Bioeconomy Science Institute™

NZ Land Use & Management (NZLUM) — Pilot Map Review

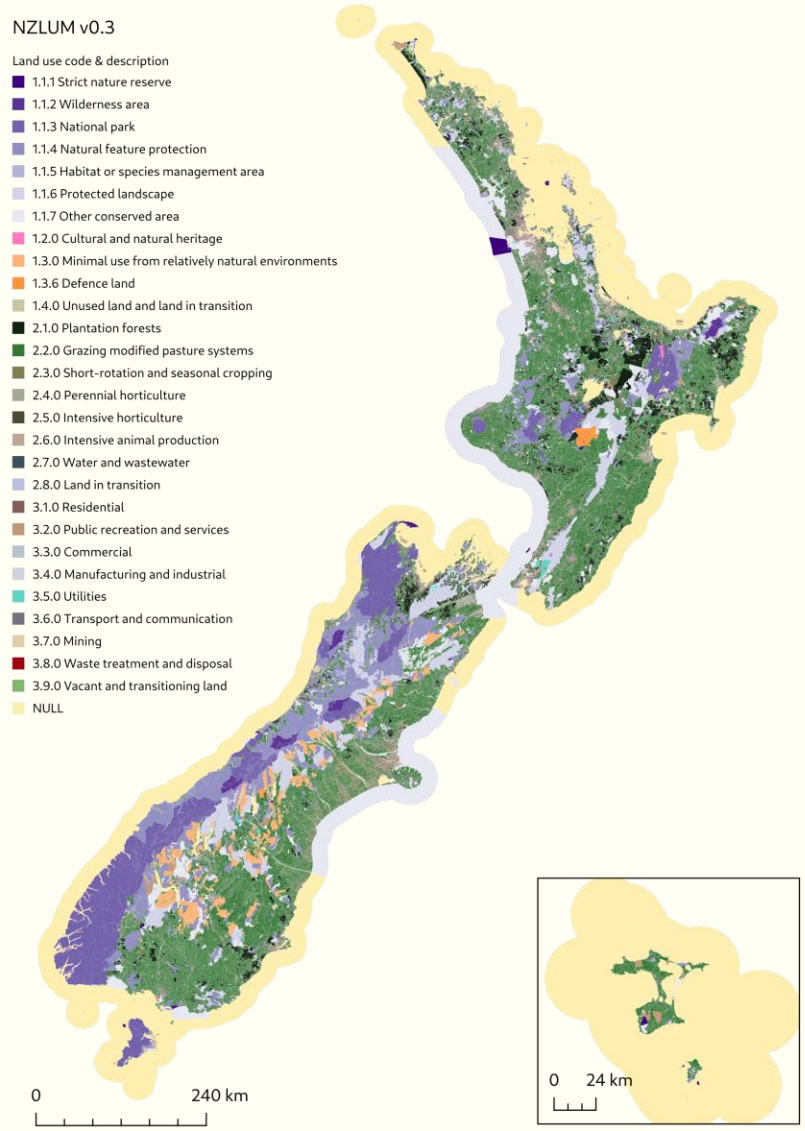
Richard Law

Geospatial Information Systems (GIS) Special Interest Group (SIG)

4 December 2025

Overview

1. Pilot national land use map available to experiment
   - https://lris.scinfo.org.nz→**"NZLUM v0.3 2025"**
   - CC-BY 4.0
   - Protected Areas (PAN-NZ) data available separately (CC-BY)
2. Feedback for the classification system?
3. Do you have more data?
4. Future work for NZLUM v1.0
   - Temporality
   - Revised classification
   - Additional data
   - Māori LU classification



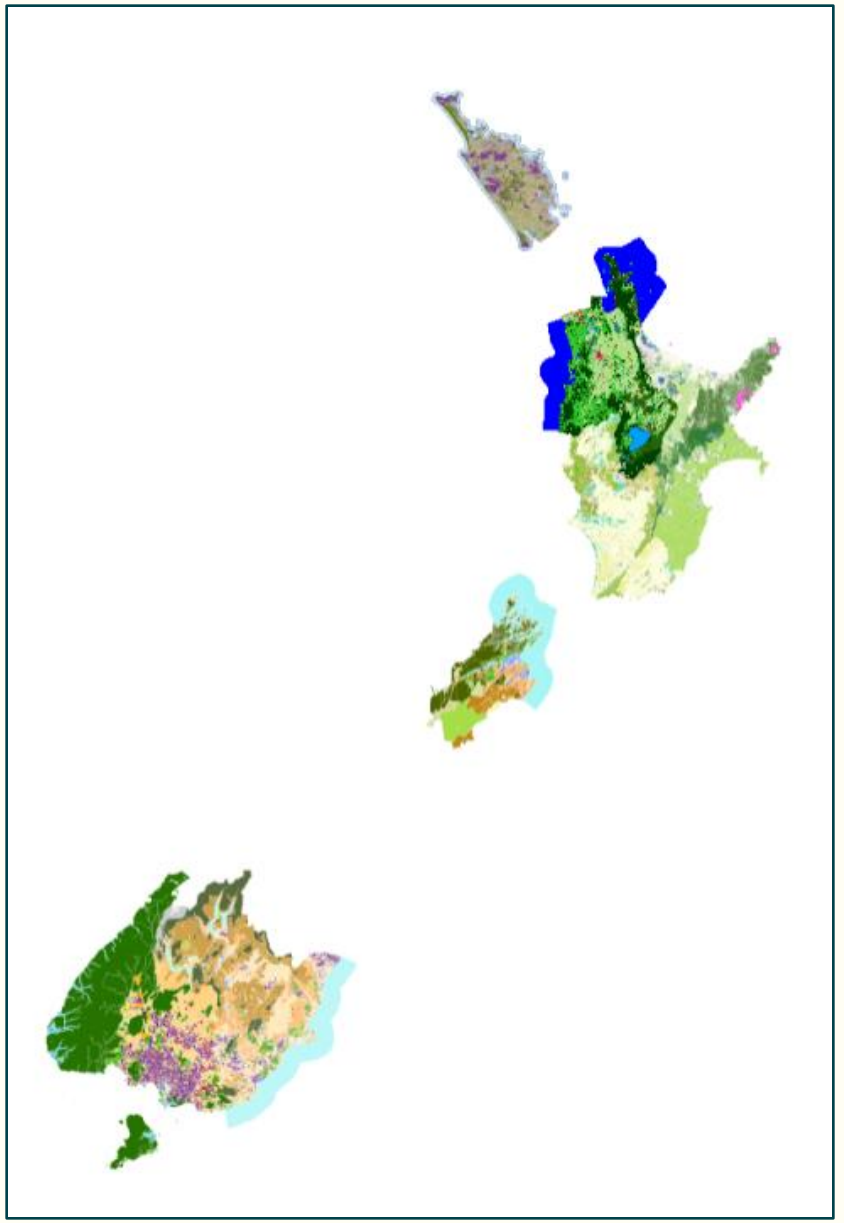
Problem

- "The literature reviewed indicates land use information serves an important role in enabling central and local government organisations to meet their regulatory obligations however **there is still no consistent definition of, or approach to land use mapping across New Zealand**, but rather land use mapping approaches continue to vary, reflecting the divergent purposes for which mapping is being undertaken."
- "Research consistently supports the need for greater sharing of land use information, however **practical advances to address these issues have proven difficult** to achieve."
- "There are a variety of **data sets that could be combined to develop a land use database**, however, at present, **access to this information is often difficult**, costly to access, and it currently sits in a variety of formats that may not be compatible."

