

**Consultation Draft**  
**Environmental Protection Act 1994**  
**Point Source Water Quality Offsets Policy 2018**  
**Not Government Policy**

Environmental Policy and Planning Division, Department of Environment and Science

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## 1 Introduction

This document outlines the policy requirements when considering the adoption of **water quality offsets**<sup>1</sup> as a voluntary option for managing regulated point source wastewater discharges to Queensland waters.

Where water quality offsets are conditioned under a new or amended environmental authority (EA) the *Point Source Water Quality Offset Policy 2018* (the policy) informs the decision-making.

The policy provides guidance for new and existing EA holders, regulated under the *Environmental Protection Act 1994* (EP Act), to meet point source wastewater discharge conditions through water quality offsets solutions to achieve improved water quality in the **receiving environment**. A conceptual diagram is shown at Figure 1

The policy provides flexibility for new and existing EA holders; for example to voluntarily consider the implementation of offset solutions to meet the EA conditions for incremental upgrades to production or as part of the treatment options under the *Environmental Protection Regulation 2008* Chapter 4 (EP Reg) management hierarchy to achieve EA conditions.

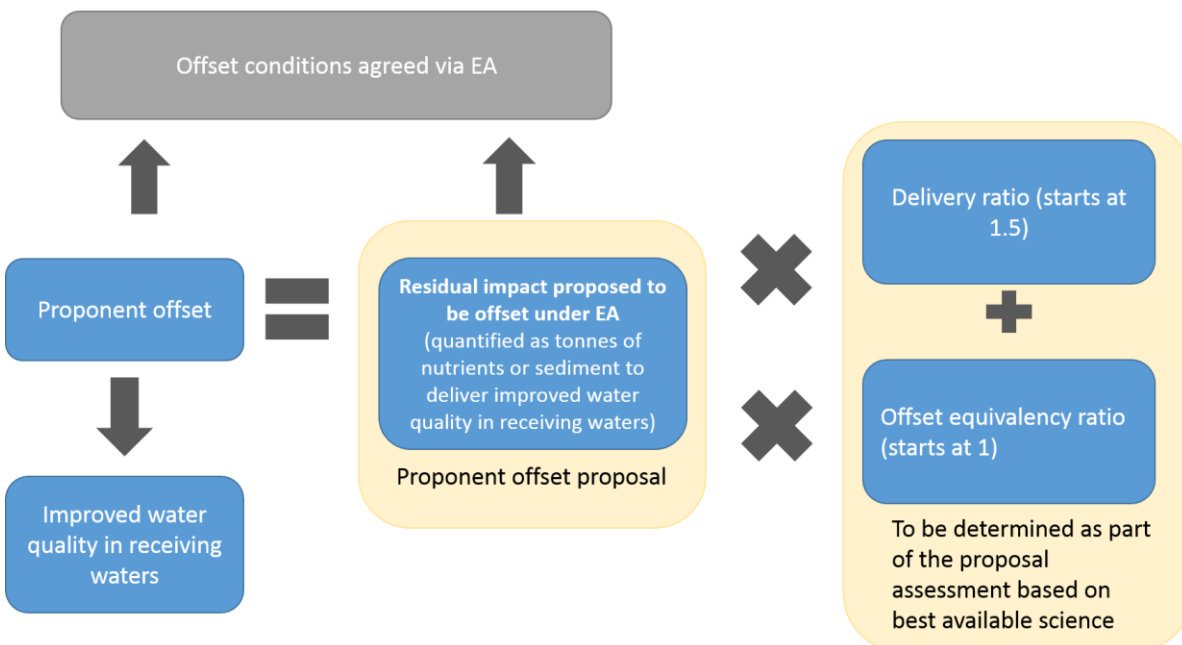
The policy may be tested through industry or local government projects, and the Department remains keen to discuss and to partner with proponents in developing proposals in accordance with the policy; i.e. the proposal must achieve improved water quality in the receiving environment and achieve sustainable whole-of-catchment outcomes under regional planning frameworks, including for example catchment based total water cycle management plans.

Policy adoption would be based on compliance with existing EA conditions i.e., additional, unless under a new EA. The *Point Source Water Quality Offset Guideline 2018*, published on the Department’s website, informs the policy.

### Notes

1. The EP Reg prescribes the regulatory requirements for all environmental management decisions. For new EAs and amendments to existing EAs, the consideration of water quality offsets would include assessment in accordance with the management hierarchy provisions of the *Environmental Protection (Water) Policy 2009* (section 13).
2. Legislative provisions, and decisions under legislation, take precedence over policy and guidelines.

