

Notice

Environmental Protection Act 1994

Environmental Evaluation

Notice to conduct or commission an environmental evaluation

This notice to conduct or commission an environmental evaluation is issued by the administering authority pursuant to section 326B of the Environmental Protection Act 1994.

Gelita Australia Pty Ltd (ACN: 000 010 597)
Piper Alderman
Level 36, 123 Eagle Street
BRISBANE QLD 4000

Gelita Australia Pty Ltd
PO Box 409
BEAUDESERT QLD 4285

Attn: Natasha Smith

Your reference: CA38455

Our reference: EPPR00495113

1 December 2016

Take notice: that under the *Environmental Protection Act 1994* (the Act) a notice to conduct or commission an environmental investigation is issued to Gelita Australia Pty Ltd (you) by the administering authority. The administering authority is the Chief Executive of the Department of Environment and Heritage Protection (the department).

The notice to conduct or commission an environmental investigation is issued in respect of the activities of Gelita Australia Pty Ltd at 50 Flood Road, Josephville, Queensland on land described as Lot 1 on RP118424, Lot 2 on RP118424 and Lot 3 on CP862699 (the premises).

A. Grounds

The notice to conduct or commission an environmental investigation is issued on the following grounds:

- An activity or proposed activity is causing or likely to cause environmental harm.

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The facts and circumstances forming the basis for these grounds are:

Grounds in relation to person and location

Gelita Australia Pty Ltd (the recipient) operates a gelatine plant and associated activities. The facility is located at 50 Flood Road, Josephville Qld within the Bromelton State Development Area along the northern banks of the Logan River.

Grounds in relation to activity

The gelatine manufacturing process is a rendering-type activity where the recipient uses a chemical process to extract collagen from abattoir by-products (e.g. skin from the head and ears of cattle) to produce gelatine. The recipient holds an environmental authority with the department (referenced as EPPR00495113) and the conditions of the environmental authority consist of the conditions of two development approvals, IPDE00992208 to undertake: ERA 15 – Fuel Burning; ERA 25(3b) – Meat processing; ERA 63(2a) – Sewage treatment; and DA7 for ERA 53 – Composting and soil conditioner manufacturer.

The gelatine manufacturing activity produces large volumes of nutrient rich waste water which is treated on site using primary screens, fat removal Dissolved Air Flotation's (DAF), Upflow Anaerobic Sludge Blanket (UASB), flocculation DAF, activated sludge and clarification. The nutrients include nitrogen. The form of nitrogen is dependent upon the form and level of treatment applied to waste water and includes organic nitrogen, ammonia nitrogen and oxidised nitrogen (nitrite and nitrate). The first two forms predominate prior to effective nitrification of the effluent, which is an aerobic process. Hence un-nitrified effluent is likely to contain high concentrations of ammonia.

Treated effluent is stored in a large on site dam (capacity approx. 150 ML) prior to being irrigated over the 121 hectare site which is bordered by the Logan River. Daily volumes of irrigation vary and have been recorded at up to 4 ML per day. The recipient also holds agreements with three third-party irrigators and pumps irrigation effluent to these nearby properties for their private use.

The associated activities of sewage treatment and composting are additional potential sources of nitrogen in effluent and stormwater runoff respectively that may be released both directly and indirectly from the premises.

Since November 2013, the department has received in excess of 10 notifications from SeqWater (the operator of the Beaudesert Water Treatment Plant) of high ammonia concentrations within the Logan River affecting their ability to treat and supply drinking water to the city of Beaudesert. To monitor risks to source water quality, SeqWater undertake a routine water quality monitoring program in the Logan River catchment and have done so for several years, with recent monitoring showing ammonia concentrations at the SeqWater offtake at Beaudesert to be as high as 1.9 mg/L.

In response to these allegations, the department began an investigation into the matter undertaking numerous inspections of the recipient's facility between late 2014 and March 2016 which identified several non-compliances relating to irrigation practices and monitoring of both groundwater and surface water.

