

Guideline

Environmental Protection Act 1994

Reef discharge standards for industrial activities

This guideline outlines the information an applicant should include in an environmental authority application to address section 41AA of the Environmental Protection Regulation 2019, and where the applicant is proposing to discharge fine sediment or dissolved inorganic nitrogen to the Great Barrier Reef catchment waters.

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Key terms and concepts

Dissolved inorganic nitrogen (DIN)	A combination of ammonia (NH ₃) nitrogen plus oxidised nitrogen (NO _x). Oxidised nitrogen is a combination of nitrite (NO ₂ -) nitrogen and nitrate (NO ₃ -) nitrogen.
Environmentally relevant activity	Has the meaning in section 18 in the <i>Environmental Protection Act 1994</i> .
Fine sediment	Has the meaning in section 41AA of the Environmental Protection Regulation 2019, where the presence of fine sediment must be detected by measuring total suspended solids.
Great Barrier Reef catchment	Has the meaning in section 75 of the <i>Environmental Protection Act 1994</i> and means the area shown on a map prescribed by regulation as the Great Barrier Reef catchment and each part of the Great Barrier Reef catchment shown as a river basin on the map is a river basin.
Great Barrier Reef catchment waters or other coastal waters (GBR catchment waters)	Has the meaning in section 41AA of the Environmental Protection Regulation 2019 and means Great Barrier Reef catchment waters defined under section 112 of the EP Act to mean water in a river in the Great Barrier Reef catchment or water in a tributary of a river in the Great Barrier Reef catchment; and coastal waters of the State that are between the following geodesic lines: <ul style="list-style-type: none"> (i) a line running north from the point that is the most northern coastline of the State in the Great Barrier Reef catchment; (ii) a line running east from the point that is the most southern coastline of the State in the Great Barrier Reef catchment.
Mitigation measures	Mitigation measures has the meaning in section 41AA of the Environmental Protection Regulation 2019, and means, for the relevant activity, is a measure carried out to avoid or minimise the release of fine sediment, or dissolved inorganic nitrogen, to Great Barrier Reef catchment waters. In addition, a mitigation measure, for a relevant activity may be carried out at the place where the relevant activity is carried out or elsewhere.
Point source releases	Any discernible confined and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, discrete fissure, or other discrete source where pollutants are or may be discharged. This does not include waterway diversions, uncontrolled releases, unplanned releases and/or emergency releases.
Prescribed environmentally relevant activity	Has the meaning in section 106 of the <i>Environmental Protection Act 1994</i> .
Residual impact	Has the meaning in section 41AA of the Environmental Protection Regulation 2019.

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Resource activity	Has the meaning in section 107 of the <i>Environmental Protection Act 1994</i> .
Total nitrogen	Is the sum of ammonia, organic and reduced nitrogen and nitrate-nitrite. It can be derived by monitoring for organic nitrogen compounds, free-ammonia, and nitrate-nitrite individually and adding the components together.
Total suspended solids	Means sediments that can be derived from both natural and modified landscapes through erosion and can be present in various forms of water. Total suspended solids are an indicator of particulate matter in the water.
Uncontrolled/unplanned releases	Has the meaning included in guideline: <i>Application requirements for activities with impacts to waters</i> (ESR/2015/1837) ¹ (e.g., leaks through, or overflows from, waste water ponds or poorly managed fuel or oil storages, contamination by landfill leachate, generation of acid mine drainage) and may include a release considered to be an emergency release.

¹ This is the publication number. This and other publication numbers can be used as a search term to find the latest version of a publication at www.qld.gov.au.

1 Introduction

1.1 Purpose

The primary purpose of this guideline is to:

- assist applicants in making well-supported **environmental authority** (EA) applications, where the applicant proposes impacts to the **Great Barrier Reef catchment waters or other coastal waters (GBR catchment waters)** from the release of **fine sediment (FS)** and **dissolved inorganic nitrogen (DIN)**; and
- describe the manner in which the department will assess an EA application in accordance with section 41AA of the Environmental Protection Regulation 2019 (EP Regulation).

This guideline outlines the additional requirements an applicant should include, to address section 41AA of the EP Regulation. These requirements are in addition to the existing requirements for any proposed discharges to water outlined in the department's guideline: *Application requirements for activities with impacts to waters* (ESR/2015/1837) and Technical guideline: *Waste water release to Queensland waters* (ESR/2015/1654). Therefore, this guideline should be read in conjunction with these two existing guidelines and any other applicable application guidelines.

1.2 Background

In 2016, the Great Barrier Reef Water Science Taskforce final report² recommended the implementation of staged regulation throughout the GBR catchments to reduce nutrient and sediment pollution. The report recommended that regulation be introduced to ensure no net decline in water quality from new and expanded development within the GBR catchment. Achieving no net decline in water quality is necessary to maintain downward pressure on pollutant loads to achieve the GBR water quality targets³.

Mechanisms to achieve no net decline in water quality have been introduced into the *Environmental Protection Act 1994* (EP Act) and EP Regulation. The policy intent of no net decline has been enacted through the *Environmental Protection (Great Barrier Reef Protection Measures) and Other Legislation Amendment Act 2019* and the Environmental Protection (Great Barrier Reef Protection Measures) and Other Legislation Amendment Regulation 2019. The primary objective of the reforms is to strengthen GBR protection measures to improve the quality of the water entering the GBR catchment waters. The '2017 Scientific Consensus Statement: Land use impacts on Great Barrier Reef water quality and ecosystems'⁴ confirms that poor water quality continues to be a significant issue for overall GBR health, with the main source of pollution being the cumulative nutrient and sediment run off from agricultural land use, with local scale contributions from urban and industrial land uses.

2 Legislative framework

The EP Act specifies the information that must be included with an application for an EA for an **environmentally relevant activity** (ERA). Applications will be assessed against the requirements stated in the EP Act, the EP Regulation, and any relevant Environmental Protection Policies (EPPs). Where an ERA may impact **waters**, the department has developed the guideline: *Application requirements for activities with impacts*

² Final Report from the Great Barrier Reef Water Science Taskforce (May 2016), available at https://www.qld.gov.au/data/assets/pdf_file/0027/109539/gbrwst-finalreport-2016.pdf

³ Great Barrier Reef water quality targets, available at <https://www.reefplan.qld.gov.au/tracking-progress/targets/catchment-targets> Water quality targets have been set for the, coastal or marine ecosystems from catchment sourced pollutants.

