



*The National Land Cover Map was delivered by
Tailte Éireann's National Mapping Division,
previously Ordnance Survey Ireland, and the EPA
through a public sector partnership.*



**Tailte
Éireann**

Clárúchán, Luacháil,
Suirbhéireacht
Registration, Valuation,
Surveying

National Land Cover Map

NLC 2018

15th September 2023

@ Environment Ireland Conference

Presented By:

Gavin Smith

Analytics Team

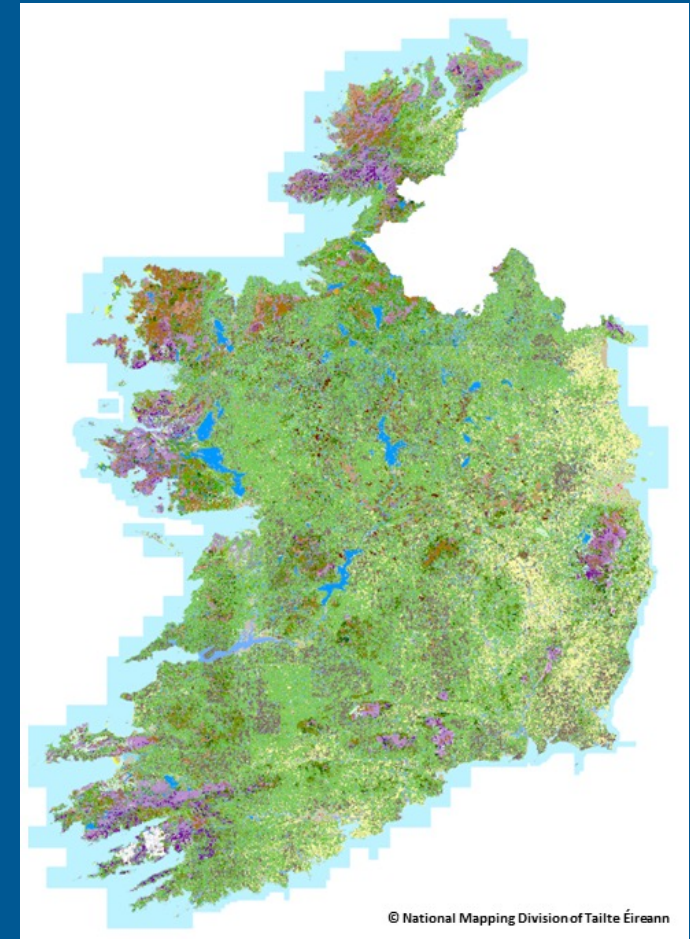
EPA Evidence Programme

Contact:

g.smith@epa.ie or 053 9160600

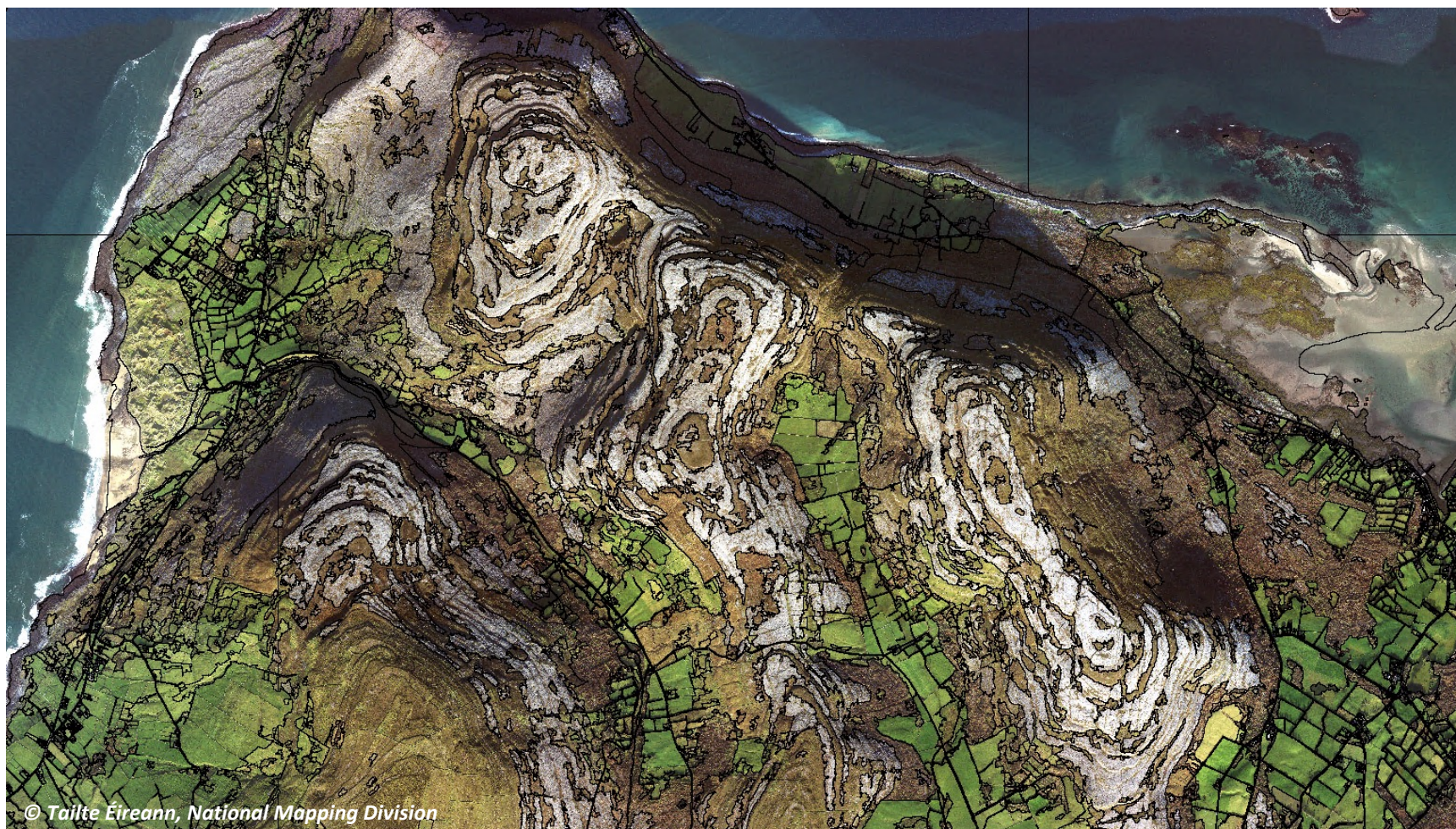
Data Enquires:

corporatesales@tailte.ie



The National Land Cover Map

A Collective Effort



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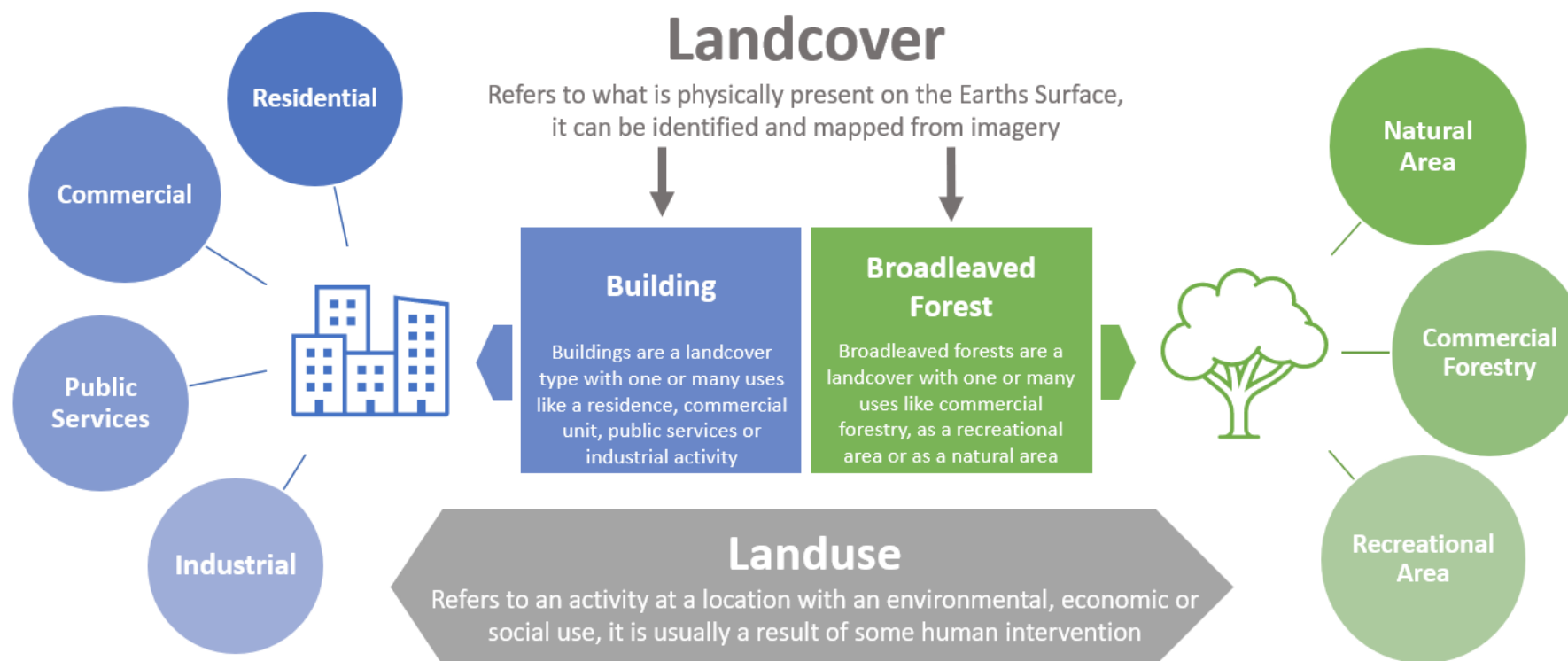
On behalf of:
The National Land Cover Project Team
An EPA & Tailte Éireann Partnership Project



