



Farm Data Standards

Farm and Model Data Standard

Data Dictionary Version 1.2



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1 Document Management

1.1 Referenced Documents

GS1 standards for business messaging, [EANCOM/GS1 XML](#)

United Nations rules for Electronic Data Interchange for Administration, Commerce and Transport, [EDIFACT](#)

OASIS Universal Business Language, [UBL](#)

Core Business Vocabulary (CBV), <http://www.gs1.org/gsmp/kc/epcglobal/cbv>

Australian and New Zealand Standard Industrial Classification (ANZSIC) 2006 with revisions, [http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1292.02006%20\(Revision%202.0\)?OpenDocument](http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1292.02006%20(Revision%202.0)?OpenDocument)

Feedipedia - Forage [Plants](#)

OVERSEER – [Best Practice Data Input Standards](#)

Schema.org - [Organisation](#)

INSPIRE Feature Concept Register - <http://inspire.ec.europa.eu/featureconcept>

INSPIRE Data Specification on Administrative Units – Technical Guidelines
<https://inspire.ec.europa.eu/id/document/tg/au>

International System of Units - https://en.wikipedia.org/wiki/International_System_of_Units

1.2 Related Documents

Related standards documents published on the [Farm Data Standards website](#) include:

- Animal Data Standard
- Stock Reconciliation Data Standard
- Financial Data Standard
- Farm Features and Attributes Data Standard

1.3 Latest Revisions

The users of this standard should ensure that their copies of the above-mentioned documents are the latest revisions. The latest version of this Standard will always be published at www.farmdatastandards.org.nz.



1.4 Version History

Date	Changes Made	Version #	Authors
24 August 2018	Update Referenced Documents section 1.1 Inclusion of Version History Section 1.4 Update measurement units for area to include m ² Rename Cultivable Area to Cultivable Area Rename Effective Grazing Area to Grazeable Area Inclusion of Effective Area Inclusion of Block total Area, Block Grazeable Area and Block Cultivable Area Removal of Block Ungrazeable Area	1.2	Don Wilson, Andrew Cooke, Sailee Patel
13 December 2016	Inclusion of Scope and Application section 2.3	1.1.1	Don Wilson, Vicki Fabling, Harry Tucker, Andrew Cooke
18 October 2016	Published version	1.1	Don Wilson, Vicki Fabling, Harry Tucker, Andrew Cooke

1.5 Review of Standards

Suggestions for improvement of this document will be welcomed. Submit your comments using the feedback mechanisms at www.farmdatastandards.org.nz.

1.6 Definitions and Abbreviations

For the purposes of this standard, the following definitions shall apply:

Term	Definition
Cadastral	Map or survey showing the extent, value, and ownership of land.
ISO Date	International Standard 8601 date format: “YYYY-MM-DD”
PCBU	Person Conducting a Business or Undertaking
PICA	Person in Charge of Animals



2 Introduction

2.1 Overview

Pastoral farming is becoming a data rich activity. Most biophysical processes from soil nutrient management to cow performance have both paper based and more organised data bases recording status, productivity and intentions. There are a significant number of tools covering livestock, nutrition and financial management¹. Most of these require the user to re-enter data from other sources and they overlap in functionality. It is probable that if data had been more accessible their design would have better focussed on the service they undertook to provide. Farmers will benefit from a highly innovative technology sector that delivers applications that are simple to use and access, which source the information they need without impedance and deliver value.

This document is part of a work stream focusing on Data Standards for interchanging farm and model data. Work on the overall programme commenced in late 2012. A well-attended workshop on Farm and Model Data in September 2014 in Hamilton, New Zealand, defined the scope of this work, the entities that should be interchanged and the associated issues.

2.2 Outcome Statement

Broad adoption of a common vocabulary and data dictionary for exchange of farm information will result in farmers and other industry parties entering data only once and having that data readily accessible for populating multiple decision-making systems. As a result, industry and individual farm businesses will be better placed to undertake systems analysis to inform management practice. More accurate and structured interchange of farm data will also support industry breeding objectives and other information system targets.

2.3 Scope and Application

This standard addresses data relating to the Farm entity, including farm description along with enterprise details, metrics, land application, and physical characteristics of land. This Standard relies on the OVERSEER Data Standards along with referencing other Farm Data Standards where applicable:

- Identification of farm feature characteristics, including management unit data.

¹ Wolfert, S and Allen, J. Farming for the future: Towards better information-based decision-making and communication. 2011. A Report for the Centre of Excellence in Farm Business Management pp 27.



- Organisational attributes, including business details, supply number, and personnel details.
- Key Farm metrics as applicable to different enterprise types; including dairy, sheep and beef, and deer enterprises.
- Data relating to blocks of lands, termed as “Management Blocks”.
- Land application attributes, including feed, grazing, irrigation, and fertilizer.
- Climate zones and soil attributes.

2.4 Interpretation

For the purposes of this standard, the word ‘SHALL’ refers to requirements that are essential for compliance with the standard, while the word ‘SHOULD’ refers to practices that are advised or recommended. The term MAY is used to distinguish a permissible or optional practice.