⁴ 2017 Scientific Consensus Statement: Land use impacts on Great Barrier Reef water quality and ecosystems, available at https://www.reefplan.qld.gov.au/data/assets/pdf_file/0029/45992/2017-scientific-consensus-statement-summary.pdf

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to waters (ESR/2015/1837), which describes the **regulatory requirements** and outlines how applicants should address these in application material. For further information on how the department will assess and decide waste water releases to waters, refer to the Technical guideline: *Waste water release to Queensland waters* (ESR/2015/1654). Note: there may be other applicable departmental application guidelines for your specific industry.

Chapter 4, Part 3 of the EP Regulation includes additional regulatory requirements for environmental management decisions.

In relation to industrial activities (prescribed ERAs and resource activities), no net decline to water quality is met through assessing new or expanded **prescribed ERAs** and **resource activities** against section 41AA of the EP Regulation. From 1 June 2021, the **administering authority** must consider section 41AA of the EP Regulation when making an environmental management decision (EMD) for an ERA discharging DIN/fine sediment in the **GBR catchment waters**.

The administering authority must refuse to grant the application⁵ if the authority considers that:

- a) the relevant activity will, or may, have a **residual impact**; and
- b) having regard to the matters mentioned in the water quality offset policy, the residual impact will not be adequately counterbalanced by **offset measures** for the relevant activity.

Section 41AA of the EP Regulation defines a residual impact of a relevant activity as the presence of fine sediment, or DIN, in Great Barrier Reef catchment waters that—

- a) was released to the water because of the relevant activity; and
- b) remains, or is likely to remain in the water despite mitigation measures for the relevant activity.

Under circumstance the applicant cannot appropriately avoid, mitigate or offset all residual impact of DIN/fine sediment from the activity, then the application must be refused.

The release of fine sediment would typically be associated with activities such as extractive activities and mining and DIN releases will typically be associated with sewage treatment, aquaculture, abattoirs/meat processing or through intensive use of fertiliser.

Important note: In the absence of data or information on DIN that would be sufficient to support an application, the administering authority may consider the use total nitrogen (TN) as the contaminant of interest for the purposes of section 41AA of the EP Reg. This will ensure that the intent of ‘no net decline’ of DIN to GBR catchment waters is met.

Currently there is no standard conversion factor available between TN and DIN. In the meantime, the applicant may decide to measure DIN, or use TN as a proxy.

Note: the remainder of the guideline will refer to DIN.

⁵ The following applications may be refused by the administering authority:

- A standard EA application for a mining activity relating to a mining lease if a properly made submission is made for the application (section 194A of the EP Act)
- A site-specific EA application (section 172 of the EP Act)
- A major amendment application (section 242 of the EP Act)
- A transitional environmental program (section 339 of the EP Act)

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2.1 Determining no residual impact—the intent of the provision

A **residual impact** of a relevant activity is the presence of fine sediment, or DIN, in Great Barrier Reef catchment waters that—

- a) was released to the water because of the relevant activity; and
- b) remains, or is likely to remain in the water despite mitigation measures for the relevant activity.

The policy intent of this provision aims to achieve ‘no net decline’ in water quality from the release of waters into the GBR catchment waters.

To allow easy identification of when the provision applies, and when an applicant needs to consider the provision in an application, the table below outlines each criterion. Each of these criteria will need to be fulfilled to trigger consideration of section 41AA of the EP Regulation. Further details on how an applicant should address these criteria in an application is described below.

Criteria	Triggered by?
Application type	<ul style="list-style-type: none"> • A site-specific EA application under Chapter 5 of the EP Act • A major amendment application under Chapter 5 of the EP Act • A standard application is made for a mining activity for a mining lease, and a properly made submission has been received • A variation application is made, and the variation relates to releases to waters • A decision on a transitional environmental program (TEP) under section 338(1)(a) of the EP Act. See the Transitional Environmental Program guideline (ESR/2016/2277)⁶ for further information.
Activity type	<p>Resource and prescribed ERAs except for the following ERAs as described in Schedule 2 of the EP Regulation:</p> <ul style="list-style-type: none"> • ERA 16 - Extractive and screening activities to the extent the activity is dredging in the coastal waters of the State (as defined in section 41AA) this includes any ancillary activity associated with ERA 16 that is dredging in coastal water of the State such as ERA 50; and • ERA 13A - Commercial cropping and horticulture in the Great Barrier Reef catchment.
Release location	The release is to the GBR catchment waters.
Release type	<p>An application proposing a point source release to GBR catchment waters. See section 2.1.2 for more information and the</p> <ul style="list-style-type: none"> • Release is from a point source as the end of pipe and,

⁶ This is the publication number. The publication number can be used as a search term to find the latest version of a publication at www.qld.gov.au.

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	<ul style="list-style-type: none"> • Release source is waste water from the relevant activity (excluding stormwater containing sediment only), and, • Release event is planned/controlled.
Contaminant type	An application proposing to discharge waste water from a point source release that contains DIN/fine sediment. See section 2 for more information.

Where applicants are proposing activities within the GBR catchment waters that do not trigger any of the above criteria, it must be clearly stated in the application, for example:

- If an applicant is proposing releases from a point source, but is not discharging into any GBR catchment waters, then a statement to that effect should be made in an application and supported by a site plan validating that the point source location is not mapped in any GBR catchment waters.
- If an applicant is proposing releases from a point source, but the waste water does not contain DIN or fine sediment, then a statement to that effect should be made in an application and supported by any waste water characterisation that indicate the absence of DIN and fine sediment as a contaminant.

The administering authority will not need to consider section 41AA under these circumstances.

2.1.1 Identifying GBR catchment waters

The GBR catchment waters are waters of the GBR catchment and other coastal waters and are depicted in **Figure 1 Great Barrier Reef catchments and rivers basins map** and means water in a river in the GBR catchment or a tributary of a river in the GBR catchment (refer to section 112 of the EP Act).

The other coastal waters mentioned in section 41AA(1)(b) are waters between the following geodesic lines:

- a line running north from the point that is the most northern coastline of the State in the GBR catchment;
- a line running east from the point that is the most southern coastline of the State in the GBR catchment.

