



TOOLKIT FOR UNDERTAKING LANDSCAPE CHARACTER ASSESSMENT

2024



RESEARCH TEAM

The Reframe team was supported by the EPA Research Programme 2021–2030.

The team consisted of Ruth Minogue (Minogue Environmental Consulting Ltd); Dr Craig Bullock, Dr Karen Foley and Laura Kearney (University College Dublin); Frank Coyne (Aegis Archaeology Ltd); Pat Doherty (Doherty Environmental); Dr Ronan Hennessy (Geoscene); Dr Conor Norton (Loci Ltd); and Eilís Vaughan (Minogue Environmental Consulting Ltd).

ACKNOWLEDGEMENT

This project is funded under the EPA Research Programme 2021-2030, and co-funded by the Department for Agriculture, Food & Marine. The EPA Research Programme is a Government of Ireland initiative funded by the Department of the Environment, Climate and Communications.

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ISBN: 978-1-80009-165-8

ENVIRONMENTAL PROTECTION AGENCY

An Ghníomhaireacht um Chaomhnú Comhshaoil
PO Box 3000, Johnstown Castle, Co. Wexford, Ireland
Telephone: +353 53 916 0600 Fax: +353 53 916 0699
Email: info@epa.ie Website: www.epa.ie

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Glossary of Terms

- **Historic landscape character assessment (HLCA)** is a comprehensive method used to characterise landscapes from an archaeological perspective focusing on time–depth. It both identifies and analyses historic character. It assesses different attributes in the landscape such as sensitivity, significance and pressures of change.¹
- **Land cover** refers to the materials that are physically present on the Earth’s surface (and comprises natural vegetation, freshwater and non-living surfaces, including peatlands, grassland and tree-covered areas).²
- **Landscape** “means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors”.³
- **Landscape and visual impact assessment** is a tool used to identify and assess the significance and effects of change, resulting from development, both on the landscape as an environmental resource and on people’s views and visual amenity.⁴
- **Landscape character** is the combination of characteristics arising from physical/natural and socio-economic factors and the often complex interrelationships that make one landscape different from another.⁵
- **Landscape character areas** are unique, geographically specific areas of a particular landscape type. Each area has its own individual character and identity, even though it shares the same generic characteristics with other areas of the same type. Landscape character areas take on the names of specific places, for example Newcastle Lowlands, Youghal Bay or The Burren.
- **Landscape character assessment (LCA)** is the process of identifying and describing variations in the character of the landscape. It seeks to identify and explain the unique combination of elements and features (characteristics) that make landscapes distinctive.⁶
- **Landscape character types (LCTs)** “are distinct types of landscape that are relatively homogeneous in character. They are generic in nature in that they may occur in

¹ Lambrick, G., Hind, J., Wain, I. (2013), *Historic Landscape Characterisation in Ireland – Best Practice Guidance*, the Heritage Council, Kilkenny, Ireland.

² <https://www.gov.ie/en/publication/f272c-land-use-review-phase-1/>

³ Council of Europe (2000), *European Landscape Convention*, Council of Europe, Florence.

⁴ Landscape Institute, Institute of Environmental Management and Assessment (2013), *Guidelines for Landscape and Visual Impact Assessment*, Third Edition, Routledge, Abingdon, UK.

⁵ Tudor, C. (2014), *An Approach to Landscape Character Assessment*, Natural England, York, UK.

⁶ Ibid.

different areas in different parts of the country, but wherever they occur they share broadly similar combinations of geology, topography, drainage patterns, vegetation, historical land use and settlement pattern”,⁷ for example “Upland Farmland and Foothills” or “Coastal Drumlin Farmland”.

- **Landscape policy** means an “expression by the competent public authorities of general principles, strategies and guidelines that permit the taking of specific measures aimed at the protection, management and planning of landscapes”.⁸
- **Landscape quality objective** “means, for a specific landscape, the formulation by the competent public authorities of the aspirations of the public with regard to the landscape features of their surroundings”.⁹
- **Land use** represents activities undertaken at a location and usually implies the existence of some form of human intervention or management. Examples of land use include residential, agriculture, recreational or forestry.¹⁰
- **Local landscape character assessment** is a similar approach to an LCA but on a smaller scale, usually an area between 5 and 10 km². It is usually a community or local authority initiative and records local landscape characteristics, including historic, ecological and cultural qualities. A local landscape character assessment can be used to identify features and key landscape issues relevant to the local community.
- **Public participation networks (PPNs)** are an important resource for any landscape character assessment. They have access to local community groups, non-governmental organisations and trade groups and have experience with co-designing with the community. Resource workers are funded and allocated to each local authority to facilitate citizens having an improved voice in policymaking in their county or city.
- **Seascape** refers to an area, as perceived by people, from land, sea or air, where the sea is a key element of the physical environment.
- **Seascape character area** is a unique geographical area of land, intertidal and marine area with a recognisable sense of place and identity.¹¹

⁷ Ibid.

⁸ Council of Europe (2000), European Landscape Convention, Council of Europe, Florence.

⁹ Ibid.

¹⁰ <https://www.gov.ie/en/publication/f272c-land-use-review-phase-1/>

¹¹ Northern Ireland Environment Agency (2014), *Northern Ireland Regional Seascape Character Assessment*, Belfast.

- **Seascape character assessment** is the process of identifying, mapping and describing variation in the character of the seascape. It seeks to identify and explain the unique combination of elements and features that makes seascape distinctive.¹²
- **Townscape** is “the landscape within the built-up area, including the buildings, the relationship between them, the different types of urban open spaces, including green spaces and the relationship between buildings and open spaces”.¹³



¹² Ibid.

¹³ Landscape Institute, Institute of Environmental Management and Assessment (2013), *Guidelines for Landscape and Visual Impact Assessment*, Third Edition, Routledge, Abingdon, UK.

INTRODUCTION

The people spoke of its woods and outskirts as Daire-caol, the Narrow Oak Wood, and Daroda, the Two Roads, and Druim-da-Rod, their Ridge ... The red mud of the road, the purple heather and foxglove, the brown bogs were a contrast to the grey rocks and walls of Burren and Aidhne, and there were many low hills brown when near, misty blue in the distance; then the Golden Mountain, Slieve nan-Or, "where the last great battle will be fought before the end of the world".

Lady Gregory (1920), *Visions and Beliefs in the West of Ireland*¹⁴

I. The Toolkit

This toolkit is one of the outcomes of the **Reframe** research project, **NE1063** (carried out as part of the EPA Research Programme 2021–2030), examining new approaches to landscape character assessment (LCA). Over a period of 18 months, our research team compiled a literature review, collected and analysed available geographical information system (GIS) data, met with stakeholders, held workshops and studied three pilot areas in the East, Midlands and South of Ireland. A novel approach to defining landscape character types (LCTs) using readily available datasets was tested in the field and included in the technical guide, please see the appendices. The toolkit has borrowed extensively from existing guidelines while also incorporating new research and case study results. The purpose of the LCA toolkit is to provide a consistent and comprehensive approach for the baseline description of landscape character.

II. What is Landscape Character Assessment?

LCA is the process of identifying and describing variation in the character of the landscape. LCAs identify and explain the combination of elements and features that make landscapes distinct from one another by mapping and describing LCTs and landscape character areas. The associated description of a landscape's distinctive characteristics shows how the landscape is perceived and experienced by people.¹⁵ LCA is described as an "integrated, multi-disciplinary,

¹⁴ Gregory, A. and Yeats, W.B. (1920), *Visions and Beliefs in the West of Ireland: With Two Essays and Notes*. Second Series, G.P Putnam's Sons, New York and London, The Knickerbocker Press, New York. Reproduced under the terms of the Project Gutenberg licence (www.gutenberg.org/license).

¹⁵ <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/what-landscape-character-assessment>

consultative, and forward planning process”,¹⁶ which can be used to manage and protect landscapes. LCA has the potential to deepen our understanding of how the landscape is shaped and identify opportunities for further action (e.g. agri-environmental schemes, tourism, protection of the landscape and restoration projects).

The LCA process is not designed to prevent change in the landscape. It is intended to aid decision-making, describe what the landscape is like today and how it evolved, and identify possible trends for future change.¹⁷

LCA can inform policy planning and development management and guide/inform decision-makers in assessing development proposals that will change the landscape.

LCA should facilitate decisions that are in keeping with national and regional landscape objectives. The character of a valued landscape, once identified, can be maintained and enhanced with the proper guidance.

¹⁶ Transport Infrastructure Ireland (2020), Landscape Character Assessment (LCA) and Landscape and Visual Impact Assessment (LVIA) of Specified Infrastructure Projects – Overarching Technical Document, Dublin.

¹⁷ Scottish Natural Heritage (n.d.), Landscape Considerations in Strategic Environmental Assessment, Inverness, UK.

Landscapes Come in a Wide Range of Types



Figure 1: Royal Canal, Dublin
Image: Ruth Minogue



Figure 2: Groody Road, Limerick
Image: Ruth Minogue



Figure 3: River Barrow
Image: Ruth Minogue



Figure 4: Dungarvan Bay
Image: Ruth Minogue



Figure 5: Uphills, Co. Wicklow
Image: Laura Kearney



Figure 6: Outskirts of South Co. Dublin
Image: Laura Kearney



Figure 7: Deer at Phoenix Park
Image: Laura Kearney



Figure 8: Arable land, Co. Tipperary
Image: Laura Kearney

III. Who is the toolkit for?

The toolkit is primarily designed as a practical guide or manual for planners, local authorities, landscape architects and consultants tasked with carrying out an LCA on a regional or county scale. The approach can be applied at a local level by community-led initiatives subject to appropriate technical support. Currently, LCAs are almost exclusively undertaken at a county level as a means of preparing a supplementary document to the county development plan. They are either led or commissioned by the local authority.

Who are the potential users of a landscape character assessment?

A non-exhaustive list includes planners, landscape architects, environmental consultants, state bodies (such as the Forestry Service, Fáilte Ireland, the National Parks & Wildlife Service (NPWS) and the Environmental Protection Agency (EPA)) and those undertaking environmental assessments of plans/projects across different land use sectors. LCAs can be used proactively to inform design and restoration strategies and can be used by local communities to support public-realm planning or local landscape initiatives.

IV. Why Undertake a Landscape Character Assessment?

The European Landscape Convention (ELC) defines a landscape as “an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors”.¹⁸ In response, signatories to the ELC have explored methods of integrating natural and cultural aspects of landscapes, together with people’s perceptions, to create a spatial framework for planning and development. Ireland ratified the ELC in 2002 and it came into force in 2004.¹⁹ A critical component of the ELC and LCAs is that they apply to all landscapes:

“The Convention applies to the entire territory and covers natural, rural, urban and peri-urban areas. It includes land, inland water and marine areas. It concerns landscapes that may be considered outstanding as well as everyday and degraded landscapes.”²⁰

Council of Europe – Landscape Convention

¹⁸ Council of Europe (2000), European Landscape Convention, Council of Europe, Florence.

¹⁹ For the legal and policy framework, see Annex 1.

²⁰ <https://www.coe.int/en/web/landscape/home>

The National Landscape Strategy for Ireland 2015–2025²¹ is a high-level policy framework. Its stated objectives include recognising landscapes in law, developing a national LCA, developing landscape policies, increasing landscape awareness, identifying education and training needs, and strengthening public participation (see Annex I for further planning and policy information).

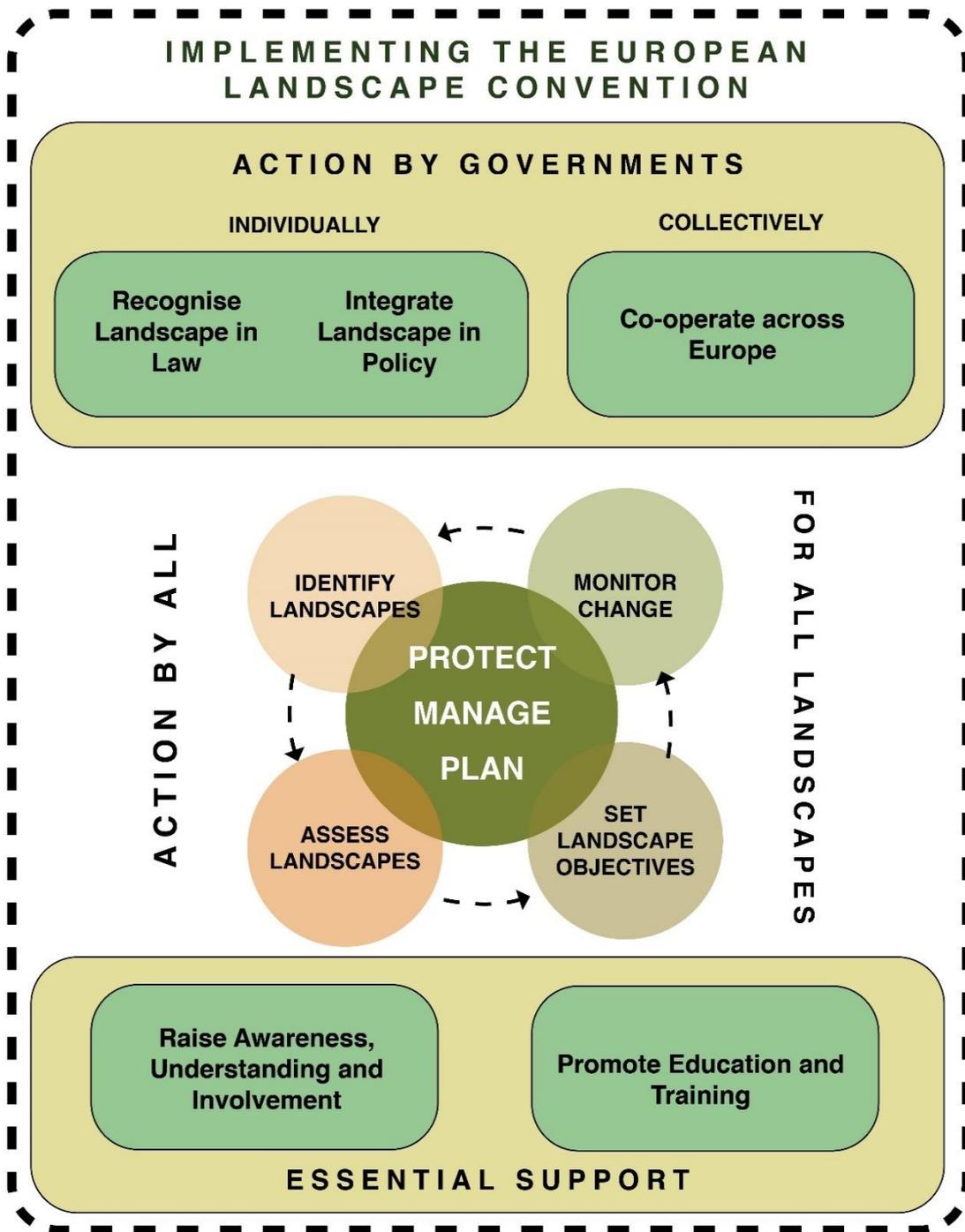


Figure 9: Implementing the ELC, adapted from Countryside (2008) and based on a concept by Michael Dower and Adrian Phillips

²¹ <https://www.gov.ie/en/publication/8a59b-national-landscape-strategy/>

V. Current Landscape Policy in Ireland

Almost all local authorities in Ireland have completed an LCA as part of their respective county/city development plans; however, a national or regional LCA would deliver on the commitments made in the National Landscape Strategy for Ireland 2015–2025 as well as the national and regional planning objectives set out in the National Planning Framework and Regional Spatial and Economic Strategies (RSEs). Northern Ireland has completed a regional LCA to provide an evidence base that can be used by planners, developers and the public. LCAs in Ireland are still inconsistent in range, nomenclature and approach. The intention of this toolkit is to improve the uniformity of the approach to preparing an LCA. Please see Figure 10 for an overview of relevant planning and policy frameworks.

| Key Influences | Legislation and Statutory Guidance | International Reference Practice Guidance |
|--|---|--|
| <p>European Landscape Convention 2000 (Council of Europe)</p> <p>Green Infrastructure and Nature Based Solutions (European Commission)</p> <p><i>EU Nature Restoration Law: under consideration (June 2023)</i></p> | <p>European Environmental Directives (e.g. SEA, AA, WFD, MSP, EIA) *</p> <p>Public Participation Directive (2003/35/EC), and the Birds (79/409/EEC) and Habitats (92/43/EC) Directives</p> | <p>EUROPEAN</p> <p>Natural England (2014). An Approach to Landscape Character Assessment</p> <p>Natural Heritage and the Countryside Agency (2002). Landscape Character Assessment Guidance for England and Scotland.</p> |
| <ul style="list-style-type: none"> • Project Ireland 2040 • National Development Plan, (NDP) 2018-2030 • Ireland 2040: National Planning Framework (NPF) • Climate Action Policy (e.g. Climate Action Plan 2023) Energy and renewable energy policy • National Strategic Objective 14 (on the landscape) • National Landscape Strategy, (NLS) 2015-2025 <p><i>Land Use Review – Phase 1 (DAFM, 2023)</i> <i>Phase II will consider policies, measures, and actions</i></p> | <ul style="list-style-type: none"> • Legislation SEA, AA, WFD, MSP, EIA etc. SEA/AA Planning and Development Act, 2000 and Planning Regulations, 2001, as amended • <i>Draft Planning and Development Bill 2022 (Jan 2023)</i> • Development Plans - Guidelines for Planning Authorities (2022) • The Landscape and Landscape Assessment: Draft Guidelines for Planning Authorities (DoELG, 2000) • EPA Guidelines: Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) (2022) • TII, (2020) Landscape Character Assessment (LCA) and (LVIA) of Proposed National Roads - Standard (PE-ENV-01102) Pertaining to roads but includes good guidance on LCA. • Climate Action and Low Carbon Development (Amendment) Act 2021 • The Heritage Council: Historic Landscape Characterisation in Ireland Best Practice Guidance | <p>NATIONAL</p> |
| <p>Regional Economic and Spatial Strategies</p> | <p>Regional Landscape Character Assessments (31 City and County level LCAs)</p> | <p>REGIONAL</p> |
| | <ul style="list-style-type: none"> • County Level Development Plans • Landscape Character Assessment (County Level) • Green Infrastructure studies and Landscape policies and objectives (Eco-system Services studies e.g.) • Local Authority Climate Action Plan Guidelines • Local Area Plans • Architectural Conservation Areas/Conservation Management Plans • Local Landscape Character Assessment (LLCA) • National Landscape Alliance: A Guide to Undertaking a 'Landscape Circle' Study in 7 easy steps (local /community approach) | <p>LOCAL</p> <p>* EIA: Environmental Impact Statement, SEA: Strategic Environmental Assessment AA: Appropriate Assessment WFD: Water Framework Directive MSP: Marine Spatial Planning</p> |

Figure 10: Overview of landscape-related planning and policy legislation, statutory guidance and key influences. Contains public sector information licensed under the Open Government Licence v3.0

VI. The Landscape Wheel

First introduced in *Landscape Character Assessment Guidance for England and Scotland*,²² the Landscape Wheel is a key visual aid that illustrates the natural, cultural, social, perceptual and aesthetic elements of landscapes.

The LCA process seeks to consider and combine these factors in its methodology, and it is the composite nature of landscapes that is critical to this LCA process and methodology.