The terms ‘Normative’ and ‘Informative’ have been used in this standard to define the application of the Appendix to which they apply. A ‘Normative’ Appendix is an integral part of a standard while an ‘Informative’ Appendix is only for information and guidance.

3 Identification of Locations and Herds

3.1 Location Identification

Distinct identification of locations is required in animal recording to support both traceability systems and identification of environmental contemporary groups for genetic analysis. A number of identifiers are accepted for property identification in New Zealand:

- Ministry for Primary Industries FarmsOnLine identifier;
- AgriBase² farm_id (based on a coordinate pair in lat/long, NZTM or NZMG coordinates);
- EPCglobal Serialised Global Location Number³ (sGLN) (as used by the EPC Network Architecture). (The NZ Business Number is based on a GS1 GLN through a partnership with GS1 NZ); and
- Regulated Dairy Herd Testing Location identifier using the NZMS1 (1939 to 1975) map grid reference.

² AgriBase, AsureQuality (<https://secure.asurequality.com/capturing-information-technology-across-the-supply-chain/agribase-database-for-new-zealand-rural-properties.cfm>)

³ EPCglobal SGLN and GLN are defined at <http://www.gs1.org/gsmp/kc/epcglobal/cbv>



For historic reasons it will be necessary to support the interchange of data utilising all of these mechanisms. This standard therefore requires that location identifiers SHALL be prefixed with a URN namespace identifier.

This standard therefore requires that:

1. **Location identifiers SHALL be prefixed with a URN (RFC 2141 Uniform Resource Name)⁴ namespace identifier, so that software systems can determine how to interpret each identifier**
2. **Acceptable URN namespaces for use in New Zealand location identifiers SHALL be:**
 - **urn:epc:id:sgln or**
 - **a nzl: registered location namespace.**
3. **It SHALL be the responsibility of systems interacting with legacy software, databases, and devices to interpret interchanged animal identifiers to or from the form used by the legacy system.**
4. **For specific interchanges agreed between two parties, the parties MAY agree to exchange identifiers within a single namespace only, and dispense with the namespace prefix.**

3.2 Spatial Attributes

Features with location attributes can be described by a set of geographic information. **When transferring data about physical farm features, the following Geographic Coordinates, Geographic Shape, and Feature Identifier SHOULD be interchanged with that data. Geographic coordinates and shape are applicable for each location feature so will not be replicated throughout the document.**

Attributes or Fields	Data Types and Notes
Geographic Coordinates	Coordinates representing a location, using latitude and longitude, or a recognised coordinate system identified using the European Petroleum Survey Group (EPSG) parameter registry guide .
Geographic Shape	OGC Web Feature Service URL or string of embedded feature, using a recognised coordinate system identified using the European Petroleum Survey Group (EPSG) parameter registry guide .
Feature Identifier	String: Identifier used to identify the feature
Feature Name	String: Name used to identify the feature
validFrom	ISO Date : Date at which this spatial data object begins

⁴ URN is defined in RFC 2141 (<http://tools.ietf.org/html/rfc2141>)



Attributes or Fields	Data Types and Notes
validThrough	ISO Date: Date at which this spatial data object ends

3.3 Herd and Flock Identification

Distinct identification of flocks or herds as the primary unit of management of a group of animals is used for traceability purposes, access control and membership, and contemporary groups for genetic analysis. There are a number of systems in use within New Zealand, including:

- NAIT numbers;
- AHB herd numbers;
- Dairy Industry Herd Numbers (a combination of a location and a herd number) and Participant codes;
- Beef+Lamb NZ Genetics (formerly SIL) flock code;
- EPCglobal serialised Global Trade Item Number (sGTIN)⁵.

This standard requires that herd identifiers shall be prefixed with a URN namespace identifier.

For specific interchanges agreed between two parties, the parties may agree to exchange identifiers within a single namespace only, and dispense with the namespace prefix.

3.4 Registration of Namespaces

This standard requires the addition of a namespace when exchanging an identifier. While some namespaces have been formally registered (RFC 5134 for EPC and RFC 5141 for ISO), there has not previously been a method for registering other namespaces for use in animal recording.

A registry process for top-level namespaces is administered by IETF (the Internet Engineering Task Force), and the process for using this is defined in RFC 3406⁶.

New Zealand livestock and farm recording system identifiers SHALL be registered at www.farmdatastandards.org.nz, and issued with Namespace identifiers in the urn:nzl:farm: namespace (the NZ namespace was registered in RFC 4350⁷). Each NZ farm recording namespace registered SHALL specify:

1. **The official name or description of the namespace;**

⁵ EPCglobal serialised Global Trade Item Number (sGTIN) are defined at <http://www.gs1.org/gsmp/kc/epcglobal/cbv>.