The department undertook an inspection of the premises on 17 June 2015 at which time multiple issues relating to the management of irrigation effluent were identified. During this inspection, authorised officers inspected an area of a likely source of contaminant release to the Logan River in the south of the premises. At that time, officers observed the release of water from the site to a gully entering the Logan River south of the site. Samples of this water were taken by the department and analysed. The results showed the water that had been released was heavily contaminated with nutrients, including ammonia at 154 mg/L and total nitrogen at 200 mg/L.

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You were directed to resolve the matters identified in a letter from the department dated 2 July 2015 and was issued with a penalty infringement notice for this release in December 2015. As part of the 17 June 2015 site inspection, the department also requested groundwater quality monitoring results in accordance with the conditions of the environmental authority. These results showed extremely high concentrations of total nitrogen in two of the three groundwater monitoring bores, with concentrations ranging from 88 mg/L to 240 mg/L. It should be noted that the recipient's environmental authority requires waste water releases for irrigation of the lands to be managed such that environmental harm is avoided, including specifically managing nitrogen loads applied to the irrigation fields.

On 21st March 2016, the department undertook a further inspection of practices at the premises. During this site visit, officers again observed evidence of overflowing water storage ponds. In particular, one pond in the north east of the site, located approximately 20m from Logan River was found to be overflowing into the river. Whilst the recipient claimed the water was only stormwater, officers noted the pond had visible scum and algae on the surface, indicating the pond water contained nutrients.

Officers collected samples from this pond, analysis of which returned results of 58mg/L of ammonia and 76mg/L of total nitrogen, confirming that the pond water being released contained high levels of contaminants. The officers also sampled the release location where the discharging water flowed into the Logan River. This sample contained 59mg/L of ammonia and 83mg/L of total nitrogen.

These results indicate that discharge of nutrient rich water occurs from the premises to the river, either via the direct release of waste water, or if the pond contained only stormwater runoff as claimed, that contamination of stormwater ponds with nitrogen had occurred, with subsequent release into the river.

The above observations raise reasonable concerns about nutrients loads being produced by the recipient's activities and how they are being managed to avoid adverse impacts on surface water, stormwater and groundwater quality.

Grounds in relation to environment

The premises has at least 3 kilometres of frontage to the Logan River, with identified releases to the river as described above, as well as other potential releases as yet unidentified. Under the *Environmental Protection (Water) Policy 2009* (Water EPP), all Queensland waters including groundwater have prescribed environmental values and water quality objectives which must be maintained or enhanced. Environmental values and water quality objectives for the receiving waters the subject of this investigation are listed in schedule 1 of the Water EPP see:

<http://www.ehp.qld.gov.au/water/policy/pdf/plans/logan-river-ev-plan-2010.pdf>

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The environmental values prescribed for surface waters in this area are: aquatic ecosystem protection, irrigation use, farm use, stock watering, aquaculture, human consumption of aquatic food, primary recreation, secondary recreation, visual recreation, suitability for drinking, industrial use and cultural and spiritual values.

The environmental values prescribed for groundwater in this area are: aquatic ecosystem protection, irrigation use, farm use, stock watering and suitability for drinking and industrial use.

Ecological health and public amenity and safety are also environmental values prescribed under the *Environmental Protection Act 1994* that may be adversely affected by contaminated surface water run-off, contaminated groundwater and contaminated soil.

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The activities occurring at the premises pose potential risk of environmental harm through impacts to these defined environmental values.

Grounds in relation to environmental harm

The environmental harm caused or threatened is primarily related to risks to environmental values of waters, including surface waters and groundwater and ecological health.

Nitrogen is a nutrient that, if present in excess, can cause adverse effects on ecological health via eutrophication of receiving waters. Effects of eutrophication include excessive growth of aquatic plants and algae and subsequent adverse effects on dissolved oxygen concentrations.

Ammonia nitrogen is also a toxicant to many aquatic species and exerts an oxygen demand on receiving waters, as organisms that convert it naturally to oxidised forms (i.e. nitrification) are aerobic. These are plant nutrients that may cause algal blooms in waters.

The concentrations of nitrogen measured in the river exceed the trigger values for ammonia (95% species protection) prescribed in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality – (ANZECC 2000) and the water quality objectives for lowland freshwater prescribed in the *Environmental Protection (Water) Policy 2009*.