Boffa Miskell Limited 2023. ***Understanding Land Use Information Requirements****: Ministry for the Environment. Report prepared by Boffa Miskell Limited for Ministry for the Environment: Science Investment*

Regional Land Use Maps

- Ad hoc development
- Made for different purposes
- Inconsistent:
  - Schema
  - Scale
  - Data type
  - Mapping practice
  - Validation
  - Acceptability criteria
  - Visualisation
  - License

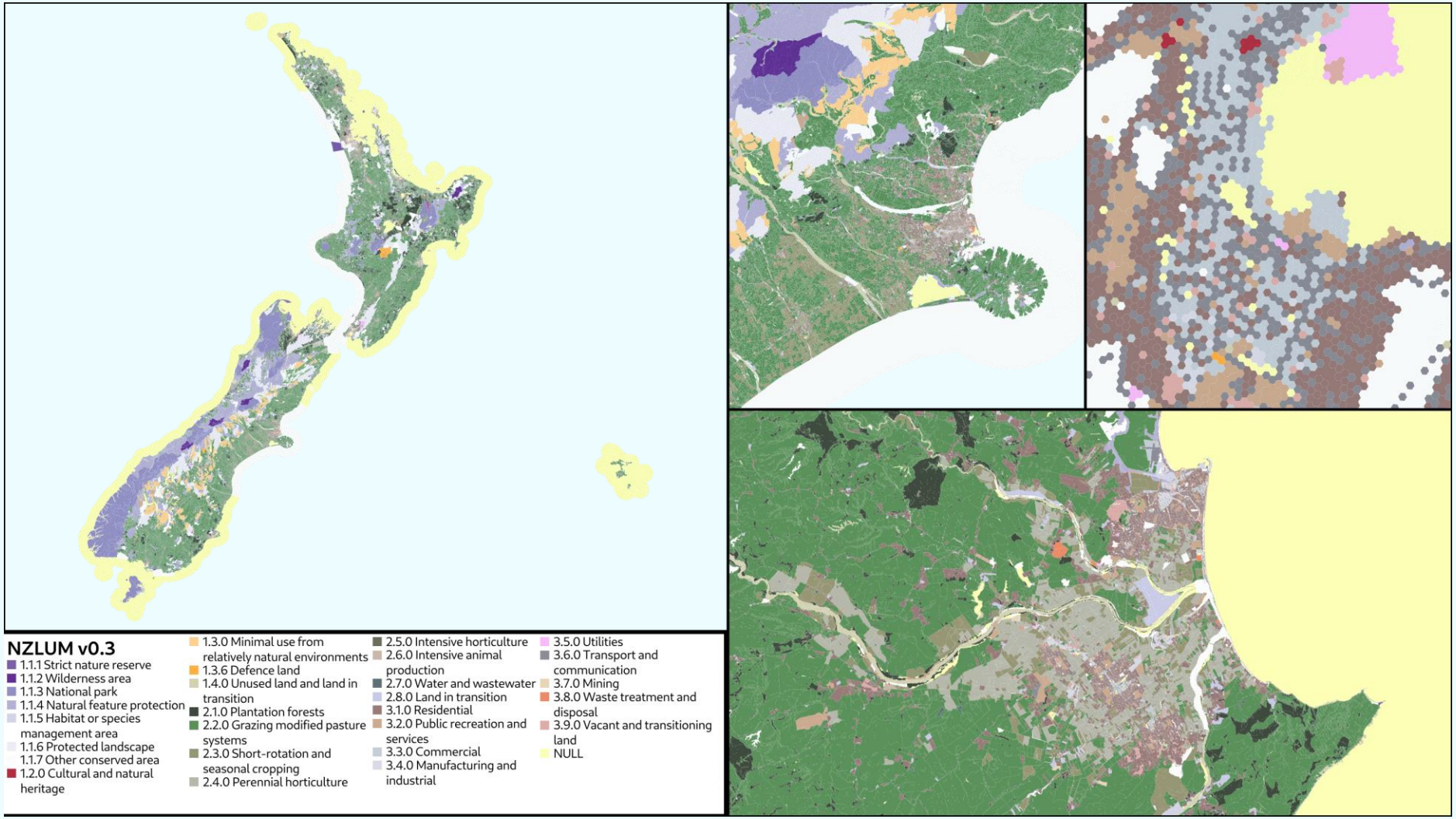


Problem

- Respondents were asked whether a nationally consistent resource of land use information would benefit their organisation. Respondents noted that a national resource could:
  - Provide less background work and analysis required at a regional level
  - Provider greater certainty and comparability nationally
  - Ensure regular updates
  - Allow consistent monitoring
  - Allow organisations to track the change in land use patterns for a range of environmental reporting requirements
  - Provide another service offering for public users
  - Promote new opportunities to generate data and analyses
- When asked about the potential problems with the creation of a national dataset of land use classification, respondents stated:
  - Whether funding would be sufficient to ensure a regular and meaningful update frequency
  - Will require other data sources which are often restricted (rather than just satellite imagery)
  - Different uses for land use information require different groupings/breakdowns/detail of specific use classes
  - Where the dataset could be reliable

Boffa Miskell Limited 2023. ***Understanding Land Use Information Requirements****: Ministry for the Environment. Report prepared by Boffa Miskell Limited for Ministry for the Environment: Science Investment*

Pilot solution: NZLUM v0.3 2025 — Map



https://lris.scinfo.org.nz/layer/122805

NZLUM v0.3 — Taxonomy (implemented)

1	Conservation and minimal use of natural environments
1.1.0	**Nature Conservation**
1.1.1	Strict nature reserve
1.1.2	Wilderness area
1.1.3	National park
1.1.4	Natural feature protection
1.1.5	Habitat or species management area
1.1.6	Protected landscape
1.1.7	Other conserved area
1.2.0	**Cultural and natural heritage**
1.3.0	**Minimal use from relatively natural environments**
1.3.6	Defence land
1.4.0	**Unused land and land in transition**

2	Production agriculture and plantations
2.1.0	**Plantation forests**
2.2.0	**Grazing modified pasture systems**
2.3.0	**Short-rotation and seasonal cropping**
2.4.0	**Perennial horticulture**
2.5.0	**Intensive horticulture**
2.6.0	**Intensive animal production**
2.7.0	**Water and wastewater**
2.8.0	**Land in transition**