⁶ See <http://www.ietf.org/rfc/rfc3406.txt>

⁷ NZ Namespace for URN is defined in RFC 4350 (<http://tools.ietf.org/html/rfc4250>)



2. **The organisation responsible for maintaining the namespace and issuing identifiers;**
3. **Contact details for the organisation;**
4. **A regular expression that may be used to determine if identifiers within the namespace are in the correct format (but not necessarily valid issued identifiers).**

4 Periods and Dates in Data Interchange

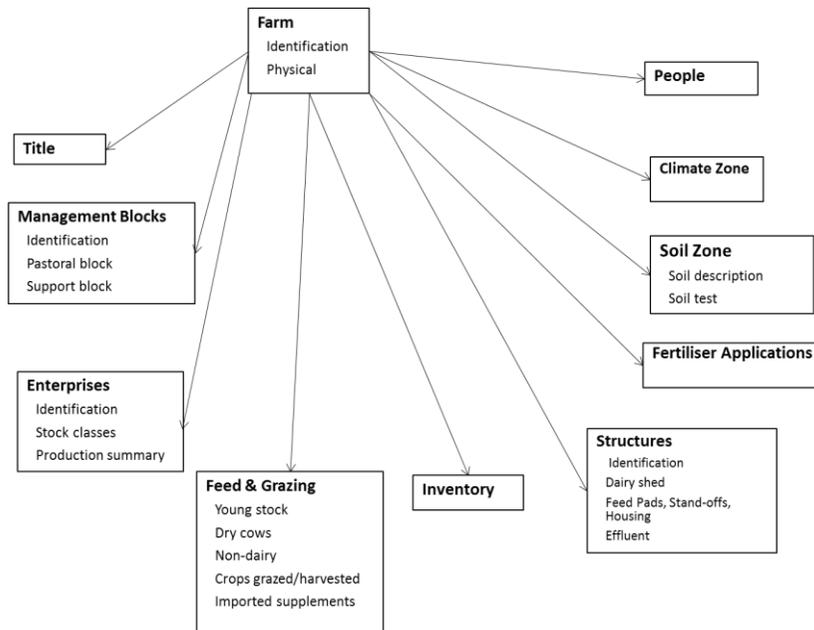
Much of the data shown in section 5 of this document pertain to the state of a farm, or the activities and observations on a farm in a defined period. This may be a future period (for instance, the long term average of a farm used to model coming years of activity), or a distinct past period (for instance, 1 June 2013 to 31 May 2014). Different benchmarking systems may use different analysis periods (June-May for dairy, July-June for sheep and beef, for instance), and some farming businesses may use different periods to fit the financial reporting requirements of their owners.

This standard specifies:

1. **That the Opening Date and Closing Date or the Balance Period for which data is relevant SHALL be interchanged with that data. This SHOULD utilise ISO 8601 dates and durations.**
2. **That data relating to specific activities or observations SHALL be accompanied by an Observation Date (see the Animal Data Standard for details).**

5 Farm Data Entities

The data dictionary defines the following entities:



Areas are to be specified in m² for compliance with international standards⁸. These measurements can be converted, for example to hectares and does not affect what end users will see.

⁸ INSPIRE Feature Concept Register - <http://inspire.ec.europa.eu/featureconcept>



5.1 Farm Entity

The following table defines items that apply to the overall farm. The farm system overall description is equivalent to a Holding as defined in the Farm Features and Attributes Data Standard. Note that sections which can be linked to spatial attributes will be headed as a feature, conforming to the Farm Features & Attributes Standard, whereas non-spatial items will be headed as Category.

Feature	Attributes	Data Types and Notes
Farm identification and location	Country	ISO 3166 country code or name
	Physical Address	Physical Address specified using http://schema.org/postalAddress or as a formatted address string in the local format of the relevant country.
	Statistical Region	URN String: Defined in Section 3.4
	Territorial Local Authority	String: The primary rating authority of the farm
	Regional Council	String: The primary resource management authority of the farm
	Catchment	String: A name of a catchment
	Total Area	Float: Total farm area expressed in m ² (SI unit) or hectares (ha, accepted non-SI unit). Implementations must clearly specify which unit is used, and ensure consistent use. For spatial data interchange m ² should be used. ⁹
	Cultivable Area	Float: Area of the farm for cultivation (cropping) purposes. Valid units for expressing area are m ² (SI unit) or hectares (ha, accepted non-SI unit). Implementations must clearly specify which unit is used, and ensure consistent use. For spatial data interchange m ² should be used. ⁹
Farm system overall description (This is synonymous with the Holding feature described in Farm Features & Attributes)	Grazeable Area	Float: Area of the farm for grazing purposes. Valid units for expressing area are m ² (SI unit) or hectares (ha, accepted non-SI unit). Implementations must clearly specify which unit is used, and ensure consistent use. For spatial data interchange m ² should be used. ⁹