*“The language of landscape is our native language ... humans touched, saw, heard, smelled, tasted, lived in and shaped landscapes before the species had words to describe what it did”.*²³

AW Spirn – The Language of Landscape

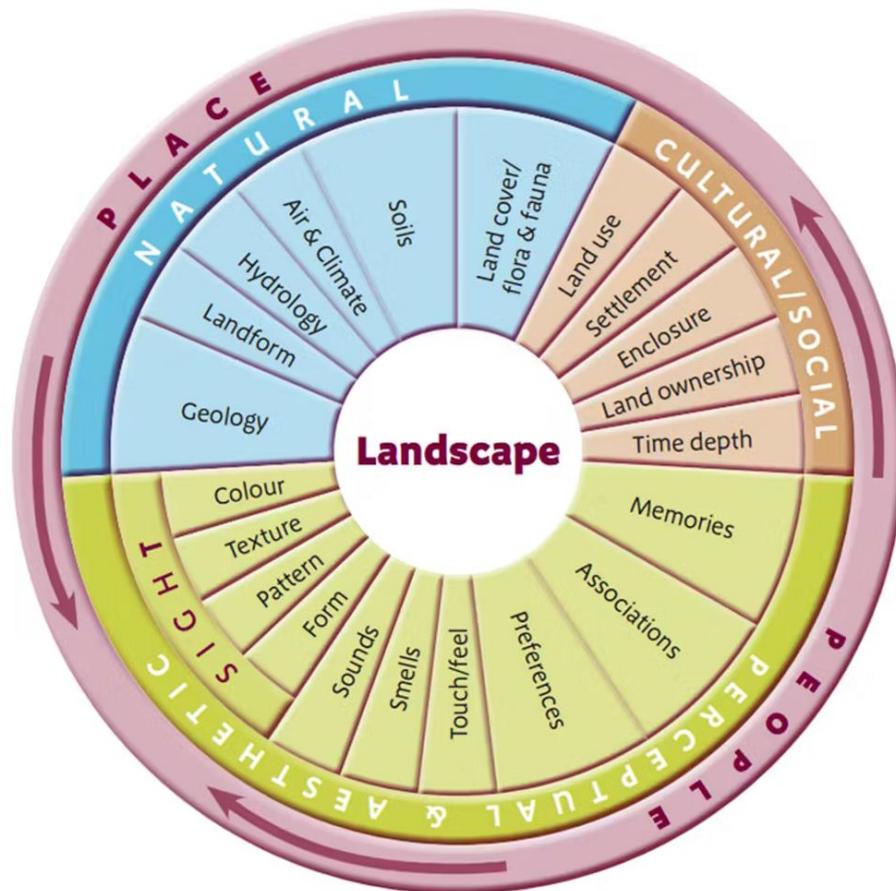


Figure 11: The Landscape Wheel - Originally developed by Carys Swanwick, 2002, for Natural England. Contains public sector information licensed under the Open Government Licence v3.0

²² Swanwick, C., Land Use Consultants (2002), *Landscape Character Assessment Guidance for England and Scotland*, Scottish Natural Heritage and the Countryside Agency, Edinburgh and Cheltenham, UK.

²³ Spirn, A.W. (1998), *The Language of Landscape*, Yale University Press, New Haven, CT.



Figure 12: Upland Landscape of Co. Wicklow. Image: Laura Kearney

VII. The Reframe Toolkit: Overview of the Landscape Character Assessment Process – Step-by-Step Guide

The following sections present in detail the “how to” of LCAs, with Figure 13 summarising the main steps.

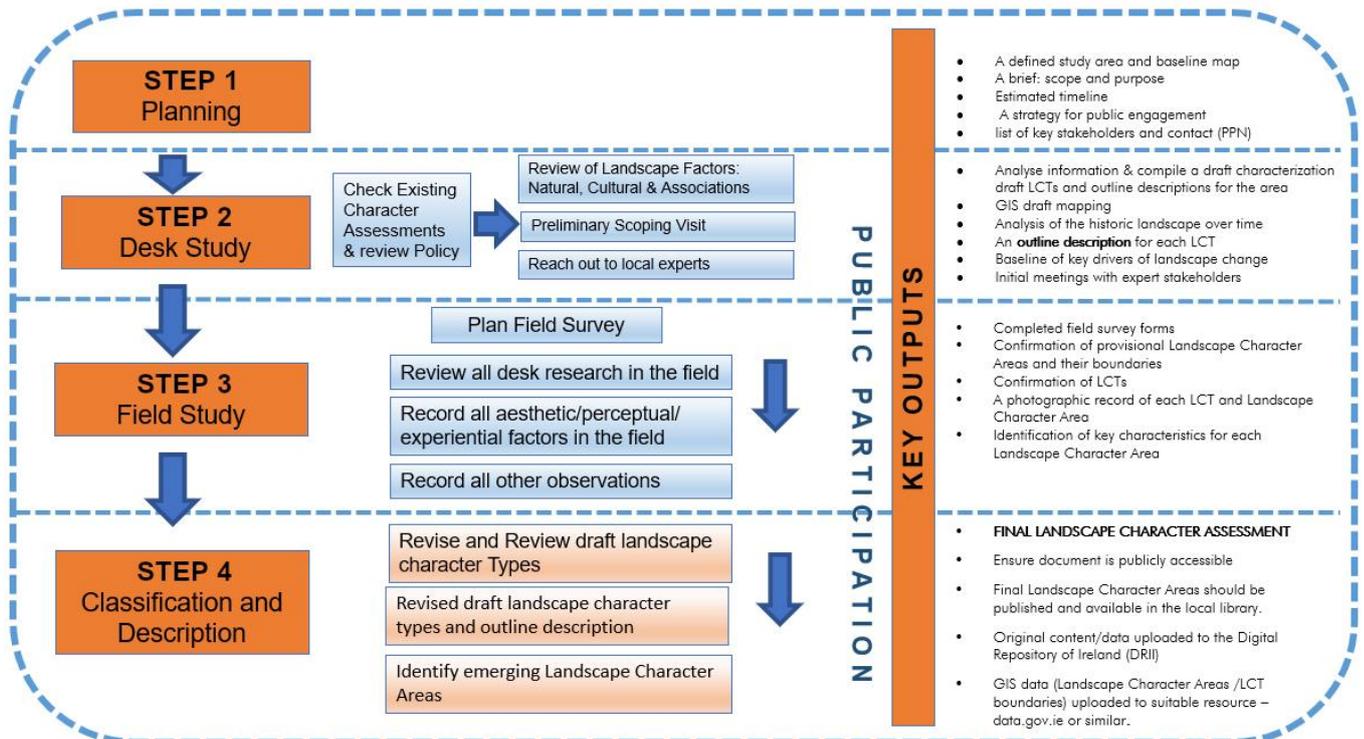


Figure 13: Landscape Character Assessment Overview

Step 1: Planning, Purpose and Scope

1 STEP 1: PLANNING, PURPOSE AND SCOPE

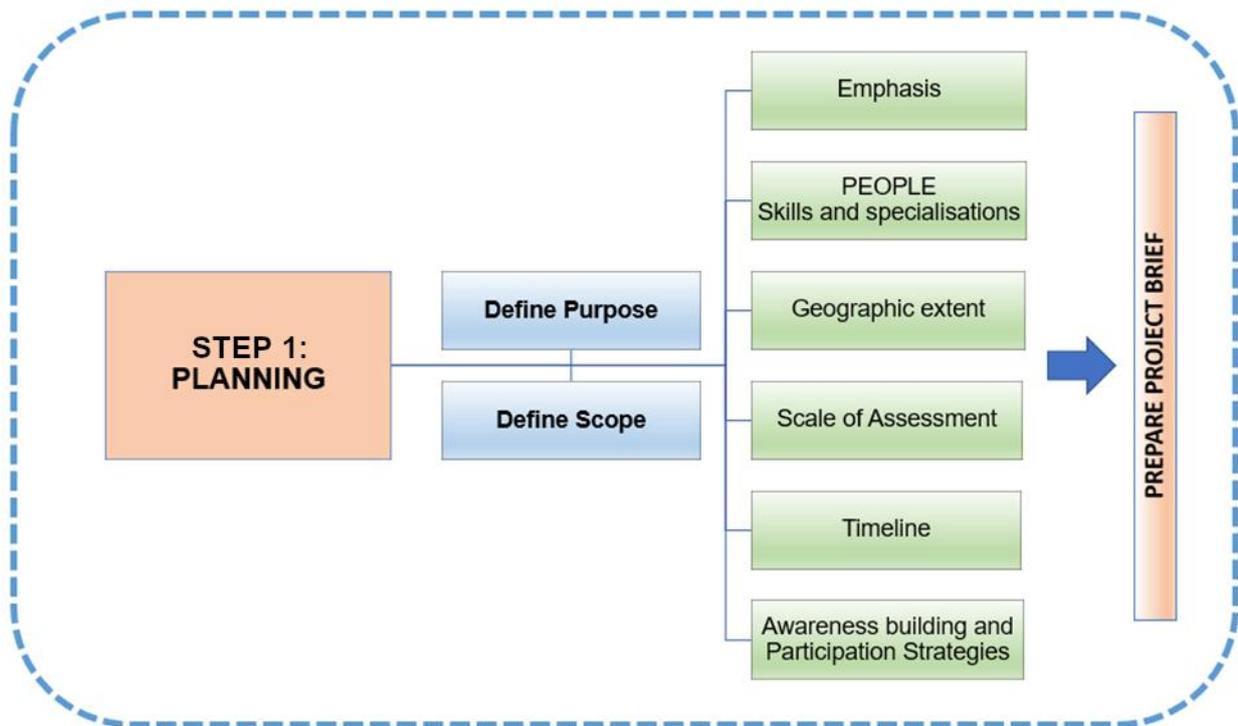


Figure 14: Step 1: Planning

1.1 Define Purpose and Scope

Define the purpose of your assessment

What is the reason for carrying out an LCA? Sample answers include:

- It is part of the requirements of fulfilling a regional policy objective (RPO) in a RSES or a statutory county development plan.
- It will examine an area for potential protection such as conservation of heritage, culture or habitat, restoration or agri-environmental scheme (extension of or new national park, consideration as a United Nations Educational, Scientific and Cultural Organization world heritage site).
- It is intended to raise awareness of the character of an area locally, regionally or nationally.
- It is a requirement for a large interregional infrastructure project.

Step 1: Planning, Purpose and Scope

- It is needed to update a current LCA that is out of date and not fit for purpose as a baseline for the assessment of a plan (strategic environmental assessment) or project (environmental impact assessment).

Define the scope of the assessment

What is the most suitable type of assessment for the area?

- Depending on spatial scale, a country-level LCA is often linked to a county-level development plan, a local LCA to a local area plan and a historic landscape character assessment (HLCA) to a demesne Architectural Conservation Area or proposed infrastructure project. Other spatial areas might require a seascape character or townscape character analysis.

What areas should be included in the assessment and why?

- A town centre masterplan, for example, will benefit from a townscape character assessment, while offshore renewable planning should include a baseline seascape character assessment. It is also important to note that while a county boundary or local area plan boundary will provide the defined area and focus of study, consideration of adjacent areas of landscape are important as landscape and seascape character transcend administrative boundaries.

1.2 Estimated Timeline

A proposed timeline and baseline project management scheme should be drawn up, defining the periods for the different steps of the study. This is the beginning of record keeping, and all subsequent decisions should be recorded by the project manager or person responsible for delivering the LCA. This timeline will be affected by:

- the geographical size of the area;
- the availability and quality of existing LCAs for baseline review;
- seasonal constraints, weather, etc.;
- the availability of key personnel and anticipated stakeholder engagement and availability;
- requirements for consultation at various stages of the project.

Step 1: Planning, Purpose and Scope

1.3 Geographical Extent: Scale

LCAs can be carried out on different scales, ranging from national to local. It is important to establish the most appropriate or required scale for your project. Most regional LCAs will have a defined scale or geographical area if they are linked to county boundaries. Seascape character assessments will follow a similar approach in terms of defining scale and methodology.²⁴

1.4 People: Skills and Expertise

What **skills and specialisations** are required for the LCA? A team should be established to deliver the LCA. Depending on the budget and skillset of the team, the LCA may be carried out in-house or outsourced to a consultancy firm. Often the work is a collaboration between technical officers, planners, landscape architects and consultants. This is the time to put together the team who will manage the project. The box below lists skills that are useful for LCA teams. This list is not exhaustive, nor is it essential that all these skills are present in the team. Access to all experts mentioned in this box may not be possible because of, for example, a lack of resources, expertise or time. An expert stakeholder²⁵ contact list should be compiled and consulted during all stages of the LCA process.

²⁴ Please see, for example, Marine Institute (2020), Regional Seascape Character Assessment for Ireland 2020 https://emff.marine.ie/sites/default/files/bluegrowth/PDFs/final_seascape_character_assessment_report_with_annexes.pdf

²⁵ A stakeholder is an individual or group who has an interest in a subject or place. An expert stakeholder is someone with expert knowledge and a specialisation in that area.

Step 1: Planning, Purpose and Scope

Table 1: Expert Skills that are useful for LCA teams

The **Steering Group** should comprise people with planning skills, architectural/conservation skills and natural heritage/ecology skills, landscape architect/landscape specialists and social inclusion/community leaders.

Skills needed for LCAs

- GIS
- Archaeology
- Ecology
- Earth science (geology/hydrology/soil)
- Landscape architecture/landscape specialisation
- Participation and engagement specialisation/experience

List of experts and organisations at regional/county level to include in stakeholder map (see section 1.6)

- Public participation network (PPN)
- Local community groups
- Local non-governmental organisations
- Local historians and researchers
- Local authority heritage forums, heritage officer
- Local authority strategic policy committees
- Elected representatives/council or municipal district level
- Representatives from Teagasc, NPWS, Coillte, Forest Service (part of the Department of Agriculture, Food and the Marine), local authority departments and offices such as planning, transport, climate, infrastructure, environment and, where present, biodiversity, heritage, arts, and tourism, local authority water programme catchment team, non-governmental organisations and sectoral stakeholders, as appropriate, such as
- agriculture, fishing, tourism and energy.

Step 1: Planning, Purpose and Scope

1.5 Level of Engagement: Public Participation and Landscape Character Assessment

A 2014 study of how public knowledge of landscapes feeds into LCAs concluded that although expert views are invaluable they are unreliable for gaining an understanding of the value that people attach to their landscape.²⁶ It is essential that LCAs are based on an understanding of the values that people attach to their landscape and that they are undertaken in partnership with expert leads.

Consultation as part of the normal planning process is not a substitute for participation and collaboration from the outset. Discovering what a landscape means to people requires their input and involvement in the LCA process. The more engaged the public, the more successful an LCA will be as an informational tool. The Department of Rural and Community Development (2023) states that community engagement “avoids wasting resources or efforts due to mistaken assumptions when making decisions”.²⁷

Reasons for improving participation in LCAs:

- **Fulfils legal obligations.** Each signatory to the ELC is committed to introducing measures that improve participation in policymaking for the general public.
- **Improves the democratic process.** Democracy should be participative rather than representative.²⁸
- **Incorporates local knowledge.** It is essential that local experts are included in field studies to fully understand and incorporate local knowledge.²⁹
- **Fills knowledge gaps.** Identifying key cultural ecosystem services during the LCA process will help to fill the gap in knowledge around the valuation of **ecosystem**

²⁶ Butler, A., Berglund, U. (2014), Landscape character assessment as an approach to understanding public interests within the European Landscape Convention, *Landscape Research*, **39**(3), 219–236.

²⁷ Department of Rural and Community Development (2023), *A Guide for Inclusive Community Engagement in Local Planning and Decision Making*, Government of Ireland, Dublin.

²⁸ Department of the Environment, Community and Local Government (2014), Working Group Report on Citizen Engagement with Local Government, Government of Ireland, Dublin.

²⁹ Santé, I., Fernández-Ríos, A., María Tubío, J., García-Fernández, F., Farkova, E., Miranda, D. (2019), The Landscape Inventory of Galicia (NW Spain): GIS-web and public participation for landscape planning, *Landscape Research*, **44**(2), 212–240.

Step 1: Planning, Purpose and Scope

services. Improving participation also has the potential added benefit of educating the public about ecosystem services in workshops and using interactive media.³⁰

As data collection will inevitably be part of an LCA, especially the collection of opinions on the landscape, it is important to draft a policy regarding the General Data Protection Regulation (GDPR), which came into effect in 2018. The GDPR defines regulations for the protection of personal data throughout the European Union.³¹

1.6 Project Planning: Stakeholder Mapping

Stakeholder mapping is a way of learning about the perspectives of stakeholders, their affiliations and the area they represent, their areas of interest and their perspectives.³² A stakeholder map (or communications/engagement plan) should be prepared at this stage to indicate key stages for engagement, participation and feedback, and the means necessary to undertake the engagement. This can be a “live” document that is updated over the course of the project. It can also take a visual form that enables the team to identify and assess the interests and influences of the key stakeholders. The International Association for Public Participation has useful resources for stakeholder mapping.³³ Suggestions, resources, new technology and case studies focused on engaging the public and increasing public participation are covered in Annexes 8 and 9 of this toolkit.

Identify your stakeholders. From the outset, seven key principles should apply when planning for stakeholder engagement:

1. Involve people from the beginning.
2. Find out who needs to be involved.
3. Make sure relevant people are not left out.
4. Use local resources.
5. Prioritise marginal groups.

³⁰ Lopes, R., Videira, N. (2019), How to articulate the multiple value dimensions of ecosystem services? Insights from implementing the PArticulatES framework in a coastal social-ecological system in Portugal, *Ecosystem Services*, **38**, 100955.

³¹ <https://www.dataprotection.ie/sites/default/files/uploads/2019-04/A-Guide-to-help-SMEs-Prepare-for-the-GDPR.pdf>

³² https://cdn.who.int/media/docs/default-source/reproductive-health/contraception-family-planning/stakeholder-mapping-tool.pdf?sfvrsn=981f5162_3

³³ https://cdn.ymaws.com/www.iap2.org/resource/resmgr/pillars/spectrum_8.5x11_print.pdf

Step 1: Planning, Purpose and Scope

6. Enable stakeholders to take part at all stages.
7. Include other ways of targeting your audience (such as piggybacking on heritage, biodiversity, cultural open days and guided tours with surveys).

Please see Table 2 for an example of stakeholder mapping grid.

Table 2: Stakeholder mapping grid

| Name of organisation | Name of contact person/s (title and level) | Level of influence | Type of influence | Priority of engagement | Role and type of engagement |
|----------------------|--|--------------------|-------------------|------------------------|-----------------------------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Step 1: Planning, Purpose and Scope

1.7 Case Study: Public Participation in the Donegal Landscape Character Assessment

1.7.1 Donegal Landscape Character Assessment 2014: excerpt taken from the Donegal County Council website.

Public Participation occurred as part of the wider LCA public consultation process during a three-month period 2014. The LCA process was advertised in local press, on the council's website and Facebook and Twitter. A letter and information leaflet were sent out to over 400 community groups throughout the County outlining the LCA process, detailing drop-in events and explaining how to make a submission and become involved in the LCA process. Similarly, a letter and information leaflet was sent out to all public libraries, primary schools and secondary schools in the County in order to target a younger age cohort in the consultation process. Targeted notification on the LCA was also sent out to all neighbouring Local Authorities. An interactive mapping tool was developed encouraging digital submissions that were localised to a geographical point and to which submissions and photographs could be attached, and all methods of submission including digital submissions were encouraged and welcomed. There were a series of 5 structured public "drop in" events throughout the County during February 2014 and attended by members of the LCA team. There were a number of draft maps on display...in addition to rolling presentations and hand-out maps and documentation. The purpose of the public events was to encourage informed public participation and, on the whole, these events were well attended and had positive outcomes.³⁴

³⁴

<https://www.donegalcoco.ie/media/donegalcountyc/planning/pdfs/viewdevelopmentplans/landscapecharacterassessmentofcountydonegal/settlementcharacterassessmentofcountydonegal/Settlement%20Character%20Assessment.pdf>

Step 1: Planning, Purpose and Scope



1.8

Key Outputs of Step 1

- A defined study area.
- A brief report on the rationale of the geographical area, scope and purpose.
- An estimated timeline for the project.
- A strategy for public engagement and a social media campaign during the assessment.
- A comprehensive list of key expert stakeholders and non-expert stakeholders.
- PPN contacted.

Step 2: Desk Study and Data Collection

2 STEP 2: DESK STUDY AND DATA COLLECTION

A desk study consists of three stages:

1. reviewing relevant sources, including existing LCAs, adjoining county LCAs and current plans and policies;
2. conducting a preliminary site visit;
3. contacting local experts.