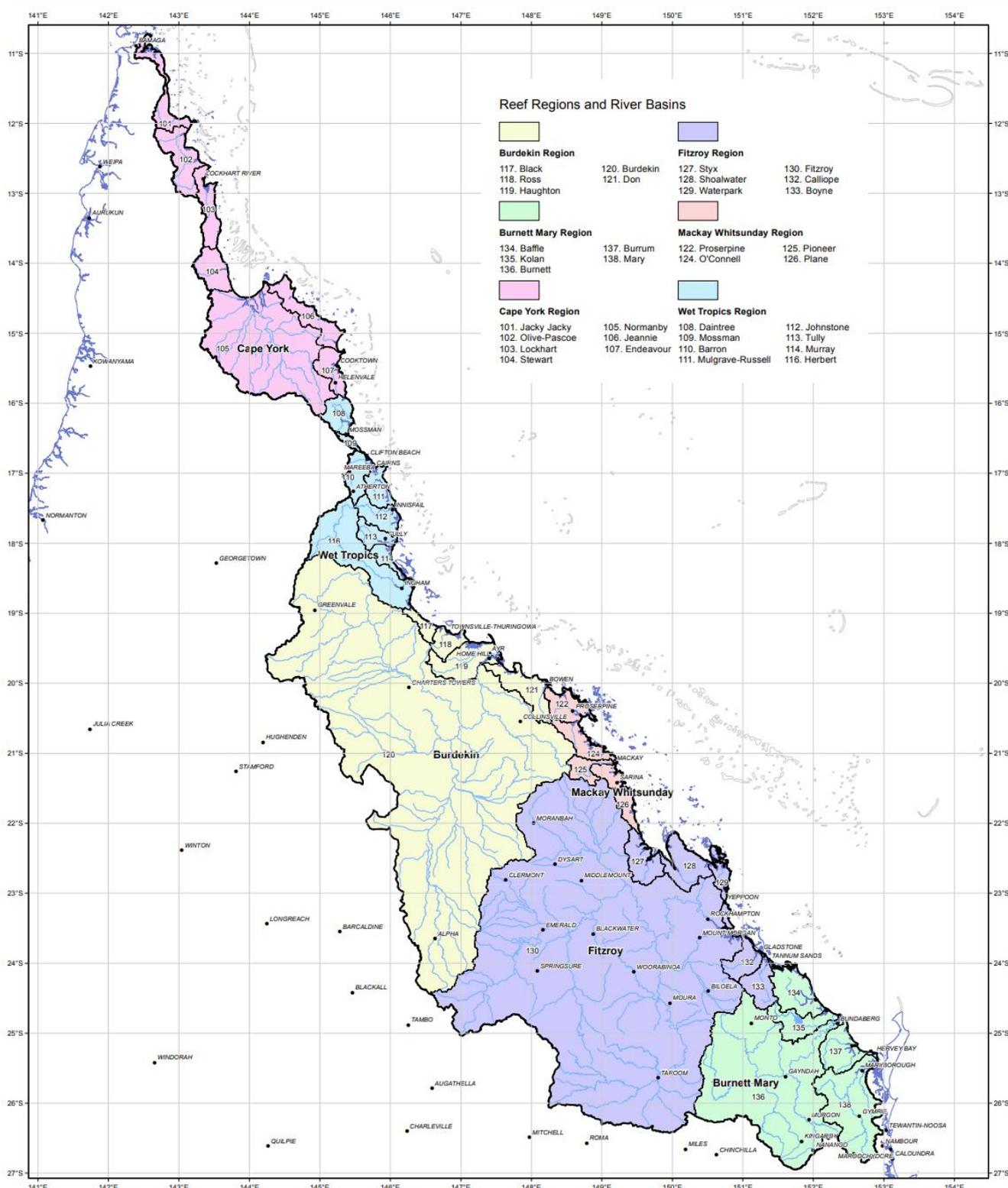
The department provides a free online [Reef regulatory requirements map](#) tool, where applicants can complete an online form with the Lot and Plan number of their property to receive a map via email that shows if the property is proposed to be or operating in a Reef region and subject to the new Reef discharge standards. Alternatively, applicants' can download the [Great Barrier Reef catchment and river basin map \(PDF, 1 MB\)](#), provided in Figure 1.

The relevant environmental values for applications that trigger section 41AA of the EP Regulation is the GBR catchment waters. The Reef water quality objectives (Reef WQOs) outline the load limits of DIN/fine sediment that will protect the 35 river basins in the GBR catchment from additional decline. The Reef WQOs are derived from the end-of-catchment anthropogenic water quality targets set out under the Reef 2050 Water Quality Improvement Plan⁷ and are represented as annual anthropogenic pollutant load limits. An example of a load limit from the Reef WQOs is that no more than 232,000 tonnes of anthropogenic fine sediment can leave the Herbert River basin in a year.

The Reef WQOs will not change the current protection levels and standards for the local receiving environment.

⁷ Reef 2050 Water Quality Improvement Plan, available at https://www.reefplan.qld.gov.au/_data/assets/pdf_file/0017/46115/reef-2050-water-quality-improvement-plan-2017-22.pdf

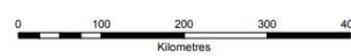
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The map shows legislative boundaries defined by the river basin boundaries shown in the Queensland Drainage Basins mapping 1998, DNRM. The boundaries and names of the Queensland drainage basins are as defined by the Australian Water Resources Management Committee (WRMC). Information includes the name and number of each drainage basin.

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- Towns
- Great Barrier Reef catchment boundary
- Coastline
- Drainage
- River basins



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Figure 1: Great Barrier Reef catchment and river basins map

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2.1.2 Releases of interest

The intent of section 41AA of the EP Regulation is to apply to activities that are directly releasing DIN/fine sediment into the GBR catchment waters, otherwise known as **point source releases**. A release is taken to occur if any amount of DIN/fine sediment enters the GBR catchment waters and remains in the water for any amount of time. A point source is any discernible confined and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, discrete fissure, or other discrete source where pollutants are or may be discharged.

For a new activity, the **load** of DIN/fine sediment considered will be the proposed total load of these contaminants being released from any point source. For an amendment to an existing activity, the total load will be the load associated with the amendment to the extent the amendment application proposes any additional point source releases. The total load of the amendment application will not include any existing loads already authorised on the EA to be released from point sources.

To provide further clarity, the below section details the types of releases that is intended to be considered under section 41AA of the EP Regulation.

2.1.2.1 Release is any point source - End of pipe

The end of pipe is the first point where the presence or potential presence of DIN/fine sediment can be detected in the GBR catchment waters, therefore; the contaminants will be measured at the end of pipe. If required, subsequent EA conditions will require water quality release limits and monitoring at the end of pipe, these conditions would be necessary and desirable to ensure any avoidance, minimisation or offset requirements for the residual loads can be measured and enforced. This is consistent with the current assessment approach – where assessment of water quality impacts is based on the releases estimated at discharge points (end of pipe) and water quality release limits are imposed at the end of pipe, where they can be clearly measured and enforced.