⁹ See section 6.1.3 at <https://inspire.ec.europa.eu/id/document/tg/au>



Feature	Attributes	Data Types and Notes
	Effective Area	Float: Effective area of the farm taking into account slope. Valid units for expressing area are m ² (SI unit) or hectares (ha, accepted non-SI unit). Implementations must clearly specify which unit is used, and ensure consistent use. For spatial data interchange m ² should be used. ¹⁰
	Principal Farm System	Enumeration: Australian and New Zealand Standard Industrial Classification (ANZSIC) class ¹¹ , Division A (Agriculture, Forestry and Fishing), Subdivision 01 (Agriculture). Use of the International Standard Industrial Classification ¹² ISIC V4 Code may be appropriate for organisations considering international compatibility.
	Primary activity	Enumeration: from list of ANZSIC Primary Activities for the Principal Farm System
	Farm System Sub-type	String: DairyNZ farm system number, B+LNZ farm class
	Irrigation used	Enumeration: Not irrigated, < 30% irrigated, > 30% irrigated
	Distance to furthest paddock	Float: distance from dairy shed to furthest paddock (kilometres)
	Proportion at different height	Integer: % farm at a different height/altitude to farm dairy
	Average height difference	Integer: Average difference in height between farm dairy and hill paddocks (metres)
	Organic farm	Boolean: No, Yes
	Title identifier	String: Land registration reference (Certificate of Title Number)
	Legal Description	String
	Title area	Float: Title area expressed in m ² (SI unit) or hectares (ha, accepted non-SI unit). Implementations must clearly specify which unit is used, and ensure consistent use. For spatial data interchange m ² should be used. ^{Error! Bookmark not defined.} (titles are often

¹⁰ See section 6.1.3 at <https://inspire.ec.europa.eu/id/document/tg/au>

¹¹ See the ANZSIC classification at [http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1292.02006%20\(Revision%202.0\)?OpenDocument](http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1292.02006%20(Revision%202.0)?OpenDocument)

¹² See the ISIC registry at <http://unstats.un.org/unsd/cr/registry/isic-4.asp>



Feature	Attributes	Data Types and Notes
Cadastral Parcel (See Farm Features and Attributes Section 3.1 for full definition)		specified using square metres – divide by 10,000 to produce hectares). <i>Equivalent to a Cadastral Parcel in the Farm Features and Attributes Data Standard</i>
	Title purchase date	ISO Date
	Rateable capital value	Currency
	Date of revaluation	ISO Date
	Revaluation district	String: Territorial Local Authority in which this title was revalued.
	Area sold during year	Float: Area sold expressed in m ² (SI unit) or hectares (ha, accepted non-SI unit). Implementations must clearly specify which unit is used, and ensure consistent use. For spatial data interchange m ² should be used. ¹³
	Sale date	ISO Date
	Opening market value	Currency: estimated market value at start of year
	Closing market value	Currency: estimated market value at end of year
	Valuation source	String

5.2 Person and Organisations

The following table defines the organisations (companies, trusts, partnerships) associated with the farm. Many of the items in this table are based upon definitions at <http://schema.org>, which is an output of the W3C Semantic Web group, and is used by Google and Microsoft. Alternatives schemas can be found in the work of OASIS/UBL (www.oasis-open.org and <http://ubl.xml.org>) and UN/EDIFACT (www.unece.org/cefact/edifact).

A Full list of person attributes can be found in the Health and Safety Data Standard. INFORMATIVE examples of person attributes can also be found in the Health and Safety Standard, referencing the schema.org/Employee Role attributes.

¹³ See section 6.1.3 at <https://inspire.ec.europa.eu/id/document/tg/au>



Category	Attributes	Data Types and Notes
Organisation Identification	Name	String: Name of the Organisation
	Global Location Number	EPC Global number for a business – in New Zealand, this is the NZ Business Number. See Schema.org for definition.
	Email	String: An email address described in RFC 5322 and RFC 5321 ¹⁴ .
	Website	URL String

5.3 Livestock Enterprises (Herds)

The following table defines items in entities that apply to livestock **enterprises**. Enterprises may be further defined by a **Stock Reconciliation** for the entire period being evaluated, or a monthly stock reconciliation for each month of the period being evaluated.

Category	Attributes	Data Types and Notes
Enterprise Identification and Attributes ¹⁵ (all enterprises)	Herd Name	String: Name of the enterprise within the farm
	Identifier(s)	One or more herd or flock identifiers using URN notation. See section 3.3.
	Species Binomial Name	String: Combines Genus and Species; “Bos taurus” - cattle, “Ovis aries” - sheep, “Cervus elaphus” - red deer, “Cervus Canadensis” - elk wapiti, “Capra aegagrus” - goats
	Species Simple Name	Enumeration: Describes the species in common terms; Cattle, Deer, Goats, Sheep
	Use	Enumeration: Describes the purpose of the enterprise the animals belong to: Dairy, Stud, Grazing, Breeding, Finishing, Meat, Fibre, Velvet

¹⁴ See <http://tools.ietf.org/html/rfc5322> and <http://tools.ietf.org/html/rfc5321>

¹⁵ See the definition of an Enterprise in the Stock Reconciliation Data Standard at www.farmdatastandards.org.nz