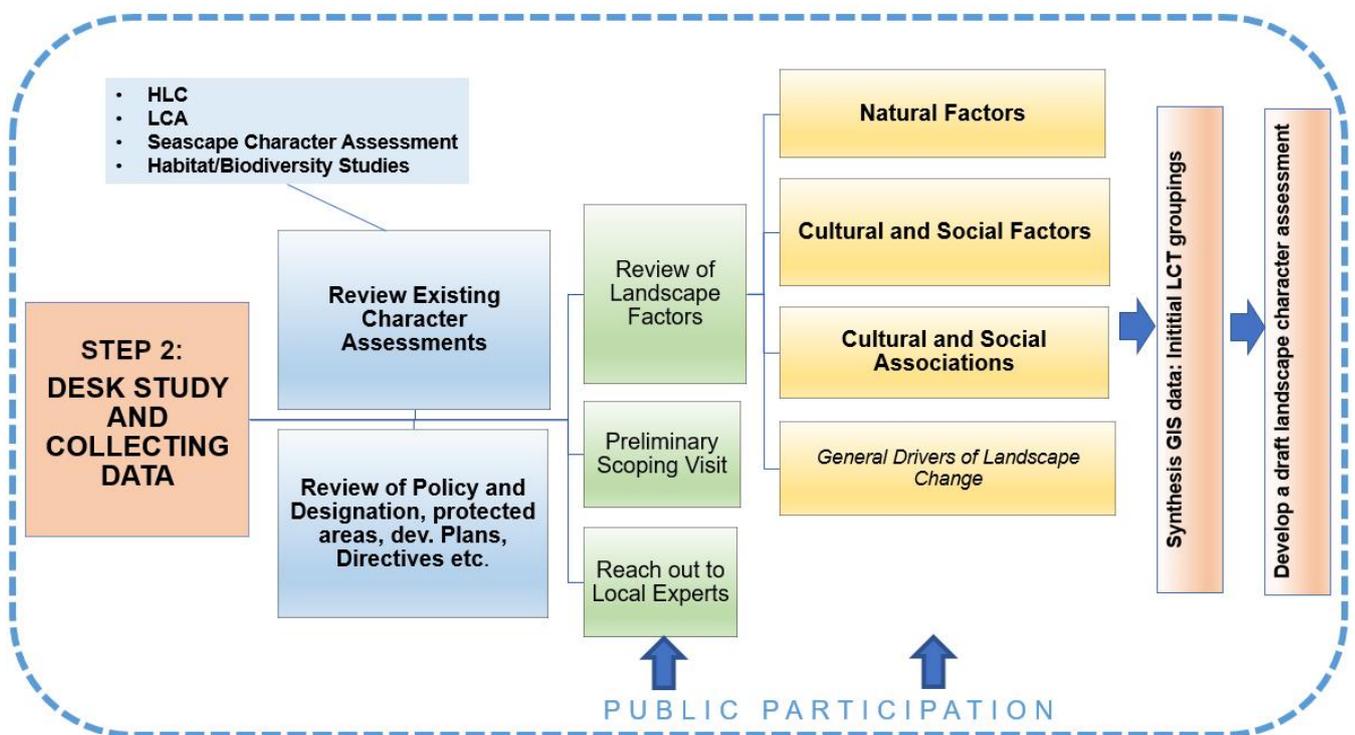


Figure 15: Step 2: Desk Study

2.1 Existing Landscape Character Assessment Review

Review all available assessments, any existing landscape or seascape character assessments, marine/coastal/biodiversity studies, HLCAs and local habitat studies both within the LCA area

Step 2: Desk Study and Data Collection

and, where possible, including areas adjoining the area to be assessed. A regional seascape character assessment (Marine Institute, 2020) is now available for Ireland.³⁵

2.2 Review of Relevant Plans, Policies, Programmes and Statutory Designations

Review relevant planning and land use policies and programmes, conservation designations and protected areas (Natural Heritage Areas, Special Areas of Conservation, etc.). See Annex 1, “Planning and Policy Related to Landscape”, for relevant statutory policy. Review potential drivers of change in the landscape as a general overview. A high-level understanding of the key drivers of change in the environment will help to raise awareness of the trends and pressures of the landscape such as changing agricultural practices and pressure for housing and infrastructure. Local biodiversity, water, climate and heritage officers along with locally elected representatives and forward planners will have expert localised knowledge of these issues. A more detailed examination of drivers and pressures will be carried out later in the assessment.

2.3 Preliminary Site Visit

Although extensive field studies will be taken in the next step of the assessment (Step 3, “Field Work/Study”), it is important to schedule a primary “scoping” site visit to get an initial “sense of place”. This should be carried out very early in the process, especially for those who are not familiar with the location. This allows important first impressions to be formed. Bring a 1:50,000 Tailte Éireann Discovery Series map to mark up during the scoping visit. Developing an understanding of potential LCTs present in the study area by studying the LCTs of neighbouring counties can be a useful exercise before the first outing. When driving around, it is imperative to take georeferenced photos. Make sure that the team’s cameras or mobile phones have the location-sharing tab turned on, as this is essential for subsequently reviewing the images and route. Images can be uploaded to any map viewer and analysed later for recording information on elevation, geology, etc. Drone footage can be useful for extensive areas and the national land cover map also.

³⁵ [final seascape character assessment report with annexes.pdf \(marine.ie\)](#)

Step 2: Desk Study and Data Collection

2.4 Collecting Data on Cultural and Social Associations

Data from natural factors are easiest to source, followed by cultural and social factors in the form of historical mapping and photography. Finding the cultural and social associations of a landscape is less tangible and requires engaging with local sources of art, folklore and heritage. Conversations with local experts (librarians, historians, heritage officers, locally elected officials) can point you in the right direction for these initial studies. Many landscapes not only have been mapped, but have also been documented in other ways, for example written about in journals, studied by naturalists or have provided inspiration for stories and poems. Certain landscapes have been immortalised in paintings and films. It is important not to ignore these more complex accounts of a place. These traces are clues to the cultural landscape and enhance the “time–depth” and quality of the narrative. The perceptual qualities of a landscape can be experienced and recorded in field studies. Figure 15 presents sources for the desk study.

Step 2: Desk Study and Data Collection

Sources for desk study



Figure 16: Sources for desk study. Image: Laura Kearney

See Table 3 for suggested baseline data on national and regional scales and Annex 5 for a list of map viewers and data to download.

Step 2: Desk Study and Data Collection

2.5 Sourcing Datasets: Mapping Component of Landscape Character Assessments

2.5.1 *Mapping Component of Landscape Character Assessments*

The mapping component of an LCA occupies both the initial desk study phase of the process (Step 2) and the later phase of classification and description (Step 4). The desk study mapping phase requires the collation and review of relevant geographical information in the form of published maps and spatial data. The role of GIS and the generation of a project-specific spatial database is essential at this stage. Following the selection of relevant geographical information and spatial data, a suite of maps can be produced that serve to communicate aspects of the natural and cultural character of the landscape. The GIS part of the desk study consists of three major stages: (1) selection of landscape variables for consideration for the LCA; (2) data collation and pre-processing; and (3) data analysis and visualisation, map generation and provisional characterisation, which are then tested in the field. Maps can be generated using standard georeferenced digital spatial data (vector data and raster imagery) available in the open data domain or held by data owners (e.g. local authorities, state mapping agencies). Moreover, non-georeferenced maps can be digitised (scanned) and georeferenced in a GIS as image overlays. Online GIS maps (e.g. historical maps, aerial imagery) can also be consulted as supporting references.

The collation of a portfolio of maps and geographical information is key to pre-field study familiarisation with landscape elements that will require further attention in the field. Draft character areas and types can be considered through the analysis of landscape element patterns, and the interrelatedness of physical, hydrological, climatic, ecological and cultural (present and historical) characteristics can be deliberated. The desk study mapping phase should also be used to identify what aspects of the landscape are not represented by existing maps or spatial data and need to be considered (e.g. past land use practices, local climatic characteristics, smell and sounds, as described in the Landscape Wheel shown in Figure 11).

Step 2: Desk Study and Data Collection

Table 3 provides a selection of spatial data that have been used in LCAs and HLCAs in Ireland. To a large extent, the data associated with the “Natural Place” portion of the Landscape Wheel are publicly available in an open data format associated with the Creative Commons attribution (CC-BY) licence (<https://data.gov.ie/pages/opendatalicence>). Data pertaining to the “People – Perceptual and Aesthetic” portion of the Landscape Wheel either tend not to be in the public domain and to be held, for example, by local authorities or are not available in spatial format. The latter, non-spatial, data might not always be available or reproduced in layer form but can be used qualitatively alongside the spatial data layers displayed on a GIS.

Table 3: Suggested baseline data for LCAs – national and regional scales

| SUBSTRATE | | | |
|--|---|---------------------------------------|--|
| Theme/dataset | Description | Original Scale/ Resolution | Data source/provider |
| Bedrock Geology | Bedrock Geology | 1:100,000; 1:500,000 | Geological Survey Ireland https://www.gsi.ie/ |
| Irish Soil Information | Soil drainage, texture | 1:250,000 | Teagasc-EPA http://gis.teagasc.ie/ |
| Quaternary Sediments | Quaternary Sediments | 1:50,000 | Geological Survey Ireland https://www.gsi.ie/ |
| GEOMORPHOLOGY | | | |
| Elevation | Digital Elevation Model (DEM) | 25 m | EU Copernicus https://spacedata.copernicus.eu/ |
| Physiography | Topographic Profile Index (SAGA GIS) | 25 m | EU Copernicus https://spacedata.copernicus.eu/ |
| Geomorpho90m | Geomorphometry | 90 m | OpenTopography https://opentopography.org/ |
| WATER | | | |
| EPA WFD water bodies; Tailte Éireann rivers and lakes | Surface water bodies | 1:50,000; 1:250,000 | EPA; Tailte Éireann https://gis.epa.ie/ |
| Feature layer contains the spatial data for Waterways Ireland’s Blueways | Blueway trails, trail heads and access points for canoeing, start/finish points for cycling and walking trails and Blueway sections | Variable | Waterways Ireland https://wwi.maps.arcgis.com/ |

Step 2: Desk Study and Data Collection

Table 3 (continued): Suggested baseline data for LCAs – national and regional scales

| CLIMATE | | | |
|--|---|---------------------------------------|---|
| Theme/dataset | Description | Original Scale/ Resolution | Data source/provider |
| Met Éireann AAR | Annual average rainfall, 1981–2010 | 1 km × 1 km | Met Éireann https://www.met.ie/ |
| Met Éireann AAT | Annual average temperature, 1981–2010 | 1 km × 1 km | Met Éireann https://www.met.ie/ |
| LANDCOVER | | | |
| National Land Cover Map, (released 2023) | Reference year 2018 | 1 m ² | EPA, Tailte Éireann https://www.tailte.ie/en/ https://osi.ie/ |
| CLC 2018 | EU CORINE data | 25 ha | EPA https://gis.epa.ie/ |
| Landscape Classification of Ireland | Minimum mapping unit of 5 km ² . GSI Physiographic Units Level 3 and CLC 2018 (data include elevation, HNVf and soil type variables) | 1:250,000 | Teagasc Carlier <i>et al.</i> , 2018 ³⁶ https://t-stor.teagasc.ie/ |
| ECOLOGY | | | |
| SACs SPAs NHAs/pNHAs | Designated nature conservation areas | 1:10,560 | NPWS https://www.npws.ie/ |
| NPWS habitat and species data | Habitat and species data | Variable | NPWS https://www.npws.ie/ |
| Local habitat surveys | Local survey data | Variable at local level | Local authorities |

³⁶ Carlier, J., Doyle, M., Finn, J. A., Ó hUallacháin, D. Moran, J. (2021). A landscape classification map of Ireland and its potential use in national land use monitoring, *Journal of Environmental Management*, 289, 112498.

Step 2: Desk Study and Data Collection

Table 3 (continued): Suggested baseline data for LCAs – national and regional scales

| AGRARIAN | | | |
|---|--|---------------------------------------|--|
| Theme/dataset | Description | Original Scale/ Resolution | Data source/provider |
| HNVf | HNVf_distributed HNVf_distributed | ED 2 × 2 km (200 ha) | Teagasc https://t-stor.teagasc.ie/ |
| Commonage | Commonage GIS Dataset | 1:10,560 | NPWS https://www.npws.ie/ |
| Grassland (Copernicus) | Improved and semi- improved | | EPA https://gis.epa.ie/ |
| FORESTRY | | | |
| Copernicus HighRes Forestry | Copernicus HighRes Forestry | 20 m | EPA https://gis.epa.ie/ |
| CULTURAL | | | |
| Settlement | Copernicus Imperviousness Settlement | 20 m | EPA https://gis.epa.ie/ |
| Tailte Éireann open data, settlements and transport | Roads, rail, settlements | 1:250,000 | Tailte Éireann https://www.tailte.ie/en/ https://osi.ie/ |
| National monuments | Archaeology/cultural heritage | 1:100,000 | NMS https://www.archaeology.ie/ |
| Built heritage ³⁷ | RPS, NIAH, Architectural Conservation Areas | 1:10,000 | Variable availability; Department of Housing, Local Government and Heritage |
| Placenames Database of Ireland | Logainm | >1:10,000 | https://www.logainm.ie/ |
| Irish Townlands | Townlands | >1:10,000 | https://townlands.ie/ |
| Leisure routes, way-marked ways, Pilgrim ways | Leisure routes, way- marked ways, Pilgrim ways | 1:20,000 | https://www.heritagecouncil.ie/ |

³⁷ Other possible datasets for built heritage: SMR and NIAH records, ACAs (variable types held by local authorities), archaeological zones in towns, the Irish Historic Towns Atlas (available in hard-copy format and online: <https://www.ria.ie/irish-historic-towns-atlas-online-galway>), local study publications and journal articles.

Step 2: Desk Study and Data Collection

2.6 Landscape Character Types

2.6.1 *An Overview of the Methodology for Determining Baseline Landscape Character Types Through Geographical Information System Mapping*

The objective of mapping for the desk study component of LCA is to collate a graphical, spatial and contextual baseline data of landscape elements and character. At a practical level, the intention is to produce an “atlas-type” portfolio of maps to capture and communicate a series of landscape variables, to enable further consideration of the more pertinent landscape variables that should be factored into decision-making on landscape typologies and landscape character areas.

The approach to determining a landscape character typology for Ireland presented here attempts to improve the consistency of LCAs on varying spatial scales in Ireland. To date (2024), no national- or regional-scale landscape typology framework exists.

The adoption of a common and consistent approach to determining a landscape character typology can assist in the identification of regionally comparable landscape types and serve to provide statistically sound, defensible and repeatable spatial units on which to develop a landscape character typology and LCA processes. In the absence of a consistent methodology for determining LCTs, the mapping process will continue to result in a “patchwork” of spatially incoherent landscape assessment outputs, as has emerged in Ireland in the past three decades.

An abridged description of two methodologies for LCT mapping (“grid cell type” and “polygon feature method”) for developing an LCT framework is presented in the appendices. The methods demonstrate how spatial data and map-based information can be used to generate and identify draft LCTs, for subsequent verification in the field, which can then be incorporated into LCAs. LCTs are generated from generalised assemblages of three landscape element variables, of which two are core landscape elements, physiography and land cover, and the third variable is drawn from one of three landscape elements: bedrock, soil drainage or soil texture. These elements are described below:

- Physiography (landforms or elevation) describes the underlying natural geomorphometric dimension of the landscape.
- Land cover describes the visible surface character of the landscape.
- Bedrock geology describes the solid constituent of the physical landscape.

Step 2: Desk Study and Data Collection

- Soil drainage and soil texture describe the unconsolidated surface component of the landscape.
- A fifth variable, culture (e.g. settlement and transport), can be overlain to introduce the cultural dimension of the landscape.

Figure 16 provides a generalised overview of the steps and considerations involved in undertaking the mapping component of an LCA.

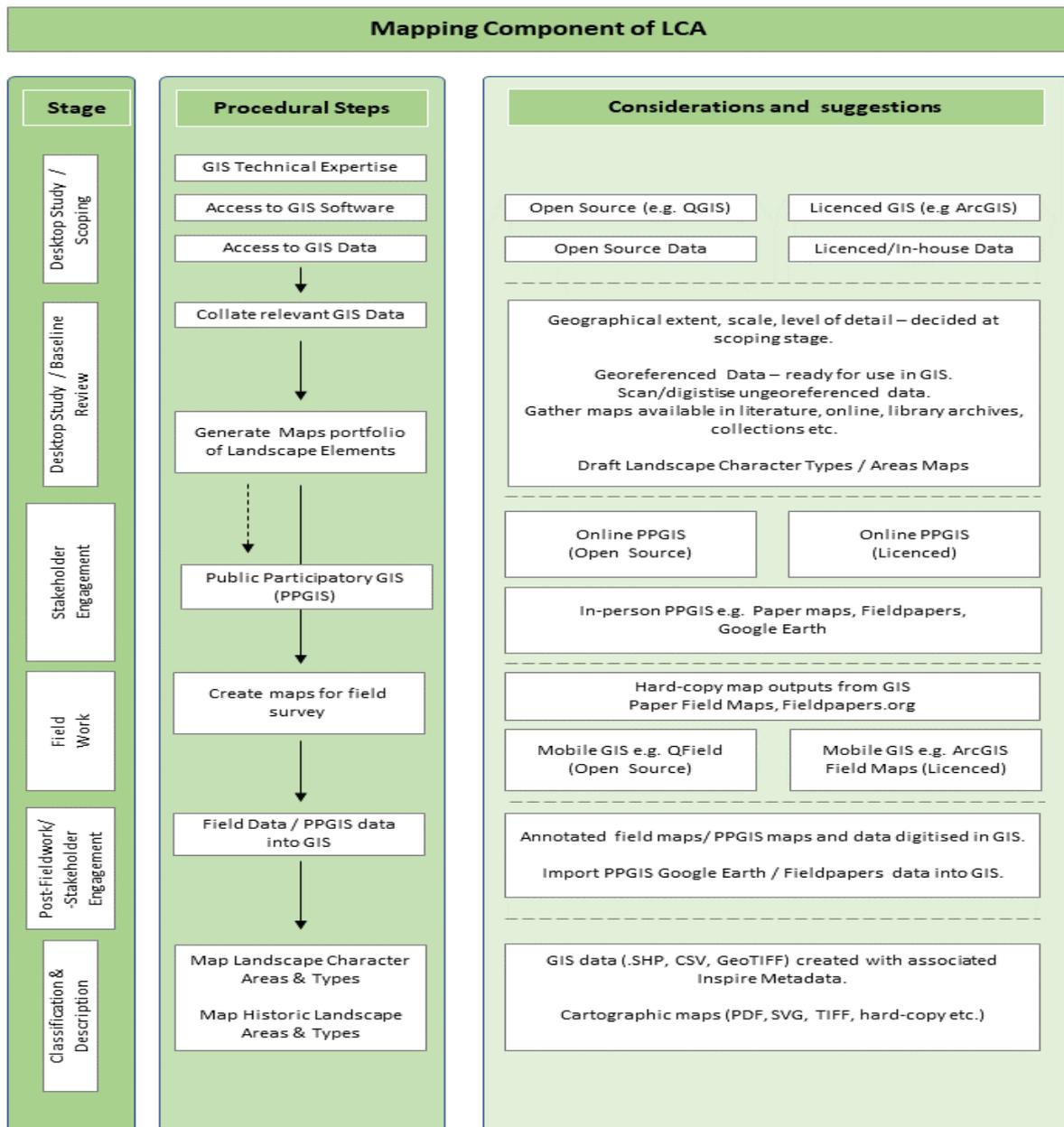


Figure 17: The steps and considerations involved in undertaking the mapping component of an LCA

Step 2: Desk Study and Data Collection

2.6.2 *Geographical Information Systems and Spatial Data*

The role of GIS in successfully delivering LCAs has been widely demonstrated. With the consistent and reliable availability of new and updated spatial data, particularly in the open data domain, the menu of landscape characteristics in spatial format is diverse and plentiful. The necessity for GIS technical expertise in delivering the mapping component of LCAs is crucial, although the objective of the project in question may assist in deciding on the level of proficiency required. Most LCA undertakings require an intermediate to high degree of fluency in GISs and in working with spatial data (sourcing, collating, geoprocessing, data generation, cartography, metadata).

The choice of GIS software application depends on access to licensed or open-source software. Licensed software such as ESRI ArcGIS is widely used, where the organisations or project partners conducting the LCA have licence agreements in place. Advances in free and open-source software (FOSS) applications such as Quantum GIS (QGIS) and System for Automated Geoscientific Analyses (SAGA) have seen the adoption of open-source tools wholly, or the combined use of licensed and open-source software. Open-source software coupled with open data enables the delivery of the mapping component of LCAs at a significantly lower cost.