Figure 1. Point source water quality offsets policy – conceptual diagram



<sup>1</sup> Throughout the document, terms that appear in bold at first mention have been included in the definitions table at the start of the document.

## 2 Purpose

The purpose of the policy is to provide a voluntary alternative investment option for existing EA holders, or as part of the conditions of a new EA, to meet their water emission discharge requirements under the EP Act, while delivering an improvement in water quality in the receiving environment.

## 3 Objectives

- Deliver a net improvement to catchment receiving waters by providing offset solutions to production increments under existing or new EAs from **environmentally relevant activities (ERAs)**.
- Provide voluntary alternative investment options that may provide more cost effective solutions for ERAs to meet EA conditions.
- Allow for growth and innovative development, while improving water quality across the catchment/sub-catchment receiving waters, depending on the offsets type/location, in accordance with local<sup>2</sup> and national water quality standards<sup>3</sup>.
- Maximise ecologically sustainable whole of catchment outcomes under regional planning frameworks; including for example statutory regional plans, Local Government total water cycle management plans and water quality improvement plans developed by a recognized entity.
- Maximise the benefit of an investment for improved waterway health by co-locating offsets works, where relevant, under this policy with that required under other legislative or policy instruments.
- Minimise transaction costs and regulatory burden.
- Partner with proponents in developing offsets proposals to provide confidence in the approach:
  - a. discussing technical requirements, including identifying appropriate sites and required site assessments, and
  - b. considering joint publicity to demonstrate the benefits of offsets to the broader environment and affected communities.

## 4 Application

The policy applies to:

- EA holders that wish to increase production but still fall under discharge limits set out in the EA conditions, and/or
- EA holders wishing to amend their EA conditions to increase their discharge limits, and/or
- Proponents that currently do not hold an EA, and/or
- Proponents considering other proposals in accordance with the policy should be discussed with the Department.

Under an EA, the policy applies to the management of total nitrogen, including dissolved inorganic nitrogen, and total phosphorous discharging to waters.

The policy also applies to total suspended solids discharging to waters.

For all proposed water quality offsets, a point source operator must demonstrate a valid scientific approach for evaluating and monitoring the offset. Advice on requirements should be sought from the Department.

Other water quality parameters such as salinity, pathogens and biological oxygen demand are outside the scope of the policy. Treatment of these contaminants must be managed to ensure the prevention of environmental harm through the protection of environmental values as set under the EA conditions. Environmental values for waters are stated in the *Environmental Protection (Water) Policy 2009*.

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<sup>2</sup> Refer to Schedule 1 of the *Environmental Protection (Water) Policy 2009*

<sup>3</sup> Under the *Environmental Protection (Water) Policy 2009*, water quality objectives for toxicants at differing levels of aquatic ecosystems protection are stated in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 (as amended)..

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In applying the policy a proponent must demonstrate that any proposed discharge increase at the point of concern, avoids environmental harm, achieves a net improvement to catchment receiving waters by water quality offsets and potentially creates a broader benefit to receiving waters<sup>4</sup>. Proponents are encouraged to contact the Department to discuss technical and policy matters at the earliest opportunity when preparing preliminary proposals for water quality offsets projects.

Under the policy the Department encourages a partnership approach between State Government, Local Government and Industry. Through partnerships a coordinated effort can aid identifying appropriate sites, site assessments and appropriate monitoring programs for an offset project. A collaborative approach may also facilitate joint communication when building new case studies.

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<sup>4</sup> To be determined by the department based on water quality objectives and environmental values under the *Environmental Protection (Water) Policy 2009*.

## 5 Definitions

The following definitions are adopted for the purposes of this policy.