Category	Attributes	Data Types and Notes
	Breed Assessed	String: There is no internationally recognised master list of livestock breeds. ICAR mandates a list of codes for bovine semen straws ¹⁶ , and Oklahoma State University publishes a useful list of livestock breeds ¹⁷ . The UN Food and Agriculture Organisation (FAO) maintains a database of all domestic livestock breeds ¹⁸ . A list of breeds suitable for use with New Zealand farmed livestock will be maintained at www.farmdatastandards.org.nz .
Organisation Supply Details (repeated as necessary for all enterprises)	Customer Name	Name of Dairy or Meat Processor
	Supply Type	Enumeration: Milk, Meat, Fibre, Other
	Supply Number(s)	Integer: One or more company-specific supply numbers as defined by isicV4 , e.g. meat co, 105 = dairy co, 131 = textile processor
Dairy Herd additional details	Dairy Business Model	Enumeration: Owner operator, 50-50 sharemilker, Variable order
	Calving season	Enumeration: Spring, Autumn, Spring and Autumn, Other
	Peak Cows Milked	Integer
	Herd Average Live Weight	Integer: kg
	Herd Breeding Worth	Currency/%Reliability: the average Breeding Worth of the animals in the herd. Measures the ability to breed profitable replacements. Expresses the extra net farm income per year (per 5 tonnes of dry matter fed) relative to the current genetic base that will be passed on to progeny of the cows in the herd. Reliability measures how much information has contributed to the trait evaluation for the animals.
	Herd Production Worth	Currency/%Reliability: the average Production Worth of the animals in the herd. Measures the lifetime productive ability. Expresses the extra net farm income per year (per 5 tonnes of dry matter fed) relative to the current genetic base that will be

¹⁶ ICAR Guidelines 2012, Section 8 Annex 1, Breed Codes on Bovine Semen Straws for International Trade assigned by ICAR Sub-committee Interbull, International Committee for Animal Recording.

¹⁷ Oklahoma State University Livestock Breeds, <http://www.ansi.okstate.edu/breeds/>.

¹⁸ FAO Domestic Animal Diversity Information System, <http://dad.fao.org/>



Category	Attributes	Data Types and Notes
		produced by cows in this herd during their lifetime. Reliability measures how much information has contributed to the trait evaluation for the animals.
	Herd Lactation Worth	Currency/%Reliability: the average Lactation Worth of the animals in the herd. Measures the ability to convert feed into profit in the current season. Expresses the extra net farm income (per 5 tonnes of dry matter fed) that will be produced by this herd, relative to the current genetic base for the current season. Reliability measures how much information has contributed to the trait evaluation for the animals.
Sheep, beef, or deer additional details	Total RSU	Integer: Total revised stock units in this enterprise (having been calculated using the feed requirements of the animal numbers specified for the enterprise).
	Breed Class	Enumeration: Describes the purpose for the identified species; Dual Purpose, Fine Wool, Meat/Terminal, British, European
	Average Mature Weight	Float: weight of mature breeding stock (cows, hinds, ewes) in kg.

5.4 Derived Metrics

Models and benchmarking applications frequently utilise enterprise or farm “attributes” that are in fact summarised or derived from actual observations of animals, mobs, or management actions. These vary by enterprise, so the table below is broken into sections by enterprise type and the sort of summary information concerned (for instance, reproduction, milk or meat production).

Category	Attributes	Data Types and Notes
Dairy Reproduction	Start calving	ISO Date
	Number of cows calved	Integer
	Date 50% calved	ISO Date: date when 50% of cows calved
	Number calves reared	Integer
	Planned start of calving	ISO Date
	Planned start of mating	ISO Date



Category	Attributes	Data Types and Notes
	Date AB finished	ISO Date
	Date bull withdrawn	ISO Date
	Cows confirmed empty	Integer
	Number cows calved at 21 days	Integer: number cows calved 3 weeks from planned start of calving
	Number cows calved at 42 days	Integer: number cows calved 6 weeks from planned start of calving
	Number cows calved at 63 days	Integer: number cows calved 9 weeks from planned start of calving
	Number cows induced	Integer
	Number cows submitted in 21 days from PSM	Integer: number of cows submitted in 21 days from Planned Start of Mating
	Number cows treated for anoestrus	Integer
	6 week in-calf rate	Integer: % of herd in calf at 6 weeks
Sheep, Beef, or Deer Reproduction	Planned start of birthing	ISO Date; Planned start of lambing or calving
	Start of birthing	ISO Date: Actual start of lambing or calving
	Mean Birthing Date	ISO Date: mean lambing or calving date
	Mean Weaning Date	ISO Date
	Weaning weight	Float: weight in kilograms
	Condition Score at Mating	Float: Average Condition Score (see Condition Score in the Animal Data Standard ¹⁹)
	Liveweight at Mating	Float: Average Liveweight
	Hogget Liveweight at Mating	Float: Average Liveweight of Hoggets mated
	Number Mated	Integer

¹⁹ The Animal Data Standard can be found at www.farmdatastandards.org.nz



Category	Attributes	Data Types and Notes
	Number Hoggets Mated	Integer
	Number Pregnant	Integer
	Number Hoggets Pregnant	Integer
	Scanning Percentage	Integer: %
	Hogget Scanning Percentage	Integer: %
	Birthing Percentage	Integer: % (calculated from number of live progeny / number of dams at mating)
	Hogget Lambing Percentage	Integer: %
	Weaning %	Integer: % (number of progeny weaned / number of dams at mating)
	Number born	Integer
	Number weaned	Integer
Dairy Mortality and Replacements	Number calves reared	Integer
	Replacement Grazing	Enumeration: Off-farm from weaning, Off-farm from 9 months, Always on-farm
	Replacement Rate	Integer: % annual replacement rate
	Number cows start of season	Integer: number of cows at start of season
	Number R2 heifers start of season	Integer
	Number R2 heifers end season	Integer: Number of R2 heifers at start of season and still in herd at end of season
	Number milking 1 Dec	Integer: Number of cows and R2 heifers milking at 1 Dec
	Number replacement calves reared	Integer
Sheep, Beef, or Deer Mortality and Replacements	Progeny Mortality	Float: %
	Replacement Rate	Integer: % annual replacement rate in ewe flock or breeding cows
Dairy Mastitis and Lameness	Cows lame	Integer: number of cases of cows lame



