorus loads required to meet the water quality targets in the draft WQIP, there is a compelling need for preventing the cumulative impact of additional residual nutrient loads from new development.

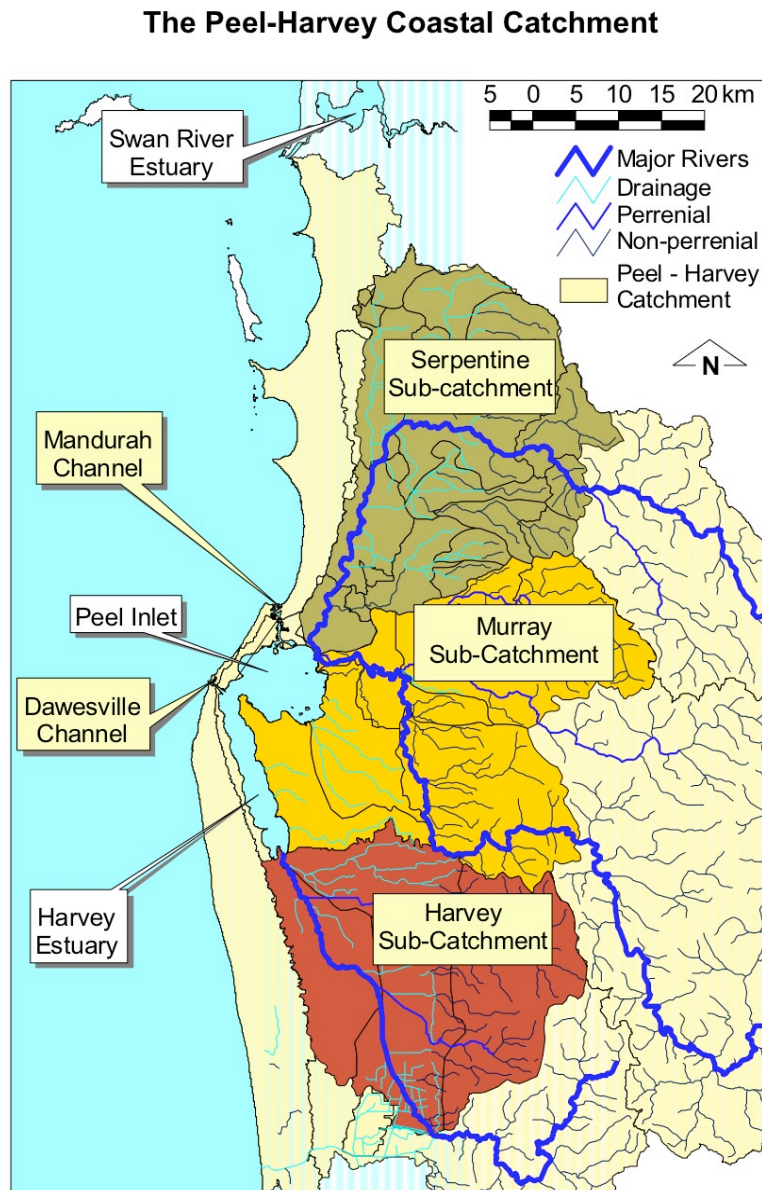
4.2 Nature of nutrient problem

The characteristics of the nutrient problem in the Peel-Harvey catchment are similar to those in the Swan Canning:

- There are three major river systems feeding into the estuarine system - the Serpentine, the Murray and the Harvey Rivers.
- The nutrient problem is *regional* in nature - with the key areas of impact being the Peel Inlet-Harvey Estuary and the lower reaches of the three major rivers. It does not appear that there is a need for a physical offset scheme where offset buyers and sellers are closely matched to ensure 'like for like' offsets so as to protect local water quality.

A nutrient contributions scheme is likely to be applicable for this catchment, with a small number of defined environmental zones (as has been proposed for the Swan Canning). Figure 4.1 shows the Peel-Harvey catchment. A contribution scheme could operate with four zones – the Serpentine catchment, the Murray catchment, the Harvey catchment and the Peel Inlet/Harvey Estuary.

