



# Nitrate-nitrogen leaching from sheep livestock 2017

## Metadata

### File Identifier

75E0B3AC-0DBB-4347-8DFF-D10C54285824

### Language

eng

### Character Set

#### Character Set Code

utf8

### Hierarchy Level

#### Scope Code

series

### Hierarchy Level Name

series

## Contact

### Responsible Party

#### Organisation Name

Stats NZ

### Contact Info

#### Contact

##### Address

##### Address

##### Country

Australia

### Role

#### Role Code

pointOfContact

## Date Stamp

### Date

2019-03-14

## Metadata Standard Name

ANZLIC Metadata Profile: An Australian/New Zealand Profile of AS/NZS ISO 19115:2005,  
Geographic information - Metadata

## Metadata Standard Version

**Identification Info****Data Identification****Citation****Citation****Title**

Nitrate Nitrogen leaching from livestock 2017

**Date****Date****Abstract**

Raster layer with 100m \* 100m pixels, Each pixel represents the estimated nitrate-N leached in kg/ha/yr. This layer contains all nitrate leaching estimated from sheep.

**Purpose**

To understand the pressure on water quality from nitrate N leaching from selected land-based activities

**Credit**

Anne-Gaelle Ausseil, Andrew Manderson

**Credit**

Manaaki Whenua – Landcare Research

**Status****Progress Code**

completed

**Resource Maintenance****Maintenance Information****Maintenance And Update Frequency****Maintenance Frequency Code**

irregular

**Descriptive Keywords****Keywords****Keyword**

New Zealand

**Type****Keyword Type Code**

theme

**Thesaurus Name****Citation****Title**

ANZLIC Jurisdictions

Date

Edition

| Version 2.1

Edition Date

| Date

| 2008-10-29

Identifier

| Identifier

| Code

| <http://asdd.ga.gov.au/asdd/profileinfo/anzlic-jurisdic.xml#anzlic-jurisdic>

Cited Responsible Party

| Responsible Party

| Organisation Name

| ANZLIC the Spatial Information Council

| Role

| Role Code

| custodian

## Descriptive Keywords

Keywords

Keyword

| AGRICULTURE-Livestock

Keyword

| INDUSTRY-Primary

Keyword

| LAND-Use

Keyword

| POLLUTION-Water

Keyword

| WASTE-Sewage

Keyword

| WATER-Quality

Keyword

| WATER-Rivers

Type

| Keyword Type Code

| theme

Thesaurus Name

Citation

Title

ANZLIC Search Words

Date

Edition

Version 2.1

Edition Date

Date

2008-05-16

Identifier

Identifier

Code

<http://asdd.ga.gov.au/asdd/profileinfo/anzlic-theme.xml#anzlic-theme>

Cited Responsible Party

Responsible Party

Organisation Name

ANZLIC the Spatial Information Council

Role

Role Code

custodian

Resource Constraints

Security Constraints

Classification

Classification Code

unclassified

Resource Constraints

Legal Constraints

Access Constraints

Restriction Code

license

Resource Constraints

Legal Constraints

Use Constraints

Restriction Code

license

Resource Constraints

Legal Constraints

Use Limitation

- The map should not be used to infer leaching rates for individual farms as average farming practices are assumed and actual stock numbers per farm

were not available. • The spatial extent of nitrate leaching should be considered as an update from EA 2015 and Our freshwater 2017, and should not be used for comparing time differences between this one and previous versions.

#### Use Constraints

##### Restriction Code

otherRestrictions

#### Other Constraints

• The map should not be used to infer leaching rates for individual farms as average farming practices are assumed and actual stock numbers per farm were not available. • The spatial extent of nitrate leaching should be considered as an update from EA 2015 and Our freshwater 2017, and should not be used for comparing time differences between this one and previous versions.