Section 41AA of the EP Regulation is not intended to regulate an ERA that includes a release to the urban sewage system (e.g., a prescribed ERA is being undertaken in an industrial estate). The contaminants will be identified at the end point of the sewage system as appropriate.

Releases that are not considered end of pipe include:

- sediment from dust that travels via air into waters
- any stormwater that flows to land
- a waterway diversion/watercourse diversion

2.1.2.2 Release source – waste water from the relevant activity

Releases of DIN/fine sediment from a point source to the GBR catchment waters will only be assessed under section 41AA as a result of waste water from the relevant activity. This may include waste water from the onsite processes or treatment trains such as sewage treatment, aquaculture growing ponds, meatworks processing plants or mine affected water.

Triggers for assessment under section 41AA do not include contaminated stormwater that contains sediment only. This will allow for an exclusion for stormwater proposed to be managed through erosion and sediment control measures. This approach is consistent with Reef protection reforms required for the agricultural industry, where stormwater is managed through best practice environmental management. If the stormwater mixes with any contaminants from the relevant activity other than sediment, then the waste water discharge would be triggered for assessment under section 41AA.

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Regardless of this determination, appropriate erosion and sediment control measures will be conditioned through the environmental authority to prevent as much sediment as is practical from entering the GBR catchment waters.

To clarify, sediment laden stormwater will not be considered under section 41AA provided that it is not mixed with waste water or other contaminants from the relevant activity. Examples include stormwater runoff from undisturbed areas that are diverted around disturbed areas (e.g., a mine site, quarry pits, bunded areas), or point-source discharges of stormwater from sediment and erosion control systems onsite, provided that they do not receive any other waste water or contaminant runoff from the relevant activity.

Example: Stormwater from disturbed areas of the relevant activity

An applicant is proposing to build a mine on half of the tenure and will capture mine affected water in sediment pond A and release to GBR catchments waters via a point source. The proposed release of mine affected water is a direct result of the relevant activity and would be considered under section 41AA of the EP Regulation.

The other half of the tenure will not be initially mined, however the mine operator will build a road and turn around bay for vehicles travelling to the mine. Sediment laden stormwater (non-mine affected water) from the undisturbed area and the road and turn around bay will be directed into sediment pond B that will be released to GBR catchment waters. The applicant is proposing to design and manage releases from sediment pond B as part of the site's erosion and sediment control plan under the environmental authority. Sediment from the road and turn around bay to sediment pond B, is released, and will not be considered under section 41AA, because while the release is a direct result from the relevant activity, the stormwater only contains sediment and no other contaminants from the relevant activity, and will be managed effectively through the site's erosion and sediment control plans.

2.1.2.3 Release event – planned/controlled

Consideration under section 41AA will apply where the relevant activity will release DIN/fine sediment as part of its day-to-day operations during **dry weather days** or where the activity may release DIN/fine sediment during **wet weather days** that would ordinarily be conditioned as part of the EA.

Section 41AA of the EP Regulation is not intended to apply to **uncontrolled/unplanned releases**. For example, an uncontrolled release could include a release from a sediment pond during a heavy rainfall event over and above the pond's design storage capacity. Another example could include bypass releases from sewage treatment plants over and above the plant's design capacity. Uncontrolled releases should be addressed and considered under other sections of the legislative framework. The department's guideline: *Application requirements for activities with impacts to water* (ESR/2015/1837) provides additional information on how to address these releases.

Example: planned release from an aquaculture activity

An aquaculture facility that periodically releases DIN to GBR catchment waters from ponds via a point source is also proposing some releases to empty the ponds to undertake maintenance. The applicant should account for this release as a controlled/planned release and ensure the release is authorised on the EA via the point source. The DIN loads being released from this point source will be considered under section 41AA because they are controlled/planned releases and not an uncontrolled/unplanned release.

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Further to this, temporary emissions licences are also available for uncontrolled/unplanned releases and are not triggered under section 41AA of the EP Regulation, see the department's guideline *Temporary Emissions Licence* (ESR/2015/1724)⁸.

2.1.3 Mitigation measures to meet the intent

Mitigation measures include onsite avoidance and/or minimisation measures to remove these residual contaminant loads prior to release to GBR catchment waters. More details on mitigation measures can be found in Section 3.2.

Where all reasonable onsite avoidance and minimisation measures are unable to remove all residual contaminant loads prior to release, the applicant may utilise an offset measure such as a water quality offset to achieve no residual impact. The applicant must ensure that these measures counterbalance the total amount of DIN/fine sediment that is proposed to be released (once all appropriate avoidance and minimisation has been undertaken).

3 Preparing applications to be assessed against section 41AA of the Environmental Protection Regulation 2019

3.1 Mandatory application requirements

Where the applicant is proposing to discharge to waters, the application:

1. must include the mandatory content required under section 125 or 226 of the EP Act relevant to the proposed discharge to waters; and
2. should provide enough information about any residual impacts from the proposed discharge to waters.

Sufficient information must be included in the application document to enable the administering authority to evaluate the relevant activities in relation to each of the application requirements and assess the application against section 41AA of the EP Regulation. The department's guideline: *Application requirements for activities with impacts to water* (ESR/2015/1837) and the Technical guideline: *Waste water release to Queensland waters* (ESR/2015/1654) provides information on how to address these mandatory requirements for a proposal discharging to waters. The section below outlines the additional information to address section 41AA of the EP Regulation.

The application should include enough information for the administering authority to decide if the amendment application is a minor or major amendment. The assessment level decision made under section 228 of the EP Act to determine if an application is a minor or major amendment will vary depending on the site-specific nature of the activity, proposed release and receiving environment. The applicant should refer to the guideline: *Major and minor amendments* (ESR/2015/1684) to understand if the proposed amendment application meets the criteria for a minor amendment threshold.

Section 41AA of the EP Regulation is not a consideration in this assessment level decision and will only be considered after the application is deemed a major amendment. Applicants should expect their application to be deemed major if the proposed amendment would increase the contaminant loads being discharged to waters by more than 10%. This is consistent with the standard approach adopted in the guideline: *Major and minor amendments* (ESR/2015/1684) where increasing the scale and intensity of the operation by 10% is generally considered a major amendment. Applicants who have questions regarding whether a proposed amendment of

⁸ This is the publication number. The publication number can be used as a search term to find the latest version of a publication at www.qld.gov.au.

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an existing EA is likely to be a minor or major amendment, are encouraged to arrange a **pre-design/pre-lodgement meeting** with the administering authority.