2.7 **Historic Landscape Character Assessments and Landscape Character Assessments**

“Vernacular buildings, including fences, gate piers and other furniture of the local environment are especially important signatures of the local in landscape. In the absence of documentary evidence, vernacular buildings are often the only sources of information on life and landscapes of households of more modest or poorer circumstances.”³⁸

PJ Duffy, *Exploring the History and Heritage of Irish Landscapes*

³⁸ Duffy, P.J. (2007), *Exploring the History and Heritage of Irish Landscapes*, Four Courts Press, Dublin.

Step 2: Desk Study and Data Collection

2.7.1 Overview

HLCA is a comprehensive method used to characterise landscapes from an archaeological perspective, focusing on time–depth. It both identifies and analyses historic character. It assesses different attributes in the landscape, such as sensitivity, significance and pressures of change.³⁹ HLCAs and LCAs are complementary but offer different ways of assessing the same area; moreover, the baseline data and analysis of an HLCA tend to be at a much more detailed level than is usual for an LCA.⁴⁰

When considering the influence of human activities and historical processes on the present day landscape and landscape character, a full HLCA may not be feasible.⁴¹ This toolkit gives a baseline recommendation for what should be included in a historical review as part of a LCA, including simple guidelines to research a robust and scaled-down overview of the historical character.

2.7.2 Why is a Narrative on Map Analysis Important?

A map analysis of any landscape/seascape in question is important because it gives a time–depth perspective and understanding of how a place has changed over time. Depending on the area, this change may be only slightly perceptible over a long period of time or, conversely, the change may be transformational, where, for example, a once rural landscape becomes very urbanised, or a place once under water becomes dry land through natural or human causes such as climate change or land reclamation/improvement.

³⁹ Lambrick, G., Hind, J., Wain, I. (2013), *Historic Landscape Characterisation in Ireland – Best Practice Guidance*, the Heritage Council, Kilkenny, Ireland.

⁴⁰ Ibid.

⁴¹ Our research team concluded that a full HLCA may not be considered a necessary part of LCAs depending on scale. An HLCA is expensive, time-intensive and often beyond the capacity of most county councils. Conversely, by requiring or recommending a full HLCA that cannot be performed, the important historical part of the research can often be completely omitted. Our toolkit gives a baseline recommendation for what should be included in a historical review as part of a LCA, including simple guidelines to research a robust and scaled-down overview of the historical character. HLCAs should always be drafted for larger regional and interregional projects such as large infrastructure projects that require a landscape and visual impact assessment. On a smaller scale (approx. 10–30 km²), HLCAs would be extremely informative and detailed. On a larger scale, much of the information exceeds the needs of most LCAs and may not have a specific use.

Step 2: Desk Study and Data Collection

Considering maps from the most recent times through to the earliest times is called “map regression”. For archaeological purposes, however, it is considered more useful to begin with the earliest map of a locality and trace its evolution through time as features are added or taken away from the landscape/seascape under study (see examples shown in Figures 20–23).

Because of Ireland’s somewhat turbulent history, the historical map coverage of the country is patchy at best, and in many places the earliest maps available are, relatively speaking, late, with many dating to the 19th century with the first-edition 6-inch Ordnance Survey (OS) maps. Sometimes, earlier maps, such as estate maps or the 17th century “Down Survey”, are available but are not consistent for the entire country. This is in sharp contrast to England, for example, which has the 11th century Domesday Book as a start for many places, and in some cases even earlier evidence is available.

However, map images alone will not tell the whole story. A narrative account or commentary is important for any map analysis, as this can then incorporate other important evidence such as placenames and folklore, which are not readily seen in the image but are intrinsic to any locality. Maps also use symbols, for example early lime kilns are indicated by dot-on-circle motifs and are worthy of some description when considering their presence in a locality.

The supporting narrative can also provide interpretations when crucial map evidence is missing or lost. Thus, the maps themselves can provide a “snapshot” in time, while the overall narrative provides a critical interpretation of those snapshots through time, leading to an understanding of the landscape/seascape under study. The maps produced in this study are broadly divided into the recognised archaeological periods (e.g. Neolithic and Bronze Age), and a supporting narrative will aid in the interpretation and use of the historical/archaeological maps.

Step 2: Desk Study and Data Collection



Figure 18: Drumacoo Church, Ballinderreen, Co. Galway. Image: Frank Coyne

Step 2: Desk Study and Data Collection

2.7.3 Methodology for Providing Insight into the Historical Evolution of a Landscape Using Relevant Historical Maps

Steps:

- Download the data from www.archaeology.ie as a spreadsheet.
- Open a new column and assign a number to a site depending on the archaeological period, for example 1 for Neolithic, 2 for Bronze Age, etc. (note: in this example, there are no Mesolithic sites but the number assigned would be 1 if Mesolithic sites/monuments were located).
- Generate maps based on these periods.
- It is also possible to generate maps showing different site types, such as fulachta fiadh or barrows, as each site type has a unique class code (e.g. BARO = barrow, FUFU = fulachta fiadh).

| Assigned | ENTITY_ID | CLASSCODE | NAT_GRID_E | NAT_GRID | RMP_PRO | CO_ID | ITM_E | ITM_N | CLASSDESC | SMRS | TLA |
|----------|-----------|-----------|------------|----------|---------|-------|--------|--------|--------------------------------|---------------|-----|
| 6 | CO08052 | TREE | 200080 | 86127 | 1 | 5 | 600030 | 586186 | Designed landscape - tree-ring | CO055-011---- | SAN |
| 7 | CO08053 | ENCL | 200380 | 87350 | 1 | 5 | 600330 | 587409 | Enclosure | CO055-012---- | LYR |
| 7 | CO08054 | EART | 201771 | 85234 | 1 | 5 | 601721 | 585293 | Earthwork | CO055-013---- | BRE |
| 4 | CO08068 | RATH | 201014 | 83864 | 1 | 5 | 600964 | 583923 | Ringfort - rath | CO055-025---- | BAL |
| 4 | CO08069 | ENCL | 201481 | 83904 | 1 | 5 | 601431 | 583963 | Enclosure | CO055-026---- | CAF |
| 4 | CO08070 | RATH | 201658 | 83905 | 1 | 5 | 601608 | 583964 | Ringfort - rath | CO055-027---- | CAF |
| 6 | CO08086 | VEHO | 200607 | 81937 | 1 | 5 | 600557 | 581997 | House - vernacular house | CO055-042001- | BAL |
| 6 | CO08087 | LIME | 200628 | 81912 | 1 | 5 | 600578 | 581972 | Kiln - lime | CO055-042002- | BAL |
| 6 | CO08088 | SEID | 201169 | 83150 | 1 | 5 | 601119 | 583210 | Settlement cluster | CO055-043---- | MEI |
| 6 | CO08089 | FUMI | 201465 | 81724 | 1 | 5 | 601415 | 581784 | Mill - fulling | CO055-044---- | BAL |
| 6 | CO08090 | SEID | 201517 | 81499 | 1 | 5 | 601467 | 581559 | Settlement cluster | CO055-045001- | BAF |
| 6 | CO08091 | SCHO | 201591 | 81531 | 1 | 5 | 601541 | 581591 | School | CO055-045002- | BAF |
| 5 | CO08101 | LINE | 201430 | 86982 | 1 | 5 | 601380 | 587041 | Linear earthwork | CO055-054---- | BRE |
| 5 | CO19444 | FORD | 200800 | 87387 | 1 | 5 | 600750 | 587446 | Ford | CO055-069---- | REA |
| 2 | CO19930 | STST | 201767 | 86236 | 1 | 5 | 601717 | 586295 | Standing stone | CO055-070---- | BRE |
| 5 | CO08114 | CHUR | 203583 | 81197 | 1 | 5 | 603533 | 581257 | Church | CO056-001002- | BAL |
| 4 | CO08115 | RATH | 204685 | 82212 | 1 | 5 | 604634 | 582272 | Ringfort - rath | CO056-002---- | BAL |
| 2 | CO08116 | FUFI | 205337 | 81212 | 1 | 5 | 605286 | 581272 | Fulacht fia | CO056-003---- | COF |
| 6 | CO08117 | LIME | 204308 | 82253 | 1 | 5 | 604258 | 582313 | Kiln - lime | CO056-004---- | BAL |
| 6 | CO08118 | VEHO | 203383 | 81211 | 1 | 5 | 603333 | 581271 | House - vernacular house | CO056-005---- | BAL |
| 6 | CO08119 | VEHO | 202149 | 82474 | 1 | 5 | 602099 | 582534 | House - vernacular house | CO056-006---- | BAF |
| 6 | CO08120 | VEHO | 202361 | 82175 | 1 | 5 | 602311 | 582235 | House - vernacular house | CO056-007---- | RAT |
| 5 | CO08122 | BOST | 202997 | 87071 | 1 | 5 | 602947 | 587130 | Boundary stone | CO056-009---- | BRE |
| 4 | CO08123 | SOUT | 204685 | 82212 | 1 | 5 | 604634 | 582272 | Souterrain | CO056-010---- | BAL |
| 4 | CO08124 | HOWE | 205376 | 81153 | 1 | 5 | 605325 | 581213 | Ritual site - holy well | CO056-011---- | COF |
| 5 | CO08125 | LINE | 202600 | 87115 | 1 | 5 | 602550 | 587174 | Linear earthwork | CO056-012---- | BRE |
| 2 | CO08126 | FUFI | 205357 | 81163 | 1 | 5 | 605306 | 581223 | Fulacht fia | CO056-013---- | COF |
| 6 | CO09708 | CYHO | 200339 | 80676 | 1 | 5 | 600289 | 580736 | Country house | CO066-024---- | MO |
| 6 | CO09709 | LIME | 201401 | 78554 | 1 | 5 | 601351 | 578615 | Kiln - lime | CO066-025---- | BAL |
| 6 | CO09725 | CYHO | 200118 | 77886 | 1 | 5 | 600068 | 577947 | Country house | CO066-038003- | AGI |

Figure 19: Excel spreadsheet of data downloaded from archaeology.ie for a pilot site

2.7.4 Heatmapping of Cultural Heritage Data

By utilising the available data, analyses can be undertaken using heatmaps to help identify clusters of archaeological features from historical time periods. This can provide useful insights on the landscape scale into extant features of human activities and historical land use activities. The maps are only as good as the data, and so care should be taken and this step should be carried out under

Step 2: Desk Study and Data Collection

the guidance of an appropriate cultural heritage expert, usually an archaeologist or conservation expert. Heatmap symbology, which can be created through GIS software, displays the relative density of points as a dynamic raster visualisation using a colour scheme to indicate density values. The colour scheme should be a smoothly varying set of colours, ranging from cool blues (sparse density of points) to hot oranges and reds (high density of points).⁴²

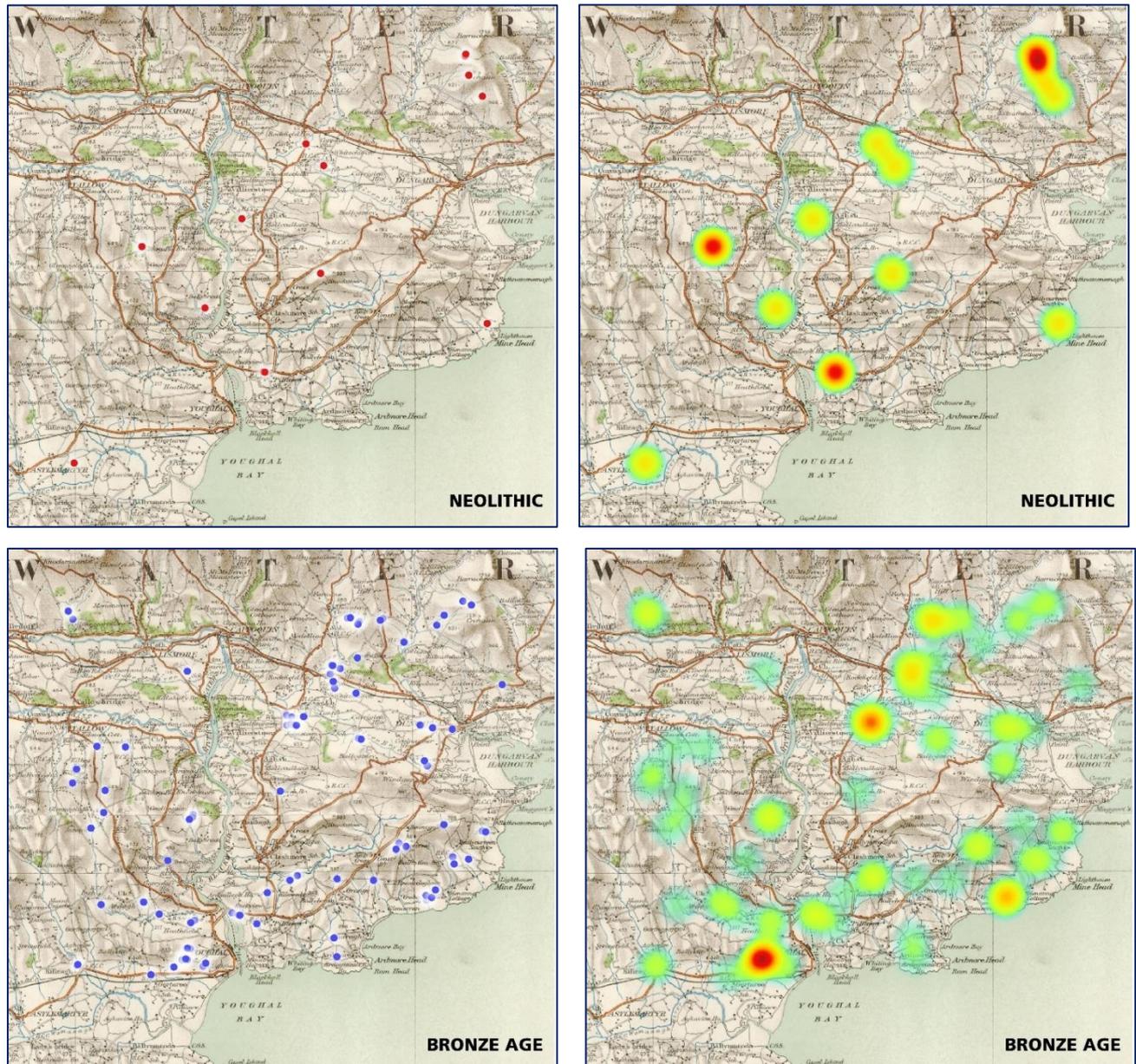
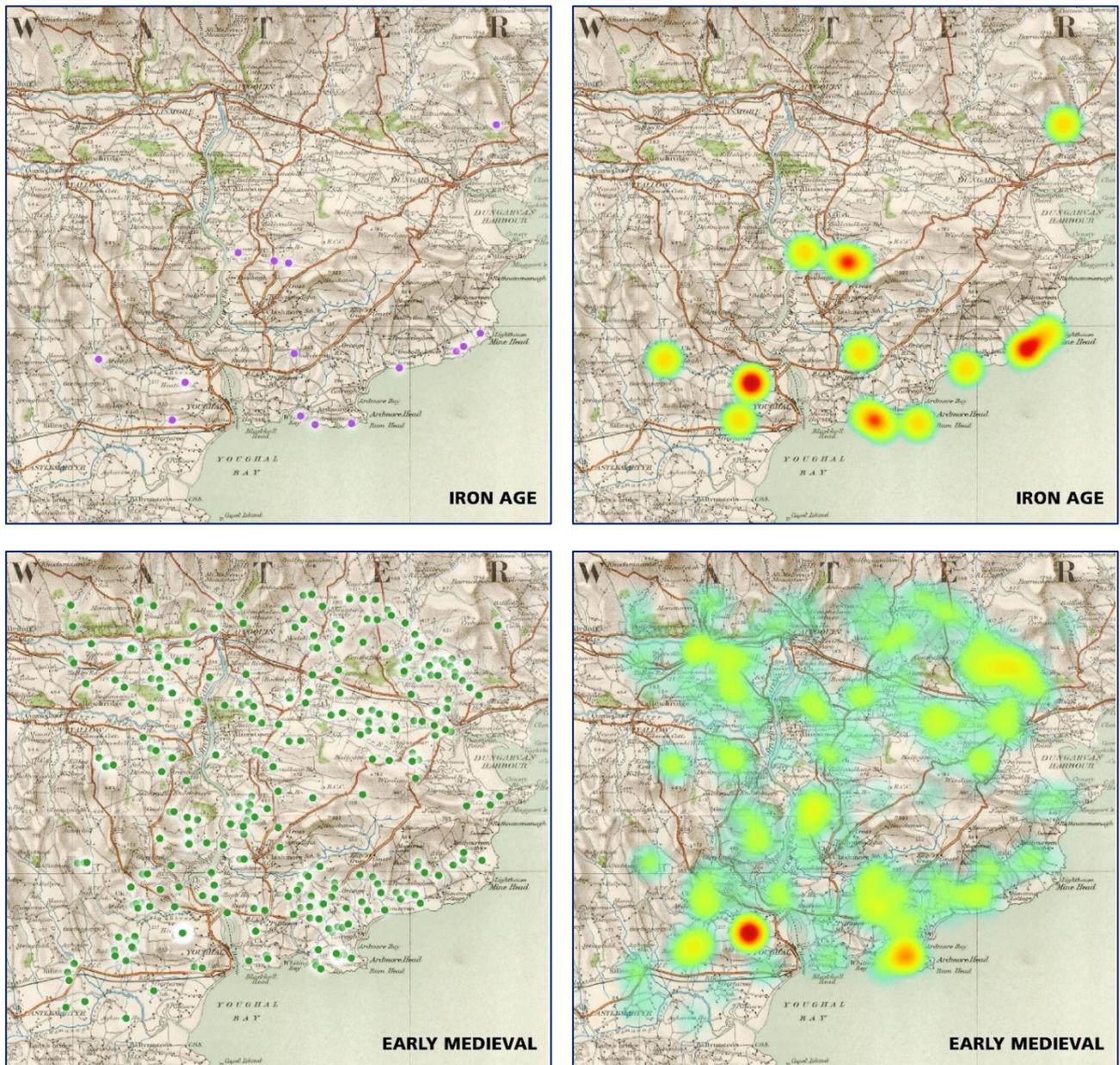


Figure 20: Six Archaeological periods mapped and then grouped into heatmaps. Heat maps created in QGIS. Base map includes Tailte Éireann data reproduced under Tailte Éireann Licence No. 2019/OSi_NMA_074. Unauthorised reproduction infringes copyright © Tailte Éireann

⁴² <https://pro.arcgis.com/en/pro-app/latest/help/mapping/layer-properties/heat-map.htm>