Term	Meaning
Amalgamated environmental authority	Has the meaning under the EP Act sections 243 to 250.....including where the holder of 2 or more environmental authorities may apply to the administering authority for a new environmental authority (an <i>amalgamated environmental authority</i> ) for all activities for the authorities. Commonly referred to as a 'bubble licence'.
Best practice environmental management	Means under the EP Act, section 21, the management of the activity to achieve an on-going minimisation of the activity's environmental harm through cost effective measures assessed against the measures currently used nationally and internationally for the activity. Section 21 (2) lists measures to be used to determine the best practice environmental management of an activity. These include, but are not limited to, strategic planning, systems and training, product and process design, public consultation, waste prevention/treatment and disposal.
Catchment	An area of land bounded by natural features such as hills, from which drainage flows to a common point, usually ending in a river or creek and eventually the sea or termination point.
Delivery ratio	A multiplicative factor that takes into account the attenuation (distance and uncertainty) regarding the successful implementation of the water quality offset in delivering a net reduction in nutrient or sediment loading at the point of concern. Normally 1.5:1.
Diffuse source	Non-point pollutant sources (i.e. without a single point of origin or not introduced into a receiving stream from a specific outlet). The pollutants are generally carried off the land by stormwater or overland flow. Common non-point sources are agriculture, forestry, urban areas, and historical mining sites.
Dry weather day	Means a day which is less than an agreed value for mm of rainfall which is recorded at any rainfall measuring station recognised by the Commonwealth Bureau of Meteorology within the area of the point source location, or if no such measuring station exists, at the nearest such station to the point source. The term also excludes days during which recorded rainfall over the preceding agreed number of days exceeding a cumulative rainfall of an agreed value for mm of rainfall based on catchment characteristics.
Environmentally Relevant Activity.	Under the EP Act 1994, a regulation may prescribe an activity as an environmentally relevant activity if the Governor in Council is satisfied the contaminant will or may be released into the environment when the activity is carried out and the release of the contaminant will or may cause environmental harm
Environmental Equivalence	Means the equivalence (chemical form, quantity, spatial) between the water quality gains resulting from water quality offset solutions that offset the increased point source emissions at the ERA approved discharge or release point.
Evidence-based	Refers to any concept or strategy that is derived from or informed by objective evidence.

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Management hierarchy	Means the management hierarchy under the <i>Environmental Protection (Water) Policy 2009</i> that must be considered when making <i>environmental management decisions</i> (EMDs) under the <i>Environmental Protection Regulation 2008</i> . Note for existing ERAs EMDs have been made, including consideration of management hierarchy, as part of the EA conditions. The consideration of water quality offsets is voluntary and additional.
Mixing zone (or initial mixing zone)	Under the <i>Environmental Protection Regulation 2008</i> initial mixing zone means an area where water containing contaminants mixes rapidly with surface water because of the momentum or buoyancy of the contaminated water and the turbulence of the surface water.
Offset equivalency ratio	Accounts for the uncertainty associated with attenuation of offset above the point of concern, environmental equivalence (chemical form, spatial (same/adjacent catchments/ offsets delivered below the point of concern) and temporal factors—that is, offset to be in effect before ERA approved release increases. Normally 1:1
Point of concern	The point of concern is the area in a waterway adjacent to a point source discharge pipe (outfall) outlet and may be referred to as a “mixing zone”. The point of concern will be determined on a case-by-case basis depending on the sensitivity of the receiving environment.
Point source entity	The holder of an EA that allows the discharge of treated effluent into waterways at a point of concern.
Point source pollution	Pollutants discharged to a waterway by a point source entity at a point of concern.
Prescribed contaminants	Refers to contaminants listed in Schedule 9 of the <i>Environmental Protection Regulation 2008</i> .
Proponent	A holder, or a prospective holder, of an environmental authority wishing to undertake a voluntary nutrient reduction action/s to meet water emission discharge requirements under the <i>Environmental Protection Act 1994</i> .
Receiving environment	An ecosystem and its constituent parts that is likely to come in contact with an environmentally relevant activity being released to the environment.
River Basin	Under the Queensland Water Quality Guidelines 2009 as amended, river basins are defined according to where water flows and drains across the landscape. Refer to Figure 2.3.2 for a map of defined river basin divisions across all of Queensland. An <b>adjacent river basin</b> is defined as when two river basins share a boundary.
Toxicity	The health effects which living organisms suffer as a result of contaminants in aquatic ecosystems.
Water Body	Any significant accumulation or mass of water having definite hydrological, physical, chemical and biological characteristics.
Water quality offset	An action taken to offset point source discharge at a point of concern, providing a net water quality improvement to the catchment receiving environment



Water type	A water body type under the Queensland Water Quality Guidelines 2009, within which water quality (or biological condition) is sufficiently consistent that a single guideline value can be applied to all waters within each type. Examples of water types include; upland freshwater, lowland freshwater, lakes, wetlands (palustrine), estuaries and marine – inshore and offshore (refer to <a href="https://www.ehp.qld.gov.au/water/guidelines/">https://www.ehp.qld.gov.au/water/guidelines/</a> )
Wet weather day	A day that is not considered a dry weather day (see definition above).
Whole of catchment management	Planning and implementation of management practices or actions within a river basin, catchment or sub-catchment, that takes into account land uses and threats to water quality and environmental values, water quantity, water quality and water security and the impacts of climatic events.