Figure 4.1 Peel-Harvey sub-catchments



The above map indicates the coastal portions of the Harvey, Murray and Serpentine River hydrological catchments and is indicative of what is referred to as the **Peel-Harvey Coastal Catchment**. Although please note the above map differs from the official policy area defined in the *Environmental Protection (Peel Inlet-Harvey Estuary) Policy 1992* whose eastern boundary is generally defined by property boundaries at the base of the Darling Scarp; the above map includes areas to the east of this boundary where considered to be a part of the hydrological sub-catchments of the three river systems.

Source: Department of Water, as presented in the draft WQIP for the Rivers and Estuary of the Peel-Harvey system

4.3 Nature of new development

The nature and extent of expected new development will also influence the attractiveness of alternative offset scheme structures. For example, if only a small number of large developments were expected, it may not be worth the administrative effort in establishing a 'rules-based' scheme. This section examines the nature of expected development in the Peel-Harvey.

Table 4.1 provides a summary of upcoming subdivision projects in the Peel-Harvey region over the next five years. It is not comprehensive but provides an indication of the order of magnitude of the projects and lots expected in key growth areas. There are also some very large developments under consideration over the next ten years that are not included in Table 4.1. For example a development at Keralup (10km north of Mandurah) has been proposed with an additional 25,000 lots.

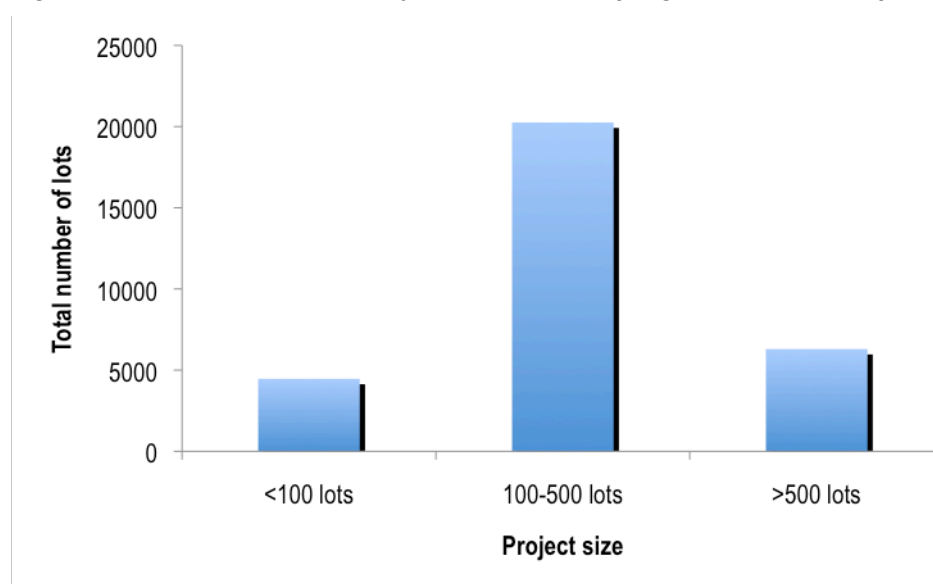
Table 4.1 Upcoming subdivision projects in Peel-Harvey region over next five years

Metro Development Plan sector	Area	Subdivision projects	Subdivision lots
South West	Cockburn, Kwinana and Rockingham	133	18,117
Peel	Mandurah & Murray Shires	70	9,587
South East	Shire of Serpentine-Jarrahdale	29	3,302
Total		232	31,006

Source: DPI MDP database 2008

The majority of the projects over the next five years involve between 100 and 500 lots as shown in Figure 4.2.

The data suggests that there are large number of developments expected and this would warrant setting up a rules based scheme, rather than relying on case by case assessment of offset requirements.

Figure 4.2: Size of subdivision projects in Peel-Harvey region over next five years

Source: DPI MDP database 2008

4.4 Recommendations

The nutrient offset contributions scheme proposed for the Swan Canning seems appropriate for the Peel-Harvey as:

- There is a compelling need to prevent additional nutrient loads from new development given the reductions in overall nutrient loads required and the potential significance of residual loads from new development;
- The nature of the nutrient problem is regional in nature, suggesting that a contributions scheme with four defined zones (the Peel Inlet-Harvey Estuary; the Serpentine catchment, the Murray catchment and the Harvey catchment) would be applicable in the Peel-Harvey;
- The large number of new developments indicates that administrative costs are likely to be reduced through the establishment of a rules based scheme for offset requirements.