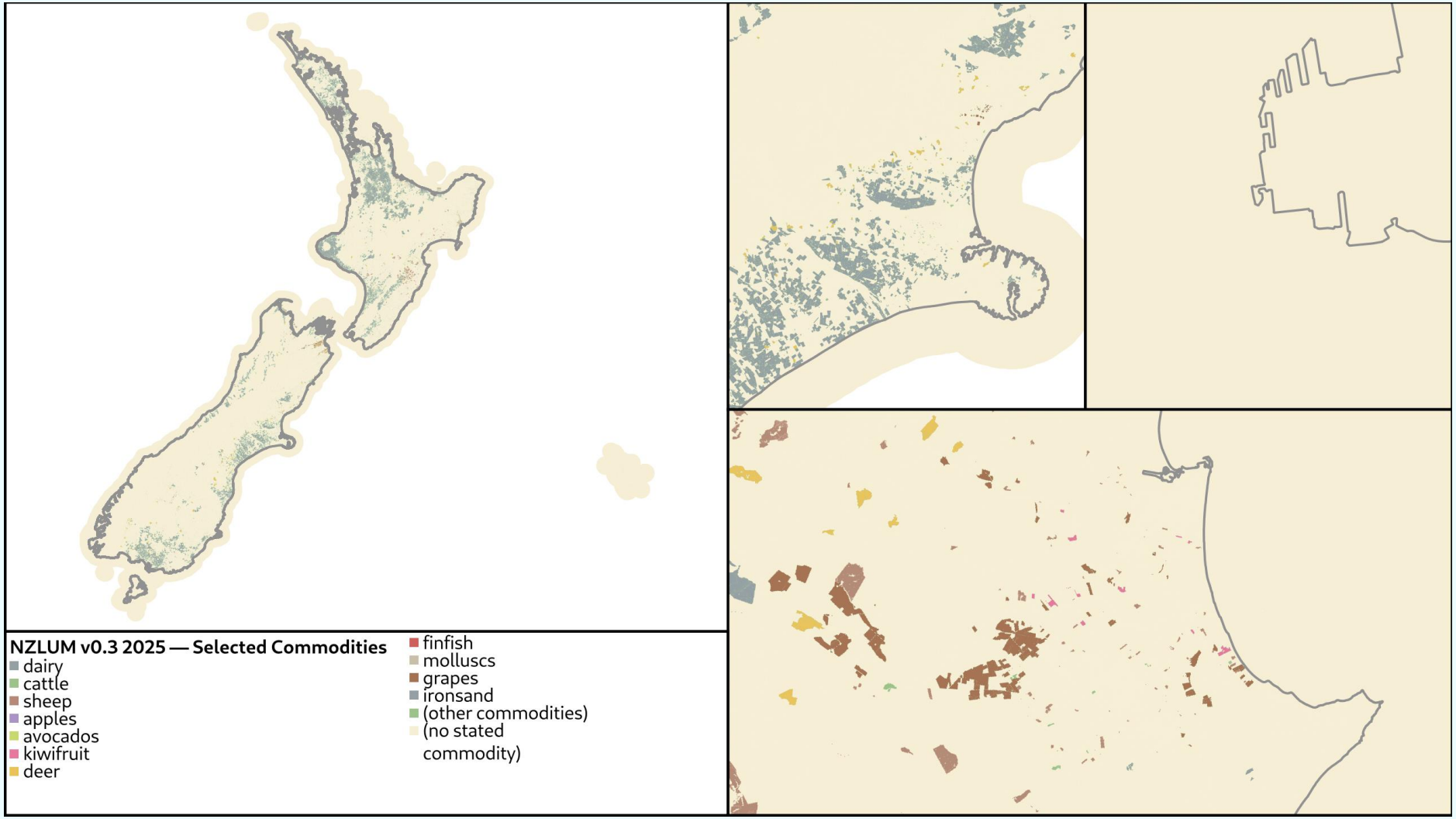
3	Built environment
3.1.0	**Residential**
3.2.0	**Public recreation and services**
3.3.0	**Commercial**
3.4.0	**Manufacturing and industrial**
3.5.0	**Utilities**
3.6.0	**Transport and communication**
3.7.0	**Mining**
3.8.0	**Waste treatment and disposal**
3.9.0	**Vacant and transitioning land**