## 6 Types of water quality offsets

The policy provides for water quality offsets between:

### a) Two or more point sources (point source : point source offsets)

Point source: point source offsets can be used between regulated entities of one or multiple EA holders. The holder of 2 or more EAs may apply to the administering authority for an **amalgamated environmental authority**.

For example if two or more points of concern are managed by the same regulated entity under the EP Act sections 243 to 250, the entity may seek to combine discharge limits to meet an overall reduced discharge limit— under a new EA for all activities for the EAs. This is commonly referred to as a **'bubble licence'**.

Different entities managing two or more points of concern may also enter into a water quality offset arrangement—where one regulated entity reduces its limit below that specified on the EA, so that the other/s may increase their discharge load accordingly. The adjusted load limits would be reflected as a condition of the EA for each entity.

### b) A point source and diffuse source provider (point source : diffuse source offsets)

A point source entity may also offset its impact and remain within EA conditions through actions that achieve a net improvement in catchment receiving water quality from a **diffuse source/s** such as rural, urban or other areas.

The type of actions that may provide a water quality offset include, for example:

- Riparian streambank area restoration,
- Constructed or remediated wetlands,
- Bioremediation technology to further treat wastewater. For example aquaculture farm water bioremediation management to treat pond water before release,
- Improved fertiliser application management above any required minimum standards,
- Improved grazing land management practices above any required minimum standards, AND
- Water sensitive urban design (beyond meeting the design objectives under the *State Planning Policy 2017, State Interest Water Quality*).

The water quality offset would be reflected as a condition of the EA for the point source entity.

## 7 Requirements

To ensure that the water quality offsets solutions generate improved water quality in the receiving environment, the following requirements must be addressed.

- Additionality must be demonstrated for water quality offsets that are designed to meet multiple legislative or policy requirements. For example, if a water quality offset is designed to meet requirements of this policy and meet stormwater management design objectives under the *State Planning Policy 2017 (SPP) State Interest Water Quality*; then the offsets solutions must be designed to meet the requirements of this policy and the requirements of the SPP State Interest Water Quality. That is 'double-dipping' proposals not accepted.
- The additionality requirement may extend to other considerations, e.g. co-benefits requirements under a Land Restoration Fund proposal. The Department encourages water quality offset proposals that consider multiple ecological benefits or co-benefits (e.g. biodiversity or carbon benefits), that support whole of catchment outcomes.
- Support sustainable whole of catchment outcomes under regional planning frameworks; including statutory regional plans, Local Government total water cycle management plans (or equivalent) and water quality improvement plans developed by a recognized entity. For example, by locating offsets works in accordance with regional planning frameworks where relevant to the offset solution and co-locating offset works being delivered under other policy instruments, again where relevant.
- For water quality offsets, proponents must demonstrate the offsets solutions will achieve water quality improvements that deliver a net decrease in nutrient/sediment loads to the catchment/sub-catchment receiving waters.
- The consideration of water quality offsets would normally be based on compliance with existing EA conditions.
- Proposed increases in point source discharge should not occur in waters that have been mapped as high ecological value under the *Environmental Protection (Water) Policy 2009* or in water supply buffer areas.
- The policy does not allow for water quality offsets in the form of a direct financial contribution to an entity.
- The proposed water quality offsets solutions should be designed to ensure there are no unintended consequences such as increased downstream flooding impacts.

For proposed offsets solutions that do not have established best practice environmental management guidelines, the proponent should seek advice from the Department.

To build knowledge, the Department encourages evidence-based pilot projects and would seek to partner with proponents in developing offsets proposals.

### 7.1 Catchment and Total Water Cycle Management

Water quality offsets under the policy should preferably align with any whole-of-catchment and total water cycle management plans developed by a recognised entity. Examples of these include; catchment management action plans, water quality improvement plans, local government total water cycle management and urban stormwater water quality management plans.

Where key priority areas for on ground restoration works have been identified under such plans, water quality offsets locations should adopt these locations. For further information on identified key priority areas for water quality offsets site locations please contact the Department or Local Government for the relevant river basin.

### 7.2 Location and site condition

In accordance with 7.1, the proponent should describe the water quality offset location options considered prior to proposing the final location. This includes a feasibility evaluation of water quality offset locations available in relation to the point source discharge – upstream, downstream, same **river basin**, adjacent river basin, non-adjacent river basin (see Table 1).

For example, if the proposed offset location is not located within the same river basin or upstream/downstream of the point source, then nearer locations must be assessed and the proponent

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must clearly articulate reasons for proposing a water quality offset location that is not within the same river basin as the point source discharge.

For all proposed water quality offset locations, the proponent must show an **equivalency** in discharge reduction in receiving waters (refer to section 7.3).