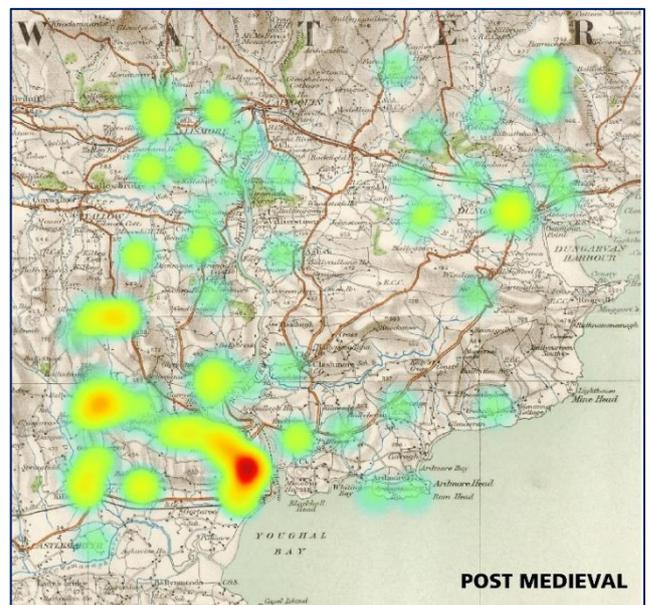
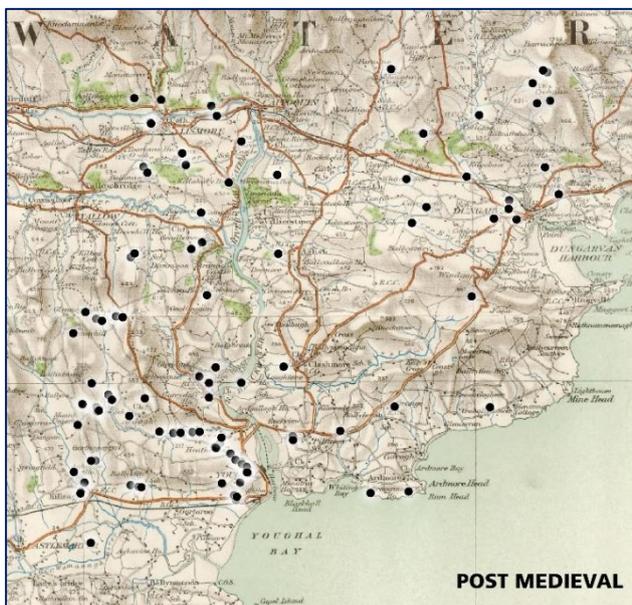
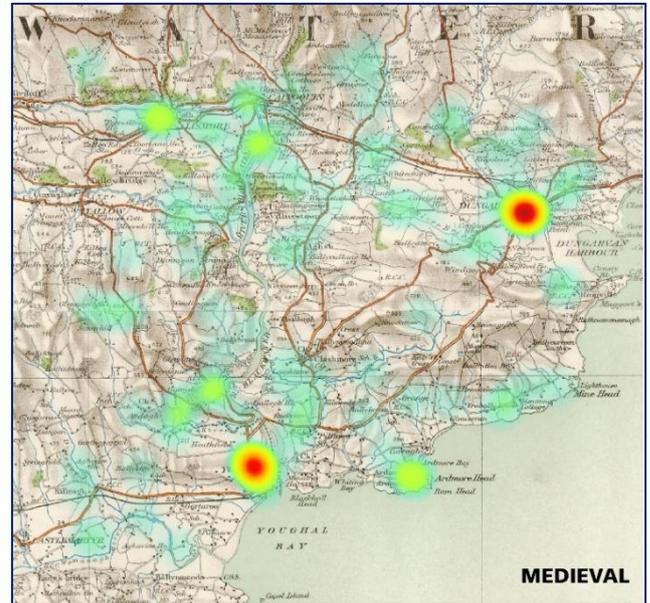
Step 2: Desk Study and Data Collection

Figure 20 (continued): Six archaeological periods mapped and then grouped into heatmaps. Heat maps created in QGIS. Base map includes Tailte Éireann data reproduced under Tailte Éireann Licence No. 2019/OSi_NMA_074. Unauthorised reproduction infringes copyright © Tailte Éireann



Step 2: Desk Study and Data Collection

Figure 20 (continued): Six archaeological periods mapped and then grouped into heatmaps. Heat maps created in QGIS. Base map includes Tailte Éireann data reproduced under Tailte Éireann Licence No. 2019/OSi_NMA_074. Unauthorised reproduction infringes copyright © Tailte Éireann



Step 2: Desk Study and Data Collection

2.7.5 Case Study: Tinnabinna Townland, County Waterford

Below are a series of historical maps and modern images for Tinnabinna Townland (Irish Transverse Mercator (ITM) 610433/5814510), showing the gradual loss of field boundaries/features from the mid- to late 19th century, around ringfort WA037-026002. The aerial photos show that many of the field boundaries from the early 20th century have been removed.



Figure 22: OS, first edition (c. 1840). Includes Tailte Éireann data reproduced under Tailte Éireann Licence No. 2019/OSi_NMA_074. Unauthorised reproduction infringes Tailte Éireann Government of Ireland copyright. © Tailte Éireann

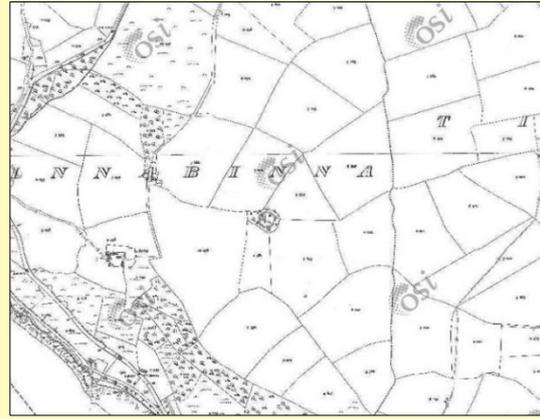


Figure 21: OS 25 inch (c. early 1900s). Includes Tailte Éireann data reproduced under Tailte Éireann Licence No. 2019/OSi_NMA_074. Unauthorised reproduction infringes Tailte Éireann Government of Ireland copyright. © Tailte Éireann

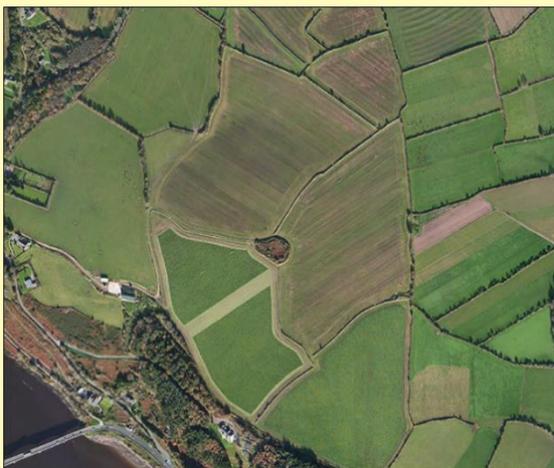


Figure 24: DigitalGlobe aerial photo (c. 2011–2012). Image © DigitalGlobe



Figure 23: Google Earth (21 April 2018). Map data © 2018 Google

Step 2: Desk Study and Data Collection

2.7.6 Case Study: Lismanny Townland, County Galway

The increased role of GIS in LCAs and the availability of historical mapping datasets and map viewers have enhanced the potential applications for and spatial analyses of landscape data. Historical GISs can trace the long-term spatial development of certain landscape features, for example hedgerows, peatlands and water features such as rivers and ponds, as well as built features, particularly from the 18th century onwards with the availability of mapping via Tailte Éireann and estate maps. This type of analysis can assist in understanding the historical to contemporary landscape change and help with the identification of locations that may be suitable for restoration through agri-environmental and other spatial planning measures. Within an LCA, this can be considered part of landscape management and recommendations. As part of our pilot study in the midlands, we examined changing ecology through historical maps of the Lismanny Townland, north of Laurencetown in County Galway, part of the floodplains of the River Suck. Images from Bog Commission Maps (1809–1814) show huge habitat loss from drained peatlands in the area. The Pollock Estate in Lismanny is a good example of an “improving landlord”, with radical post-famine interventions in the landscape still evident today. The study highlights possibilities for habitat restoration, tourism or agri-environmental interventions.



Figure 25: Part of the bog belonging to the River Suck (1812), Bog Commission Maps 1809–1814. Image: Bord na Móna

Step 2: Desk Study and Data Collection



Figure 26: Bridge associated with historical extent of the Grand Canal



Figure 27: River Suck Callows adjacent to Laurencetown Bog



Figure 28: Former Train used to transport extracted peat



Figure 29: Shannonbridge peat power station plus wind farms on cutaway bog from March 2023

Figures 25 - 28: Photos from Lismanny, Co. Galway Case Study. Images: Ruth Minogue



2.8 Key Outputs of Step 2

- GIS draft mapping of the project study area complete.
- Analysis of changes in the landscape over time complete.
- An **outline description** for each LCT identified through GIS.
- High-level understanding gained of key drivers of landscape change.
- Initial meetings and consultations with expert stakeholders held.

Step 3: Field Work/Study

3 STEP 3: FIELD WORK/STUDY

Step 3 allows the desktop and GIS analyses to be explored and ground truthing to be performed⁴³ through the critical process of field surveys.

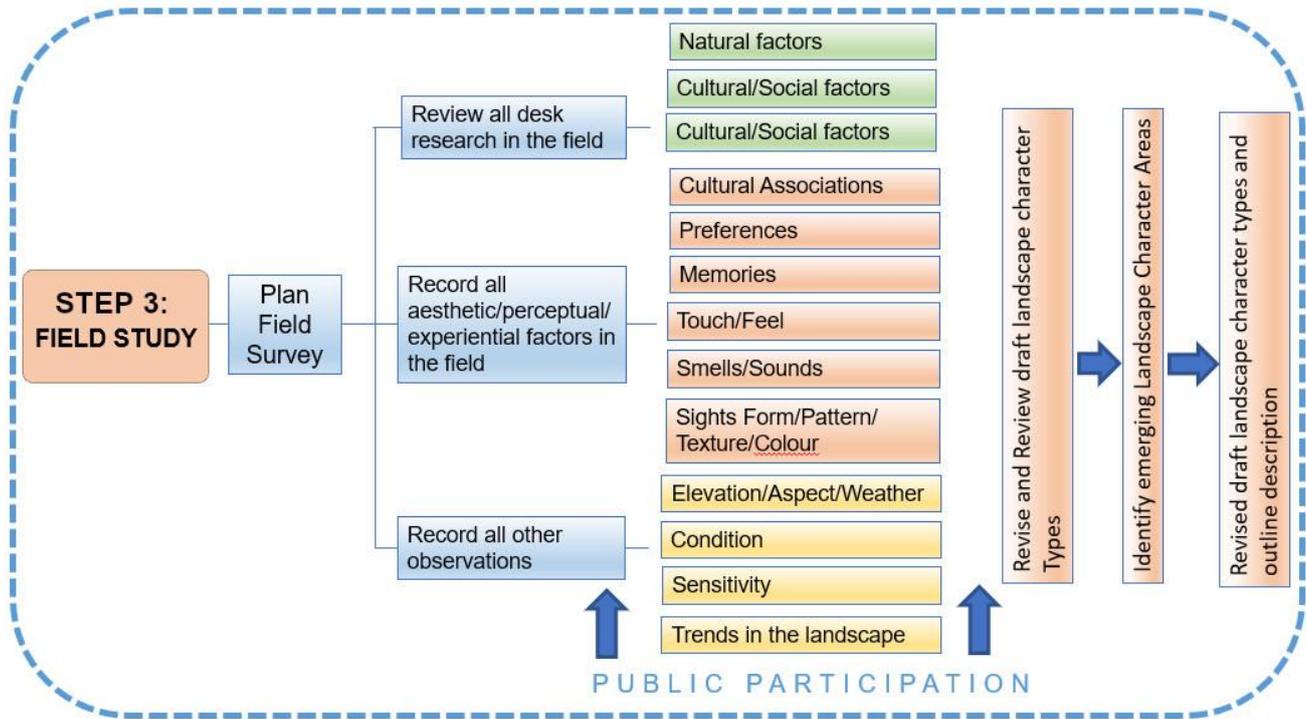


Figure 30: Step 3 diagram, based on Natural England, 2014. Contains public sector information licensed under the Open Government Licence v3.0



Figure 31: Landscape Wheel, originally developed by Carys Swanwick, 2002, for Natural England. Contains public sector information licensed under the Open Government Licence v3.0

⁴³ Ground truthing: checking the results from the desk study on the ground in the study area.

Step 3: Field Work/Study

It is important to revisit the Landscape Wheel when commencing the field study step of the LCA process as a reminder of the scope of factors that must be considered when identifying the character of the landscape.

3.1 Reviewing Desk Study Findings in the Field

Field work entails recording landscape character in the field using survey forms, taking photos and refining the draft LCTs and emerging landscape character areas on the ground. Data obtained on the ground are different from data obtained from datasets used in a desktop assessment, and a more nuanced character can be experienced in the field. Pre-existing LCA boundaries should be field checked and compared with new information. Through detailed fieldwork/study, the team can:

- observe how natural and cultural factors interact;
- confirm the desk study findings;
- redraft boundaries (LCTs) if needed;
- gain a deeper understanding of the character of the landscape.

3.2 Resources in the Field

3.2.1 *The Team*

If possible, LCA best practice would involve a transdisciplinary team facilitating a conversation that allows for cross-specialisations. A geologist, an ecologist and a planner, for example, will see very different things in the landscape. Following Step 2, the team will have gained an initial understanding of the landscape and this can then inform the design and delivery of the field study.

3.2.2 *Planning a Route*

It is useful to try to plot a rough itinerary, even if the assessment ends up deviating from it, as a way to plan routes and key areas to investigate. As part of the field survey preparation, the team should plot suggested routes and map these in advance through paper maps (1:50,000 Discovery) as well as digital mapping devices. Possible survey points should include obvious transitions between elevations and landscape types, historic landmarks, coastal routes, etc. Elevations and panoramic viewpoints can provide an overview of several different types of landscape types.

Step 3: Field Work/Study



3.2.3 Paper Maps

Despite the ease of using Google Maps, etc., a Tailte Éireann paper map, printed in sheets with a detailed scale, is an integral tool for annotating in the field and seeing areas on a scale that is not possible on the small screen of a mobile phone. The map should be clear and legible, illustrating character types and/or areas along with the proposed boundaries, with a scale bar and north arrow. Colour-coded keys and labels should be used to differentiate between LCTs

Step 3: Field Work/Study

and landscape character areas.⁴⁴ These maps should be marked to reflect:

- the planned route;
- refinements in boundaries of draft LCTs and landscape character areas;
- the location of potential survey points, photograph locations, viewpoints and important elements and features;
- any other information that is location specific.

3.3 Photography

It is important to have your global positioning system (GPS) location turned on so that all photos are geotagged. Photos should be taken from several directions and include the main factors that define the character of that particular area. It is important to include some more detailed photos of specific landmarks and features to highlight key historic features that contribute to landscape character. Panoramic photos and short videos are useful additions to the data collected. Short videos including ambient sounds, which give a more nuanced impression of a place (traffic sounds, birdsong, water, etc.), are also helpful.

⁴⁴ Tudor, C. (2014), *An Approach to Landscape Character Assessment*, Natural England, York, UK.

Step 3: Field Work/Study



Clondalkin round tower,
Co. Dublin



Stone Row, Dromatouk,
Kenmare, Co. Kerry



Stone walls, Inishmaan,
Co. Galway



Rathmines Road, Dublin City



The Holy Tree, Corofin,
Co. Clare



Millrace, Castletownroche
Co. Cork



Cliff habitat, Howth Head
Co. Dublin



River Corrib, Co. Galway



Lough Tay, Co. Wicklow

Figure 32: Examples of local features/elements contributing to landscape character. Images: Reframe project team

Step 3: Field Work/Study

3.4 Landscape Journal

It is very useful to keep a landscape journal during fieldwork. This acts as a practical memory aid and complements the field survey forms. It is important to note any questions that are raised by the team while in the field, or any key questions or potential insights that may arise.

3.5 Sketches

If time permits, drawing quick sketches of the landscape can focus attention on small details that can get lost in photos. The action of drawing involves a sensory engagement with the setting and can encourage you to take some time experiencing the place. These are a personal aide-mémoire only.

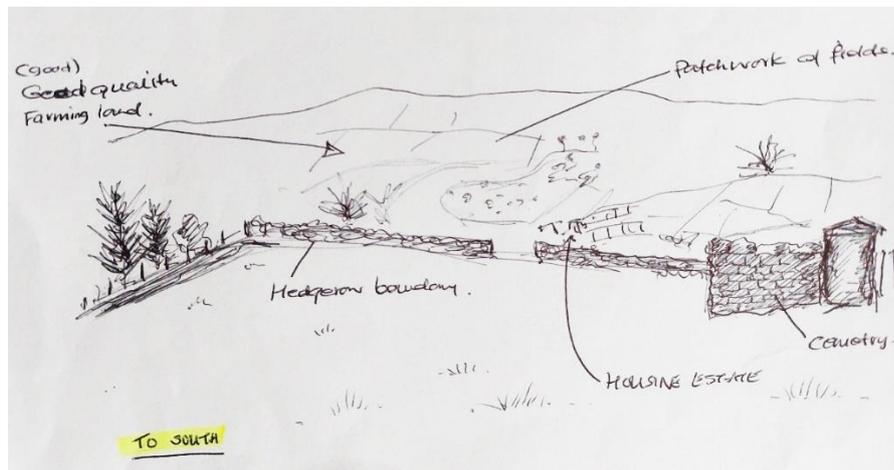


Figure 33: Sample field sketch.

3.6 Field Surveys

The aesthetic, perceptual and experiential factors of the landscape cannot usually be identified during a desk study; therefore, recording these factors in the field is essential and will be part of the draft written descriptions. These impressions can be recorded through the field survey forms (note: field surveys may differ in terms of complexity, in that they can be on paper, a tablet or a mobile phone, and can be short videos, photographs and/or sketches (see example in subsequent section and Annex 3)). These factors should be recorded using consistent language throughout. Field survey forms will prompt you to ask the following questions:

- What are the sounds of the landscape (waves, wind, birdsong, traffic, urban-generated sounds, etc.)?

Step 3: Field Work/Study

- How much are the sounds contributing to the character?
- Are there distinctive smells associated with the place depending on the season (scent of gorse, honeysuckle, etc.)?
- Are there smells and sounds encountered in agricultural or industrial landscapes?

We experience landscapes through our senses and this affects our perceptions of the surrounding landscape and its character. Visiting a landscape in different seasons will influence this experience and understanding.

It is important to follow a systematic approach covering the whole area and that records are made at all survey points. Carry out a quick orientation field survey, taking into consideration all LCTs and landscape character areas from the desk study to get a general sense of how they relate to each other, with at least two or three field survey points for each distinct LCT identified in Step 2. It is important to observe the relationships with surrounding landscapes, looking out at the adjacent land types, then looking back at the landscape from outside. Consider intervisibility between different LCTs and how one type can form the setting or backdrop of another. In Figure 33, you can see the border between two counties and how the landscape in one connects to the other through elevation and views.



Figure 34: Carlow–Kilkenny border. Image source: Ruth Minogue

Elevation should be marked on the field surveys; however, to get a sense of how the topography is calculated in GIS, Figure 34 gives a rough sense of the physiography.

Step 3: Field Work/Study

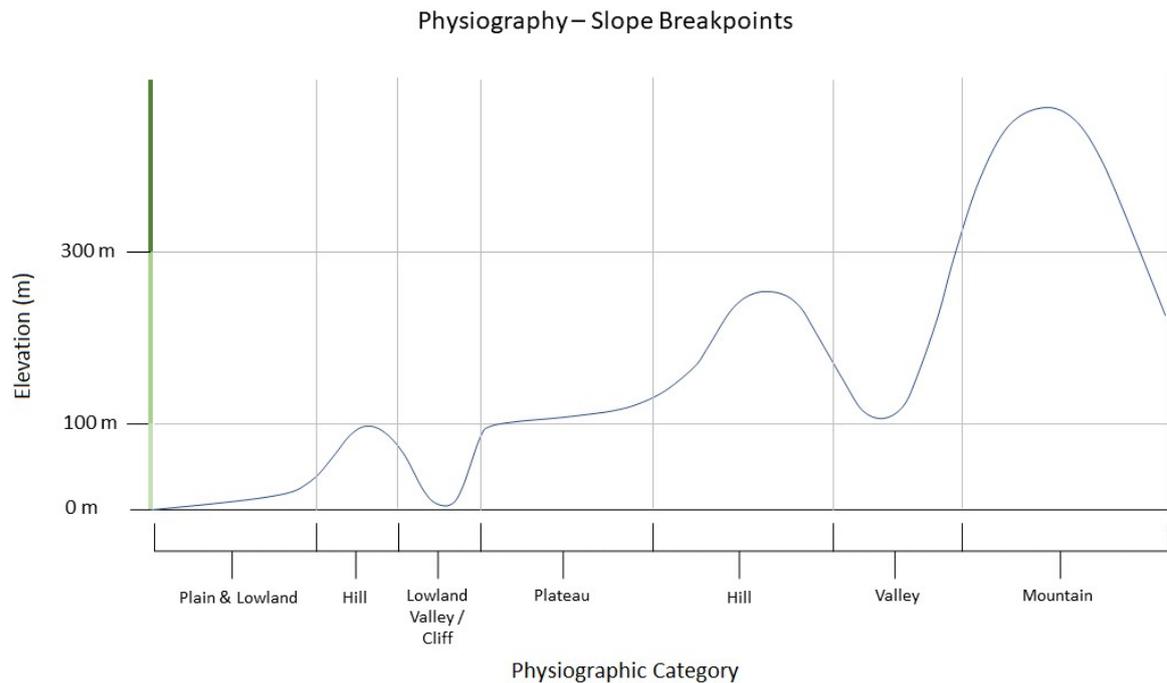


Figure 35: Physiography and slope breakpoints in GIS

The average number of days required for fieldwork will vary based on the scale of the region and number of team members, but an average of between 1 and 3 weeks should be sufficient when planning and allocating resources. Field survey forms should be kept and stored for record keeping. See Annex 3, “Sample Field Surveys”, for other field survey samples.