https://github.com/manaakiwhenua/nzsluc/tree/main/classification-systems/nzlum

NZLUM v0.3 — Data Schema

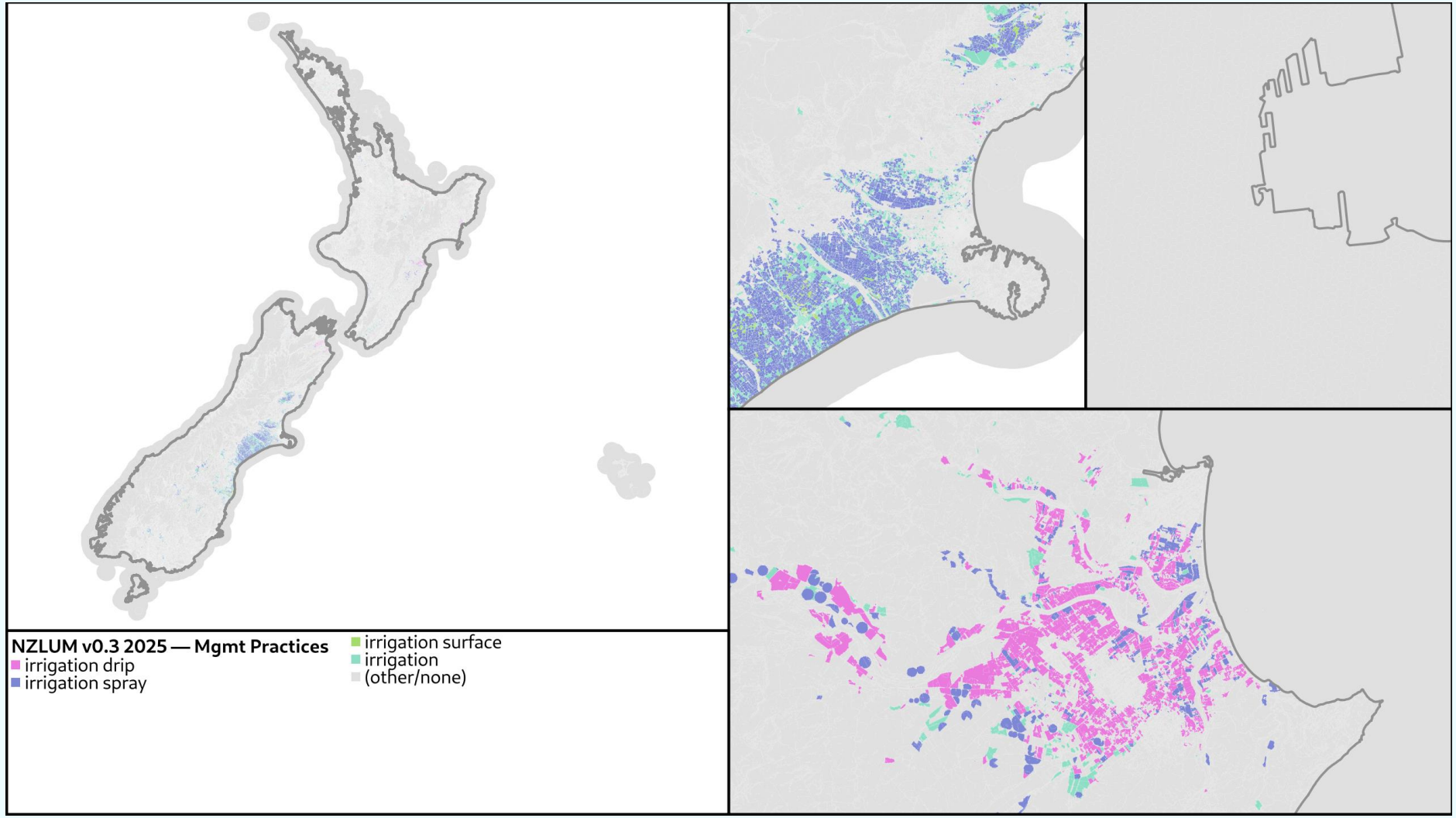
attribute	type	example	notes
lu_code_primary	integer	`1`	Numerical land use code (primary use) at the primary level
lu_code_secondary	integer	`2`	Numerical land use code (primary use) at the secondary level
lu_code_tertiary	integer	`3`	Numerical land use code (primary use) at the tertiary level
lu_code	string	`1.2.3`	Complete land use code (primary use)
lu_description	string	`Natural Heritage`	Land use class label (primary use)
lu_code_ancillary	(sorted set of) string	`2.2.0,3.2.1`	Land use code (ancillary uses), multiple uses are to be specified with comma separation with optional whitespace characters
commod	(sorted set of) string	`cattle dairy`	Commodity type; multiple commodities are to be specified with comma separation with optional whitespace characters
commod_ancillary	)sorted set of)string	`pulpwood`	Commodity type(s) relating to the ancillary land use code(s)
manage	(sorted set of) string	`irrigation spray,organic`	Management practices; multiple practices are to be specified with comma separation with optional whitespace characters
manage_ancillary	string	`free standing`	Management practices relating to the ancillary use code(s)
land_estate	string	`freehold`	Estate type
land_status	string	[TBD]	Land status type (public–private continuum; terminology to be determined)
water	string	`lake`	Water type (`null` for non-water)
zone	string	`Large format retail zone`	District plan zone; terminology to be taken from the Zone Framework Standard (National Planning Standards, 2019)
permeability	string	`sealed`	Permeability type (`sealed` or `unsealed`)
confidence	integer	`3`	Confidence 1-4, a qualitative assessment relating to the overall operator confidence in the assigned classification
luc_date	date	`2024-05-26`	Date of land use classification, "last modified"
source_data	(sorted set of) string	`DVR,NRC,LCDB v5,field mapping`	Primary source data (e.g. field mapping, local knowledge, ancillary dataset, air photo, imagery). Often, multiple sources of information are combined to come to a conclusion; to a reasonable extent, all should be specified.
source_data_doi	(set of) uri	`doi:10.26060/W5B4-WK93`	Optional (i.e. when available) DOI or HTTP URI for source data
source_date	string (date range)	`[2011-05-02,2025-01-03)`	Combined date range of spatial features (e.g. image date, ancillary photo date, last edited date) in primary source data, at feature (preferentially) or dataset level, using interval notation for inclusive and exclusive endpoints
source_scale	string (integer interval)	`[10,60]`	Combined integer (interval)[https://en.wikipedia.org/wiki/Interval_(mathematics)] indicating the precision of source data, in the CRS units (metres)

NZLUM v0.3 — Attributes (commodities)



https://lris.scinfo.org.nz/layer/122805

NZLUM v0.3 — Attributes (management practices)



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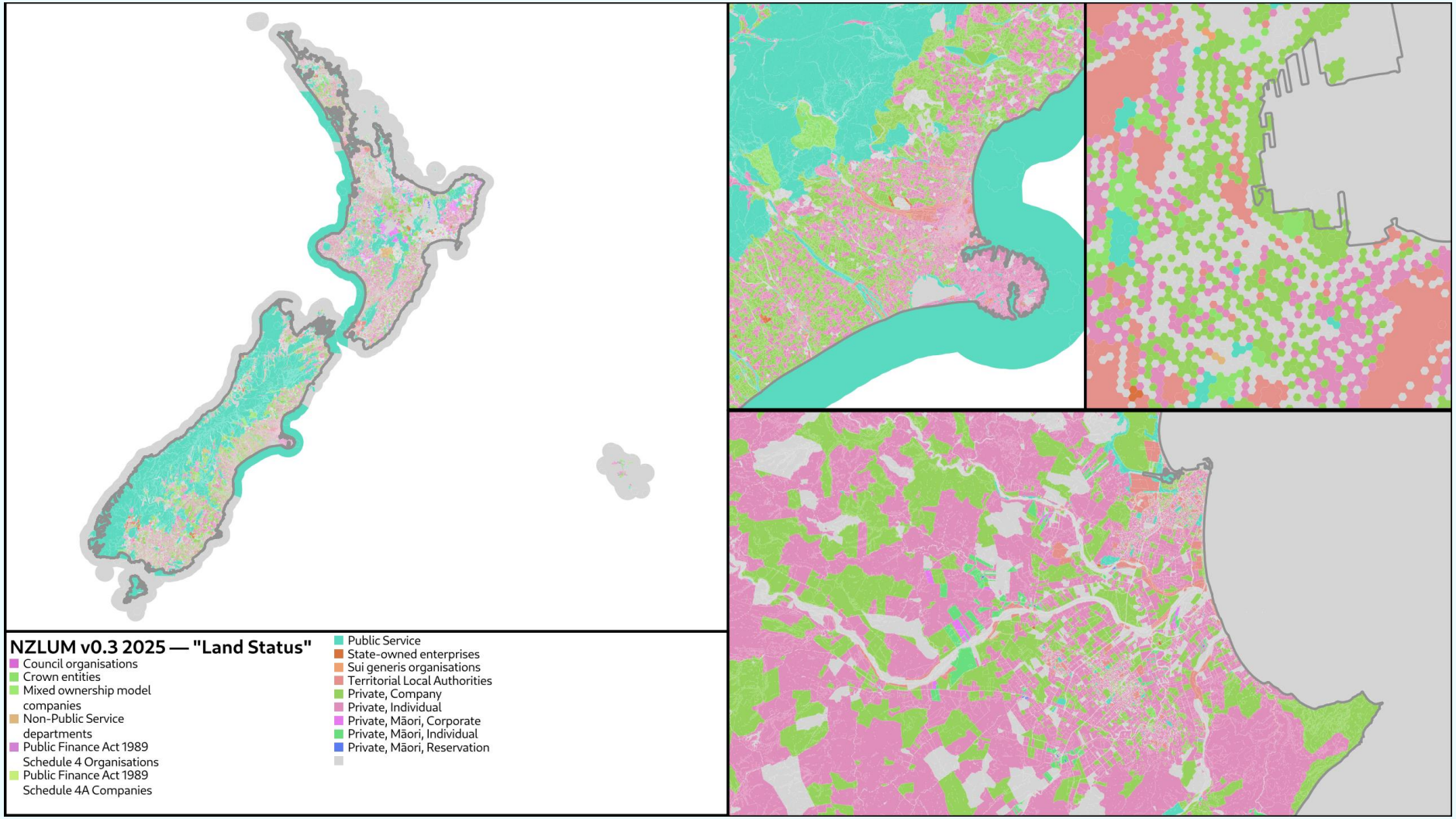
NZLUM v0.3 — Attributes (tenure)