Tailte Éireann
Clárúchán, Luacháil,
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Registration, Valuation,
Surveying



Land Cover is not Land Use

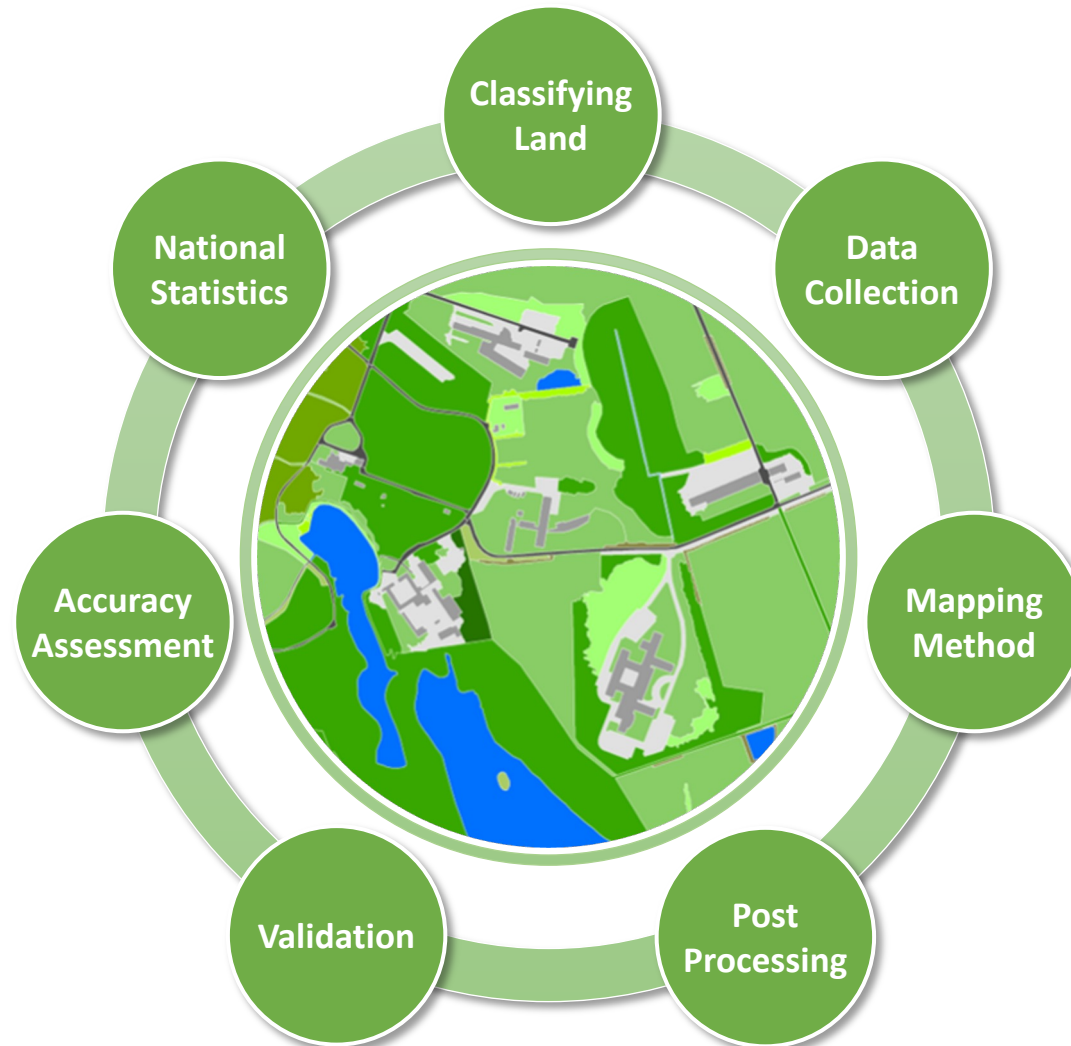


Why did we need a new map?