There are some free services to assist in the construction of field surveys, such as **Field Papers** <http://fieldpapers.org/>. This service enables the quick generation of multi-page PDF field survey sheets based on OpenStreetMap or satellite base maps that then can be printed for annotation in the field. Annotated and marked-up field sheets can then be scanned and uploaded to the Field Papers online service and rendered as a georeferenced image format (Geotiff). The Geotiff field sheets can then be viewed in any GIS application (see user guide in Annex 6).

Step 3: Field Work/Study

3.6.1 Sample Field Survey Sheet: Landscape Character Assessment

LANDSCAPE CHARACTERISTICS

| SKETCH | | | | | | |
|--------|--|--|--|--|--|--|
| | | | | | | |

| GENERAL | | | | | | |
|-------------|--------------------|----------------|----------|----------|--------------------------|--------------------------|
| Date & time | Weather Conditions | Grid Reference | Photo ID | Location | Landscape Character Type | Landscape Character Area |
| | | n/s/e/w | | | | |
| | | | | | | |

| GEOLOGY/TOPOGRAPHY | | | |
|--------------------|--------------|-------------------------------------|----------------------|
| Flat | Steep | Rolling lowland | Broad/glacial valley |
| Rolling | Vertical | Hills | Narrow valley |
| Undulating | Scarp/cliffs | Mountain ridge | Drumlins |
| Plains | Bare rocks | High | Coastline |
| Plateau | Slopes | Rugged | Peninsular |
| | Upland | Foothills between > 100m and < 300m | |

Step 3: Field Work/Study

| DOMINANT LANDCOVER & LANDSCAPE ELEMENTS | |
|---|--|
| BUILDINGS | Farm buildings Masts/poles/pylons Industry Settlement Urban Mineral works Military |
| HERITAGE | Vernacular Religious Country house Field systems Prehistoric/megalithic Hilltop enclosure Fort/crannog Rath/cashel/castle Monuments Historic sites |
| FARMING | Stone walls Fences Hedgerows Hedge-banks Fields old/modern Arable improved Grasslands Rough grazing Orchards |
| LANDCOVER | Parkland/estate Scrub Marsh Peat bog Blanket bog/heath Rough grassland Wet grassland Urban/built |
| WOOLAND/FORESTRY | Deciduous Woodland Coniferous Coniferous plantation Mixed woodland Shelterbelt Hedge trees Isolated trees Linear woodland |
| HYDROLOGY | River Stream Reservoir Pond Lake Coastal Dunes Intertidal flats Beach Bay Canal Waterfall |
| COMMUNICATIONS | Road Track Footpath Lane Pylons Communications masts Railway |

| VISUAL CHARACTERISTICS | | | | |
|------------------------|------------|-------------|------------|-------------|
| COLOUR | Monochrome | Muted | Colourful | Garish |
| TEXTURE | Smooth | Textured | Rough | Very rough |
| PATTERN (2D) | Dominant | Strong | Broken | Weak |
| FORM (3D) | Straight | Angular | Curved | Sinuous |
| CALE | Intimate | Small | Medium | Large |
| COMPEXITY | Uniform | Simple | Diverse | Complex |
| REMOTENESS | Wild | Remote | Vacant | Active |
| UNITY | Unified | Interrupted | Fragmented | Chaotic |
| ENCLOSURE | Expansive | Open | Enclosed | Constrained |
| VISUAL DYNAMIC | Sweeping | Spreading | Dispersed | Channelled |

Step 3: Field Work/Study

Relatively tranquil areas are characterised by a low density of people, minimal levels of artificial noise and a landscape that is perceived as relatively natural, with few overt signs of human influence.

| ADDITIONAL NOTES | |
|-----------------------------------|--|
| Architecture (condition/quality) | |
| Local Material Used: | |
| Vernacular Style/Settlement Form: | |

| PERCEPTUAL – a continuum | | | | | |
|--------------------------|--|-------------|--------------|---------------------|--------------|
| SOUND | Still | Quiet | Intermittent | Distant | Loud |
| SMELL | Rural/ agricultural | Sea/coastal | Bad smells | Industrial odour | Urban smells |
| STIMULUS | Monotonous | Bland | Interesting | Challenging | Inspiring |
| TRANQUILITY | Remote | Peaceful | Vacant | Busy | Very busy |
| LIGHT | Presence/absence of artificial light/dark skies designations if present. This is worth noting. | | | | |

Step 3: Field Work/Study

3.7 Review of Landscape Character Types

3.7.1 *Landscape Character Types to Review*

At this point, you should have confirmed your provisional LCTs based on the desk study and redrawn boundaries based on your field observations. The preliminary LCTs identified through the desk study and GISs can now be verified or altered in terms of descriptors and based on whether or not the LCT boundaries identified through desktop and GISs are reflective of ground conditions following the field survey.

3.7.2 *Emerging Landscape Character Areas*

Following the field survey, the team should be able to identify and understand the emerging landscape character areas in terms of the following:

- key characteristics;
- draft names and boundaries;
- forces for change;
- condition of landscape.

The field survey forms, photographs, journal and sketches (if used) should be a primary source of information to start the writing process for each LCA. It is important for the team to collaborate and discuss the above bullet points while the information is still fresh in everyone's minds. A useful way to do this is to have a review session with the team at the end of each survey day, where the LCTs and emerging landscape character areas can be explored and reviewed by the team. A working document for LCTs and emerging landscape character areas can be developed at this point, focusing on confirming/amending the LCTs and identifying the emerging landscape character areas.



3.8 Key Outputs of Step 3

- Completed field survey forms.
- Provisional landscape character areas and their boundaries confirmed.
- CTs confirmed and described.
- A photographic record of each LCT and landscape character area produced.
- Key characteristics of each landscape character area identified.

Step 4: Classification and Description

4 STEP 4: CLASSIFICATION AND DESCRIPTION

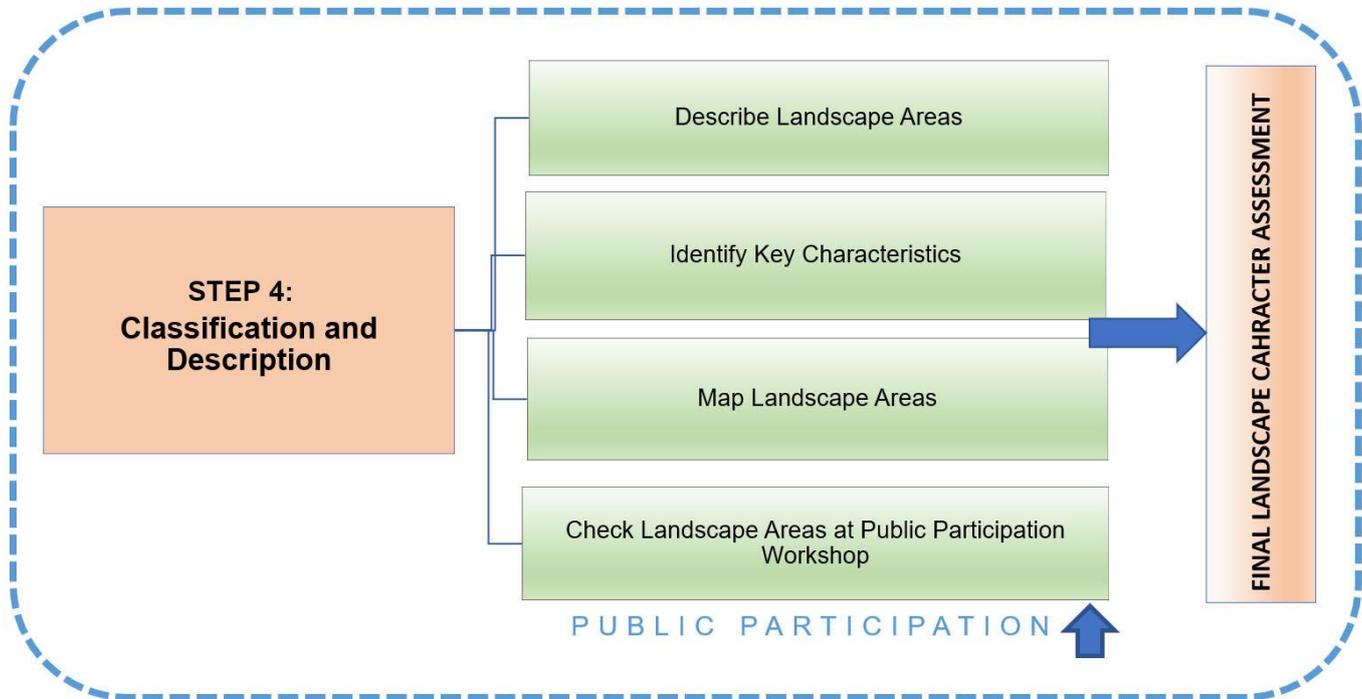


Figure 36: Step 4 diagram

Using the information gathered in Step 2 (“Desk Study and Data Collection”) and Step 3 (“Field Work/Study”), the steps outlined below are taken.

4.1 Describing the Draft Landscape Character Types

This stage consists of mapping and compiling typical sample photos with detailed explanations of each LCT and listing their defining key characteristics. At this stage, the team should concentrate on fully reporting and describing each LCT. The boxes below present reminders of what LCTs and landscape character areas are.

Landscape Character Types are distinct types of landscape that are relatively homogenous in character. They are generic in nature in that they may occur in different localities throughout a county. Nonetheless, where they do occur, they share similar combinations of geology, topography, land cover and historical land use.⁴⁵

⁴⁵ Ibid.

Step 4: Classification and Description

Landscape Character Areas are unique, geographically specific areas of a particular landscape type. Each area has its own individual character and identity, even though it shares the same generic characteristics with other areas of the same type. Landscape character areas take on the names of specific places.⁴⁶

LCTs and landscape character areas should be described separately. Usually, LCTs are briefly described, mapped and accompanied by a relevant photograph; see section 4.1.1 for examples of LCT descriptions.

4.1.1 Examples of Landscape Character Type Descriptions

Coastal Drumlin Farmland (County Leitrim Landscape Character Assessment)

This LCT comprises a mosaic of cutover bog and farmland located between the coastal plain and the upland landscapes of Tievebaun and Arroo. The topography comprises gently rolling drumlin hills. The area features large tracts of bog and marsh interspersed with rough pasture and abundant areas of woody scrub vegetation, including willow and birch. Areas of cutover bog have an abundance of rhododendron (*Rhododendron ponticum*). Isolated patches of plantations of coniferous forest are dispersed throughout. Pastoral farmland is present as a small-to medium-scale field pattern defined by hedgerows or post and wire fences. Some signs of dereliction are apparent, with some dwellings, farm buildings and roads in poor condition. The landscape is relatively flat and visually open where wooded vegetation is absent, affording views of big skies. The more open areas of this landscape are overlooked from the south by Tievebaun Mountain and from the east by Arroo Mountain.⁴⁷

⁴⁶ Ibid.

⁴⁷ Leitrim County Council (2023), Leitrim County Development Plan 2023–2029 – Appendix vi County Leitrim Landscape Character Assessment, Carrick-on-Shannon, Ireland.

Step 4: Classification and Description

Broad Fertile Lowland Valleys (County Cork Landscape Character Assessment)

This landscape type stretches west and east from the environs of Cork City and also includes a smaller area east of Rathcormack. The valleys in these areas are created by the rivers flowing east to west and are surrounded by low, well-spaced ridges. These shallow and flat valleys wind as they follow the course of the river, rising to the north and south, with gentle slopes where the valley is wide and steeper-faced slopes where the valley narrows. Further upstream to the west, the broad flatness narrows and winds between low hills. Land cover comprises highly fertile, regularly shaped fields typically of medium size and with mature broadleaf hedgerows. Agricultural use primarily involves intensive dairying as well as tillage, with farmsteads relatively well screened by the hedgerows. Some of the larger settlements include Bandon, Ballincollig and Blarney to the west of Cork City, Castlemartyr to the east and Rathcormack to the north. Major roads such as the N22 between Macroom and Cork City and the N71 between Innishannon and Bandon tend to follow the rivers, often providing distant views across the landscape.

4.2 Refining Landscape Character Areas

It is important to refine the landscape character area boundaries and describe key characteristics of the character areas. Some landscape character areas may include several LCTs while others may comprise just one LCT; commonly, this is the case in very strongly geologically influenced LCTs such as karst landscapes. For example, in County Clare Landscape Character Area 1 Burren Uplands and Landscape Character Area 8 Sliabh Bernagh Uplands there are three LCTs within these extensive areas. This contrasts with Lough Derg Basin Landscape Character Area 7, which includes two LCTs, and Lough Graney Landscape Character Area 6, which is much smaller in area and includes one LCT only (see Figures 36 and 37).

In LCAs where the county is relatively small in area, a relatively small number of LCTs and landscape character areas are likely to be identified and assessed. For example, the South Dublin LCA identified a total of 10 LCTs and five landscape character areas (see Figure 38).

Step 4: Classification and Description

4.3 Relationship Between Landscape Character Types and Landscape Character Areas

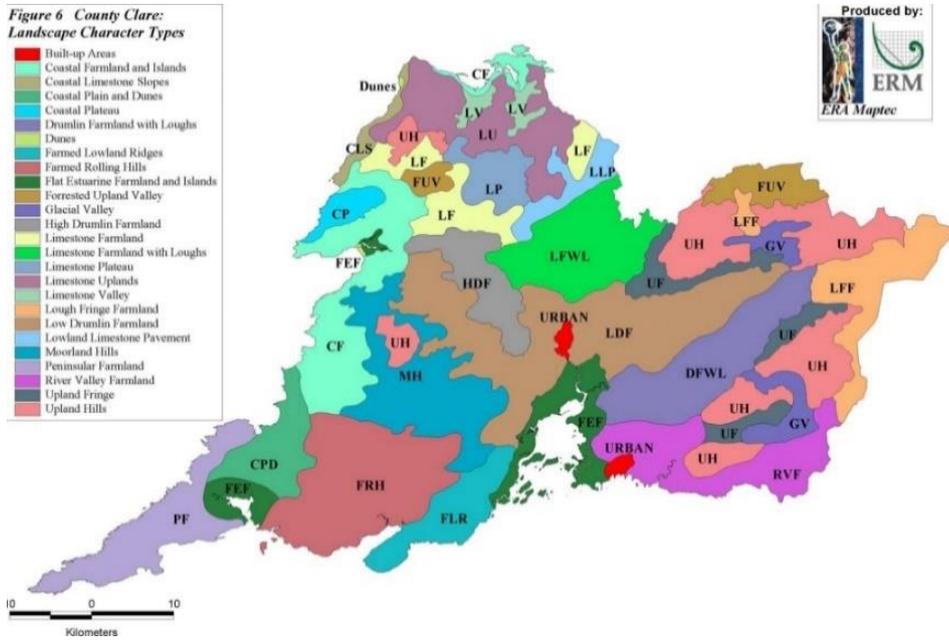


Figure 37: County Clare LCTs, 2002. Image source: Eilís Vaughan

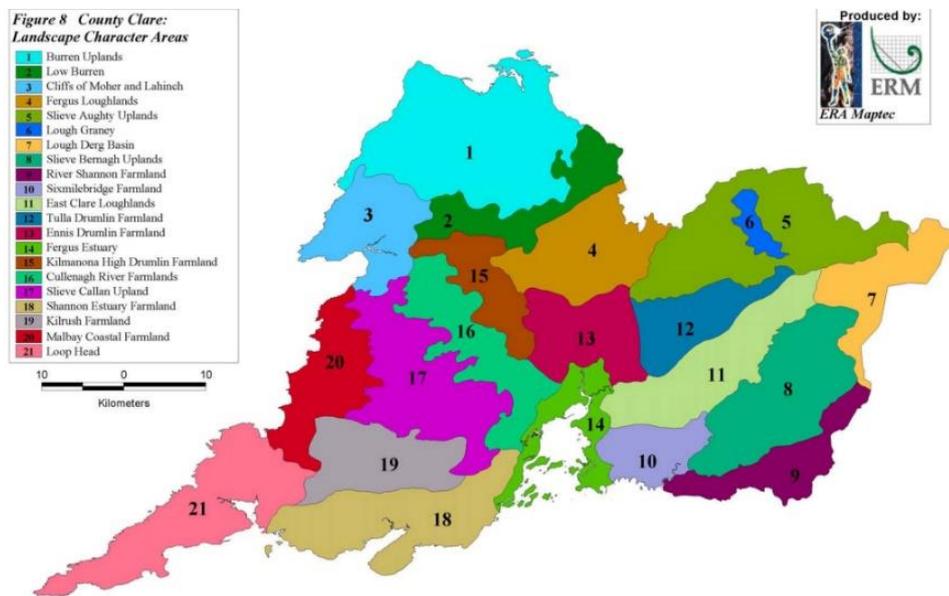


Figure 38: County Clare landscape character areas, 2002. Image source: Eilís Vaughan

Step 4: Classification and Description

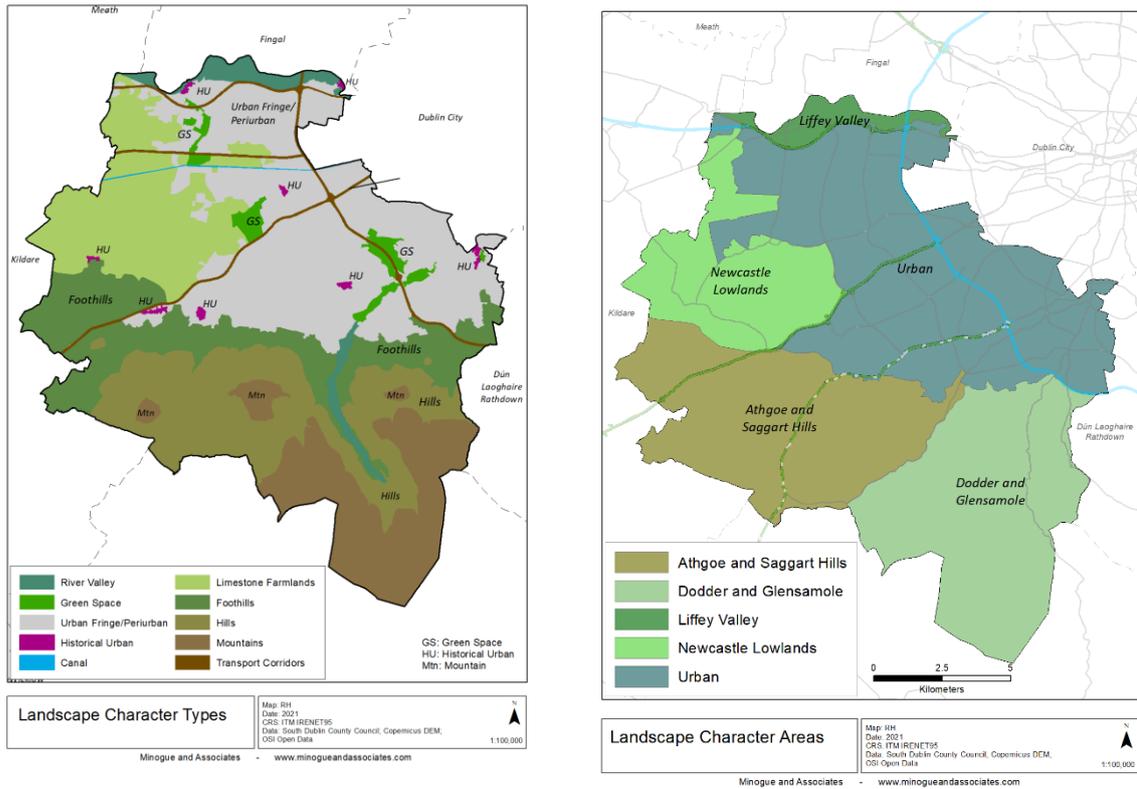


Figure 39: South Dublin County LCTs and LCAs, 2021. © Minogue & Associates 2024

4.4 Naming the Landscape Character Areas

Landscape character areas are unique and geographically specific. The name they are given will typically be based on a placename or locality and will often include reference to the landscape type (e.g. West Tyrone Hills and Valleys (Northern Ireland), Letterkenny Estuary and Farmlands, Slabh Aughty Uplands). Capturing a sense of place will be particularly evident in the identification of the landscape character areas. Figure 38 presents a summary LCA description of Liffey Valley Landscape Character Area 1, South Dublin County Council (2021).