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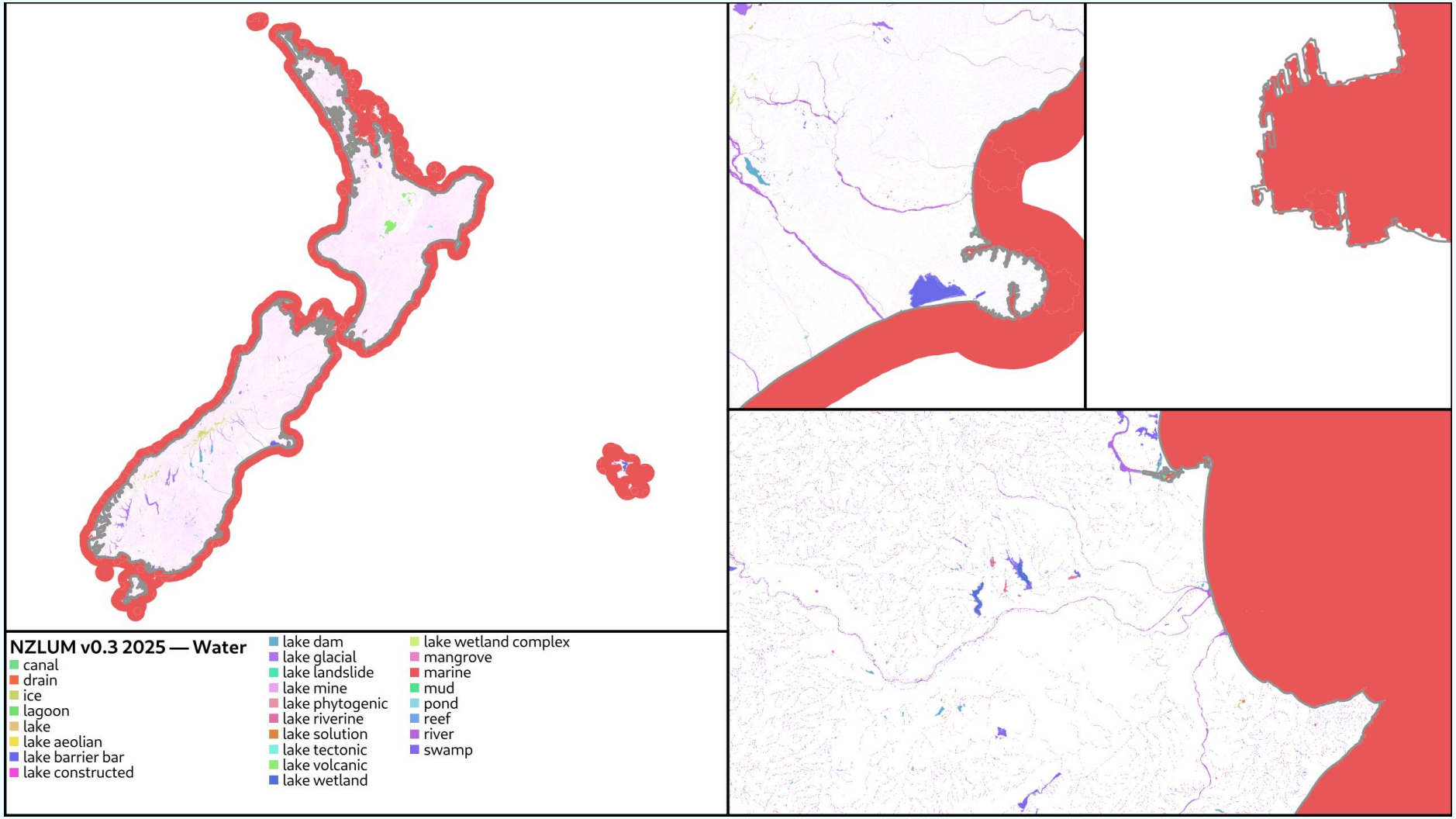
NZLUM v0.3 — Attributes (water)



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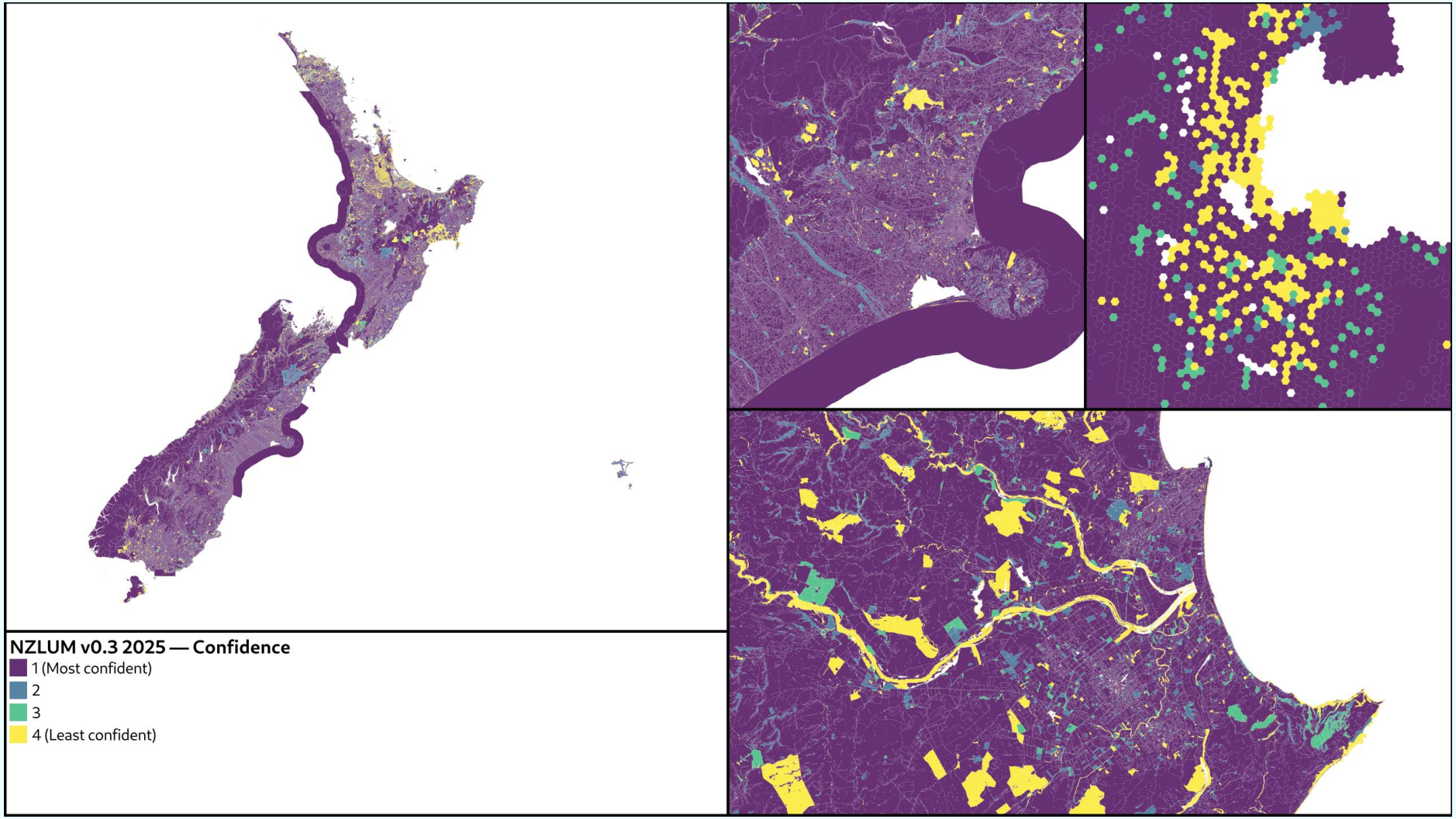
NZLUM v0.3 — Meta attributes (confidence)