Category	Attributes	Data Types and Notes
	Cows treated mastitis	Integer: number cows treated for mastitis in first 6 weeks from Planned Start of Calving
Milk Production	Once-a-day milking	Enumeration: Never, Only at drying-off, Half of season, All season
	Winter milk	Boolean: Yes, No
	Drying-off date	ISO Date
	Days in milk per cow	Integer: average days in milk for herd
	Total milk solids	Integer: kg MS
	Fat	Integer: Total fat, kg
	Protein	Integer: Total protein, kg
	Average bulk somatic cell count	Integer: average bulk cell count for season
	Milk Volume	Integer: Total milk volume, litres
	Milk fed to calves	Integer: Total milk fed to calves, litres
	Discarded milk solids	Integer: kg
	Peak daily milk solids	Integer: Average daily milk solids per cow for 10 days at peak, kg
	End of peak	ISO Date: date of last day of 10 day peak
	Milk solids to 31 Dec	Integer: Milk solids to 31 Dec sold to factory, kg
Daily milk solids end Dec	Integer: Average daily milk solids per cow for last 10 days in Dec, kg	
Carcass Production	Mean slaughter date	ISO Date
	Mean slaughter age	Integer: days
	Mean live weight at sale	Float: kg
	Mean carcass weight	Float: kg
	Mean Dressing out %	Integer: %
Wool and Velvet Production	Velvet harvested	Integer: kg

Category	Attributes	Data Types and Notes
	Wool shorn	Integer: kg

5.5 Management Blocks

The spatial blocks that a farmer uses to manage the land may be different to those defined by land titles, soil, or climate zones. In New Zealand, we use the term “Management Block” to define blocks that are managed differently. Typically, these differ in irrigation or effluent application, fertilisers applied, and types and numbers of stock grazed. The following table defines items in entities that apply to each **management block**. These are also known as Sites by INSPIRE, and this is a synonymous term used in the Farm Features and Attributes Data Standard.

Feature	Attributes	Data Types and Notes
Management block identification and location information	Runoff	Boolean: True if runoff block
	Block Total Area	Float: Block total area expressed in m ² (SI unit) or hectares (ha, accepted non-SI unit). Implementations must clearly specify which unit is used, and ensure consistent use. For spatial data interchange m ² should be used. ²⁰
	Block Effective Area	Float: Effective area of the farm taking into account slope. Valid units for expressing area in m ² (SI unit) or hectares (ha, accepted non-SI unit). Implementations must clearly specify which unit is used, and ensure consistent use. For spatial data interchange m ² should be used. ²⁰
	Block Grazeable Area	Float: Area of the farm for grazing purposes. Valid units for expressing area are m ² (SI unit) or hectares (ha, accepted non-SI unit). Implementations must clearly specify which unit is used, and ensure consistent use. For spatial data interchange m ² should be used. ²⁰
	Block Cultivable Area	Float: Area of the farm for cultivation (cropping) purposes. Valid units for expressing area are m ² (SI unit) or hectares (ha, accepted non-SI unit). Implementations must clearly specify which unit is used, and ensure consistent use. For spatial data interchange m ² should be used. ²⁰

²⁰ See section 6.1.3 at <https://inspire.ec.europa.eu/id/document/tg/au>



Feature	Attributes	Data Types and Notes
	Block ownership	Enumeration: Owned, Leased
	Topography	Enumeration: Flat, Rolling, Easy hill, Steep hill (this enumeration is defined by Overseer)
	Distance from coast	Integer: kilometres
	Pasture type	Enumeration: Ryegrass/white clover, Browntop, Unimproved/tussock grasslands, Summer C4 (paspalum) pastures, C4 (kikuyu) pastures, Lucerne, Grass only (enumeration defined by Overseer)
	Pasture Species	Array: Plant species names as defined in Feedipedia forage plants
	Clover level	Annual average clover content (as a proportion of pasture dry matter) where fertiliser N inputs are not applied. Enumeration defined by Overseer. Enumeration: Very low, Low, Medium, High, Very high
	Pasture utilisation	Integer: %
Pastoral Block details	Average pasture N concentration	Integer: %
	Support block owned	Enumeration: Owned, Leased
	Support block address	String
	Stock type on support block	Enumeration: Dairy Cows [Cows], Dairy Replacements [Young Stock], Pigs, Sheep, Beef Cattle [Cattle], Deer
Support block details	Number of stock	Integer
	Date stock come	ISO Date
	Date stock leave	ISO Date
	Area hay/silage harvested	Integer: Area expressed in m ² (SI unit) or hectares (ha, accepted non-SI unit). Implementations must clearly specify which unit is used, and ensure consistent use. For spatial data interchange m ² should be used. ²¹

²¹ See section 6.1.3 at <https://inspire.ec.europa.eu/id/document/tg/au>



Feature	Attributes	Data Types and Notes
	Destination hay/silage	Enumeration: Fed on support block, Milking area, Elsewhere (defined by Overseer)

5.6 Feed & Grazing

The following table defines items in entities that summarise feed and grazing. See the [Farm Features and Attributes Data Standard](#) Appendix C.2 for a list of plot activity values for crops and grazing.