Example – A change in point source release location

A refinery has submitted an amendment application to change the point source release location and water quality monitoring location to another point within the same river basin. The applicant is not proposing to change the release limits of nitrogen or sediment and has demonstrated the application will meet all thresholds for the minor amendment criteria. The application will be deemed a minor amendment. Please note that other application requirements and or site features may impact this determination and the application may be deemed to be a major amendment.

If the refinery is proposing to change the point source release location and increase the existing authorised point source release limits from 200t/yr of TSS to 250t/yr of TSS, then the increase in discharge to waters would be over 10% and the application is likely to be deemed a major amendment.

Where residual impact is not sufficiently described in an application, the administering authority may issue an information request resulting in extended assessment timeframes. Where an application is deficient on several requirements the administering authority may choose to refuse the application rather than issue an information request. A refusal of an application is accompanied by review and appeal rights. See *Information Sheet: Internal Review and Appeal* (ESR/2015/1742).⁹

To streamline the approvals process, the department offers a **pre-design/pre-lodgement** service for all prospective applicants to provide direction and advice about EA applications. Predesign/pre-lodgement meetings allow the department to provide up-to-date information about how best to demonstrate that the current requirements, policies, and guidelines will be included in the application materials.

3.2 Information required for an assessment against section 41AA

Where an applicant proposes to release DIN/fine sediment from a point source to GBR catchment waters (that is not exempt from consideration under section 41AA), information must be provided to assist the administering authority to decide whether the relevant activity will (or may) have a residual impact and should be granted or refused. This information is important to allow the administering authority to understand the efficacy of the mitigation measures proposed by the applicant.

The application should describe the residual impacts from the activity and quantify the DIN/fine sediment in loads. The application should describe any mitigation measures proposed to avoid and minimise those residual impacts. The application should then describe any offset measures to counterbalance the total amount of DIN/fine sediment that is proposed to be released (once all appropriate avoidance and minimisation has been undertaken).

3.2.1 Information on the proposed release

The quantity of the discharge of the DIN/fine sediment from the proposed activity should be clearly characterised. This should include annual loads, typical averages and worst-case values of all potential DIN/fine sediment, assuming any proposed avoidance and mitigation is working effectively. The quantity of the discharge may need to be expressed differently based on the industry, for example a sewage treatment plant may need to express load by maximum daily discharge volume, as well as maximum hourly discharge rate. Refer to the

⁹ This is the publication number. The publication number can be used as a search term to find the latest version of a publication at www.qld.gov.au.

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department's Technical guideline: *Waste water releases to Queensland waters* (ESR/2015/1654) for more information.

The applicant should also express whether the discharge will be continuous or intermittent. Wet weather influences must be considered, and separate wet weather discharge characteristics defined where applicable. Information on the waste water discharge regime should be used to estimate resulting contaminant loads. The method used to estimate these characteristics must be clearly defined and realistically achievable from practical and economic viewpoints.

To satisfy section 41AA of the EP Regulation, this information will only be required for DIN/fine sediment. However, other sections of the EP Act and EP Regulation may require the applicant to provide information regarding other contaminants proposed to be discharged. The application should include the following:

- a description of the location of a release and indicate whether it is within the GBR catchment waters, and the applicable river basin. A site map which can be provided in hardcopy or digital format, preferably in accordance with the minimum requirements in the department's guideline: *Spatial information submission* (ESR/2018/4337)¹⁰
- If the release is from a point source and the location of the end of pipe
- A description of the potential source of the DIN/fine sediment to be released and whether the waste water is a result of the relevant activity
- A description of any waste water releases that may not be included in the section 41AA such as any predicted unplanned/uncontrolled releases, watercourse diversions, clean stormwater diverted around disturbed areas or stormwater that contains only sediment
- for a new application, the characteristics of the waste water to be released (e.g., load, concentration, volume, release rate, timing and duration of release). It should be provided to allow for an assessment on an annual basis for the life of the project.
- for an amendment application, the characteristics of the waste water to be released from the relevant activity subject of the amendment application (e.g., load, concentration, volume, release rate, timing and duration of release). It should be provided to allow for an assessment on an annual basis for the life of the project.
- the characteristics of the receiving environment (e.g., water type (freshwater, marine, tidal), environmental values, sensitive receptors).
- the spatial and temporal extent of potential changes in stream hydrology or estuarine hydraulics and water quality (regarding an increase in DIN/fine sediment).
- the mitigation measures proposed (see section 3.2.3).

3.2.2 How to demonstrate no residual impact

Where the relevant activity will involve the generation of waste water containing DIN/fine sediment, and point source releases are proposed, applicants must demonstrate that there will be no residual impact from the relevant activity, or all residual impacts are avoided, minimised or offset. Residual impact must be measured in load of fine sediment, or DIN in water and means the total mass of the fine sediment or DIN in the water measured over a period of time.

¹⁰ This is the publication number. The publication number can be used as a search term to find the latest version of a publication at www.qld.gov.au.

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To ensure that residual load is accurately described, modelling should support the application, but is not mandatory. The department has published a modelling principles document¹¹ and applicants are encouraged to provide modelling that is in accordance with this document. The application should describe the proposed mitigation measures and any residual loads remaining after any avoidance and minimisation measures. The application should account for all proposed loads of DIN/fine sediment.

3.2.3 Information on mitigation measures—avoidance and minimisation

When providing details of the management practices (in accordance with the mandatory application requirements) the application should propose mitigation measures to avoid and minimise the releases of DIN/fine sediment to GBR catchment waters. Applicants must provide evidence that there will be no residual impact from the release of DIN/fine sediment to GBR catchment waters. The guideline: *Application Requirements for activities with impacts to water* (ESR/2015/1837)¹² outlines information on how applicants can address mitigation measures for activities with impacts to waters. Examples of mitigation measures from this guideline that may assist applicants in addressing residual impact are as follows:

- erosion and sediment controls and subsequent plans which address:
 - the minimisation of topsoil being disturbed at any one time by staging development
 - the diversion of upstream runoff from disturbed areas
 - the re-vegetation or mulching of disturbed areas
 - the installation and maintenance of control measures such as sediment and erosion control devices (e.g., silt fences, swales, settling basins, energy dissipaters and vegetated buffers) and storage lagoons.
- a stormwater management plan that shows the measures in place to reduce or remove the release of DIN/fine sediment in waters from the site. This should be commensurate to the risk associated with stormwaters onsite, and for prescribed ERAs, the department has a guideline on the management of stormwater (ESR/2015/1653)¹³. The plan should include:
 - description of measures that are in place to separate clean water from areas where it may collect fine sediment, such as drainage ponds and sediment barriers
 - description of treatment measures to remove fine sediment from water before being released (such as settlement ponds)
 - modelling to demonstrate effectiveness of these measures
 - contingency measures for unforeseen storm events
- description of how DIN is being removed from the water to be released (including treatment options such as reverse osmosis and bio-remediation technology)
- description of monitoring that will be applied to verify the release and to validate the effectiveness of mitigation and management strategies. Applicants can refer to the guideline: *Receiving environment monitoring program* (ESR/2016/2399) which may help applicants design a monitoring program to

¹¹ Queensland Water Monitoring Network Good Modelling Practice Principles, available at https://science.des.qld.gov.au/__data/assets/pdf_file/0011/81110/qwmn-good-modelling-practice-principles.pdf

¹² This is the publication number. The publication number can be used as a search term to find the latest version of a publication at www.qld.gov.au.