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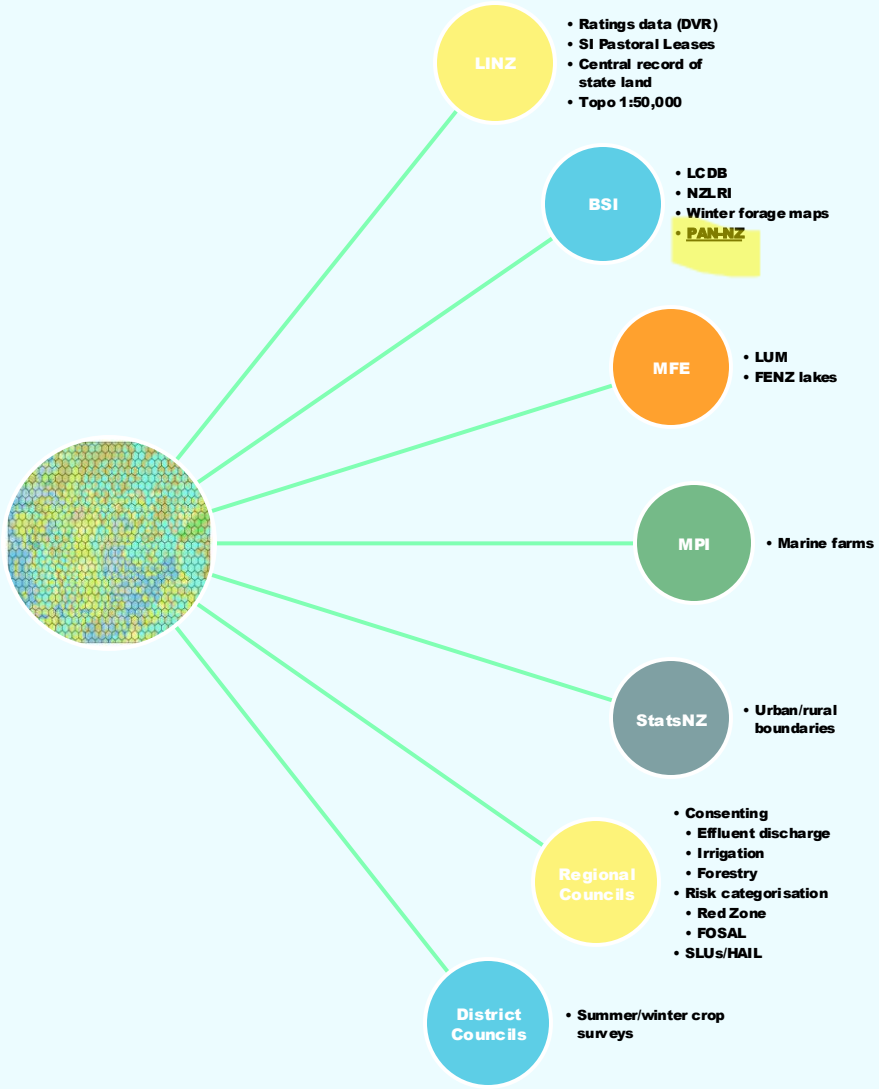
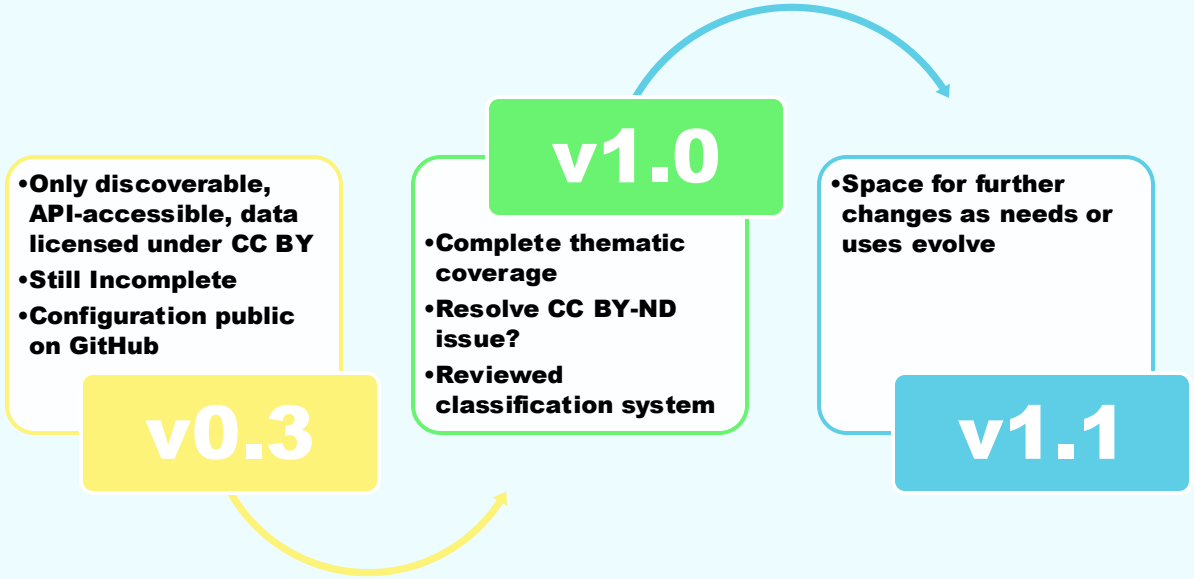
NZLUM v0.3 2025 — Data Sources