With respect to suitability for irrigation water, the ANZECC (2000) guideline value for long term use is 5 mg/L nitrogen, which is exceeded in both the groundwater and impacted surface water at the premises.

For drinking water and farm supply use, comparison must be made to the guideline values for ammonia nitrogen (aesthetic), nitrate nitrogen and nitrite nitrogen (health) prescribed in the Australian Drinking Water Guidelines (ADWG) (2011) published by the National Health and Medical Research Council (NHMRC).

Concentrations of oxidised nitrogen in receiving waters adjacent to the Gelita premises (based on the results of the department's sampling mentioned above) have been in the range of 24 – 46 mg/L.

Downstream of Gelita, the maximum nitrate concentration at the Bromelton Weir (just upstream of the Beaudesert WTP offtake point) has been recorded by Seqwater as 1.6mg/L. These concentrations demonstrate nitrate and/or nitrite levels in exceedance of the ADWG guideline value for drinking water of 0.5mg/L. The department acknowledges that these spikes may be associated with other activities up stream of the weir besides Gelita.

Note that guideline values for these chemical species are expressed as weight of these compounds, rather than weight as nitrogen and hence conversion to weight as N is necessary for comparisons. The guideline values are 50 mg-NO₃/L (as nitrate) and 3 mg-NO₂/L (as nitrite). [The conversions rates are as follows: 1 mg/L nitrate-N = 4.43 mg/L nitrate, 1 mg/L nitrite-N = 3.29 mg/L nitrite.]

Concentrations of ammonia measured in the Logan River also exceed the NHMRC guideline of 0.5 mg/L for drinking water suitability.

In addition to the exceedance of the ADWG value of 0.5mg/L for drinking water suitability, excessive ammonia in the Logan River has adverse implications for water treatment activities and supply of drinking water to the population of Beaudesert, respective to complaints made by both the water supply authority and water distribution authority.

Elevated levels of ammonia in raw water create a large chlorine demand that needs to be satisfied before disinfection can occur. Where chlorination is used as the germicidal agent in water treatment, effective disinfection requires sufficient availability of free chlorine. For free chlorine to be available, sufficient chlorine has to be introduced to oxidise all substances which would interfere with production of free chlorine,

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including ammonia. This increased demand for chlorine not only increases water treatment costs, but can only occur to a point where it becomes unfeasible to add further chlorine due to residual total chlorine in water post-treatment at levels in excess of the ADWG value for total chlorine in drinking water.

Furthermore, through the addition of sufficient levels of chlorine to overcome the demand exerted by ammonia and other substances present during high ammonia events, various disinfection by-products (DBPs) are readily formed. The ADWG also stipulates health guideline values for DBPs at levels which would be exceeded if excessive levels of chlorine were added to overcome the demand exerted during high ammonia events measured at the Beaudesert WTP intake.

In the event that chlorine cannot be dosed to achieve free chlorine residual level to meet sufficient disinfection requirements, ammonia and chlorine then combine to form residual chloramine compounds. These compounds, which are odorous and create unpleasant taste effects in water, can also pass through the reverse osmosis membranes on dialysis machines and may damage blood cells for any dialysis machine users.

High ammonia levels in the raw water intake at Beaudesert water treatment plant have resulted in the treatment plant pre-emptively shutting down to mitigate against the impacts on the disinfection process step which would result in an unacceptable health risk to the community. This adversely impacts the continuity of drinking water supply to the Beaudesert community.

B. Requirements

The report on the environmental investigation must address the following relevant matters:

1. Determine the volume of waste water produced by the activities. This must include the volume of influent directed into the waste water treatment system and the volume of effluent produced by the treatment process. This water balance must account for any gains and losses in volume such as gains due to rainfall any losses due to evaporation, seepage or recycling.
2. Determine the volume of stormwater runoff, contaminated by nitrogen compounds, likely generated under an average wet year and a 90th percentile wet year, that require management by the recipient to prevent the release of contaminated wastewater.

Note: An example of stormwater likely to be contaminated by nitrogen compounds would be stormwater running off outdoor composting materials. To be able to minimise contaminated stormwater releases in compliance with environmental authority conditions, the activity needs to be able to manage rainfall runoff in up to a 1 in 10 year wet season.