Accordingly it is recommended that the Peel-Harvey Catchment Council pursue the development of a nutrient contributions scheme for the Peel-Harvey coastal catchment in consultation with key stakeholders.

5 ISSUES FOR FURTHER DEVELOPMENT OF PEEL-HARVEY SCHEME

BDA Group 2008b and 2008c examine a range of issues involved in developing and implementing a nutrient offset contributions scheme in the Swan Canning catchment. This section explores key issues requiring specific attention for the Peel-Harvey - governance arrangements, issues with rural based offsets and interplay with the Commonwealth *Environment Protection and Biodiversity Act 1999*.

5.1 Governance arrangements in the Peel-Harvey

Unlike in the Swan Canning catchment, there is no obvious body equipped to take on the role of the Nutrient Management Fund in the Peel-Harvey catchment. Governance arrangements for water quality management in the catchment are currently being considered in the context of the implementation of the WQIP. The body charged with this responsibility may be appropriate to act as the manager of a Nutrient Management Fund established under a Peel-Harvey nutrient offset contributions scheme. This section sets out the criteria that would need to be met for the Nutrient Management Fund entity.

The role of the Fund would be to reduce loads of nutrients entering the Peel-Harvey catchment to improve regional water quality outcomes. The fund would make strategic investments to maximise regional water quality benefits taking into account:

- Any constraints on the location of offset measures associated with funds collected (to address environmental equivalence).
- The cost-effectiveness of different abatement strategies.
- The risks and uncertainties associated with different abatement strategies.

The Nutrient Management Fund would receive nutrient offset contributions as well as any funds from outside sources, such as Federal, State or local governments. The Fund may also pool resources with other organisations to achieve multiple benefits.

The following criteria are key governance characteristics for the Nutrient Management Fund entity:

The entity must have the authority to receive and spend the contributions

If nutrient contributions are to be hypothecated for expenditure on the specific purpose for which they were raised (nutrient reduction), the contributions need to be held and used by an entity with the authority to do so. While existing Government processes for appropriation and expenditure authority could be used, greater accountability and transparency for the use of hypothecated funds can be achieved by purpose-built legislation establishing the authority to receive and spend contributions.

The entity must be capable of acquiring and owning property, and entering into contracts

In order to purchase nutrient offsets, the purchasing entity will need to be legally able to acquire property and enter into contracts. To do this, it must be either a natural person, or a body corporate, or otherwise have power under statute to enter into contracts.

Nutrient offsets must be purchased in accordance with the rules of the nutrient offset contributions scheme

To ensure that the scheme provides an overall improvement in regional water quality, the entity must be bound by the rules of the scheme – including purchasing nutrient offsets taking into account the limitations on the location of nutrient offsets, and not purchasing offsets below minimum performance standards (see paragraph 5.3).

The entity should not be associated with nutrient dischargers (eg: the Water Corporation, agricultural activities) or brokers

To avoid conflicts of interest in the course of the entity's participation in the nutrient offset market, the entity should be separate from competing or possibly competing interests in the nutrient offset market. Separation can be achieved by ensuring that the entity's role is clearly described and limited, that it has an appropriate governing body for its role, and that members of the governing body are required not to act in circumstances of conflict. Such requirements can be included in statute

Purchasing nutrient offsets should be the (or a) core business of the entity

To improve cost-effectiveness of nutrient abatement, and to help ensure effectiveness, the entity should be either established predominantly for the purpose of reducing nutrients, or nutrient reduction can become a core business with other compatible activities of the entity.

To achieve cost effectiveness and improve accountability, the entity should possess the skills required to carry out the function

The membership of the entity should be such that requisite skills are evident, or the entity is required to demonstrate access to relevant skills and organizational capacity to participate in the nutrient offset market.

The entity must be accountable for the use of the funds

As the entity would purchase nutrient offsets using contributions from liable parties and possibly governments, the entity must be accountable for the use of the funds. Accountability for public funds can be achieved through various standard requirements including financial and management reporting and auditing requirements.

5.2 Challenges with rural based offsets

A range of different types of offset works and programs could be used to reduce nutrients in the Peel-Harvey including drainage intervention, better agricultural management practices and retrofitting of water sensitive urban design.