A downstream water quality offset on **wet weather days** may be considered favourable if it occurs within the same **water type** as the point of concern.

For a water quality offsets not located within the same river basin as the point source (including locations within adjacent or non-adjacent river basins), the proponent must evaluate the local impact caused at the point of concern. Such evaluations must be undertaken against the objectives of meeting water quality objectives and assessing whether prescribed contaminants may cause environmental harm at the point of concern, as set per EA conditions and risk assessment requirements in EA proposals.

The proponent will need to identify the environmental values being protected as well as the discharge equivalency in receiving waters (e.g. Moreton Bay or Great Barrier Reef Lagoon) of the point of concern.

### 7.3 Delivery and offset equivalency ratios

Increases in delivery or equivalency ratios from the 'normal ratios' will be considered only where there is no evidence and there is significant uncertainty that net improvement in water quality will be achieved in the near field or far field catchment receiving waters.

#### 7.3.1 Delivery ratio

The **delivery ratio** represents a factor that takes into account the uncertainty about delivering an equivalent discharge reduction in the receiving environment due to the distance between the point of concern and the offset solution due to attenuation in the receiving waters, the performance variation of the offset solution over time and if the offset solution is in the same catchment / basin (spatial differences.)

The delivery ratio will take into account pollutant losses/attenuation during transport in the river basin and will be applied to both point and diffuse **pollution** reductions, as the distance between the point of concern and water quality offset increases. It also takes into account the potential impact of the point source discharge increase on the receiving environment.

Generally, the further the distance between two point sources or the point of concern and the water quality offset site, the higher the delivery ratio may be, if deemed applicable.

As in Figure 1, a delivery ratio of 1.5:1 will normally be applied for both point source : point source offsets and point source : diffuse source offsets; as determined by the administering authority.

Table 1 Delivery ratios for different offsets proposals

<b>Location/offset type</b> <b><u>Point Source : Point Source</u></b> <b><u>(including 'bubble' licence</u></b> <b><u>proposals) AND</u></b> <b><u>Point Source : Diffuse Source</u></b> <b><u>(rural or urban)</u></b>	<b>Delivery ratio</b>
Same river catchment/basin – upstream	1.5:1. This will be determined based on the proposal demonstrating equivalency in receiving environment, based on best available science. The assessment will take into account distance from point source, offset
Same river catchment/basin – downstream and far upstream	
Same river catchment/basin – different water type	
Adjacent river catchment/basin	

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Non-adjacent river catchment/basin	location condition and impact on the receiving environment. Refer below for point source : point source considerations regarding delivery ratio less than 1.5:1
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### **Delivery ratio-point source : point source offsets-including bubble licence**

Applies to both the same regulated entity through an amalgamated EA and different regulated entities that choose to enter into a water quality offset arrangement.

The application of a delivery ratio is required for an amalgamated EA, which has a “bubble condition” that combines the individual load limits of point source entities into a single load limit that is less than the sum of the individual load limits. This is to ensure that there will be a broader benefit to the receiving environment in terms of water quality improvements, that is a net water quality benefit in the catchment receiving waters.

A delivery ratio of 1.5:1 will normally be applied to ensure that a water quality offset at one point, corresponding with discharges at another point source, generates a water quality improvement in the receiving environment. For example, two sewage treatment plants each have a total nitrogen mass load limit of 20 T/year. Under a bubble licence the “bubble” total nitrogen mass load limit for both sewage treatment plants is 30 T/year. This would result in a net reduction in the discharge of nutrients to the receiving environment.

For proposed bubble licences located downstream in the same or different water type within the same river basin, or located in adjacent river basin, or non-adjacent river basin, the delivery ratio may increase from 1.5:1 to ensure improved water quality outcomes in the receiving environment.

The delivery ratio of 1.5:1 may be reduced where the offset point source is located adjacent to the EA emission point source in the same water type, discharging the same contaminant and chemical form and with no on-set delay. Based on proponent submission, the administering authority may consider a reduction in delivery ratio that still reflects the risk and uncertainty in delivering improved water quality outcomes in the receiving environment.

### **Delivery ratio-point source : diffuse source offsets**

Point source load reductions and increases can be quantified at the point source, whereas it is more difficult to quantify the load reduction from diffuse sources. There are a range of management actions that have the potential to reduce nutrients and sediments, such as those described in Table 2.

However, the efficacy of these actions to deliver the equivalent reduction to offset the impact from the point source is not always known for individual sites.