#### Spatial Representation Type Code

grid

#### Representative Fraction

##### Denominator

##### Integer

50000

#### Language

eng

#### Character Set

##### Character Set Code

utf8

#### Topic Category Code

farming

#### Topic Category Code

inlandWaters

#### Topic Category Code

environment

#### Extent

##### EX \_ Extent

##### Geographic Element

##### EX \_ Geographic Bounding Box

167.376964179.625229-47.328567-33.949210

#### Data Quality Info

##### DQ \_ Data Quality

##### Scope

##### DQ \_ Scope

##### Level

##### Scope Code

series

## Level Description

### Scope Description

#### Other

series

## Lineage

### LI \_ Lineage

#### Statement

The map of nitrate-N leaching was produced by combining a map of animal numbers and estimates of nitrate leaching rates per animal type. Animal numbers were estimated by distributing region-level totals (Statistics New Zealand, 2017a) according to land use and stock-carrying capacity (Landcare Research 1992). We utilized the latest available AgriBase™ (AssureQuality 2018) land use data from May 2018 and LCDB version 4.1 (Landcare Research 2015) land cover data from 2012 for our spatial modelling. In-house scripts and routines were implemented across the AgriBase™ to remove errors and defects. Stocking rate normalization to national stock numbers was based on the Agricultural Production Census 2017 at the regional authority level (Statistics New Zealand 2017a). The census data were mapped to 2017 regional boundaries (Statistics New Zealand 2017b). Nitrate-N leaching rates per animal type were estimated for 100 unique soil and climate combinations in New Zealand (i.e. LENZ level II: Leathwick et al. 2003) using OVERSEER® (AgResearch 2011). We took into account two modifiers: • Shallow soils that have twice as much nitrate leached than deep soils. • Irrigated land that will have different nitrate leaching rates for dairy cows. To identify irrigated areas in our analysis, we rasterized the spatial data set prepared by Dark et al. (2017). In the absence of a more robust method, nitrate leaching on horticultural and arable land was set to one and two times that estimated for sheep at stock-carrying capacity respectively (Lilburne et al. 2010). AgResearch 2011. OVERSEER®. Available from [www.overseer.org.nz](http://www.overseer.org.nz). AssureQuality New Zealand Ltd, 2018. AgriBase™. Dark A, Birendra KC, Kashima A 2017. National Irrigated Land Spatial Dataset: Summary of methodology, assumptions and results. Ministry for the Environment, C17042-1. Christchurch, Aqualinc Research Limited. Landcare Research 1992. New Zealand Land Resource Inventory. Landcare Research 2015. LCDB v4.1 – Land Cover Database version 4.1, Mainland New Zealand. <https://iris.scinfo.org.nz/layer/48423-lcdb-v41-land-cover-database-version-41-mainland-new-zealand> (accessed 06/11/2017) Lilburne L, Webb T, Ford R, Bidwell V 2010. Estimating nitrate-nitrogen leaching rates under rural land uses in Canterbury. Report No R10/127. Christchurch, Environment Canterbury. 37 p. Statistics New Zealand 2017a. Agricultural production statistics: June 2017 (final). <https://www.stats.govt.nz/assets/Uploads/Agricultural-production-statistics/Agricultural-production-statistics-June-2017-final/Download-data/agricultural-production-statistics-jun17-final-tables-v2.xlsx> (accessed 21/05/2018) Statistics New Zealand, 2017b. Geographic boundary files. [http://archive.stats.govt.nz/browse\\_for\\_stats/Maps\\_and\\_geography/Geographic-areas/digital-boundary-files.aspx](http://archive.stats.govt.nz/browse_for_stats/Maps_and_geography/Geographic-areas/digital-boundary-files.aspx) (accessed 06/11/2017) The models were run using in-house scripts implemented within the ERDAS Imagine GIS software suite. The results for the individual land-use types considered were added to

derive the map of total nitrate-N leached at national scale.

## Metadata Constraints

### Legal Constraints

#### Use Limitation

Attribution 4.0 International

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#### Use Constraints

#### Restriction Code

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