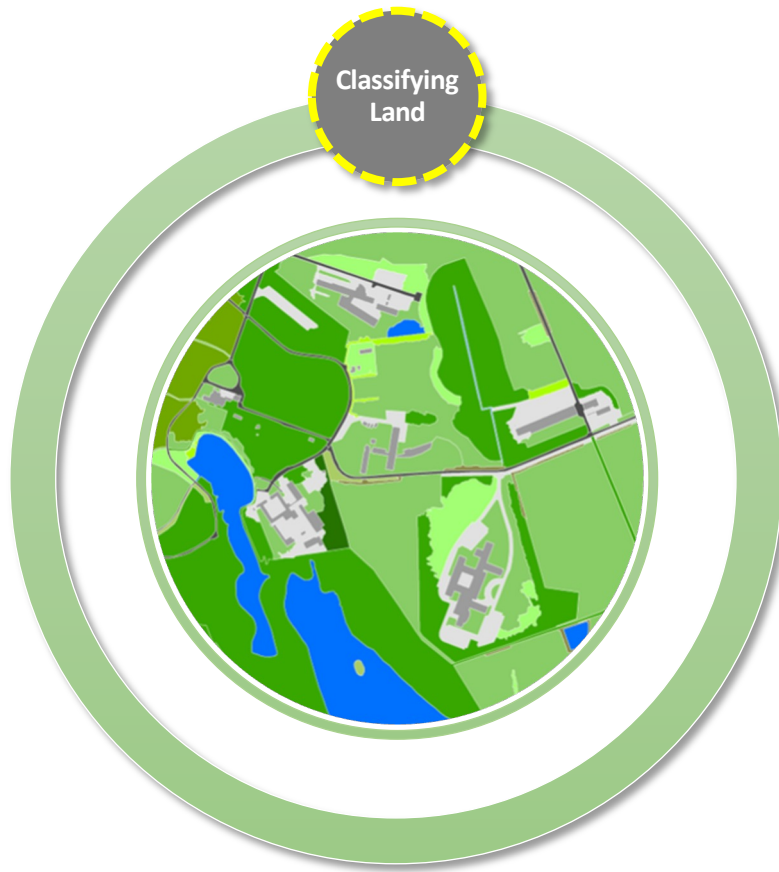
Johnstown Castle Estate, Co. Wexford



Making a Land Cover Map



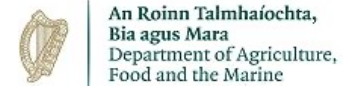
Classification



National Land Cover Classification System

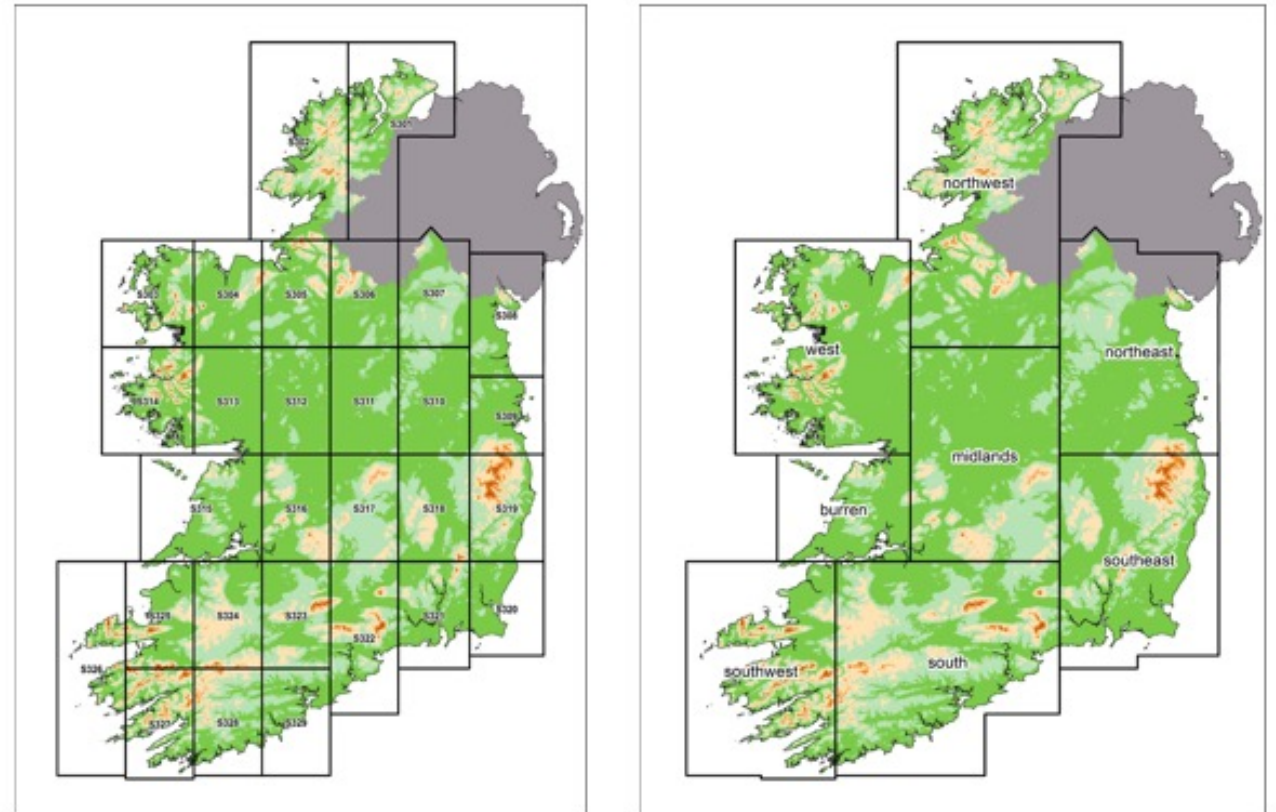
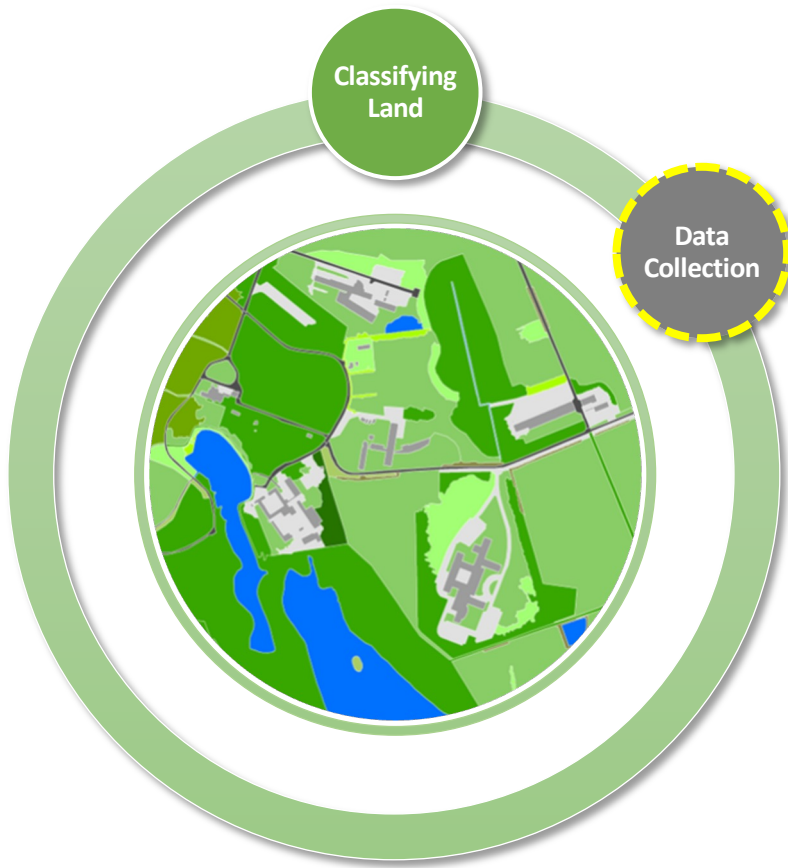
| Code | Level 1 | Code | Level 2 |
|------|--------------------------------|------|---------------------------------|
| 100 | ARTIFICIAL SURFACES | 110 | Buildings |
| | | 120 | Ways |
| | | 130 | Other Artificial Surfaces |
| 200 | EXPOSED SURFACES | 210 | Exposed Rock and Sediments |
| | | 220 | Coastal Sediments |
| | | 230 | Mudflats |
| | | 240 | Bare Soil and Disturbed Ground |
| 300 | CULTIVATED LAND | 250 | Burnt Areas |
| | | 310 | Cultivated Land |
| 400 | FOREST, WOODLAND AND SCRUB | 410 | Coniferous Forest |
| | | 420 | Mixed Forest |
| | | 430 | Transitional Forest |
| | | 440 | Broadleaved Forest and Woodland |
| | | 450 | Scrub |
| | | 460 | Hedgerows |
| | | 470 | Treelines |
| 500 | GRASSLAND, SALTMARSH and SWAMP | 510 | Improved Grassland |
| | | 520 | Amenity Grassland |
| | | 530 | Dry Grassland |
| | | 540 | Wet Grassland |
| | | 550 | Saltmarsh |
| | | 560 | Sand Dunes |
| | | 570 | Swamp |
| 600 | PEATLAND | 610 | Raised Bog |
| | | 620 | Blanket Bog |
| | | 630 | Cutover Bog |
| | | 640 | Bare Peat |
| | | 650 | Fens |
| 700 | HEATH and BRACKEN | 710 | Bracken |
| | | 720 | Dry Heath |
| | | 730 | Wet Heath |
| 800 | WATERBODIES | 810 | Rivers and Streams |
| | | 820 | Lakes and Ponds |
| | | 830 | Artificial Waterbodies |
| | | 840 | Transitional Waterbodies |
| | | 850 | Marine Water |

Consultation



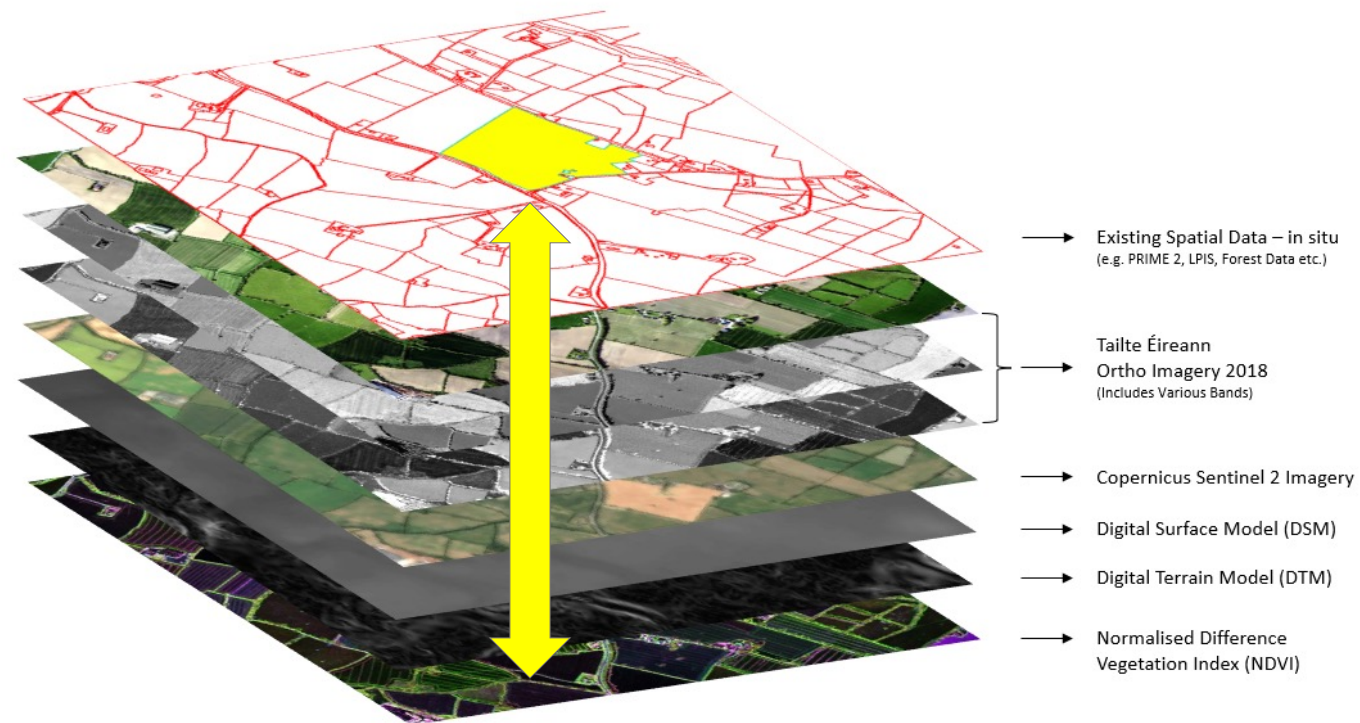
Stakeholder
Survey 2016

Data Collection



- **30 Working Blocks grouped into 8 Bio-geographical Regions**
- **Each working block had a stack of Image & Vector layers**
- **250 GB of Data per block => 7.5TB data processed**
- **Final Data product >> 10.1 million features / 10 GB**