Step 4: Classification and Description

SAMPLE LANDSCAPE CHARACTER AREA

Liffey Valley, South Dublin (South Dublin CDP 2022 – 2028) ⁴⁸



Figure 40: Landscape Character Area 1 Liffey Valley, South Dublin County Development Plan 2022–2028. Image: Ruth Minogue

Key Characteristics of the Liffey Valley Landscape Character Area

- The river valley is of significant historical importance.
- It is an important ecological corridor associated with the river Liffey.
- It is an incised valley for much of its journey through South Dublin County, and the wooded and pasture slopes combined with riparian vegetation create an attractive landscape setting.
- It is enclosed and intimate with views to the river from Strawberry Beds and at river crossings.
- Ridgelines of low hills adjoining the valley form an attractive setting for settlements.
- The settlements of Lucan and Palmerstown have important built heritage and attractive townscapes.
- Its urbanised areas contrast with the pockets of rural character along the Strawberry Beds.
- The major transport corridors of the N4 and M50 run through it.
- Its high visual and landscape quality are reflected by its designation with a Special Area Amenity Order.
- Extent: it runs from the western boundary, along the N4 corridor, to the county boundary close to Chapelizod.

⁴⁸ Note that the images used are different from those used in the final LCA of the South Dublin Landscape Character Area.

Step 4: Classification and Description

4.5 Identifying Key Characteristics And Describing Landscape Character

4.5.1 *Key Characteristics*

Key characteristics are “those combinations of elements which help to give an area its distinctive sense of place. If these characteristics change, or are lost, there would be significant consequences for the current character of the landscape”.⁴⁹

The following is a general overview of what should be included when describing landscape character:

- A written description should provide a general overview of the landscape character area, including natural features, human influence over time and cultural associations.
- Illustrations, including maps and historical photographs, should be provided.
- Attention should be drawn to characteristics that are particularly distinctive or rare.
- Feedback from surveys, interviews and workshops will be essential for finding the appropriate name for an area.

4.5.2 *Describing landscape character*

- When describing landscape character, balance will be needed between objective factual statements about the physical components that make up the landscape and the more subjective statements describing its character. Evocative descriptions will be more likely to be used when demonstrating what is special about a particular landscape or when identifying special qualities or aesthetic qualities, special views, cultural associations, etc.
- Information recorded during the desk and field studies (Steps 1 and 2) will be used, with the aim of describing the overall character of the landscape with reference to geology, landform, land cover, land use, settlement, field patterns, perceptual and aesthetic observations, etc., elaborating on the way that these factors interact. Information on biodiversity, special habitats, etc., should be interwoven into character descriptions with a focus on the specific contribution that these factors make to the character.

⁴⁹ Tudor, C. (2014), *An Approach to Landscape Character Assessment*, Natural England, York, UK.

Step 4: Classification and Description

- Consistent use of terminology is important. Types of landscapes of similar character that occur in different parts of the region should be described consistently throughout the assessment. It can also be useful to define terms that are used throughout the assessment; for example, a “small field” or “small woodland” should be defined by acres/hectares (ha).
- Attention should be paid to adjacent LCA naming conventions. For the sake of consistency, the default should relate to neighbouring county LCAs and, if prepared, regional character assessments.
- When describing the landscape, cultural descriptions from art, literature, music, film, etc., can strengthen our understanding and evoke a more well-rounded understanding of the character. Quotations and/or sketches from descriptions by local stakeholders can also be used. If a description includes views and opinions of stakeholders, these should be clearly identified.

4.6 Suggested Structure for Best Practice Landscape Character Assessments

The list below provides suggestions of chapter titles/headings for an LCA. Some parts of the country will have region-specific characteristics that require their own emphasis. All sections should be supported with accompanying maps, graphics and photos as necessary.

Step 4: Classification and Description

Landscape Character Assessment of a Region/County

1 Landscape Character Assessment of a Region/County

1.1 Introduction

1.2 Landscape as a Resource and Visual Amenity

1.2 Benefits of Good Landscape Management

1.4 Methodology

1.4.1 Desktop Review and Geographical Information System

1.4.2 Identification of Landscape Character Types

1.4.4 Identification of Landscape Character Areas

1.5 Structure of this Report

2 Evolution of the Region's/County's Landscape

2.1 Introduction

2.2 Physical influences

2.2.1 Solid Geology

2.2.2 Glaciation

2.2.3 Topography and Drainage

2.2.4 Soils and Habitats

2.3 Human Influences

2.3.1 Overview

2.3.2 Prehistoric Period (c. 7000 BC to AD 500)

2.3.3 Early Medieval Period (c. 500–1100)

2.3.4 The Viking Age

2.3.5 Later Medieval Period (12th to the End of the 16th Century)

2.3.6 Post Medieval (1540–1850)

2.3.7 The 18th and 19th Centuries

2.3.8 Twentieth Century

Step 4: Classification and Description

3 The Present-Day Landscape of the Region/County

3.1 Introduction

3.2 Identifying Landscape Character Types

4 Landscape Character Areas

4.1 Landscape Character Area 1

4.1.1 Key Characteristics

4.1.2 Landscape Character Types and Habitat Types Present

4.1.3 Geology and Landforms

4.1.4 Vegetation and Ecology

4.1.5 Historical and Human Influences

4.1.6 Landscape Values

4.7 Participation and Feedback on the Draft Landscape Character Areas

Once the LCTs and draft landscape character areas have been described, the opportunity to explore and refine the landscape character areas is presented. As Steps 1 to 3 have shown, engagement with stakeholders using a variety of tools can contribute significantly to understanding and describing landscape character. The aim of participation at this stage is to gain feedback and refine the descriptions of landscape character areas. This can be undertaken through workshops (in person or online, or a combination) as described below.

4.7.1 Workshops

At a minimum, workshops should be undertaken with communities of interest and communities of place.⁵⁰ At workshops, the team should work through the draft landscape character area names, boundaries and characteristics with the stakeholders. The workshops present opportunities for participants to mark up paper maps or use digital forms (tablets, computers). Structured workshops are a means of obtaining useful responses from the community and information on the draft landscape character areas. The below-mentioned

⁵⁰ Key stakeholders include communities based on geographical location (place) and communities that may include sectors or professions (interest).

Step 4: Classification and Description

guides provide more information and should be consulted. Key minimum actions in a workshop should be:

- an introduction and brief presentation on the landscape character areas relevant to the locality (for a large county, a series of workshops may be required);
- structured workshops around core questions such as the boundaries, names, characteristics and additional features or elements that contribute to landscape character and forces for change.

Following consultation and workshops, it is important that a report on the process, summarising the key findings and issues raised, is prepared and made available to participants. This report can be included as an annex to the LCA. As previously mentioned, GDPR considerations will apply. There are several comprehensive guides to running a workshop, including *A Guide for Inclusive Community Engagement in Local Planning and Decision Making*⁵¹ and the Heritage Council's *Village Design Toolkit*,⁵² which includes a detailed timeline for planning a workshop.

“A sense of place represents an emotional and complex attachment to a particular and cultural space, a connection embedded in social networks and feelings. It is also rich in tacit knowledge.”⁵³

Roscommon County Development Plan 2014 - 2020

⁵¹ Department of Rural and Community Development (2023), *A Guide for Inclusive Community Engagement in Local Planning and Decision Making*, Government of Ireland, Dublin.

⁵² https://www.heritagecouncil.ie/content/files/community_led_village_design_statements_toolkit_2012.pdf

⁵³ Bradley, F., Kennelly, J. (2008), *Capitalising on Culture, Competing on Difference: Innovation, Learning and Sense of Place in a Globalising Ireland*, Blackhall Publishing, Dublin.

Step 4: Classification and Description

4.8.1 Checklist for Landscape Character Assessment Report Steps 1 to 4

| | TASK | CONFIRM ✓ |
|---|--|-----------|
| 1 | The project brief and scope of the study is fully explained | |
| 2 | The methodology used to prepare the assessment is clear and robust | |
| 3 | Previous assessments and landscape studies (seascape, townscape, older landscape character areas), adjacent landscape character areas are mentioned and their relationship to this study explained | |
| 4 | Feedback from the public consultation and engagement process was incorporated into the LCA Stakeholder engagement is explained | |
| 5 | The context of the study area (physical and human influences) is well described | |
| 6 | Clear maps of the LCTs and areas are included | |
| 7 | The character of each landscape type and area is accurately and simply described, avoiding when possible value judgements | |
| 8 | Photographs and/or diagrams and sketches of each character area and type are included | |
| 9 | Lists of sources, data, references and workshop reports included in supporting documents | |

Trends in Landscape Change

5 TRENDS IN LANDSCAPE CHANGE

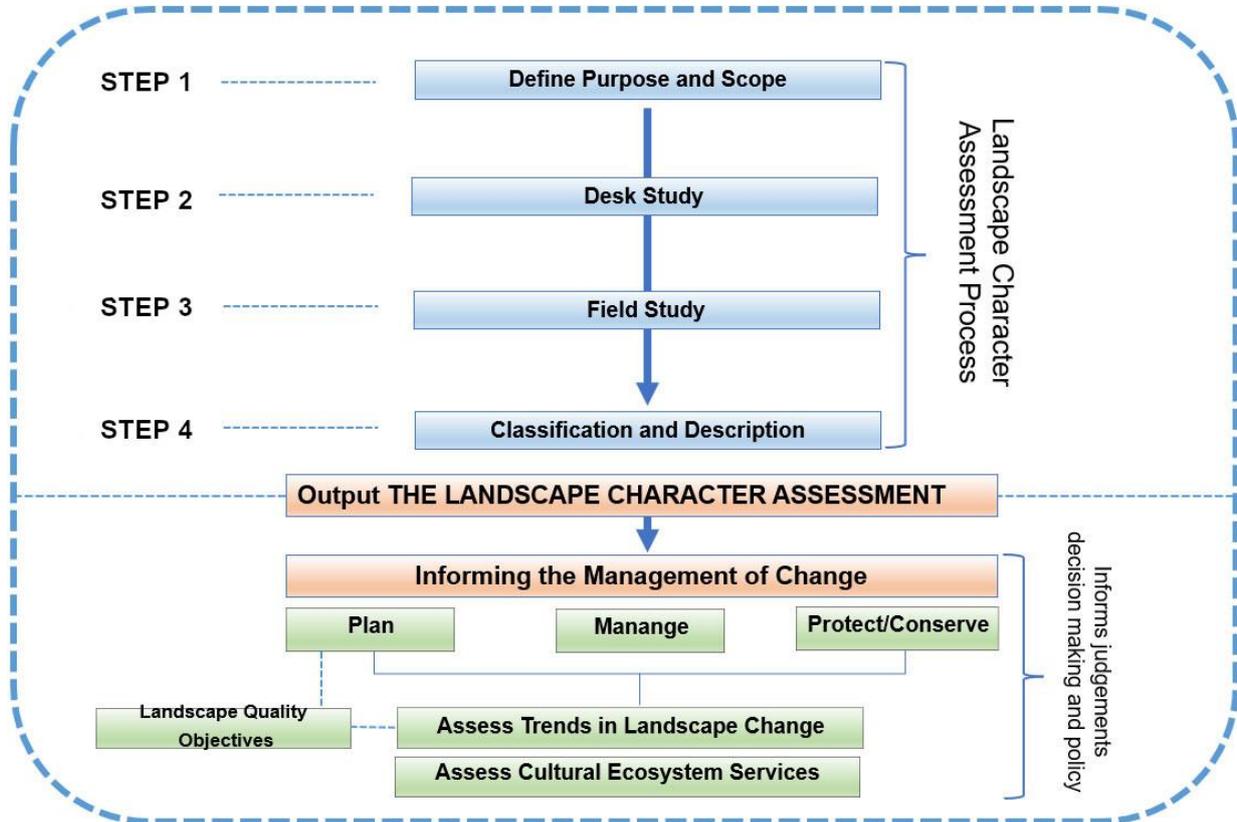


Figure 42: Management of change in the assessment process

“Key characteristics are particularly important in the development of planning and management policies ... and monitoring change.”⁵⁵

C. Tudor – An Approach to Landscape Character Assessment

5.1 Evaluating the Landscape

LCAs can inform planning policy and development management and guide/inform decision-makers in assessing development proposals that will change the landscape. The final assessment should include a description of the forces for change and landscape objectives.

⁵⁵ Tudor, C. (2014), *An Approach to Landscape Character Assessment*, Natural England, York, UK.

Trends in Landscape Change

5.2 Forces for Change

Forces for change are defined as activities that function as drivers of landscape and seascape change. Identifying forces for change is a common approach in LCAs and seascape character assessments, and such assessments usually include a discussion chapter on “key forces for change”, commonly followed by “identified forces for change”, on a character-type or character-area scale.

In the LCAs reviewed, there was variety in the level of detail and analysis, as well as presentation methods in relation to this topic. Forces for change can be identified for a defined scale (regional, county, etc.), commonly with strategic guidelines that are relevant to the identified forces for change being provided (as in the Northern Ireland Regional Assessment).⁵⁶ The preparation of landscape guidance, which relates to different land use sectors (e.g. renewable energy), is a distinct and separate process that follows from the LCA baseline output.⁵⁷ The preparation of such landscape character guidance in terms of sensitivity and/or capacity and impact evaluation is a distinct and separate process. Table 4 is from a literature review on drivers of landscape change and is a useful framework for considering forces for change.⁵⁸

Table 4: Drivers of landscape change

| DRIVER | | EXAMPLES |
|--------------------|------------------------------------|--|
| UNDERLYING DRIVERS | Political and institutional | Agricultural and forestry policy Nature conservation policy Spatial development policy Other sectoral policies Property rights Policy climate |
| | Economic | Structural change in agriculture and forestry Property market Agricultural and forestry product prices Market growth and commercialisation |

⁵⁶ <https://www.daera-ni.gov.uk/articles/landscape-character-northern-ireland>

⁵⁷ For a review of landscape capacity studies, see Grant, A., in association with Clarke, P., Lynch, S. (2010), *Landscape Capacity Studies in Scotland – A Review and Guide to Good Practice*, Scottish Natural Heritage Commissioned Report No. 385, Scottish Natural Heritage, Inverness, UK.

⁵⁸ Plieninger, T., *et al.* (2016), The driving forces of landscape change in Europe: a systematic review of the evidence, *Land Use Policy*, **57**, 204–214.

Trends in Landscape Change

| | | |
|---------------------------|---|--|
| UNDERLYING DRIVERS | Cultural | Population demographics and distribution Public attitudes, values and beliefs Individual and household behaviour |
| | Technological | Technological advances in society Technological advances in land management |
| | Natural and spatial | Climate Disturbances Soil characteristics Topography and spatial configuration |
| PROXIMATE DRIVERS | DRIVER | EXAMPLES |
| | Urban and infrastructure development | Urban development Tourism development Construction of roads, airports, etc. Dam and reservoir construction |
| | Agricultural expansion and intensification | Intensification of agriculture Expansion of arable land Increase in field size and consolidation of fields Removal of landscape elements, e.g. hedgerows, wetland areas |
| | Forestry expansion and intensification | Afforestation and plantations Intensification of timber and wood harvesting |
| | Extraction of non-renewable resources | Extraction of energy carriers Extraction of minerals Peat extraction Water extraction |
| | Land abandonment and extensification | Land abandonment Agricultural extensification |
| | Nature and heritage conservation | Expansion of protected areas Agri-environmental activities, e.g. planting hedgerows Rural development activities |

Table is compiled from information in Plieninger *et al.* (2016).⁵⁹

⁵⁹ Ibid.

Trends in Landscape Change

5.3 Tables of Resources

The most useful resources for understanding trends in landscape change will depend on the scale of the LCA (national, regional, local). Table 5 presents resources and drivers of land use sector change that may be considered in an LCA. Table 7 summarises potential key changes to landscapes resulting from climate change (impacts, adaptation and mitigation). Tables 6 and 8 provide other resources relevant to landscape change.

Table 5: Resources and drivers of change per land use sector, adapted from Scottish Natural Heritage⁶⁰

| Sector | Examples of changes in this sector with the potential to affect landscape | Possible resultant changes to the landscape characteristics |
|--------------------|--|---|
| Agriculture | <ul style="list-style-type: none"> • Changes in types of farming (extensive to intensive) • Changes in crop patterns and rotations • Changes in stock and grazing patterns • Changes in ownership • Extension or reduction of overall extent of agricultural land • Changes in unit and field size • Agricultural buildings and dwellings | <p>Landforms, land use and land cover</p> <p>Field pattern and boundaries, tree and hedgerow removal, fencing removal/modification of vernacular features associated with agricultural use</p> <p>Heritage pathways, trails adapted</p> <p>Biodiversity, flora, fauna, vegetation alterations</p> <p>Water quality</p> <p>Loss of buildings and structures in the landscape</p> <p>Linear and/or point features</p> <p>Impact on scale, colour, texture, visual diversity, line, pattern, movement, sound, solitude, naturalness (perceptual features)</p> <p>Historical and/or cultural associations</p> |
| Aquaculture | <ul style="list-style-type: none"> • New or altered shore bases or facilities • Intensification of development • New types of development • | <p>Coastal and seascape characteristics</p> <p>Buildings and structures in the landscape and offshore</p> <p>Linear and/or point features</p> <p>Changes to sea life</p> |
| Forestry | <ul style="list-style-type: none"> • New forestry planting • Forestry harvesting • Changes in woodland type and cover • Forestry industry (e.g. sawmills) • Forestry tracks • Forestry transport infrastructure | <p>Landforms, land use and land cover forests, woodlands and trees</p> <p>Relationships between landforms and land use</p> <p>Introduction/alteration of sense of openness, scale, colour, texture, visual diversity, line, pattern, movement, sound, solitude, naturalness</p> <p>Changes in historical and/or cultural association</p> |

⁶⁰ Adapted from Table 1, p. 12, of Scottish Natural Heritage (n.d.), *Landscape Considerations in Strategic Environmental Assessment*, Inverness, UK.

