



Irrigated land area, 2017

Metadata

File Identifier

2b6fabb7-5844-6295-9cbc-8e71b89dcb8e

Language

eng

Character Set

Character Set Code

utf8

Hierarchy Level

Scope Code

dataset

Hierarchy Level Name

dataset

Contact

Responsible Party

Individual Name

James King

Organisation Name

Ministry for the Environment

Position Name

Senior Analyst

Contact Info

Contact

Address

Address

City

Wellington

Country

New Zealand

Electronic Mail Address

james.king@mfe.govt.nz

Role

Role Code

publisher

Date Stamp

Date

2017-11-07

Metadata Standard Name

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

Metadata Standard Version

1.1

Reference System Info

Reference System

Reference System Identifier

Identifier

Code

2193

Identification Info

Data Identification

Citation

Citation

Title

National Irrigated Land Spatial Dataset 2017

Date

Date

Other Citation Details

Aqualinc Research Ltd

Abstract

A spatial dataset of the extent of irrigated land in New Zealand, categorised by irrigation system type (where possible) has been created. Mapping the spatial distribution of irrigated areas and irrigation system types represents a substantial improvement on previous estimates of irrigated area, which only provided a total area for the region or district.

Purpose

To provide the first nationally consistent estimates of the spatial extent of irrigation at fine (sub-property) scales

Credit

Dark, Andrew

Credit

Wood, Charlotte

Credit

King, James

Point Of Contact

Responsible Party

Individual Name

Dr. Andrew Dark

Organisation Name

Aqualinc Research Ltd.

Position Name

Researcher

Contact Info

Contact

Address

Address

City

Christchurch

Country

New Zealand

Electronic Mail Address

andrew.dark@aqualinc.co.nz

Role

Role Code

author

Point Of Contact

Responsible Party

Individual Name

James King

Organisation Name

Ministry for the Environment

Position Name

Senior Analyst

Contact Info

Contact

Address

Address

City

Wellington

Country

New Zealand

Electronic Mail Address

james.king@mfe.govt.nz

Role

Role Code

publisher

Resource Maintenance

Maintenance Information

Maintenance And Update Frequency

Maintenance Frequency Code

unknown

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-Irrigation

Keyword

AGRICULTURE-Crops

Keyword

AGRICULTURE-Horticulture

Keyword

LAND-Use

Keyword

PHOTOGRAPHY-AND-IMAGERY-Aerial

Keyword

PHOTOGRAPHY-AND-IMAGERY-Remote-Sensing

Keyword

PHOTOGRAPHY-AND-IMAGERY-Satellite

Keyword

WATER-Supply

Keyword

WATER-Groundwater

Keyword

WATER-Rivers

Keyword

WATER-Surface

Keyword

WATER

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

Use Limitation

CC-BY 3.0

Use Constraints

Restriction Code

copyright

Spatial Representation Type Code

vector

Language

eng

Character Set

Character Set Code

utf8

Topic Category Code

farming

Topic Category Code

location

Topic Category Code

environment

Topic Category Code

economy

Extent

EX _ Extent

Geographic Element

EX _ Geographic Description

Identifier

Authority

Citation

Title

ANZMet Lite Country codelist

Date

Edition

Version 1.0

Edition Date

Date

2009-03-31

Identifier

Identifier

Code

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

Cited Responsible Party

Responsible Party

Organisation Name

ANZLIC the Spatial Information Council

Role

Role Code

custodian

Code

nzl

Extent

EX _ Extent

Geographic Element

EX _ Geographic Bounding Box

167.70596483178.170971881-46.3695250285-34.7602502616

Distribution Info

Distribution

Distributor

Distributor

Distributor Contact

Responsible Party

Individual Name

Ministry for the Environment

Organisation Name

Ministry for the Environment

Contact Info

Contact

Address

Address

City

Wellington

Country

New Zealand

Electronic Mail Address

info@mfe.govt.nz

Role

Role Code

distributor

Transfer Options

Digital Transfer Options

On Line

Online Resource

Linkage

URL

<https://data.mfe.govt.nz/layer/90838-irrigated-land-area-2017/>

Data Quality Info

DQ _ Data Quality

Scope

DQ _ Scope

Level

Scope Code

dataset

Level Description

Scope Description

Other

dataset

Lineage

LI _ Lineage

Statement

A spatial dataset of the extent of irrigated land in New Zealand, categorised by irrigation system type (where possible) has been created. Mapping the spatial distribution of irrigated areas and irrigation system types represents a substantial improvement on previous estimates of irrigated area, which only provided a total area for the region or district. All regions of mainland New Zealand, except for Nelson. Snapshot of irrigated area in 2017,