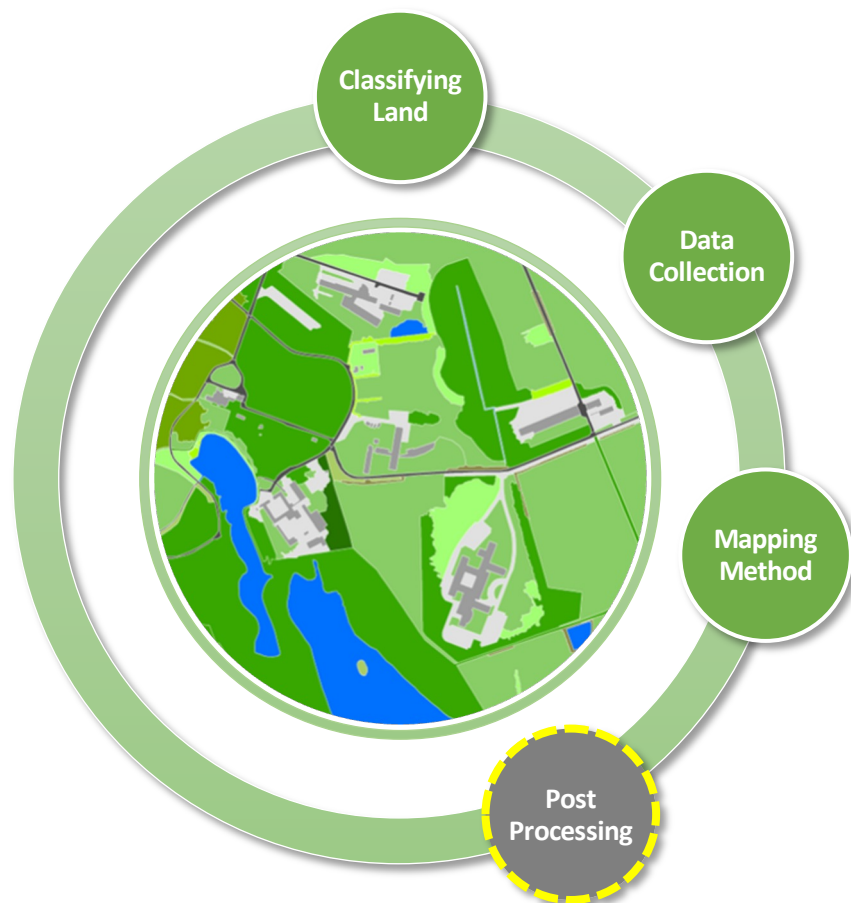
Mapping Methodology



Mapping Methodology

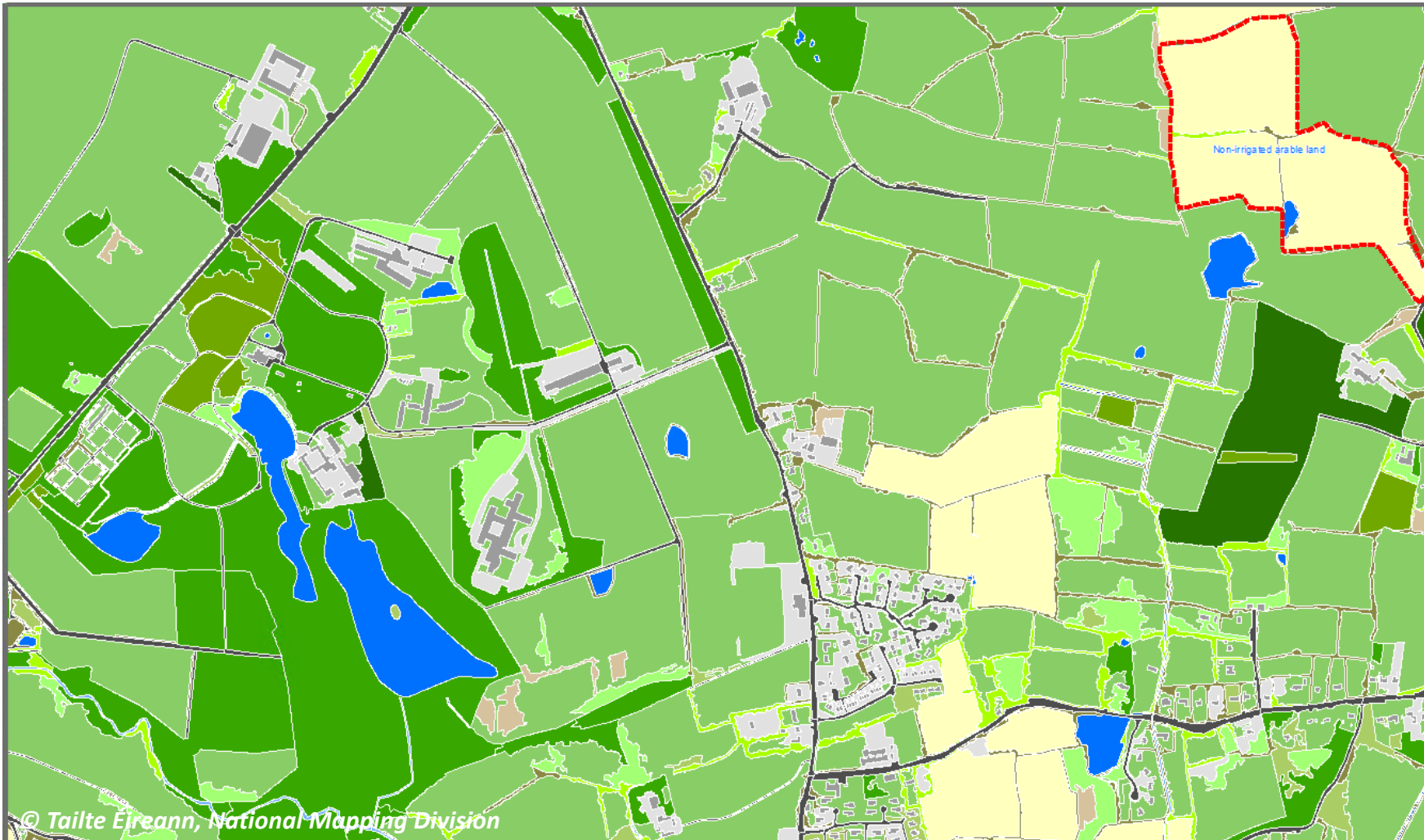


Post Processing



Improved Detail in Land Cover Data

Johnstown Castle Estate, Co. Wexford



- Buildings
- Ways
- Other Artificial Surfaces
- Exposed Rock and Sediments
- Coastal Sediments
- Mud Flats
- Bare Soil, Disturbed Ground
- Cultivated Land
- Coniferous Forest
- Mixed Forest
- Transitional Forest
- Broadleaved Forest
- Scrub
- Hedgerows
- Treelines
- Improved Grassland
- Amenity Grassland
- Semi-Natural Grasslands (Dry)
- Semi-Natural Grasslands (Wet)
- Salt Marsh
- Sand Dunes
- Swamp
- Fens
- Raised Bog
- Blanket Bog
- Cutover Bog
- Bare Peat
- Bracken
- Dry Heath
- Wet Heath
- Burnt Areas
- Rivers and Streams
- Lakes and Ponds
- Artificial Waterbodies
- Transitional Waterbodies
- Marine Water

Examples of Final Output



Cultivated Land



Improved Grassland

Validation



Ordnance Survey Ireland

Overview of the Validation Procedure

For the 2018 National Land Cover Map

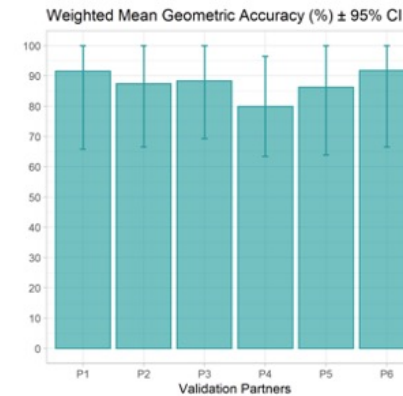
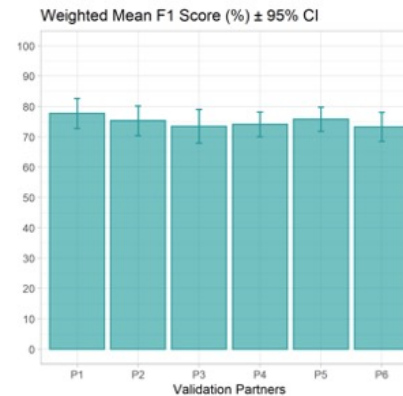
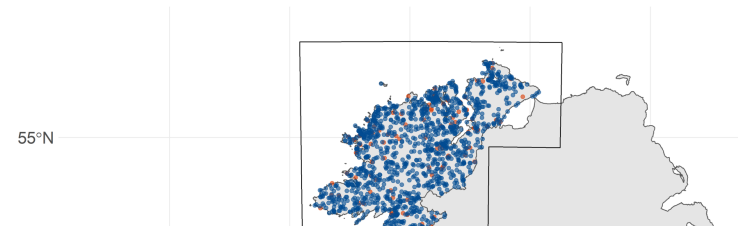
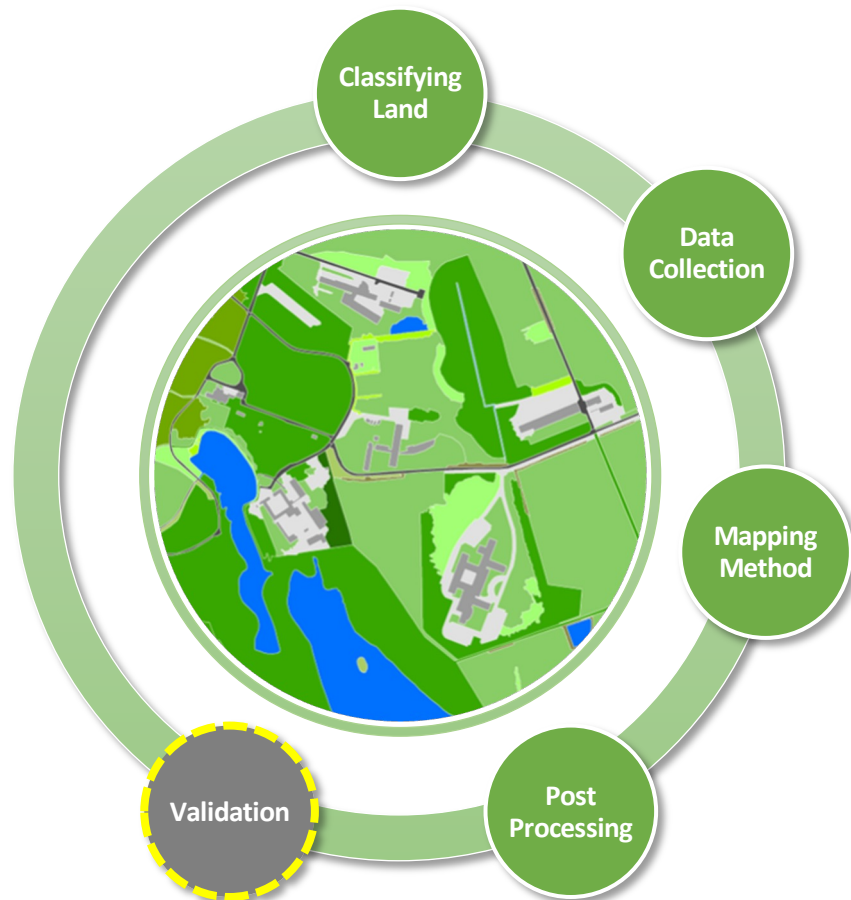
In Partnership With **epa**

Version: Version 4
Authors: Guillermo Castro Camba (OSi) & Gavin Smith (EPA)
Date: 12/10/2020
Consulted: An Phríomh-Oifig Staidrimh, Central Statistics Office, An Roinn Talmhaíochta, Bia agus Mara (Department of Agriculture, Food and the Marine), Teagasc, National Park & Wildlife Service

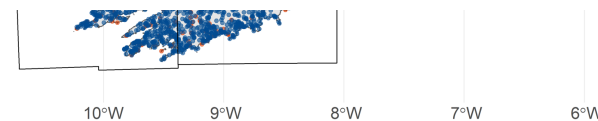
Validation Process:

- Independent validation
- Random stratified samples
- Common subset
- Validate whole object
- Validate class accuracy
- Validate boundary accuracy
- General feedback & comment
- Validated via an app