¹³ This is the publication number. The publication number can be used as a search term to find the latest version of a publication at www.qld.gov.au.

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evaluate if the proposed releases have been successful in maintain or protecting receiving environmental values over time, or successful in achieving specific discharge limits or conditions.

Example: Mineral processing plant

A mineral processing plant is proposing to release waste water to GBR catchment waters. The waste water includes stormwater capturing sediment and hydrocarbons from wash down areas and bunded areas storing chemicals. The operator proposes to install a series of swales and a bioretention basin as mitigation to prevent DIN/fine sediment from being released into waters.

The bio retention basin would be considered mitigation and any residual loads of DIN/fine sediment being released from the basin to GBR catchment waters would need to be offset.

The granted EA will likely include monitoring conditions to enable operators to demonstrate the effectiveness of management strategies and identify if mitigation measures fail or if the operator exceeds release limits. All conditions placed on an EA will be imposed on a site-specific basis and will be commensurate to the risk of impact from the proposed relevant activities. Where an applicant demonstrates no residual impact (through no releases), the EA may be conditioned to this effect.

3.2.4 Information on mitigation measures—water quality offsets

The policy intent of section 41AA of the EP Regulation is to achieve a ‘no net decline’ in water quality from the release of waters into the GBR catchment waters. Where applicants cannot avoid or minimise their residual impacts, they may be able to meet the requirement for no residual impact by counterbalancing the residual loads through an offset measure, guided by the Point Source Water Quality Offsets Policy (the **Water Quality Offsets Policy**)¹⁴ and the associated guideline, the Draft Point Source Water Quality Offsets Guideline 2019 (the Water Offsets Guideline)¹⁵.

An offset measure are activities carried out to reduce the load of fine sediment, or DIN in Great Barrier Reef catchment waters. The Point Source Water Quality Offset Policy 2019 describes the following examples of an offset measure:

- riparian area restoration.
- streambank and gully stabilisation.
- constructed or remediated wetlands.
- bioremediation technology.
- riparian fencing for stock exclusion.
- reducing on-farm nutrient runoff through improved fertiliser application management above minimum standards.
- improved grazing land management practices above minimum standards - water sensitive urban design, beyond meeting the stormwater management design objectives under the State Planning Policy 2017.
- Reef credit scheme

¹⁴ Point Source Water Quality Offsets Policy 2019, available at https://environment.des.qld.gov.au/_data/assets/pdf_file/0033/97845/point-source-wq-offsets-policy-2019.pdf

¹⁵ Draft Point Source Water Quality Offsets Guideline 2019, available at https://environment.des.qld.gov.au/_data/assets/pdf_file/0032/97844/draft-point-source-wq-offsets-guideline-2019.pdf

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Important note: The Water Offsets guideline is in draft form with the scope currently limited to guidance on offset measures involving streambank or gully restoration.

While a residual impact will still occur in the release location, a water quality offset will ensure that there is no net decline to the GBR catchment as a whole, and will therefore, still meet the legislative requirement in section 41AA of the EP Act. This is depicted in **Figure 3 – when an application cannot be refused under section 41AA of the EP Regulation**, which demonstrates that where an applicant can avoid, minimise or offset all residual impacts then the criteria under section 41AA, then the administering authority does not have grounds to refuse the with application under section 41AA of the EP Regulation.

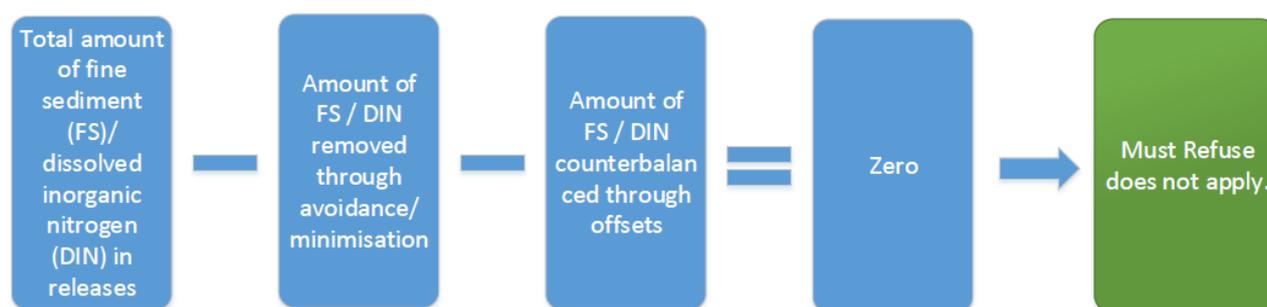


Figure 3: When an application cannot be refused under section 41AA of the EP Regulation.

The management hierarchy for an activity that may affect water is outlined in section 14 of the Environmental Protection (Water and Wetland Biodiversity) Policy 2019 (EPP Water). The management hierarchy supports the use of avoidance and mitigation measures prior to implementing treatment options. Appropriate treatment for release to surface waters or groundwaters includes treatment that ensures that the release is offset by undertaking an activity to counterbalance the impacts of releasing waste water or contaminants to waters, other than an offset to which the *Environmental Offsets Act 2014* applies.

The Water Quality Offsets Policy provides applicants the opportunity to avoid additional DIN/fine sediment release into the GBR catchments waters through the provision of a water quality offset. Water quality offsets provide an opportunity to achieve both improved environmental outcomes and improvement in the water quality of the receiving waters, whilst avoiding environmental harm to the environmental values of the receiving waters.

To demonstrate that residual loads will be adequately offset, applicants must provide details on when and how the proposed water quality offset meets the Water Quality Offsets Policy. The administering authority must consider this Policy when assessing the adequacy of the offset proposal to counterbalance residual impacts. See the Water Quality Offsets Policy and Draft Water Offsets Guideline for further information.