A key difference between the Swan Canning and Peel-Harvey catchments is the nature of opportunities for abatement from different sources. In the Swan Canning, the SRT has been investing in drainage interventions to reduce nutrients and there appears to be significant scope to expand that program. In the Peel-Harvey catchment the work undertaken for the development of the WQIP indicates there is significant scope for implementation of best management practice in rural areas at low cost.

In the Swan Canning it is envisaged that the Nutrient Management Fund would initially focus on wetlands and other drainage intervention measures where there is a high level of confidence in nutrient reduction outcomes, and invest a small proportion of contributions into demonstration projects involving best management practice at agricultural sites. While the Nutrient Management Fund in the Peel-Harvey may also pursue wetlands and other drainage intervention measures, it is expected that they may need to invest more significantly in best management practice with agriculture from the outset of the scheme.

There are a number of issues associated with rural based offsets including:

- duty of care;
- additionality;
- developing contracts;
- monitoring/enforcement;
- risk;
- processes for purchasing cost-effective offsets.

Each of these issues is discussed in more detail below.

5.2.1 Duty of care

Most trading or offset schemes set out a *duty of care* or minimum performance standard that offset sellers must meet. The minimum standard may reflect a performance level required under legislation or government requirements, or reflect community expectations for environmental stewardship. By setting a minimum performance standard, the Nutrient Management Fund would not be pursuing nutrient reduction activities that the community believes should already have been realised.

In the Peel-Harvey context, separate minimum or benchmark levels of performance for particular activities could be established as a pre-requisite for participating in the scheme (eg: varying for grazing, horticulture, etc). Alternatively, the minimum standard for all landholders could be a

conforming farm management plan (with a set of minimum requirements to be covered). The Nutrient Management Fund would need to strike a balance in setting the minimum performance standard, as setting a high benchmark may be perceived as being more equitable but is also likely to reduce participation and opportunities for low cost measures.

5.2.2 *Additionality*

The calculation of offsets requires a baseline to be established reflecting nutrient loads from the activity over time in the absence of investment by the Nutrient Management Fund - with only nutrient reductions beyond the baseline credited as an offset. The measurement of baseline nutrient loads can be problematic in the case of diffuse sources and where a range of other government programs influence future loads.

There are two specific issues in the Peel-Harvey that will have a major influence on establishing baselines. These are the impact of climate change, which will see a reduction in nitrogen and phosphorus in the waterways of the catchment and the second is the proposed ban on soluble nitrogen. Both of these factors will serve to reduce future nutrient loadings from diffuse sources, and crediting these reductions under an offset scheme would not 'make good' discharges allowed elsewhere relative to a business as usual scenario.

Another issue to be considered is the evolution of basic land management requirements over time. While it is important to 'protect early movers', it may not be appropriate to establish a 50 year offset arrangement from a landowner revegetating and fencing a riparian strip, when this may become a basic requirement for land management during this timeframe. The measure may only be 'counted' as an offset while the management practice is likely to remain a 'beyond compliance' activity.

5.2.3 *Developing contracts*

The duration of an offset will generally correspond to the length of time for which nutrient offset measures will be effective *and* ongoing monitoring and reporting arrangements will be in place. Some agricultural management practices are likely to provide only short to medium term benefits and rural landholders may also be reluctant to lock-in farm management practices over longer periods.

From the Nutrient Management Fund's point of view, short term contracts would require greater administrative effort over time but longer term contracts carry a greater risk of failure because of the requirement for a longer term commitment. The Nutrient Management Fund would need to balance the benefit of locking in long term gains versus the cost of not being able to review and change arrangements or pursue more cost-effective nutrient reduction measures.

Initially contract duration may vary considerably, taking into account the nature of the measure, ongoing maintenance commitments, the parties' negotiated preferences and taking into account the risks involved with longer durations. Over time the Nutrient Management Fund may wish to standardise contracts.

5.2.4 Monitoring and enforcement

Where the offset measure is undertaken by a point source, direct measurement of nutrients reduced from the discharge is usually feasible. However, the success of measures to reduce nutrients in diffuse source runoff is more difficult and performance can be highly variable depending on the specific design and operating conditions. The main components to measuring nutrient reductions from diffuse sources are:

- Estimating current nutrient generation rates;
- Estimating nutrient generation rates under the new management practices (which may include judgements on the effectiveness of particular practices in the specific context of the site and characteristics of the diffuse source); and
- Estimating the area of the site for which the new management practices is applicable.