Validation



There was incredibly good consistency across validation partners



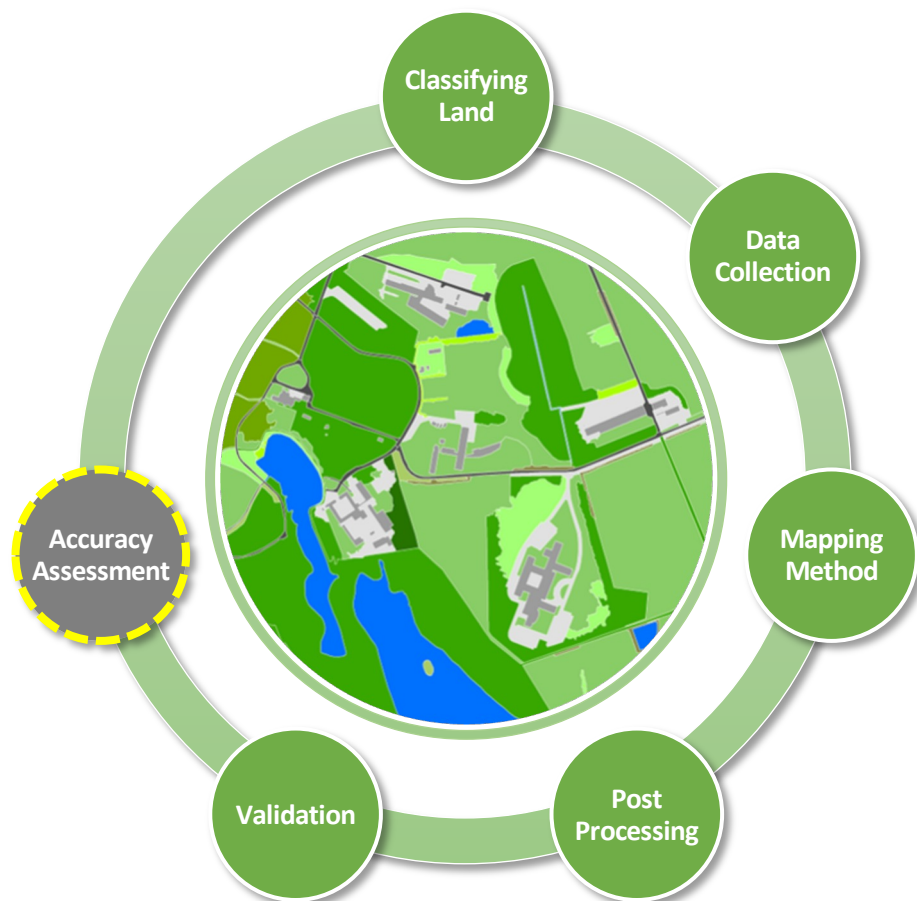
56
Validators

22,237
Samples

1,652
Common

28,526
Assessments

Accuracy Assessment



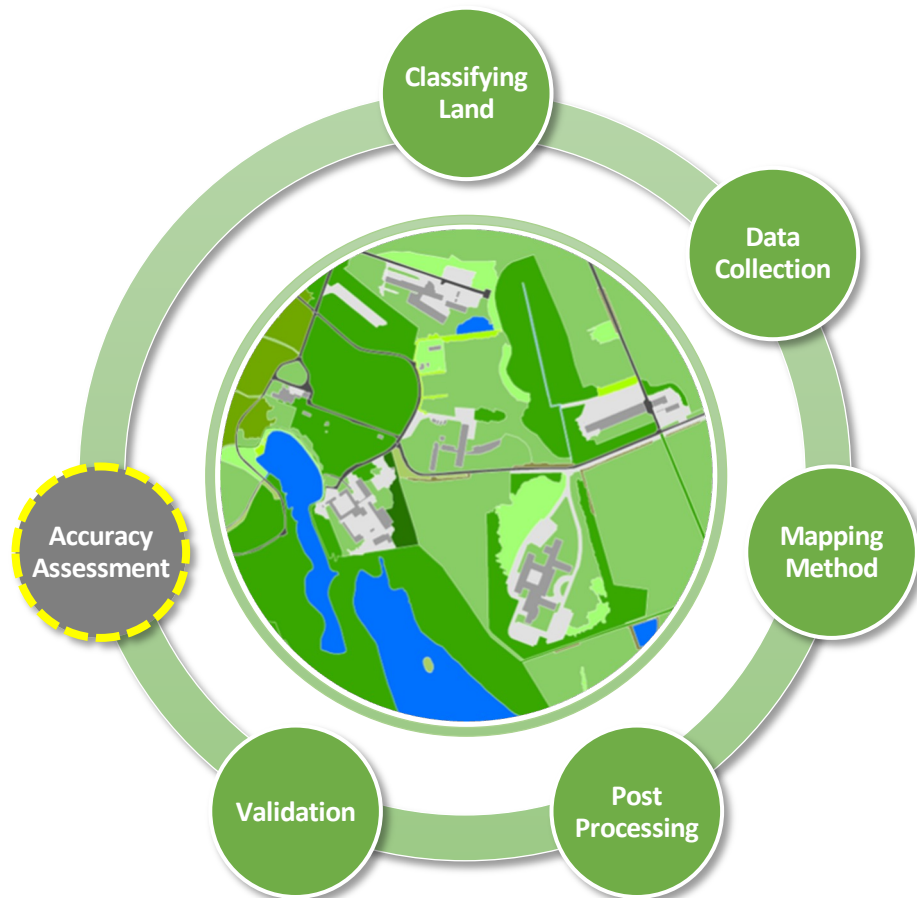
Assessment of Land Cover Map

National Overview

Overall Accuracy

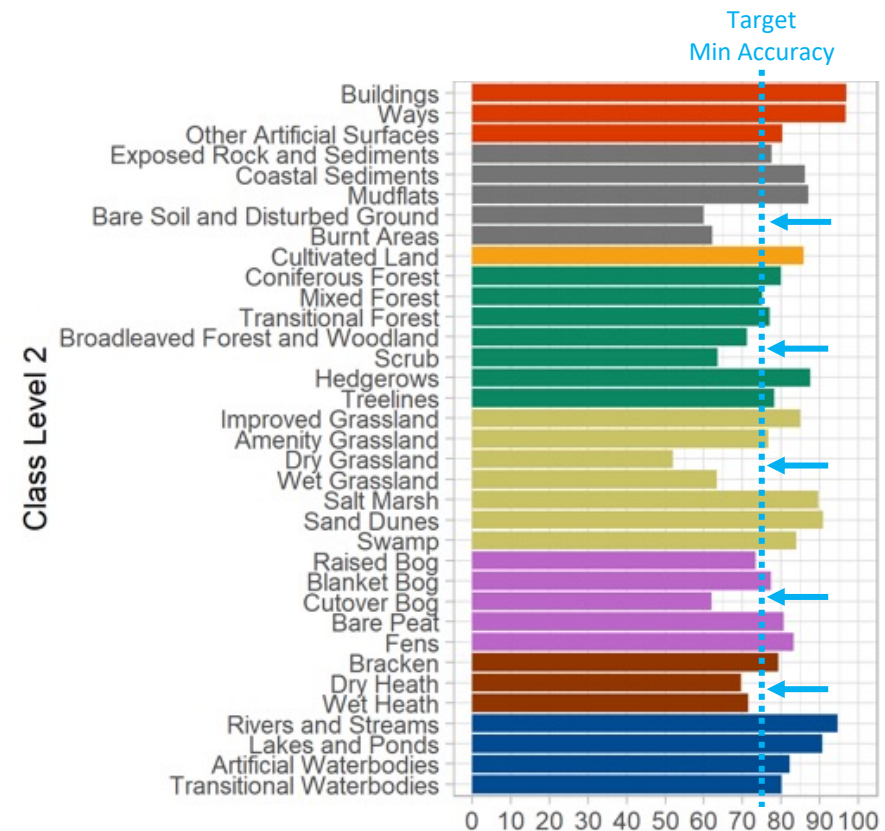


Accuracy Assessment

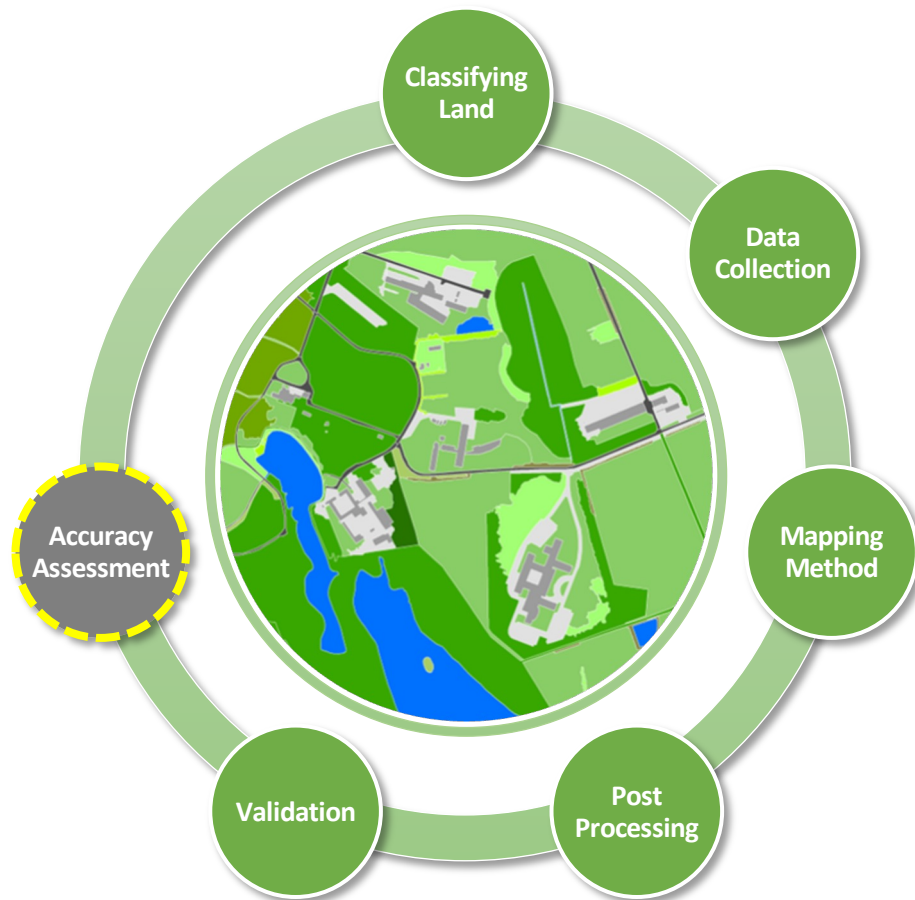