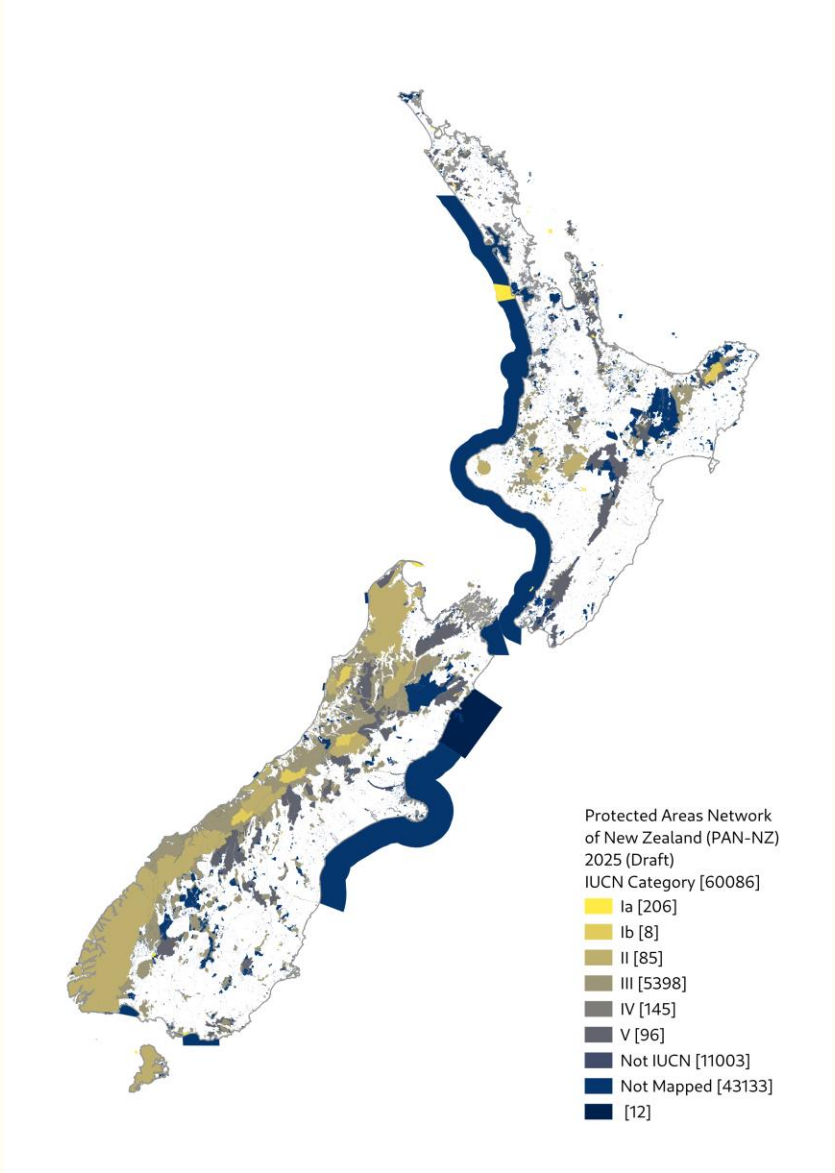




https://github.com/manaakiwhenua/luis-config-nzlum

Protected Areas Network of New Zealand (PAN-NZ) 2025 (Draft)

- PAN-NZ is hidden as one input to the land-use map, but it is a standalone dataset built with an additional 8 national, and 156 sub-national datasets.
- We are also looking for more protected areas data.
- Retains original/official boundaries.
- Data catalogue and guidelines website:



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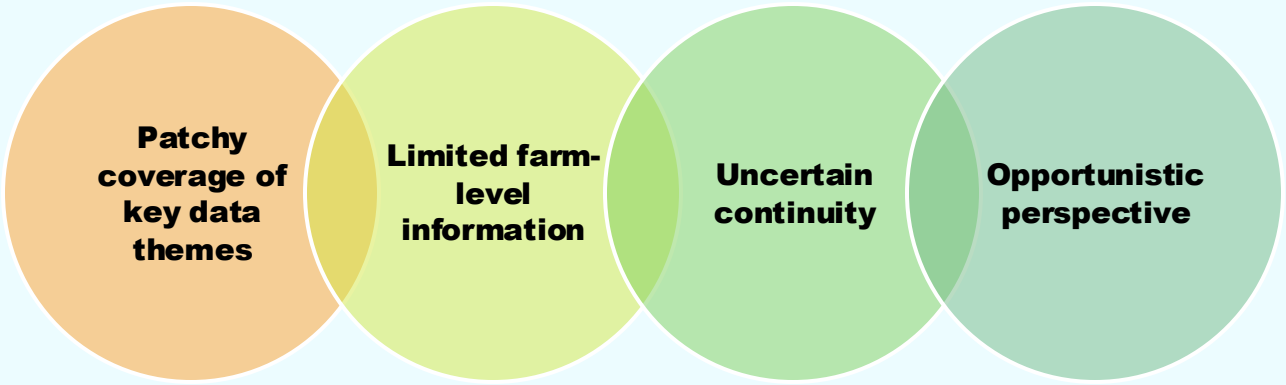
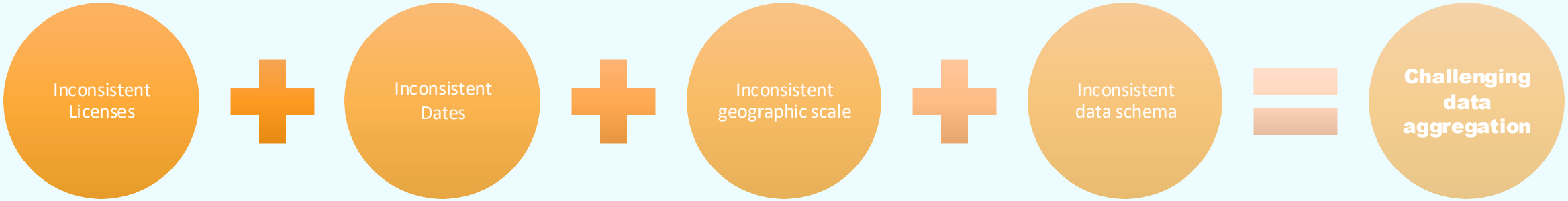
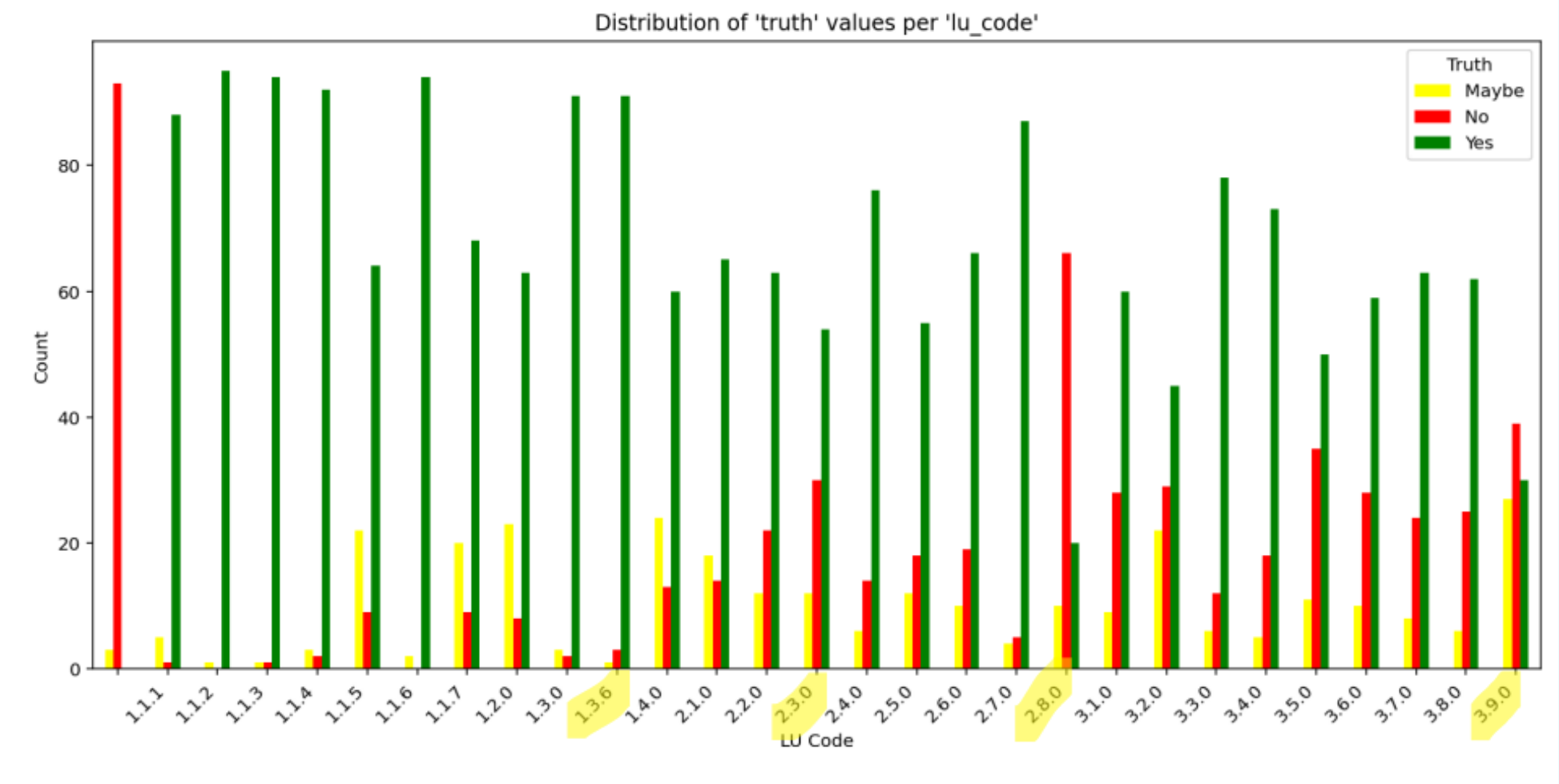
Challenge: Missing data