For rural based offsets it likely that measurement will be a combination of field measurement (where feasible and economic) and use of generation rates and treatment effectiveness gained from pilot sites or other published material. For rural based offsets, the Nutrient Management Fund will need to set out the nature and frequency of monitoring and measurement required in contracts.

5.2.5 Risk

It is possible that the offset arrangement will not deliver the assessed nutrient abatement. This may be because of a lack of scientific knowledge about the effects of the action on nutrient abatement, natural disaster (such as bushfires or storms) or failure of the offset seller to comply with the contract.

A lack of current knowledge can be reflected in the equivalency ratios, thus reducing the Fund's exposure to this risk. Other risks associated with the abatement action need to be developed within the offset contract and the risks borne by the two parties to the contract clarified. The contract may include a financial provision for offset failure. The Fund may also need to ensure a right of access to the diffuse source offset seller's site so that it can conduct an independent review of offset outcomes, where necessary.

It is not proposed that the Nutrient Management Fund take ownership of the assets invested in to deliver nutrient reductions. Rather the Fund would be contracting with offset providers – such as Water Corporation, Local Government, private businesses or landholders – to manage their assets so as to generate the negotiated nutrient reductions. It would be up to offset providers to ensure that the negotiated fee was sufficient for them to develop and maintain the offset works or management strategies for the agreed contract period, taking into account other objectives that the works or strategies may be contributing to and any residual uses and / or costs associated with the assets at the end of the period.

5.2.6 Processes for purchasing cost-effective offsets

While competitive tender approaches are commonplace for a range of works and actions sought by government, their extension to purchasing management practice changes on private property to deliver environmental benefits is relatively new.

Conservation tenders (sometimes called auctions) have been used successfully across Australia for securing native vegetation and biodiversity benefits on private lands, following the success of the *BushTender* trials in Victoria. These mechanisms have now been extended to a range of other environmental purchasing programs by governments including in water right buyback programs (as recently conducted under the Living Murray initiative) and in purchasing irrigator changes in water use (such as the timing of diversions from rivers) to protect in-stream water quality (such as under Victoria's *StreamFlow Tender*).

The potential role of an offset tender mechanism should also be considered by the Nutrient Management Fund, especially when seeking offsets via changes in agricultural management practices. Tender processes involve inviting bids from landholders for conservation works on their properties, with bids assessed, ranked and funded based on their relative value for money in terms of cost per kg of nutrients abated. Formal agreements between the funding body and the landholder are then established, which incorporate monitoring and reporting requirements as well as remedial actions or penalties if agreed outcomes fail to be achieved. Typically, payments to landholders consist of an up-front payment for capital expenses as well as on-going annual payments (often for up to 10 years) to meet any operating expenses and to provide an incentive to maintain the works.

5.3 Interplay with the EPBC Act

The Peel Inlet-Harvey Estuarine System, as a part of the broader Peel-Yalgorup System, has been placed on the list of Wetlands of International Importance under the Convention of Wetlands (Ramsar, Iran 1971). Any development likely to have a significant impact on the ecological character of the wetlands, or on listed threatened species or communities, or listed migratory species relying on those wetlands will trigger the *Environment Protection and Biodiversity Act 1999* (Commonwealth). Any action that has a significant impact on listed species will also trigger the EPBC Act, regardless of whether the location at which the species will be affected is Ramsar listed or not. The Australian Government has the power under the EPBC Act to impose offset conditions on developments in order to protect the wetlands or listed species triggering that Act.

An approval from the Australian Government does not remove the need for a separate approval from State or local government authorities. Nor does approval from State or local government authorities remove the need for a separate approval from the Australian Government. In the situation that an action is being assessed by both Governments, the bilateral agreement under the EPBC Act between the Western Australian and Australian Governments would normally apply. Under the bilateral agreement, a single assessment process run by the State Government

will be used to remove the need for separate assessment processes. Projects being assessed under the bilateral agreement are still subject to separate approval decisions.

A nutrient offset contribution scheme implemented through the imposition of developer charges at the State level will not conflict with or duplicate any offset requirements under the EPBC Act. However, there may be potential for synergies between Australian and State offset requirements and potentially “joint” funding of measures that could provide greater environmental benefit.

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