Assessment of Land Cover Map

Thematic Accuracy

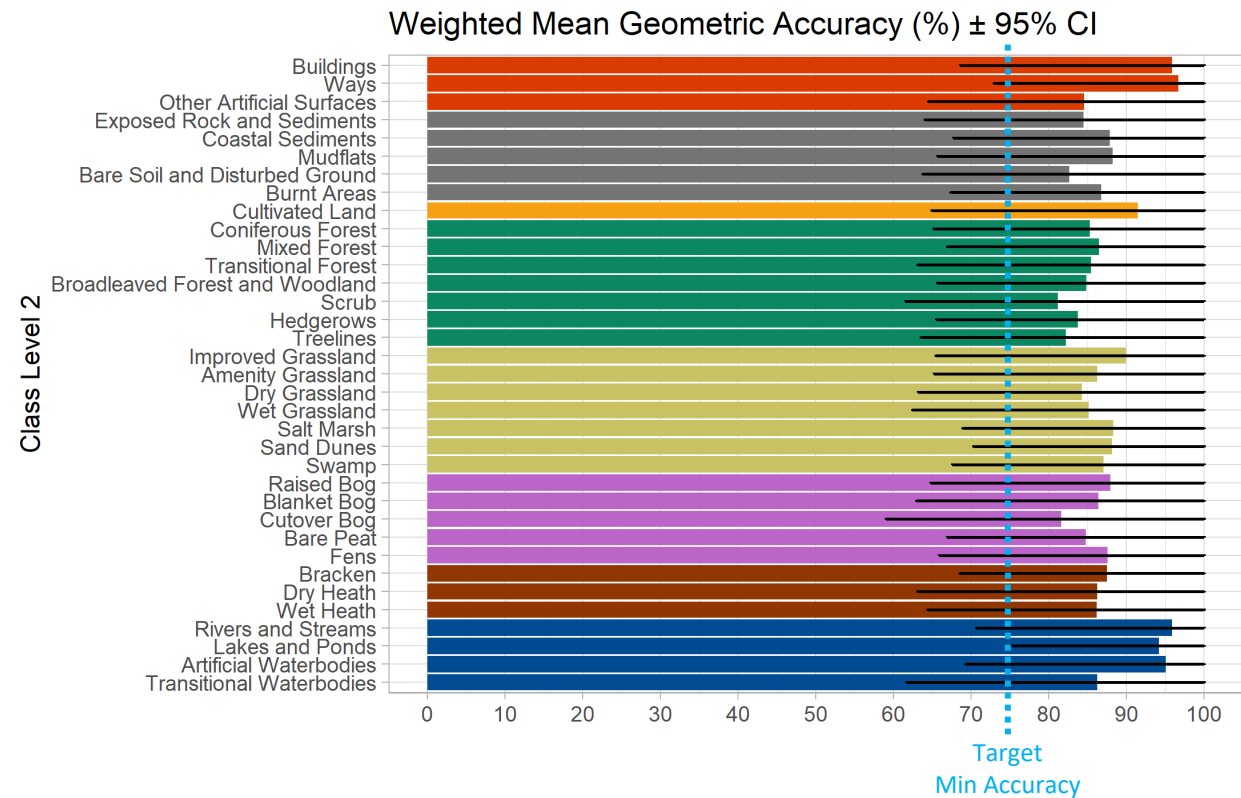


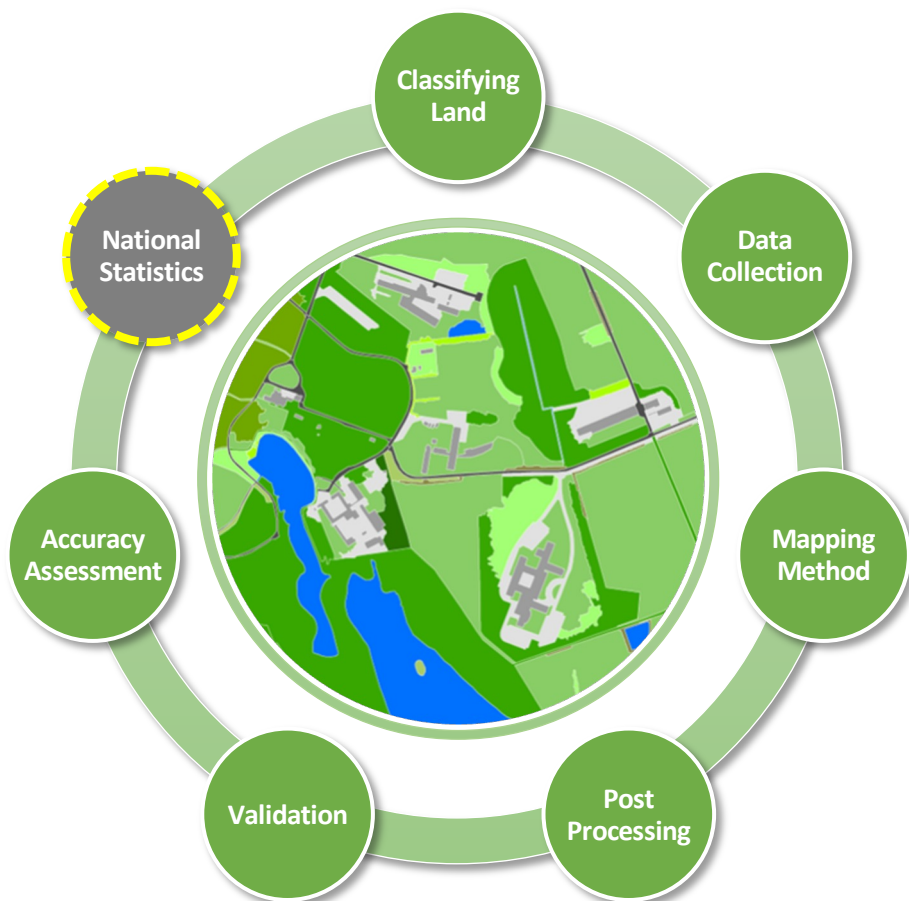
Accuracy Assessment



Assessment of Land Cover Map

Geometric Accuracy





Summary Level 1 Statistics

NLC vs Corine

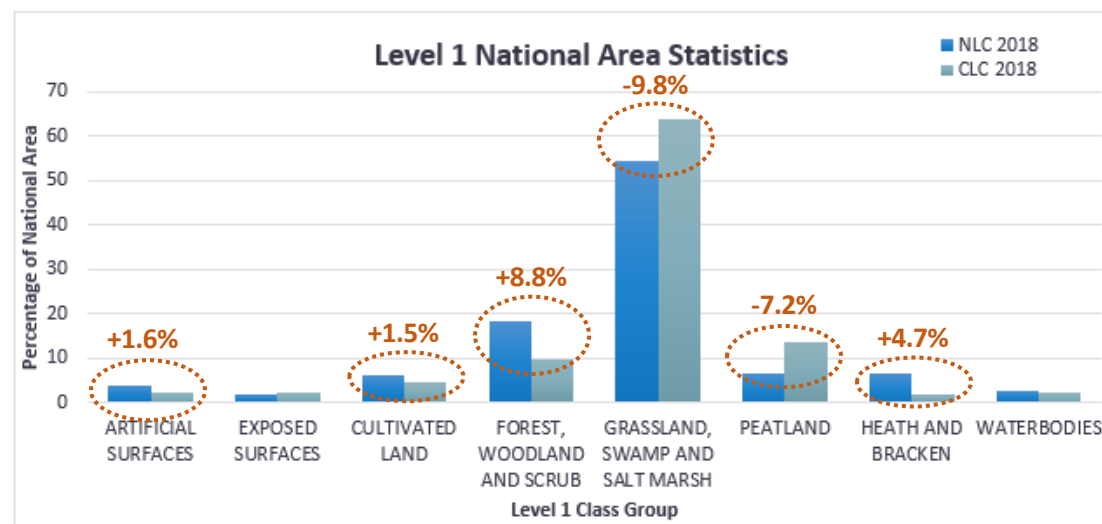


Chart 5.1: Chart comparing the percentage of national area by Level 1 group for the new National Land Cover Map (NLC 2018) and CORINE 2018 (CLC 2018).