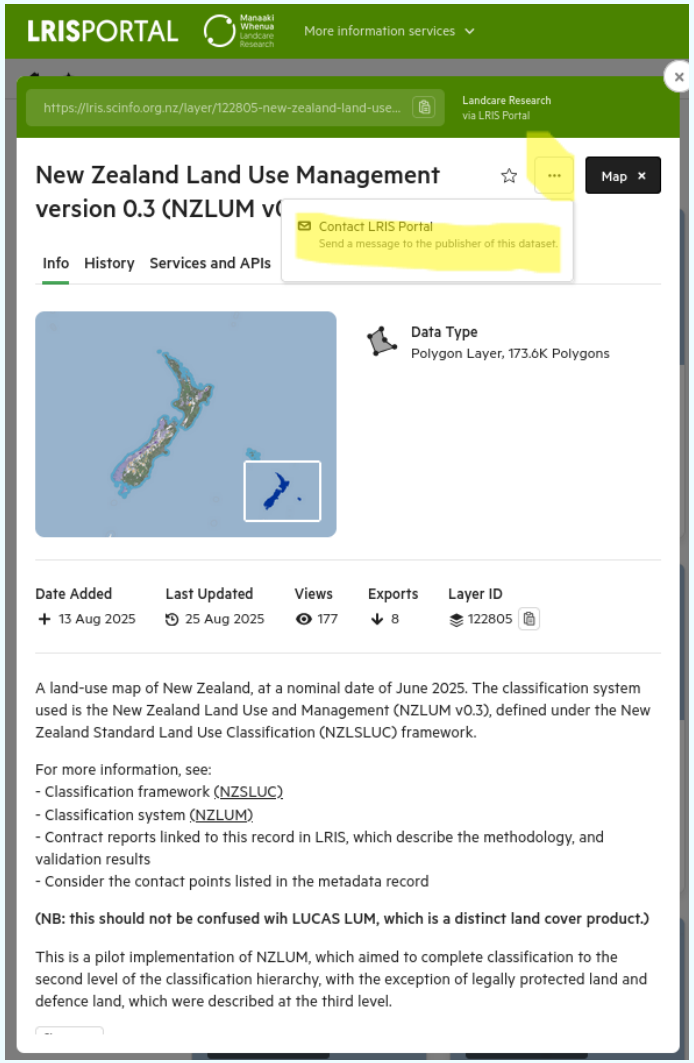
Challenge: Inconsistent data



Validation Results



Feedback



Interactive map & survey

Tell us what you think!

Next steps

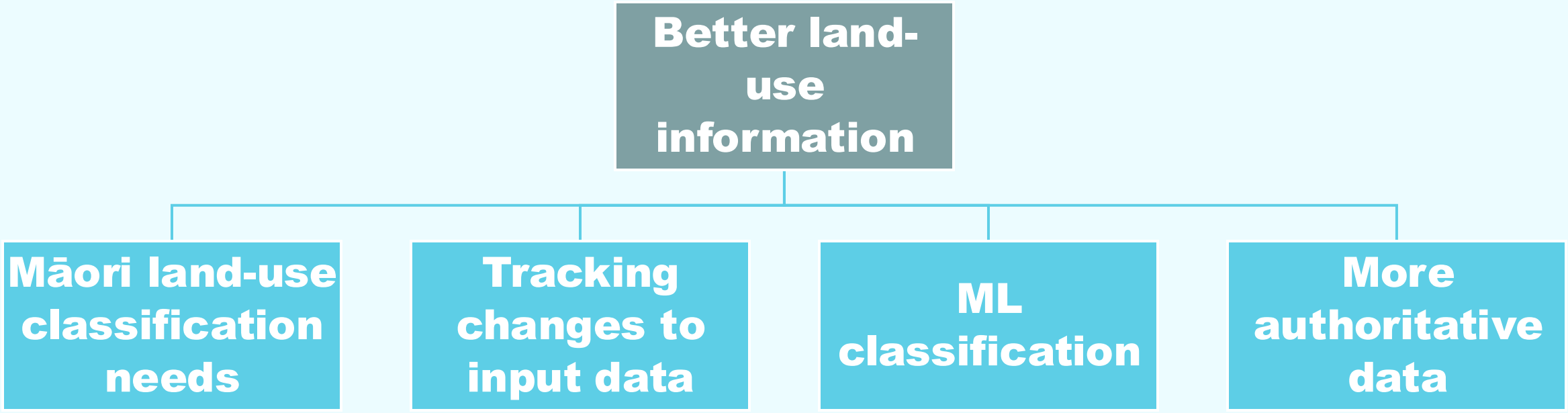
2025

- Form Steering Group
- Review NZLUM v0.3

2026

- Propose NZLUM v1.0
- Integrate new data
- Improve accuracy
- Implement, validate, release NZLUM v1.0 2026

Work in parallel



Bioeconomy Science Institute™

LawR@landcareresearch.co.nz

bioeconomyscience.co.nz

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Thank you