A **pre-design/pre-lodgement discussion** is recommended where applicants are proposing water quality offsets.

Example: Reef Credit Scheme

Under certain circumstances applicants may be able to purchase Reef Credits as an option to offset their release to waters, through the Reef Credit Scheme¹⁶. The administering authority may include the requirement to purchase a Reef credits as a condition on an EA and would need to be satisfied that the applicant has purchased the credits prior to commencing the activity.

¹⁶ Reef Credit Scheme website, available at <https://www.reefcredit.org/>

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The Reef Credit scheme is still in its infancy stage, particularly where it may apply to prescribed and resource ERAs. For further information on the Reef Credit Scheme and how to secure credits, please see the Reef Credit Scheme website.

To ensure the offset is enforceable, conditions requiring payment to the Reef Credit scheme and any additional monitoring and reporting on the success would be imposed on the EA.

4 Deciding an application against section 41AA of the Environmental Protection Regulation 2019

In deciding an application against section 41AA of the EP Regulation, the administering authority will consider the following:

- **Risk of release:** The administering authority will use the information gathered in Section 3.2 to determine whether any of the proposed activities have a risk of releasing DIN/fine sediment to GBR catchment waters.
- **Consideration of mitigation measures:** If the application indicates that the activity will result in the release of DIN/fine sediment, the administering authority must be satisfied that all appropriate mitigation measures (avoidance and minimisation) have been utilised, in accordance with the management hierarchy for waters in section 14 of the EPP Water. The proposed mitigation measures should describe provisions for the monitoring of their success.
- **Consideration of offsets measures:** Once the administering authority is satisfied the avoidance and minimisation measures are appropriate (i.e., meet best practices) and are likely to be effective, and it has been determined that these measures do not remove all residual loads of DIN/fine sediment from the proposed release, then the applicant must either not release the water or provide a water quality offset.

If the administering authority considers the relevant activity will (or may) have a **residual impact** to GBR catchment waters from DIN/fine sediment, the administering authority must refuse to grant the application. A decision tree for applying section 41AA is displayed in Figure 4.

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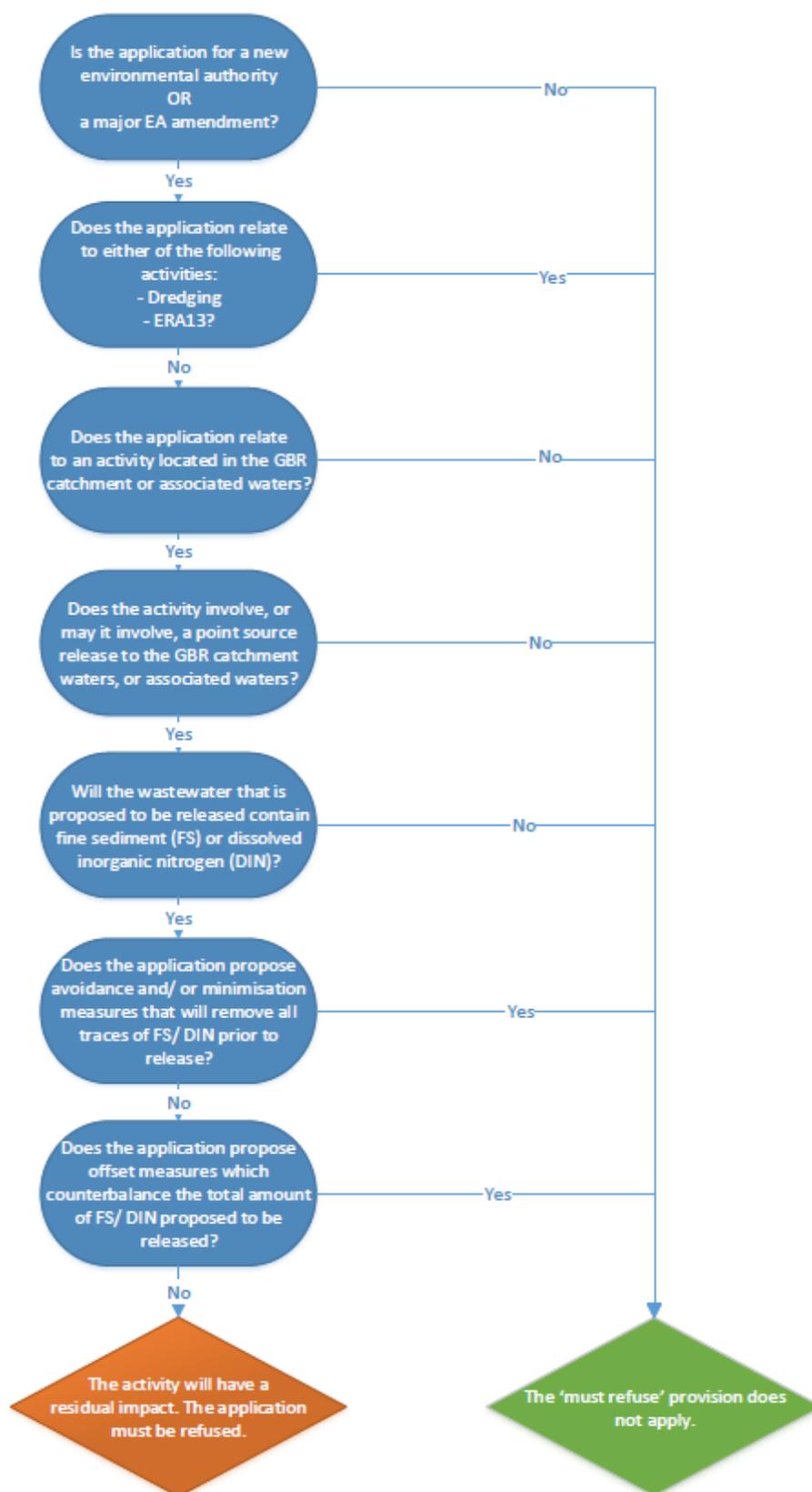


Figure 4: Decision tree for section 41AA of the EP Regulation

5 Glossary

Administering authority means:

- a) for a matter, the administration and enforcement of which has been devolved to a local government under section 514 of the *Environmental Protection Act 1994* – the local government; or
- b) for a matter relating to ERA 2, 3 or 4 of the Environmental Protection Regulation 2019 – the Chief Executive of the Department of Agriculture and Fisheries; or
- c) for all other matters – the Chief Executive of the Department of Environment, Science and Innovation.