In order to assess the proposed load reduction, the proponent will be required to demonstrate the efficacy of the diffuse water quality offset. This may include the proponent using appropriate catchment and receiving water quality models as well as flood models (refer to Policy Guideline).

Methodology is likely to differ depending on the management action that is selected. For instance, the scientific approach used for demonstrating nutrient reduction through bank stabilisation (sediment removal) will differ from the approach for demonstrating nutrient reduction through improved fertiliser application. An example approach used for calculating a water quality offset delivered by bank stabilisation is outlined in the case study below.

The delivery ratio of 1.5:1 will be applied for diffuse water quality offsets to account for the uncertainty in accurately determining what the discharge reduction will be in the receiving environment.

In tidal water types (e.g. estuaries) upstream or downstream locations in the near field and for offsets located downstream or outside of the same water type within the same river basin, or located in adjacent river basin, non-adjacent river basin, the delivery ratio may increase from 1.5:1 to ensure an

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equivalent reduction in the receiving environment; taking into account that distance, offset site condition and unique water body features may affect the water pollutant fate.

For example, to counterbalance the impact of the same additional six tonnes of total nitrogen from the point source, a diffuse water quality offset located in an adjacent river basin, may need to remove 12 tonnes of total nitrogen. In this example a delivery ratio of 2:1 may apply. Here the delivery ratio would have taken into account the uncertainty in delivering a discharge reduction, due to the increased distance between the point of concern and the water quality offset location.

Increasing the delivery ratio will depend on the offset location and condition, and the proposal demonstrating equivalency in discharge reduction in receiving waters. This should be based on best available science and identified risks and benefits of offset implementation.

As stated above, evidence-based pilot project submissions are encouraged to build further knowledge. With future additional water quality offset projects resulting in more science becoming available to determine efficacy, it may be possible to apply a generic efficacy measure for certain offsets proposals.

### 7.3.2 Offset equivalency ratio

As depicted in Figure 1, an offset equivalency ratio will also be applied under the policy, normally at 1:1

Increases in offset equivalency ratios will be considered where there is no supporting evidence and significant uncertainty that a net improvement in water quality will be achieved in the catchment receiving environment.

The policy applies to the following water quality indicators-total nitrogen, dissolved inorganic nitrogen, total phosphorous and total suspended solids. Therefore at a practical minimum total nitrogen emissions must be at least counterbalanced with total nitrogen reductions, dissolved inorganic nitrogen emissions with dissolved inorganic nitrogen emissions, total phosphorous emissions with total phosphorous reductions and total suspended solids emissions with total suspended solids reductions.

Equivalence of chemical form and consideration of any in-stream processing effects would ensure greater certainty in assessing offset equivalency.

For total suspended solids, proposals should assess if there is a need to offset for geological suspended solids or bioavailability of particulate nutrients in sediments. In some cases, geological sources may pose a single risk to the environment compared to the potential multiple risk from biological sources. The argument is that biological suspended solids will have a portion of bioavailable nutrients and therefore may add to the nutrient load. Geological suspended solids, on the other hand, are more likely to be inert, posing risks related only to sediment load (e.g. turbidity and sedimentation). A proposal for a water quality offset for total geological suspended solids may require less evidence for demonstrating water quality offset equivalency, as compared to proposals for offsetting biological suspended solids. As stated previously, the Department encourages evidence-based pilot project submissions to build further knowledge.

In accordance with the policy objectives, the offset proposal must avoid causing environmental harm to the receiving water environmental values. The proposal must ensure that local increases in point source discharge meet EA conditions and monitoring conditions for **prescribed contaminants**.

These contaminants include ammonia, BOD and heavy metals. Water quality offset solutions that reduce release of toxicants as well as the targeted nutrients or sediments will ensure greater environmental benefit.

It may be possible to reduce nutrients by undertaking actions that reduce sediment, such as through riparian or stream bank restoration, as long as equivalent nutrient reductions are achieved. This option may be applicable for single/multiple point source providers when corresponding with diffuse source water quality offsets. The proponent will need to use an appropriate methodology (e.g. modelling) to demonstrate nutrient reduction equivalency.

Table 2: Examples of diffuse source management actions

Example	Details
1. Bank stabilisation	Bank stabilisation, by structural or vegetative means, presents an opportunity for reducing the amount of nutrients (contained in sediment) being transferred into a waterway.
2. Improved nutrient management (fertiliser application)	Improved nutrient management practices above any required minimum standard for agricultural land help to ensure that there are minimal nutrient run-off effects to surrounding lands and waters, while maintaining agricultural yields.
3. Constructed wetlands	Constructed wetlands act as nutrient assimilation and filtering devices to clean polluted water before it enters the local waterway.