3. Determine the mass loads of nitrogen compounds and ammonia that are contained in treated effluent and contaminated stormwater (mentioned in requirement 2) and any other material sources that are released to land on the premises.

Note: An example of the latter would be any solid waste releases such as sludge.

4. Determine the mass loads of nitrogen in treated effluent; this must consider actual loads being created and whether there is any potential difference in loads given different operation of the treatment system. This must include an estimate of nitrogen removal efficiency for the waste water treatment system.

For example, potential loads may be higher if the gelatine plant is not being operated at full capacity or lower if the treatment process is not performing as expected.

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5. Provide details and analysis results of the recipient's sampling and monitoring program associated with the water treatment and storage ponds.
6. Clearly define the location and volume of the various effluent storage ponds and any nitrogen contaminated stormwater ponds on the premises. Describe the construction, operating freeboard, situational surroundings and assess whether these ponds are sufficiently constructed, sited and managed to effectively contain the contaminants within the ponds.

Note: the EA conditions prohibit releases to groundwater or overland flows to waters.

7. Describe the groundwater system at and in the vicinity of the premises. This must include, but should not be limited to: host soils/lithology; background water quality (conductivity, pH, redox potential, dissolved oxygen, common anions and cations, concentration of nitrogen species); any seasonal variability; any perching or confining features; depths to groundwater; groundwater elevation in metres Australian Height Datum (AHD); gradients and flow directions; hydraulic properties; and potential interaction with surface waters.

Details of all bores, including the location, elevation (metres AHD) and bore logs including construction, screened depth and soils/lithology must also be provided.

8. Provide details and analysis results of the recipient's groundwater sampling and monitoring program, including the purpose of all bores and inferred groundwater flows associated with the water treatment and storage ponds.
9. Describe the management practices for nitrogen contaminated waste, waste water and stormwater including details of locations and mass loads released to land.
10. Determine the source, cause and extent of nitrogen contamination of groundwater being caused or likely to be caused by the activity. This must include consideration of nitrogen and hydraulic loads applied to land, potential for seepage from water storages and modelling of effluent irrigation using the program MEDLI. MEDLI should be used to investigate the long term sustainability of effluent irrigation practices by better understanding the impacts that the recipient's irrigation regime may have on soil and groundwater quality.
11. Determine the source, cause and extent of nitrogen contamination of surface water being caused or likely to be caused by the activity. This must include examination of the known sources such as overflow from storage ponds and potential sources including discharge of groundwater to surface water and runoff from effluent irrigation areas.
12. Determine the extent of environmental harm likely to be caused to environmental values of groundwater and surface waters (including the Logan River and Sandy Creek) as a result of the activities. This assessment must at least include the following water quality guidelines.
 - For Aquatic Ecosystem Protection – Trigger values for ammonia (95% species protection) prescribed in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality – (ANZECC 2000)
 - For Aquatic Ecosystem Protection – Water quality objectives for lowland freshwater (nitrogen species, dissolved oxygen and chlorophyll 'a') prescribed in the *Environmental Protection (Water) Policy 2009*.

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- For Suitability for Use for Irrigation – The long term trigger value for total nitrogen prescribed in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality – (ANZECC 2000).
- For Suitability for Use for Drinking Water and Farm Supply/Use, guideline values for ammonia nitrogen (aesthetic), nitrate nitrogen and nitrate nitrogen (health) prescribed in the Australian Drinking Water Guidelines (2011) published by the National Health and Medical Research Council.

[Note: Guideline concentrations for Nitrate and Nitrate are expressed as weight of these compounds rather than weight as nitrogen.]

13. Upon completion of the investigation, notify any of the neighbours of any water users of any adverse changes to groundwater or surface water that pose any risk of environmental harm.

Section 319 of the *Environmental Protection Act 1994* provides that all persons have a general environmental duty. This duty of care applies to all activities carried out in Queensland or outside Queensland that may affect Queensland's environment. Whenever a person carries out an activity (that causes or is likely to cause environmental harm), they must take all reasonable and practicable measures necessary to prevent or minimise the harm.