primarily based on data sources from 2015 – 2017. The methodology that we have used to create the irrigated area data-set combines a number of data sources, including remote sensing data and resource consents database information. Integrating these data sources, along with Aqualinc’s expertise in irrigation design and management, has allowed the irrigated area to be mapped at a farm scale. The methodology for mapping irrigated areas involved the following steps: 1. Farm boundary extents. This step involved mapping the approximate extent of farm boundaries using land ownership and title GIS data from LINZ. 2. Irrigation systems clearly visible from aerial imagery. Wherever possible, irrigated area was mapped based on the irrigation systems viewed from high resolution aerial or satellite photos (preferably 0.5 m pixel or less). The system type was estimated by considering a range of factors including visual sighting of travelling irrigators, and markings on the ground, such as wheel tracks or irrigation patterns. If more than one set of images were available, a cross-reference was made between the imagery. In regions where there is a strong contrast between irrigated and non-irrigated land, this process typically identifies about 80-90% of the irrigated area with a high degree of accuracy. 3. Resource consent data. The farm boundaries layer (step 1) was combined with land slope and resource consent data (surface-water takes, ground water takes, and irrigation scheme command areas). This process identified farms and areas with resource consents to take water for irrigation. Such areas with land slope less than 15° were considered to be potentially irrigated. A spatial dataset of active water take consents for all regions was provided by MfE. This dataset included attributes such as water source, use type, maximum rate and annual volume. For some regions, raw consents database records were also available. 4. Multispectral satellite analysis. GIS layers of normalised difference vegetation index (NDVI) imagery were created from Landsat imagery, covering dry summer months from January to March where possible. A strong contrast between the NDVI values for dry and actively growing vegetation indicates areas that are likely to be irrigated. As discussed below, this method is more successful in some regions than in others. 5. Combine irrigation consent and NDVI analysis. We combined the results from steps (3) and (4) to map irrigated areas that could not be identified in Step (2). We manually mapped these areas, giving consideration to irrigation design and farm boundary limitations. In regions where there was not a strong contrast between irrigated and non-irrigated land in the aerial images and NDVI data, judgement was applied based on the available data sources to determine the area that was likely to be irrigated. As discussed in more detail below, the mapping accuracy in these regions was variable, and is generally expected to be lower than the regions with high contrast. 6. StatsNZ survey. To benchmark the accuracy of the mapping, we cross-referenced the total mapped area for each region with estimates of the total area equipped for irrigation from the June 2012 Agricultural Production Statistics (APS) (StatsNZ, 2013). We did not necessarily follow a linear progression through all of the above steps. Depending on the availability and quality of data for each region, more weight was put on some steps than others to draw a conclusion on whether an area was likely to be irrigated. For example, in regions where there was little contrast between irrigated and non-irrigated land in the aerial photos and NDVI imagery, areas within a farm boundary extent were assumed in most cases to be irrigated if an active consent existed within the property boundary. Where irrigation systems were clearly visible it was usually not necessary to refer to resource consent data or NDVI imagery. Centre-pivots in particular can often be identified visually, from their wheel tracks or by sighting the pivot itself, even where there is little contrast between irrigated and unirrigated land. The APS data includes only agricultural activity. The areas that we have mapped include some non-agricultural irrigation, such as golf courses. Mapping accuracy varies between regions, depending on climate. In some areas, identification of irrigated land and irrigation system type is difficult due to the lack of visual contrast between irrigated and non-irrigated land. Land used for short-rotation cropping may not be identifiable as irrigated if no crop was actively growing when the aerial photo was taken. Apart from Canterbury (which had been mapped previously for Environment Canterbury and included with this dataset for completeness), and the Takaka catchment, the scope of this project has not allowed for primary-sector validation to be undertaken. Any errors in the Councils’ consent data that was provided for the project may result in errors in the mapping.

Classification
Classification Code
unclassified

Metadata Constraints

Legal Constraints

Use Limitation

Attribution-No Derivative Works 3.0

Use Limitation

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Use Constraints

Restriction Code

license