### Case study: Determining nutrient reductions delivered by stream bank stabilisation activities—Beaudesert Pilot Project

A pilot project is currently underway in the Logan River to manage additional nitrogen and phosphorus discharges from the Beaudesert Sewage Treatment Plant (STP) as a result of local population growth. The pilot commenced in January 2014.

Almost \$1 million has been invested by Queensland Urban Utilities to repair around 500 metres of eroded riparian bank located close to the sewage treatment plant. The works include structural bank stabilisation, pile fields and riparian planting.

A modelling approach was used to determine the scale of works required to offset 5 tonnes/year of total nitrogen (TN) from entering the river each year. Put simply, historical erosion rates and bank erosion models were used to calculate the average sediment erosion during high flow events, and soil samples were taken to determine the percentage of TN in the sediment.

This allowed the production of an estimate of the sediment erosion avoided over a period of time which is then turned into an annualized rate of erosion (11 200 tonnes/year) and the associated annualised total nitrogen load avoided (5 tonnes/year) by bank stabilisation activities.

The nitrogen and phosphorus savings made through the riparian works will be used to counterbalance any potential increases in nitrogen discharge from the sewage treatment plant that may occur during and after wet weather events, when recycled water demand reduces and streambank erosion risks are highest. The Beaudesert STP supplies recycled water to five local customers to minimise treated effluent releases to the Logan River during dry weather periods

These nitrogen savings allowed the Beaudesert STP to continue safely at its current capacity in the short-term without undertaking expensive upgrades. This means that about \$7 million in savings can be invested elsewhere in the sewage network.

The pilot study has been running for three of its five years test period including detailed monitoring and assessment.



## 7.4 Management (or waste) hierarchy and wet versus dry weather release to waters

The policy refers to **wet weather days** and **dry weather days** as defined under standard conditions in an EA.

Under the *Environmental Protection Regulation 2008*, section 51 (1) (c) for decisions relating to an ERA, the administering authority must consider each of the following under the *Environmental Protection (Water) Policy 2009* (EPP Water):

- *The management hierarchy*;
- Environmental values;
- Quality objectives; and
- The management intent (i.e. high ecological value waters); and....

Under the EPP Water section 15, the management hierarchy of preferred procedures for an ERA releasing wastewater to receiving waters is:

- Evaluate water conservation measures to reduce the use of water and the production of wastewater; and
- Evaluate and implement appropriate waste prevention measures; and
- If waste prevention does not eliminate the release of wastewater to receiving waters, evaluate and implement treatment and recycling options; and
- If treatment and recycling does not eliminate the release of wastewater or contaminants to waters, evaluate the following options for wastewater—
  - (i) appropriate treatment and release to a waste facility or sewer; and
  - (ii) appropriate treatment and release to land; and
  - (iii) appropriate treatment and release to surface waters or ground waters.

For an existing EA the administering authority will have decided all regulatory requirements, and EA conditions will reflect the administering authority's decision on wet weather/dry weather discharge of wastewater to receiving waters and recycling requirements.

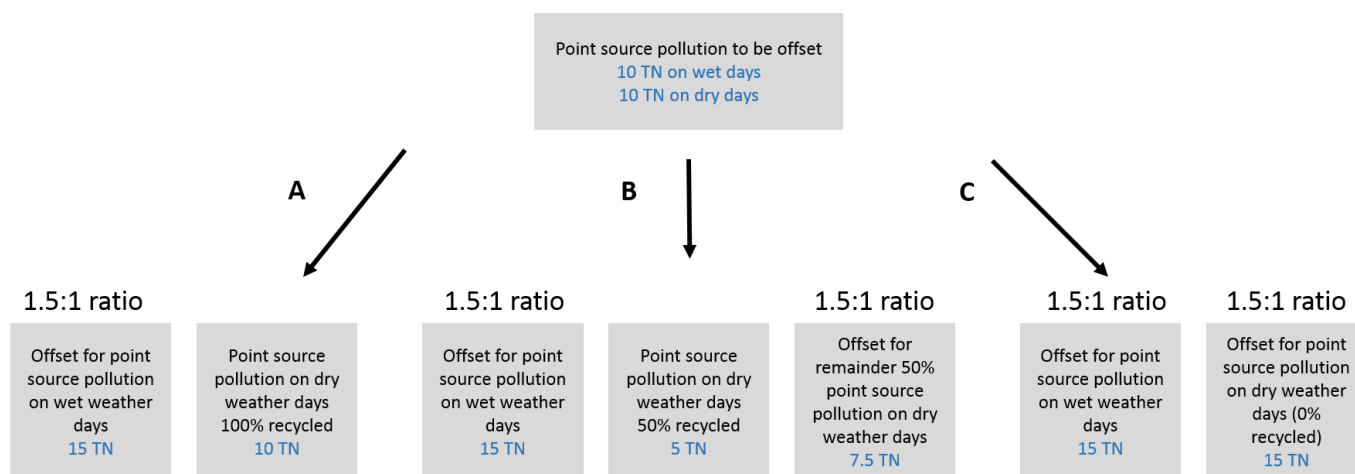
For the consideration of offset solutions under an existing EA, where relevant to the EA conditions:

- For the proposed ERA discharge of waste water to receiving waters on defined on wet weather days, the water quality offset must counterbalance total point source discharge on wet weather days, with an offset solution such as erosion controls.
- For the proposed ERA discharge to receiving waters on defined dry weather days, the water quality offset must counterbalance point source discharge on dry weather days.
- Delivery and offset equivalency ratios apply in both cases.

In considering offsets proposals, proponents must consider, under the management hierarchy, partial or total recycle/beneficial re-use of point source discharge under dry weather conditions and release only on wet weather days in advance of discussions with the Department.

For a new ERA including offsets solutions the EA conditions will reflect the decision of the administering authority on wet weather/dry weather discharge of wastewater to receiving waters and recycling requirements, subsequent to discussion with the proponent.

## Example



**Figure 2.** Diagram illustrating hypothetical options for offsetting point source pollution on wet and dry weather days as defined in EA conditions. Options A, B and C illustrate projects that would adopt 100%, 50% and 0% recycled/beneficial re-use on dry weather point source discharge respectively. TN represents tonnes Total Nitrogen and values in blue are hypothetical. The ratio in the diagram refers to the delivery ratio, and the delivery ratio of 1.5:1 may increase for point source pollution on dry weather days and this will depend on equivalency demonstration of the water quality offset.

## 7.5 Timing

The water quality offset must be provided in advance or concurrently with impacts that are occurring so that the water quality offset provides the benefit at the time of additional point source discharge release.

However the timing of offset effectiveness will be considered on a case-by-case basis and will be applicable as stated in the EA.

Examples of variations in timing will depend on the water quality offsets adopted, for instance:

- Bubble license – immediate,
- Bioremediation of wastewater – when operational,
- Riparian and streambank restoration—time allowed for vegetation to establish.

Offsets on-ground works (e.g. riparian/streambank restoration) should commence as soon as possible, rather than wait for point source infrastructure to be operational before commencing works. Full effluent offsetting will require at least 12 months for offset solutions to be effective—in the case of streambank restoration.

## 7.6 Duration

The duration of the water quality offset will be negotiated on a case-by-case basis to align with the performance specifications and lifespan of the point source infrastructure. Potential extension of the offset duration will be reviewed at the end of an offset tenure.

The water quality offset arrangements must remain in place for the period of time stated on the EA. The proponent must monitor and maintain the performance of the water quality offset throughout its lifespan.

## 7.7 Monitoring and reporting

The proponent is responsible for monitoring and reporting water quality effects at the point source location, offset location and other relevant locations as specified in the proponent's EA in order to demonstrate the efficacy of the water quality offset.



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The type of monitoring that is required will depend on the water quality offset selected and will be stipulated as conditions in the EA.

The costs of all monitoring and reporting activities are to be met by the proponent and are not the responsibility of the Department.

The Department is responsible for reviewing and recording performance and monitoring reports. Monitoring must take place according to the EA conditions and in accordance with the *Environmental Protection (Water) Policy 2009* Monitoring and Sampling Manual that is published on the website.

### **7.8 Responsibility for offsets performance**

Under an EA, the proponent will be responsible for ensuring that the water quality offset meets the design criteria, is implemented diligently and performance is maintained for the life of the offset.

The proponent may contract management actions to a third party (e.g. land owner, NRM body, manager, broker), but the responsibility for the source and delivery of the water quality offset will remain with the proponent as a requirement of the proponent's EA.

The EA conditions may also include requirements for when and how the water quality offset will be replaced in the event it is destroyed or damaged in circumstances such as an extreme weather event.

## **8 Policy review**

Going forward, it is the intention of the Department to provide certainty regarding policy conditions over time.

The intent is to undertake a 5 year review to keep up to date with improvement in technology, review of requirements in light of scientific information and pilot projects, third party submissions and experience.

## **9 Further information**

For further information on water quality offsets, refer to the Water Quality Offsets Policy Guideline 2018 published at the Department's website.