Notification of persons who may be exposed to a risk is seen as a reasonable and practicable measure to minimise environmental harm, in this case by minimising likelihood of unwitting adverse exposure or water use.

14. Having regard to the outcomes of determinations 1 to 12 inclusive, determine likely reasonable and practicable options available to minimise environmental harm and avoid future unauthorised releases of contaminants to the environment and the need for a transitional environmental program to implement effective remedial actions.

Quality Assurance for Investigations and Requirements

15. The determinations and investigations carried out under the environmental evaluation must be in accordance with relevant requirements of the following legislation and guidelines:

- a) *Environmental Protection Act 1994* – see <https://www.legislation.qld.gov.au/LEGISLTN/CURRENT/E/EnvProtA94.pdf>
- b) *Environmental Protection (Water) Policy 2009* 1994 – see <https://www.legislation.qld.gov.au/LEGISLTN/CURRENT/E/EnvProWateP09.pdf>
- c) *Queensland Water Quality Guidelines (2009)* – see <http://www.ehp.qld.gov.au/water/pdf/water-quality-guidelines.pdf>
- d) *Monitoring and Sampling Manual 2009 Environmental Protection (Water) Policy 2009 Version 2 September 2010* see - <http://www.ehp.qld.gov.au/water/pdf/monitoring-man-2009-v2.pdf>
- e) For conceptualising groundwater and making predictions about groundwater impacts - *The Australian groundwater modelling guidelines June 2012* Published by the National Water Commission. See http://nwc.gov.au/_data/assets/pdf_file/0016/22840/Waterlines-82-Australian-groundwater-modelling-guidelines.pdf

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The environmental report must be submitted to the department on or before:

- **20 January 2016**

As the recipient of this notice, you are also required to provide a statutory declaration in the form attached, to accompany the environmental report submitted to the department. The suitably qualified person who prepares the environmental report must also provide a statutory declaration in the form attached to accompany the environmental report submitted to the department.

You can view an electronic version of the statutory declaration for a recipient using the following search term (EM494).¹

An electronic version of the statutory declaration for a suitably qualified person form is available using the search term (EM471).

Take notice:

1. the requirements of the notice to conduct or commission an environmental investigation take effect immediately upon service of this notice;
2. this notice remains in force until further notice from the department; and
3. You are responsible for meeting the costs of conducting or commissioning the environmental evaluation, preparing the environmental report and providing any further information as requested by the department.

C. Reviews and appeals

The provisions regarding reviews of decisions and appeals are found in sections 519 to 539 of the Act.

A person who is dissatisfied with certain decisions of the department, may be able to apply to have the department review that original decision.

Generally, a request to have a decision reviewed must be made:

- within 10 business days of the decision being notified to the person;
- be supported by enough information to enable the department to decide the application for review; and
- be made using the application for review of an original decision form (EM709).

Where an application has been made for a decision to be reviewed, the applicant may also apply to the relevant court for a stay of the decision to secure the effectiveness of the review.

Once the original decision has been reviewed, a person who is dissatisfied with the review decision may be able to appeal against that decision to the relevant court within 22 business days after receiving notice of the review decision.

¹ 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.ehp.qld.gov.au>.

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A person whose interests are or would be adversely affected by a decision of the department may also be able to request a statement of reasons for a decision or a statutory order review under the *Judicial Review Act 1991*.

For further information about reviews and appeals see the:

1. [Information sheet - internal review and appeal to the Planning and Environment Court \(EM1866\)](#).
2. [Information sheet - internal review and appeal to the Land Court \(EM1157\)](#).

You may have other legal rights or obligations and should seek your own legal advice.

D. Penalty

Failure to comply with a notice to conduct or commission an environmental evaluation is an offence.

1. The maximum penalty for an individual is 300 penalty units, totalling \$35,340.
2. The maximum penalty for a corporation is 1500 penalty units, totalling \$176,700.

Should you have any queries in relation to this notice, please contact Angie Hollister of the department on telephone number (07) 5626 6848.



Signature



Date

Tim Brain
Manager (Compliance)
Delegate of the Chief Executive
Department of Environment and Heritage Protection
Environmental Protection Act 1994

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