Bed of any waters, has the meaning in Schedule 19 of the Environmental Protection Regulation 2019, and

- a) includes an area covered, permanently or intermittently, by tidal or non-tidal waters; but
- b) does not include land adjoining or adjacent to the bed that is from time to time covered by floodwater.

Dissolved inorganic nitrogen is a combination of ammonia (NH₃) nitrogen plus oxidised nitrogen (NO_x). Oxidised nitrogen is a combination of nitrite (NO₂⁻) nitrogen and nitrate (NO₃⁻) nitrogen.

Dry weather day means a day which has less than 1mm of rainfall recorded at any rainfall measuring station recognised by the Commonwealth Bureau of Meteorology within the area connected to the point source location. If rain were to occur that will directly impact the point source location, or if no such measuring station exists, at the nearest such station to the point source location. The term also excludes days during which recorded rainfall over the 4 preceding days exceeds a cumulative rainfall of 50mm. Where differing rainfall measurements are specifically listed in the environmental authority, those measurements prevail.

Environmental authority, has the meaning in Schedule 4 of the *Environmental Protection Act 1994*, and means generally -

- a) an environmental authority issued under section 195 that approves an environmentally relevant activity applies for in an application: or
- b) if a replacement environmental authority is issued for an environmental authority – the replacement environmental authority.

Environmentally relevant activity has the meaning of section 18 in the *Environmental Protection Act 1994*.

Fine sediment has the meaning in section 41AA of the Environmental Protection Regulation 2019, where the presence of fine sediment must be detected by measuring total suspended solids.

Great Barrier Reef catchment has the meaning in section 75 of the EP Act and means the area shown on a map prescribed by regulation as the Great Barrier Reef catchment and each part of the Great Barrier Reef catchment shown as a river basin on the map is a river basin. The map prescribed by regulation titled '[Great Barrier Reef catchment and river basins](#)' provided Figure 1 in this document, which is available on the departments website www.des.qld.gov.au.

Great Barrier Reef catchment waters has the meaning in section 112 of the EP Act and means water in a river in the GBR catchment or a tributary of a river in the GBR catchment.

Load has the meaning in section 41AA of the Environmental Protection Regulation 2019 and means load of fine sediment, or dissolved inorganic nitrogen, in water, means the total mass of the fine sediment, or the dissolved inorganic nitrogen, in the water, measured over a period of time.

Mitigation measure has the meaning in section 41AA of the Environmental Protection Regulation 2019, and means, for the relevant activity, are measures carried out to avoid or minimise the release of fine sediment, or dissolved inorganic nitrogen, to Great Barrier Reef catchment waters, because of the relevant activity being carried out.

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Offset measure has the meaning in section 41AA of the Environmental Protection Regulation 2019, and means, for a relevant activity, are activities carried out to reduce the load of fine sediment, or dissolved inorganic nitrogen, in Great Barrier Reef catchment waters.

Point source release(s) means any discernible confined and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, discrete fissure, or other discrete source where pollutants are or may be discharged to waters. This does not include waterway diversions, uncontrolled/unplanned releases and/or emergency releases.

Prescribed ERA has the meaning in section 106 of the *Environmental Protection Act 1994*.

Regulatory requirement has the meaning in Schedule 4 of the *Environmental Protection Act 1994*.

Residual impact has the meaning in section 41AA of the Environmental Protection Regulation 2019.

Resource activity has the meaning in section 107 of the *Environmental Protection Act 1994*.

Total nitrogen is the sum of ammonia, organic and reduced nitrogen and nitrate-nitrite. It can be derived by monitoring for organic nitrogen compounds, free-ammonia, and nitrate-nitrite individually and adding the components together.

Total suspended solids mean sediments that can be derived from both natural and modified landscapes through erosion and can be present in various forms of water. Total suspended solids are an indicator of particulate matter in water.

Transitional environmental program means a transitional environmental program approved under chapter 7, part 3 of the *Environmental Protection Act 1994*.

Uncontrolled release/unplanned releases has the definition as included in guideline: *Application Requirements for activities with impacts to waters* (ESR/2015/1837)¹⁷ and means unintentional releases of contaminants (e.g. leaks through, or overflows from, waste water ponds or poorly managed fuel or oil storages, contamination by landfill leachate, generation of acid mine drainage) and may include a release considered to be an emergency release.

Water quality offset policy has the meaning in section 41AA of the Environmental Protection Regulation 2019 and means the document called 'Point source water quality offsets policy 2019' made in November 2019 and published on the department's website.

Watercourse has the meaning in Schedule 4 of the *Environmental Protection Act 1994* and means a river, creek or stream in which water flows permanently or intermittently

- a) in a natural channel, whether artificially improved or not; or
- b) in an artificial channel that has changed the course of the watercourse.

Watercourse also includes the bed and banks and any other element of a river, creek or stream confining or containing water.

Waters includes all or any part of a creek, river, stream, lake, lagoon, swamp, wetland, spring, unconfined surface water, unconfined water in natural or artificial watercourses, bed and bank of any waters, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and underground water.

¹⁷ This is the publication number. The publication number can be used as a search term to find the latest version of a publication at www.qld.gov.au.

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Wet weather day means a day that is not a dry weather day. The appropriate level of management for a rainfall event will be determined by the administering authority during the assessment process. For example, for some activities, the wet weather management may be appropriate to be able to handle a 24-hour storm event with an average recurrence of 1 to 5 years or an average recurrence of 100 years.

Wetland means an area shown as a wetland on the Map of Queensland wetland environmental values.

Disclaimer

While this document has been prepared with care it contains general information and does not profess to offer legal, professional or commercial advice. The Queensland Government accepts no liability for any external decisions or actions taken on the basis of this document. Persons external to the Department of Environment, Science and Innovation should satisfy themselves independently and by consulting their own professional advisors before embarking on any proposed course of action.

Approved by Director General:

1 June 2021

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Version history

Version	Date	Description of changes
1.00	1 June 2021	First publication. This is a new guideline to help applicant's address the new Reef discharge standards for industrial activities outlined in section 41AA of the Environmental Protection Regulation 2019, that will commence on 1 June 2021.
1.01	14 April 2022	Facsimile number removed.
1.02	06 May 2022	Minor amendments made to clarify the position that releases containing sediment only are excluded from s41AA considerations, and to remove an example on page 14 that was causing some confusion.
1.03	02 May 2023	Minor amendments to update table located in section 2.1 to add content reflecting legislative requirements for section 41AA of the Environmental Protection Regulation 2019. The changes correct an oversight when the document was first published.
1.04	23 February 2024	Document rebranded to align with machinery of government changes