Category	Attributes	Data Types and Notes
Grazing for young Dairy Replacements on the milking area	Stock class	Enumeration: <i>see Stock Reconciliation Data Standard</i>
	Number animals	Integer
	Age at start of grazing	Float: mean age at start of grazing, months
	Total months grazed	Integer: Total months grazed on effective area
Grazing for dry cows	Number cows	Integer: number of cows grazed off from 1st June including in-calf heifers
	Days grazed away	Integer: Total days grazed away from milking area
	Date left milking area	ISO Date
	Grazed away location	Enumeration: Owned run-off, Leased run-off, Grazier (from Overseer)
	Feed offered	Integer: Grass and supplement offered, kgDM/cow/day
	Digestibility	Integer: %
	Metabolisable energy	Float: average metabolisable energy of all feeds including supplements, MJME/kgDM
	Utilisation %	Integer: Utilisation of feed offered, %
Grazing and feed activities for sheep, beef cattle, deer, and goats	Species Simple Name	Enumeration: Cattle, Deer, Goats, Sheep <i>see Animal Data Standard</i>
	Stock class	Enumeration: <i>see Stock Reconciliation Data Standard</i>
	Number of Stock	Integer:
	Cost of Feed	Integer: \$



	Feed eaten	Integer: kg DM
	Feed grown	Integer: Tonnes
	Feed sold	Integer: Tonnes
	Date on-farm	ISO Date
	Date off-farm	ISO Date
	Age	Integer: Age of animals at arrival, months
Crops grazed and feed harvested	Area hay & silage	Float: area harvested for hay and silage, expressed in m ² (SI unit) or hectares (ha, accepted non-SI unit). Implementations must clearly specify which unit is used, and ensure consistent use . For spatial data interchange m ² should be used. ²²
	Crop fate	Enumeration: Grazed in paddock, Cut and carry, Exported off-farm, Carried over to next season
	Area harvested crop	Float: area of harvested crop, including cereal and maize, expressed in m ² (SI unit) or hectares (ha, accepted non-SI unit). Implementations must clearly specify which unit is used, and ensure consistent use . For spatial data interchange m ² should be used. ²²
	Feed exported	Float: feed grown on milking platform and exported, t DM
	Area summer crop grazed	Float: Area of summer crop grazed on effective area, expressed in m ² (SI unit) or hectares (ha, accepted non-SI unit). Implementations must clearly specify which unit is used, and ensure consistent use . For spatial data interchange m ² should be used. ²²
	Area winter crop grazed	Float: Area of winter crop grazed on effective area, expressed in m ² (SI unit) or hectares (ha, accepted non-SI unit). Implementations must clearly specify which unit is used, and ensure consistent use . For spatial data interchange m ² should be used. ²²
	Type of feed grown	Enumeration:
	Destination of feed:	Enumeration: non-effluent block, effluent block, feed pad, etc
	Method of feeding	

²² See section 6.1.3 at <https://inspire.ec.europa.eu/id/document/tg/au>



	Cropping activity month	Enumeration: month when activity occurred
	Cropping activity	Enumeration: minimum till, conventional cultivation, direct drilled, sowing, harvesting, grazing (list from Overseer)
	Month first cultivated	ISO 8601 Date: Year/Month
	Effluent applied	Boolean:
	Irrigation applied:	Boolean:
	Month re-sown	Enumeration
	Hours grazed per day	Integer: hrs/day
	Month first grazed	Enumeration
	Month last grazed	Enumeration
	Cut and carry destination	String: Location fed if cut and carry
Imported supplements fed out on effective area during season	Type of feed	Enumeration: List of feed types from Animal Data Standards B.8.
	Wet matter	Float: tonnes
	DM %	Integer: %
	Dry matter	Float: tonnes
	Metabolisable energy	Float: average metabolisable energy, MJME/kgDM
	Utilisation %	Integer: Utilisation of feed offered, %
	Destination of feed	Enumeration: non-effluent block, effluent block, feed pad
	Method of feeding	String:

5.7 Irrigation Practices and Systems

The following table defines items in entities that summarise irrigation. See the [Irrigation and Effluent Data Standard](#) for the full Data Dictionary on irrigation and effluent.¹⁶



Category	Attributes	Data Types and Notes
Irrigation on a block or farm	Average irrigation interval	Integer: time taken for irrigator to return to its starting point or days taken to irrigate farm, days
	Method of irrigation:	Enumeration: <i>see Irrigation & Effluent Standard, Appendix 2</i> ²³
	Area irrigated	Integer: Area expressed in m ² (SI unit) or hectares (ha, accepted non-SI unit). Implementations must clearly specify which unit is used, and ensure consistent use. For spatial data interchange m ² should be used. ²⁴
	Days irrigated	Integer: number of days of season irrigated
	Total metered water	Integer: m ³
	Instantaneous flow rate	Integer: l/sec/ha
	Flow rate	Integer: flow rate for bore/borderdyke, l/sec
	Crop irrigated	Enumeration: <i>see Type of Feed</i>
	Months irrigated	Enumeration:

5.8 Farm Structures

The following table defines attributes applying to common farm structures, and for which there is an existing data interchange purpose (eg DairyBase benchmarking or Overseer models). See the [Farm Features and Attributes Data Standard](#) Appendix C for a list of attributes relating to AgriBuildings.