National Statistics



Summary Level 2 Statistics

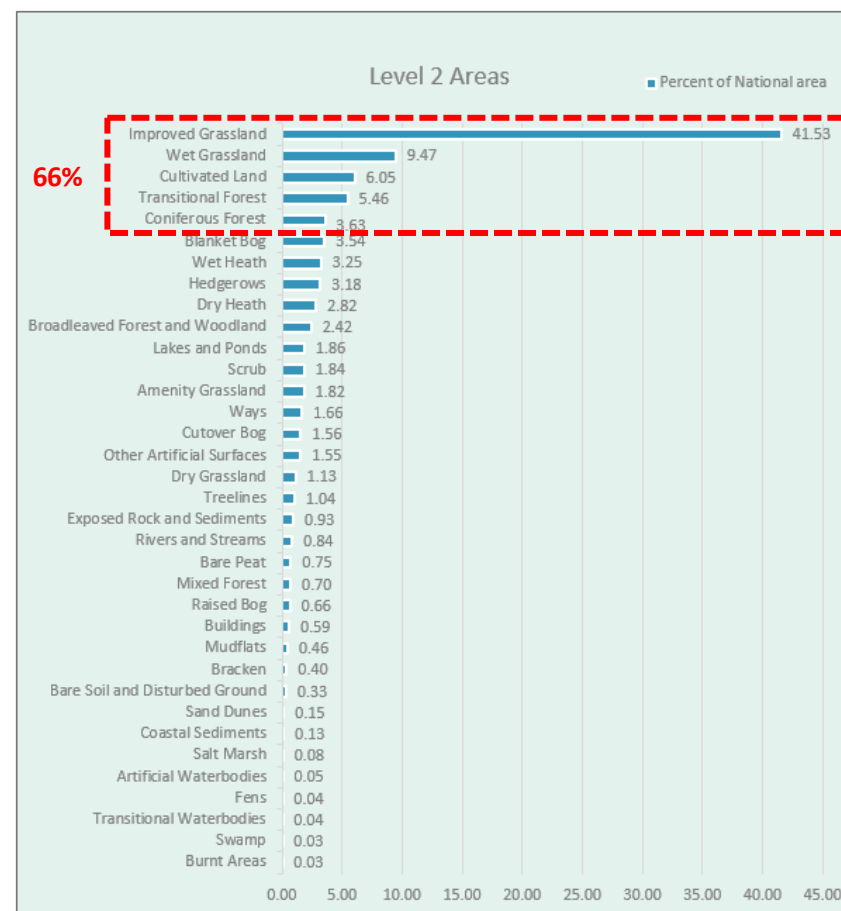


Chart 5.2: NLC 2018 Level 2 land cover classes shown in descending order as percentage of total national area.

Peatland Statistics – Not Just a Simple Stat!



5.3.6 Peatland

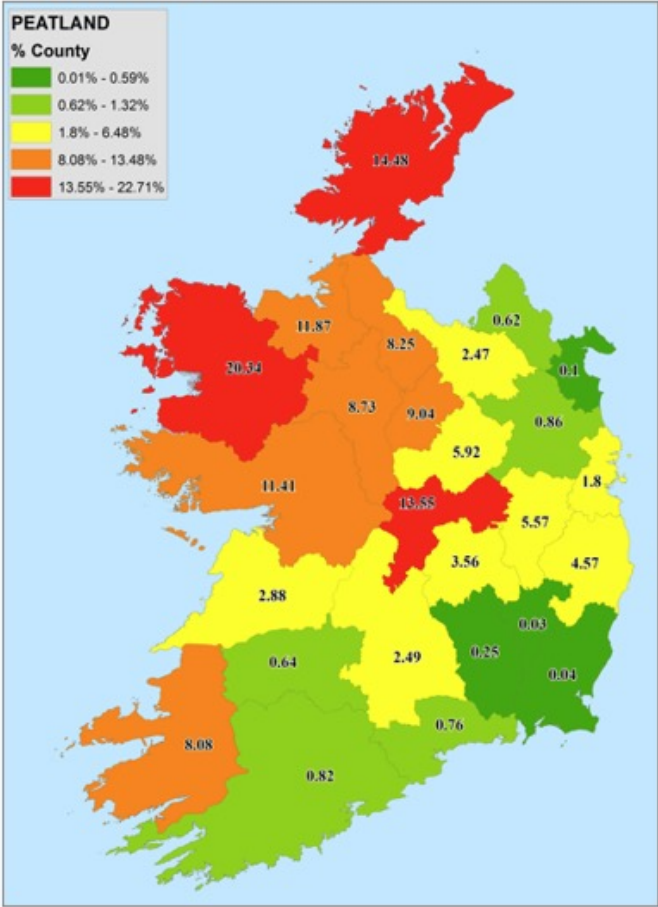


Figure 5.15: Map of Ireland showing the percentage of each county covered by the Level 1 Peatland class.

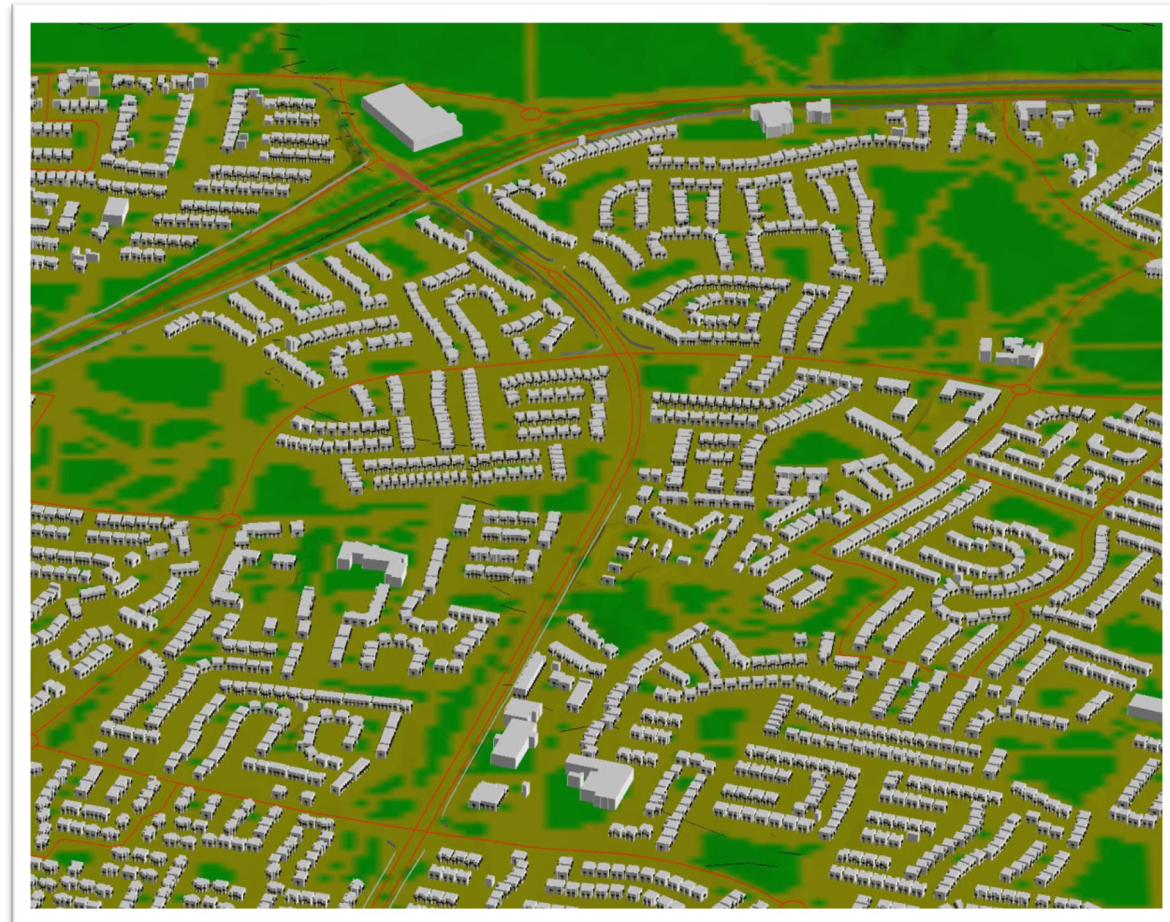
| Peat Class | % National Area |
|-------------------|-----------------|
| Raised Bog | 0.66% |
| Blanket Bog | 3.54% |
| Cutover Bog | 1.56% |
| Bare Peat | 0.75% |
| Fens | 0.04% |
| Total | 6.55% |
| Corine Comparison | 13.71% |
| Difference | -7.16% |



Land Cover Map – Use Cases



| Use Case | Impact |
|--|--------|
| Noise Modelling | High |
| Land Use Land Use Change & Forestry (LULUCF) | High |
| Pilot Landuse Map for Land Use Evidence Review | Medium |
| Illegal Waste Detection | Medium |
| Water Quality Management Tools | High |
| Research Projects (various) | High |
| Eco System Accounting | High |
| Farm Environmental Surveys | Medium |