Feature	Attributes	Data Types and Notes
Identification of each structure	Structure type	Enumeration: Dairy shed, Feed pad, Stand-off or loafing pad, Uncovered wintering pad, Covered wintering pad, Yards, Woolshed, Loading facility, Equipment shed, House, Calf rearing shed
	Structure stock type	Enumeration: Dairy cow, Dairy cow replacements, Dairy grazing, Beef, Deer, Dairy goats (enumeration from Overseer)

²³ The Irrigation and Effluent Data Standard can be found at www.farmdatastandards.org.nz

²⁴ See section 6.1.3 at <https://inspire.ec.europa.eu/id/document/tg/au>



Feature	Attributes	Data Types and Notes
Details of dairy shed	Dairy shed type	Enumeration: Herringbone, Rotary, Other
	Sets of cups	Integer
Description and usage of feed pads, stand-offs, and housing	Structure Name	String
	No. days facility used	Integer: No. days facility used by month
	No. cows using facility	Integer: number of cows using facility each month
	Daily usage	Integer: Hours facility user per day each month
	Surface of facility	Enumeration: Lime or rock mix, Sawdust or peelings, Concrete, Other
	Limited grazing	Boolean: Is limited grazing used (3-6 hours per day)?
	Effluent removal	Enumeration: Scraped, Hosed
Details of Effluent System	Effluent disposal	Enumeration: Irrigated to pasture, Discharge to water, Both
	Effluent spread location	Enumeration: effluent block, non-effluent block, exported off-farm
	Effluent spraying method	Enumeration: travelling irrigator, K-line system
	Area land effluent applied	Integer: Area expressed in m ² (SI unit) or hectares (ha, accepted non-SI unit). Implementations must clearly specify which unit is used, and ensure consistent use. For spatial data interchange m ² should be used. ²⁵
	Blocks solid applied	String: blocks where the solid effluent is applied
	Number days storage	Integer
	Decision to irrigate	String: how is decision made?
	Facility covered	Boolean
	Liquid effluent collected	Boolean
	Stored solids covered	Boolean

²⁵ See section 6.1.3 at <https://inspire.ec.europa.eu/id/document/tg/au>



Feature	Attributes	Data Types and Notes
	Period solids stored	Integer: time solids are stored, days
	Effluent storage pond	Boolean
	Solid effluent separated before pond	Boolean
	Frequency pond solids removed	Float: years
	Solid disposal location	Enumeration: effluent block, non-effluent block, exported off-farm
	Depth of application	Integer: average depth of application, mm; by month, total

5.9 Inventory items for feeds and crops

Refer to the Supplementary Feed Observations in the Grazing and Feed Data Standard for **Inventory** entities.

5.10 Climate Zones

The following table defines attributes of the **climate zone** for the farm. **For entering the name, coordinates, and shape of the climate zone, use the spatial attributes defined in [Section 3.2](#).** For Climate Data, see the Climatic and Weather Observations in the Irrigation and Effluent Data Standard.

5.11 Soil Body

The following table defines attributes of the soil zone for the farm. For entering the name, coordinates, and shape of the soil body, use the spatial attributes defined in [Section 3.2](#). See the [Farm Features and Attributes Data Standard](#) for a definition of soil body and references to the INSPIRE and ANZSoilML standards.

Category	Attributes	Data Types and Notes
Soil description and profile	Soil group	Enumeration: Sedimentary, Volcanic, Pumice, Podzol, Sand, Peat, Recent/YGE/BGE
	Soil order	Enumeration: Allophanic, Brown, Gley, Granular, Melanic, Organic, Oxidic, Pallic, Podzol, Pumice, Recent, Semiarid, Ultic
	Top soil texture	Enumeration: <i>see Irrigation & Effluent Standard, Appendix B.8</i>
	Top soil stony	Boolean



Category	Attributes	Data Types and Notes
	Top soil compacted	Boolean
	Maximum rooting depth	Integer: cm
	Depth to impeded drainage layer	Integer: cm
	Non-standard layer	Enumeration: Sandy, Stony, Stony matrix
	Drainage class	Enumeration: Well, Moderately well, Imperfect, Poor, Very poor
	Hydrophobic condition	Enumeration: Rain always soaks in, Generally soaks in, Mostly runs off
	Susceptibility to pugging	Enumeration: Rare, Occasional, Winter, Winter or rain
	Drainage method	Enumeration: None, Mole/tile system, Other
Representative Soil Test Results for effective area	pH	Float
	Olsen P	Integer
	Quick Test Mg	Integer
	Quick Test Potassium	Integer
	Soil test sulphate	Integer

5.12 Fertiliser Applications

Refer to the in the Land Application Data Standard for **Fertiliser Applications** entities.

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