**Example of the land cover map draped into 3D City model – courtesy of Simon Shilton of Acustica*

Land Cover Map – Use Cases



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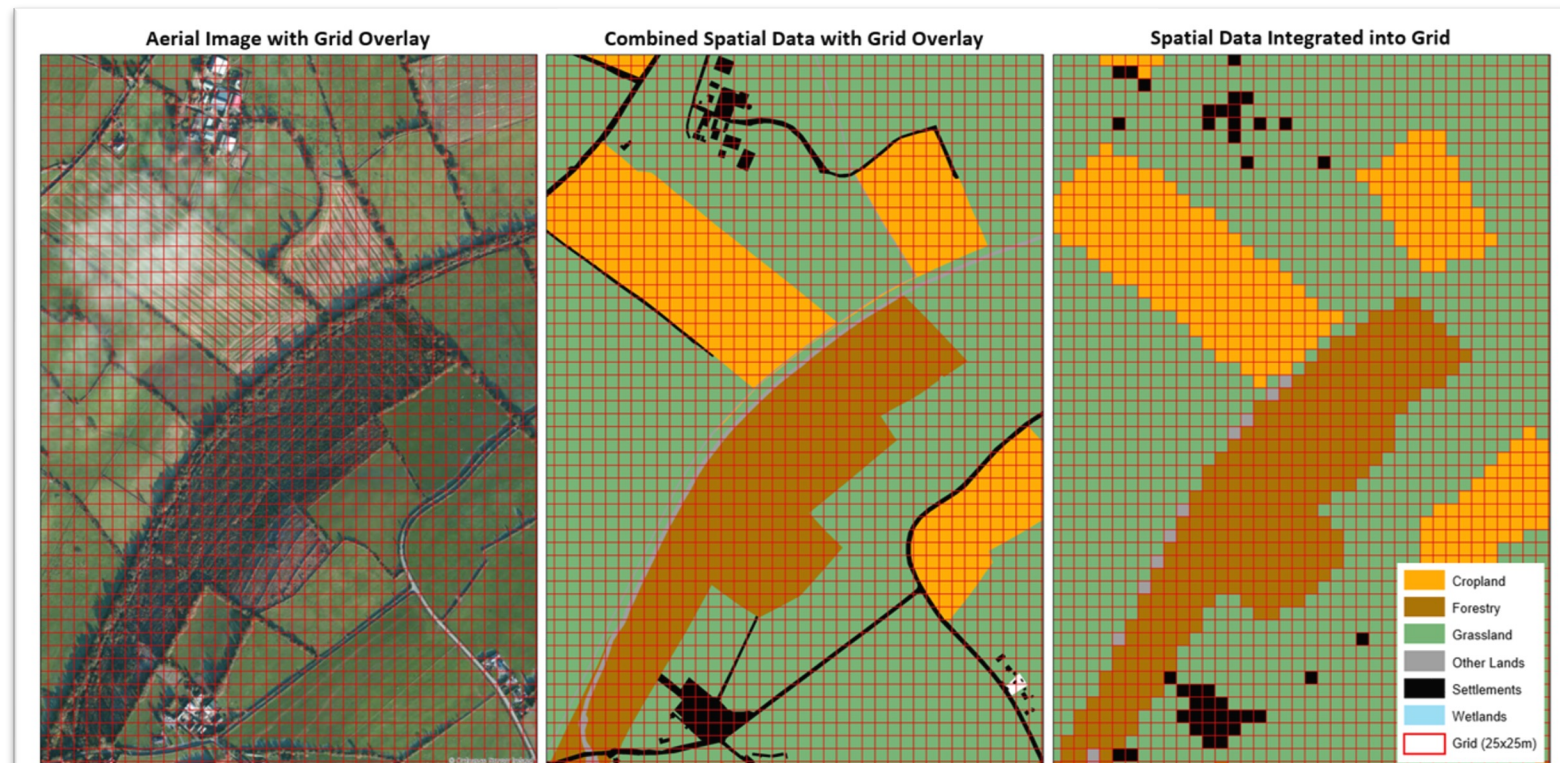


Figure 13: Example of integrating the combined spatial dataset with the Grid

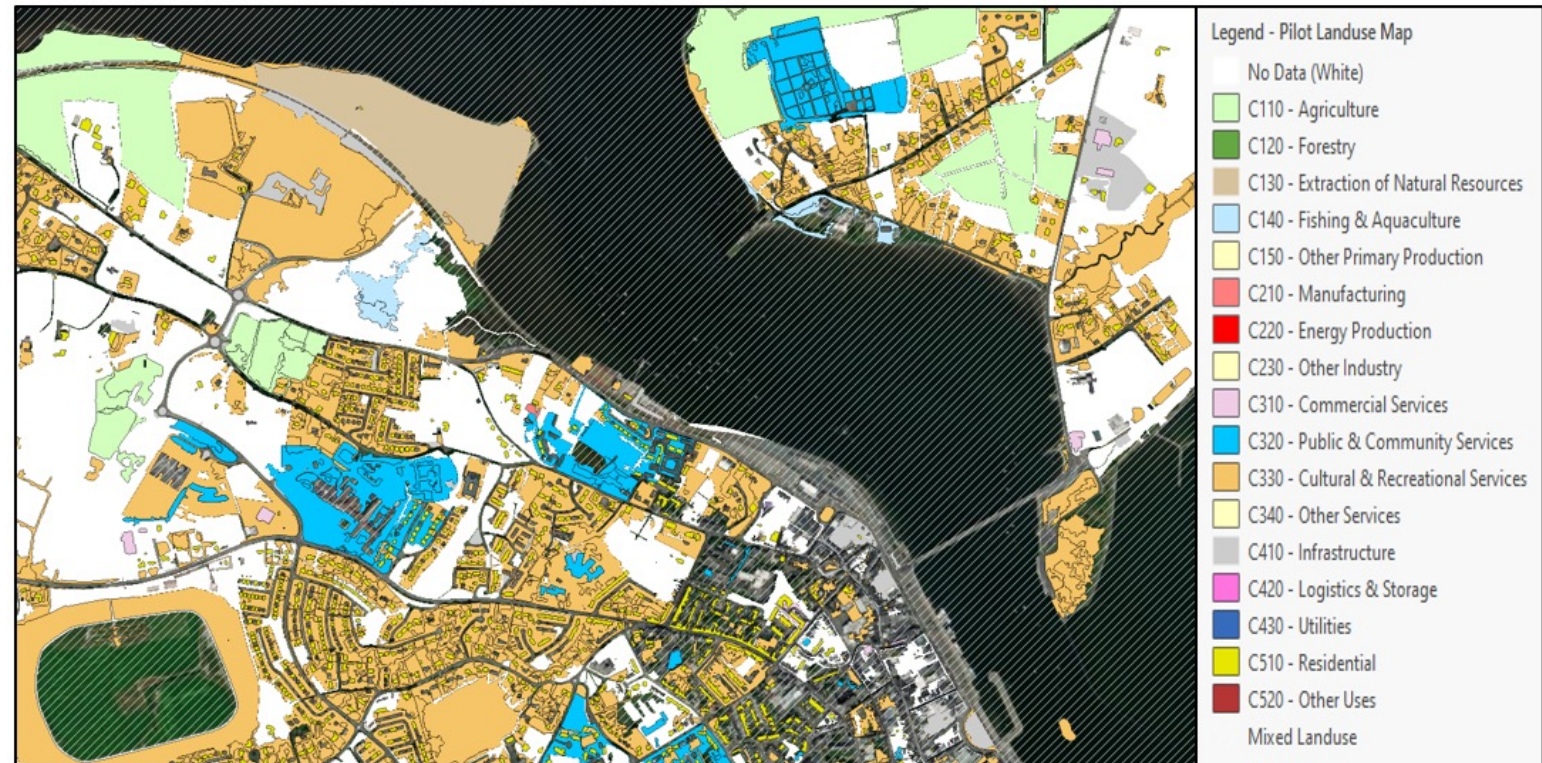
Land Cover Map – Use Cases



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Sample of Pilot Landuse Map – Wexford Town & Surrounds

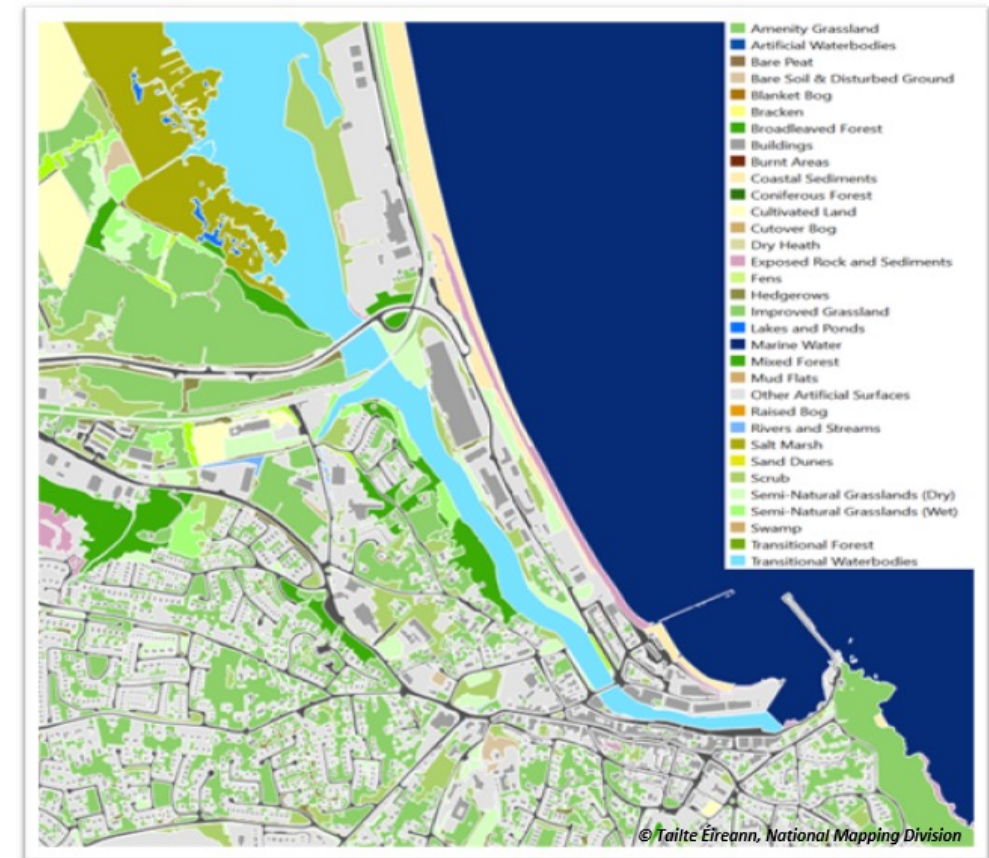


Data © Tailte Éireann, National Mapping Division. Image © Maxar, Microsoft via ESRI web service

Summary



- The National Land Cover Map was modelled and not surveyed and is based on 2018 (+/- 1 year) not 2023!
- Tailte Éireann, National Mapping Division will maintain and update the Land Cover Map as one of its products as new National Imagery is captured.
- The map contains known errors – never take results as absolute fact and get to know the data first to understand how it will work best for your purpose.
- Always be conscious of error vs change



*Example of the Landcover Map for Wicklow Town



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through a public sector partnership.*



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Registration, Valuation,
Surveying

Thank You

Further Information

EPA Website:

<https://www.epa.ie/our-services/monitoring--assessment/assessment/mapping/national-land-cover-map/>

Tailte Éireann:

Website - <https://osi.ie/products/professional-mapping/national-land-cover-map/>

Blog - <https://osi.ie/blog/a-new-national-land-cover-map-for-ireland/>

Final Report - https://osi.ie/wp-content/uploads/2023/04/NLC_Final_Report_V3.1_FINAL_110423.docx.pdf

Data Enquires:

corporatesales@tailte.ie