| Sector | Examples of changes in this sector with the potential to affect landscape | Possible resultant changes to the landscape characteristics |
|--------------------------------------|---|---|
| Transport | <ul style="list-style-type: none"> • Replacement, upgraded, new or extended: ferry terminals, harbours, ports or other maritime transport infrastructure; airfields and airports; railways; canals or river navigation systems; bridges, tunnels, motorways or other roads | Landforms; land use and land cover; water; forests, woodlands and trees; agriculture Relationships between landforms and land use Field pattern and boundaries Buildings and structures in the landscape Settlement pattern Linear and/or point features Openness, scale, colour, texture, visual diversity, line, pattern, movement, sound, solitude, naturalness Historical and/or cultural associations |
| Green and blue infrastructure | <ul style="list-style-type: none"> • New or improved greenspace infrastructure • Sustainable flood management measures • Active travel/sustainable transport • Habitat creation/restoration | Changes to the character of landscape, towns, villages Modification of road edges Changes to travel routes and traffic type Changes to openness, scale, colour, texture, visual diversity, line, pattern, movement, sound, solitude, naturalness Changes to historical and/or cultural associations Changes in the character of the landscape due to changes in habitat |
| Industry | <ul style="list-style-type: none"> • Replacement, new or extended industrial installations and other developments • Decommissioning of industrial developments • Redevelopment of former industrial installations and areas • Industrial transport infrastructure • Restoration or remediation of derelict/contaminated land | Landforms: relationships between landforms and land use Buildings and structures in the landscape Urban landscape/settlement pattern Linear and/or point features: scale, colour, texture, visual diversity, line, pattern, movement, sound, solitude, naturalness Historical and/or cultural associations |
| Waste management | <ul style="list-style-type: none"> • Replacement, upgraded, new or extended waste management sites and installations including landfill, land-raise, incineration and | Landforms; land use and land cover; water; forests, woodlands and trees; agriculture Relationships between landforms and land use |

| Sector | Examples of changes in this sector with the potential to affect landscape | Possible resultant changes to the landscape characteristics |
|-------------------------------------|---|--|
| | waste to energy plants, mineral waste disposal, recycling facilities and waste transfer installations | Buildings and structures in the landscape Linear and/or point features Openness, scale, colour, texture, visual diversity, line, pattern, movement, sound, solitude, naturalness, historical and/or cultural association Odour and impacts |
| Housing/planning development | <ul style="list-style-type: none"> • New or extended urban development, redevelopment of previously used land, land use change, new or extended rural development • Transport infrastructure • Population pressure, need for housing | Landforms; land use and land cover; water; forests, woodlands and trees; agriculture Relationships between landform and land use Buildings and structures in the landscape Urban landscape/settlement pattern Linear and/or point features Openness, scale, colour, texture, visual diversity, line, pattern, movement, sound, solitude, naturalness Historical and/or cultural associations |
| Tourism | <ul style="list-style-type: none"> • Replacement, upgraded, new or extended tourism, recreational, leisure, sport, retail and hotel centres, sites, buildings and facilities • Replacement, upgraded, new or extended access facilities and tourism transport infrastructure • Increased number of tourists visiting sites (natural, cultural, historic) | Relationships between landform and land use Buildings and structures in the landscape Settlement pattern Linear and/or point features Scale, colour, texture, visual diversity, line, pattern, movement, sound, solitude, naturalness Historical and/or cultural associations |
| Other processes | | |
| Water management | <ul style="list-style-type: none"> • Replacement, upgraded, new or extended water storage and supply and installations, reservoirs, water treatment plants, pipelines, wastewater treatment areas | Land use and land cover: water Relationships between landforms and land use Buildings and structures in the landscape Linear and/or point features |

| Sector | Examples of changes in this sector with the potential to affect landscape | Possible resultant changes to the landscape characteristics |
|---------------------------|--|--|
| | <ul style="list-style-type: none"> Water management access and transport infrastructure Coastal and riparian flood management infrastructure | <p>Openness, scale, colour, texture, visual diversity, line, pattern, movement, sound, solitude, naturalness</p> <p>Historical and/or cultural association</p> |
| Telecommunications | <ul style="list-style-type: none"> Replacement, upgraded, new or extended telecommunication installations Telecommunications access infrastructure | <p>Linear and/or point features</p> <p>Buildings and structures in the landscape</p> <p>Sound, solitude, naturalness</p> |

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Table 6: Resources related to changes that may affect the landscape

| Report | Agency | Notes |
|---|--|---|
| SEA of Local Authority Land-Use Plans – EPA Recommendations and Resources 2023 (Version 1.19) Preliminary SEA Scoping Submission – Greater Dublin Area (epa.ie) | EPA (epa.ie) | Every quarter the EPA update this document with new legislation and land use plans across all sectors Appendices are refreshed regularly: Appendix 1a: Links to environmental guidance/reports Appendix 1b: Links to spatial environmental resources Appendix II: Key national and regional plans and programmes, presents up-to-date plans, etc. |
| State of the Environment Report | EPA (epa.ie) | Produced every 4 years. Covers many areas and provides a national overview of key issues, trends, etc. Chapter 5, “Land and Soil”, includes an LCA review |
| Report of the Citizen’s Assembly on Biodiversity Loss 2023 | The Citizen’s Assembly | Reporting from the Citizen’s Assembly on Biodiversity Loss, including a summary of meetings held over 2022 and recommendations relating to key land use activities |
| Biodiversity Maps Ireland | https://maps.biodiversityireland.ie/ | |
| Article 17 Reporting | The Article 17 report for 2019 is published in three volumes. An overview report (Volume 1), released in August 2019, provides more detail on the methodologies, an easy-to-read summary of the results and a list of contributors to the assessments. Volume 2 (Habitats) and Volume 3 (Species) contain the detailed reports and relevant scientific information | Under Article 11 of the directive, each Member State is obliged to undertake surveillance of the conservation status of the natural habitats and species in the Annexes and, under Article 17, to report to the European Commission every 6 years on their status and on the implementation of the measures taken under the directive In April 2019, Ireland submitted the third assessment of conservation status for 59 habitats and 60 species (including three overview assessments of species at a group level). A further eight species are considered to be vagrant in Ireland |

Table 7: Resources and drivers of change from climate change⁶¹

| Climate change | Examples of change | Possible resultant changes to landscape character |
|----------------|---|---|
| Impacts | <ul style="list-style-type: none"> • Sea level rise • Salt water intrusion • Changing weather patterns, e.g. drought conditions/wetter conditions | <p>Changes to shape of coastal edge</p> <p>Impacts to coastal settlements and settlement pattern</p> <p>Changes to coastal and estuarine habitats and plant communities</p> <p>Changes to vegetation on uplands, drying out of areas, changes of woodland species mix</p> <p>Loss of habitats from pests/invasive species and changing weather conditions</p> <p>Changes/loss/erosion of key cultural heritage features, both tangible cultural heritage features (e.g. lighthouses) and intangible (cultural practices)</p> <p>Impact</p> <p>Openness, scale, colour, texture, visual diversity, line, pattern, movement, sound, solitude, naturalness</p> |
| Mitigation | <ul style="list-style-type: none"> • Coastal defences such as flood defences • Renewable energy generation, especially wind and solar • Expansion of woodland for carbon sequestration • Raising water levels | <p>Changes to visual and landscape character at coastal, estuarine and river landscapes particularly</p> <p>Creation of new landscapes, energy/wind farm/solar</p> <p>Buildings and structures in the landscape, including offshore/inshore</p> <p>Changing woodland cover/composition by different species/planting/expansion</p> <p>Openness, scale, colour, texture, visual diversity, line, pattern, movement, sound, solitude, naturalness</p> <p>Historical and/or cultural associations</p> |

⁶¹ Useful discussion papers are White, S., Falzon, C., Bell, H. (2020), *Communicating Landscape Change from Adaptation and Mitigation in a Changing Climate*, NRW Report No. 396, Natural Resources Wales, Bangor, Wales; and Land Use Consultants (2011), *An Assessment of the Impacts of Climate Change on Scottish Landscapes and their Contribution to Quality of Life: Phase 1 – Final Report*, Scottish Natural Heritage Commissioned Report No. 48, Scottish Natural Heritage, Inverness, UK.

Changes to character of peatland landscapes

Adaptation

- Increasing woodland cover, riparian buffers and corridors
- Rewetting/raising water table
- Controlled flooding
- Increased provision of blue and green infrastructure

Changes to location, pattern, extent and composition of woodland
Increasing woodland cover along river corridors
Low-lying land and wetland creation
Stress on green and blue infrastructure via changing weather patterns, modification to urban green and blue space

Table 8: Other plans and programmes relevant to landscape change

| Plan | Source | Comments |
|--|---|---|
| Annual Climate Change Action Plans: Climate Action Plan 2023 | Department of the Environment, Climate and Communications https://www.gov.ie/en/publication/7bd8c-climate-action-plan-2023/ | |
| Climate Change Sectoral Adaption Plans | Government of Ireland, prepared under the National Adaptation Framework | Each sector has prepared its own response on adapting to climate change: agriculture, forest and seafood, biodiversity, built and archaeological heritage, electricity and gas networks, flood risk management, water quality and water services infrastructure, health |
| Climate Change Action Plans 2019–2024 and new plans in preparation for 2024–2030 | Local authorities Guidance on plan preparation: https://www.gov.ie/en/publication/f5d51-guidelines-for-local-authority-climate-action-plans/ | Each local authority is required to prepare a climate action plan with the second round under preparation; these will be prepared in line with national guidance and have a statutory footing |

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5.3 Establishing Landscape Quality Objectives – Case Studies Illustrating Opportunities for Taking Landscape Character Assessment Forward

Establishing landscape quality objectives and reviewing existing landscape quality objectives is an important step in the assessment process. It is essential that landscape quality objectives are responsive to the landscape character and do not comprise generic (and difficult to monitor) landscape objectives. This step in the toolkit can be informed and explored through participation and consultation approaches (see sections 5.1.3, 5.1.4 and 5.2.1).

The ELC provides the following definition of landscape quality objectives:

Landscape quality objective “means, for a specific landscape, the formulation by the competent public authorities of the aspirations of the public with regard to the landscape features of their surroundings”.⁶²

These objectives are reflected in Ireland’s National Landscape Strategy Action 5 (ii) and Action 6 (see box below).

Relevant actions from Ireland’s National Landscape Strategy⁶³ as they relate to the ELC and landscape objectives

Action 5 (ii): Relevant government departments and agencies, including semi-state agencies, should ensure that sector-specific policies and strategies and relevant legislation within their remit are fully consistent with the objectives set out in the National Landscape Strategy. Where policy conflicts or gaps are identified, measures should be outlined to resolve them. Department-specific landscape policy plans may be considered and prepared, if appropriate, and any such plans should include policies on the adoption and use of LCA and landscape quality objectives.

Inter-departmental **Action 6:** Periodic “State of the Landscape” reports will be prepared by each relevant public authority and a summary compilation published by the Department of Arts, Heritage and the Gaeltacht. They will take note of changes to the landscape and indicate progress on integrating landscape into the work of the organisation and on meeting landscape quality objectives.

⁶² Department of Arts, Heritage and the Gaeltacht (2015), *National Landscape Strategy for Ireland 2015–2025*, Government of Ireland, 2015.

⁶³ Ibid.

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5.3.1 VITAL Landscapes Project⁶⁴

“As the landscape quality objectives shall be determined for each landscape identified and assessed, they have to be region specific. Therefore, landscape quality objectives cannot be published as a terminal, generic list of objectives for all landscapes, but have to be determined for each landscape in participatory planning and assessment processes, respectively.”⁶⁵

VITAL Landscapes: Valorisation & Sustainable Development of Cultural Landscapes

The VITAL landscapes project did not identify generic landscape quality objectives for the seven regions of central Europe (for the above reasons), but did provide a useful checklist that could inform participatory development, prompt discussions and help to identify relevant landscape objectives on a regional scale in Ireland (see Table 9).

Table 9: VITAL landscapes project – questions for landscape quality formation

Questions for landscape quality formation

What kind of landscape do we want in 10 years?

What can we contribute to develop our landscape?

| | |
|-------------------------------|---|
| Environment and nature | A1) Which regional/local quality of natural capital/heritage shall be achieved? Which landscape elements shall be preserved/developed? How can we achieve that in a sustainable way? |
| | A2) What is our ecological carrying capacity? How can we implement this in our development strategies? |
| | A3) Which goals of landscape preservation do we want to reach? How can we achieve that in a sustainable way? |
| | A4) Which goals of landscape development do we want to reach? How can we achieve that in a sustainable way? |
| | A5) Which regional resource cycles do we want to generate? How can we achieve that in a sustainable way? |

⁶⁴ See <https://www.visitbarje.si/Data/Sites/1/compendium-net.pdf>. For a broader discussion and analysis of the VITAL project, see the final report: Těšitel, J., Kolbmüller, B., Stöglehner, G. (eds) (2014), *VITAL Landscapes: Valorisation and Sustainable Development of Cultural Landscapes using Innovative Participation and Visualisation Techniques*, NEBE s.r.o., České Budějovice, Czechia.

⁶⁵ Ibid.

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Questions for landscape quality formation

What kind of landscape do we want in 10 years?

What can we contribute to develop our landscape?

A6) Which renewable energy sources do we want to use?

How can we achieve that in a sustainable way?

A7) Which climate change adaptation and/or mitigation goals do we want to reach?

How can we achieve that in a sustainable way?

Social issues and culture **B1)** What are the pillars of our quality of life in 10 years?
How can we implement them in a sustainable way?

B2) What is the level of social capital we want to reach?

How can we enhance and utilise our social capital?

B3) Which regional/local quality of cultural capital/heritage shall be achieved?

How can we preserve, utilise and develop it?

B4) What does demographic change mean in our region?

Which adaptation measures are necessary?

B5) What elements of the consciousness/awareness of landscape shall be raised?

How can we increase consciousness/awareness of landscape and utilise it for landscape development?

B6) What does local/regional identity mean for us?

How can we strengthen it?

Economic issues **C1)** What does the regional economic capital look like in 10 years?
How can we reach that?

C2) What does multifunctional agriculture mean in our region?

How can we support farmers to develop all functions in this way?

C3) On which regional resources is our economy based in 10 years?

How can we achieve that in a sustainable way?

C4) What does the regional labour market look like in 10 years?

How can we achieve that in a sustainable way?

C5) Which regional economic cycles do we want to generate?

Which level of regional income generation shall be reached?

How can we achieve that in a sustainable way?

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5.3.2 Catalonia Case Study

The Landscape Observatory of Catalonia has prepared a series of Regional Landscape Catalogues and, in turn, prepared relevant landscape quality objectives for each region. It should be noted that these are more general in nature and are not identified for specific sectors. The observatory has distilled the common landscape quality objectives that have been identified across almost all of Catalonia as follows.

5.3.3 Landscape Quality Objectives Common to Catalanian Landscape Catalogues

1. Well-preserved, planned and managed landscapes, independent of their type (urban, suburban, rural or natural) and their character.
2. Lively and dynamic landscapes – those existing and those newly created by intervention – capable of absorbing the inevitable territorial transformations without losing their individuality.
3. Heterogeneous landscapes, reflecting the rich diversity of the Catalan landscape and avoiding homogenisation.
4. Orderly and harmonious landscapes, avoiding disruption and fragmentation.
5. Unique landscapes, anything but mundane.
6. Landscapes that retain and reinforce their references and values, both tangible and intangible (ecological, historic, aesthetic, social, productive, symbolic and identity based).
7. Landscapes that are always respectful to the legacy of the past.
8. Landscapes that transmit tranquillity, free of dissonant elements, discordant sounds and light or odour pollution.
9. Landscapes that can be enjoyed without endangering their heritage and individuality.
10. Landscapes that take social diversity into account and contribute to the individual and social welfare of the population.

Through the landscape catalogues of each region in Catalonia, a series of region-specific objectives are developed and included. An example of the most recently adopted catalogue is that for the metropolitan region of Barcelona,⁶⁶ for which the following landscape quality objectives were adopted:

⁶⁶ http://www.catpaisatge.net/fitxers/publicacions/cataleg_rmb/CP_RMB_Bloc5.pdf

Note that these objectives were translated via Google from Catalan to English, so have been rephrased.

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5.3.4 Landscape Quality Objectives for the Metropolitan Region of Barcelona

1. Dynamic and productive agrarian landscapes, with economic, social and environmental functionality that preserves the cultural and historic elements (dry stone walls, vineyards, geological features, wells and channels, etc.) that give them their own identity.
2. Well-managed natural and forest landscapes, with ecological and productivity criteria, combining farming with recreational and educational access alongside environmental respect and resilience to main threats to the landscape (fires, erosion, climate change, invasive species).
3. Quality and continuity of river landscapes around the Besòs, Foix, Llobregat and Tordera, and other metropolitan water courses, through the improvement of the management of the water and habitats, the restoration of the same and the allocation of compatible social and natural uses.
4. Mobility, energy and telecommunications infrastructures (road and rail networks, gas pipelines, electricity, etc.) with a good landscape design, especially of the roads.
5. A system of itineraries and viewpoints that promote appropriate and sensitive landscape connectivity between cities, rural areas, natural spaces and the significant landscape elements (viewpoints, fountains, cultural heritage elements of symbolic value, etc.), which emphasises the relevant panoramic views and allows the population to interact with the diversity of urban landscapes and peri-urban, rural and natural areas of the metropolitan region of Barcelona.
6. Scenic funds that keep identifying visual references of the metropolitan region of Barcelona.
7. A system of compact cities with growth, diversity of uses and carefully defined landscape boundaries, which reflect local identity and history and enable ad hoc urban growth to be avoided.
8. Adequate urban areas, equipped with good-quality landscape elements, reflecting local landscape identity and minimising visual impact.

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9. Specialised areas (industrial, logistics, energy production) with greater aesthetic quality and that integrate landscape considerations, particularly for new specialised areas.
10. A coastal landscape of good quality that is respectful of the singularities and the landscape identity of each place (natural spaces, dunes, round roads, headlands, modernist and colonial buildings, maritime walks and port facilities), with appropriate regulation of permitted uses and special consideration in land use interventions along the coastal landscape.
11. Degraded areas (quarries, landfills, etc.) that recover or improve their landscape quality through restoration or, if applicable, the implementation of compatible uses (rock climbing, motocross circuits, etc.).

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5.4 Review of Ecosystems Services

Ecosystem services are evaluated by their own valuation and assessment processes separate from LCAs; however, the resulting information can be included in the recommendations and overview for each landscape character area. Ecosystem services have been categorised by the European Environment Agency's Common International Classification of Ecosystem Services as regulating services (regulating environmental quality), provisioning services (providing food or materials) or cultural services (providing socio-cultural outputs such as amenities, health benefits and a sense of place). Understanding the relationship between LCTs/ landscape character areas and ecosystem services is useful for future landscape management.

5.4.1 Case Study: Ecosystem Services in a Landscape Character Assessment

Case Study: Fermanagh Cavelands (text taken from Fermanagh Cavelands LCA⁶⁷)

Provisioning services

Food: dairy and beef cattle farming; freshwater fish from the loughs.

Fibre and fuel: extensive forestry plantations provide timber and other forest products; sheep farming produces wool; energy is provided in the forms of peat and renewables (hydro and wind power); peat is also commercially extracted for horticulture.

Minerals: quarrying for limestone; Marble Arch Caves Geopark is a major resource of unusual limestone geology.

Genetic resources: home to uncommon species, including regionally rare plants that thrive in calcareous soils; one of the few Northern Ireland locations for juniper.

Fresh water: high rainfall provides drinking water.

Regulating services

Carbon storage: carbon is stored by peat bogs and by forest trees, as well as by other vegetation.

Climate regulation: carbon sequestration is vital to regulating climate change; non-intensive use of land can reduce the output of greenhouse gases from livestock; contribution of renewable energy to mitigating climate change.

Flood regulation: assisted in upland and lowland areas through peatland and forestry.

⁶⁷ <https://www.daera-ni.gov.uk/articles/landscape-character-northern-ireland>

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Protected areas: include Cuilcagh Mountain SAC and Killykeeghan and Crossmurrin Nature Reserve, protecting blanket bogs, karst caves and wetlands.

Cultural services

Access, recreation and tourism: a popular visitor destination; visitor sites include Marble Arch Caves, Florence Court and many others; opportunities to access the remote countryside; the sparsely populated area, including its dark skies, is an attraction in itself.

Archaeological heritage: huge range of sites, from Neolithic monuments to Georgian houses and wartime heritage.

Education: opportunities for learning about geology, biodiversity and history.

Spiritual and religious values: spiritual value of remote, sparsely populated landscape.

Inspiration and aesthetic values: associations with painters and writers who were drawn to this landscape; opportunities for scenic views.

Sense of place: rural locality and distinctive local landscape imbues western Fermanagh with a strong sense of place.

5.4.2 Linking Ecosystem Services to Landscape Character Assessment with Cultural Ecosystem Services

The collection of cultural and perceptual data through the LCA process can ultimately feed data back into cultural ecosystem services when focused on the natural environment. Conversely, informing the public of the important roles and services underlying the natural environment could easily be incorporated into the participatory process. When asking survey questions, it is helpful to use an ecosystem services classification system with support from ecosystem research such as the **Common International Classification of Ecosystem Services** framework or the **Millennium Ecosystem Assessment Report**. Figure 42 demonstrates how cultural ecosystem services can have a symbiotic relationship with LCAs. Cultural ecosystem services were evaluated in a research project on the cultural value of the Dublin coastline, and the study includes an valuable toolkit for assessing cultural ecosystem services.⁶⁸

⁶⁸ Brannigan, J., Ryfield, F., Cabana, D., Crowe, T. (2019), *The Cultural Value of Coastlines: A Toolkit for Assessing Cultural Ecosystem Services*, University College Dublin, Dublin.

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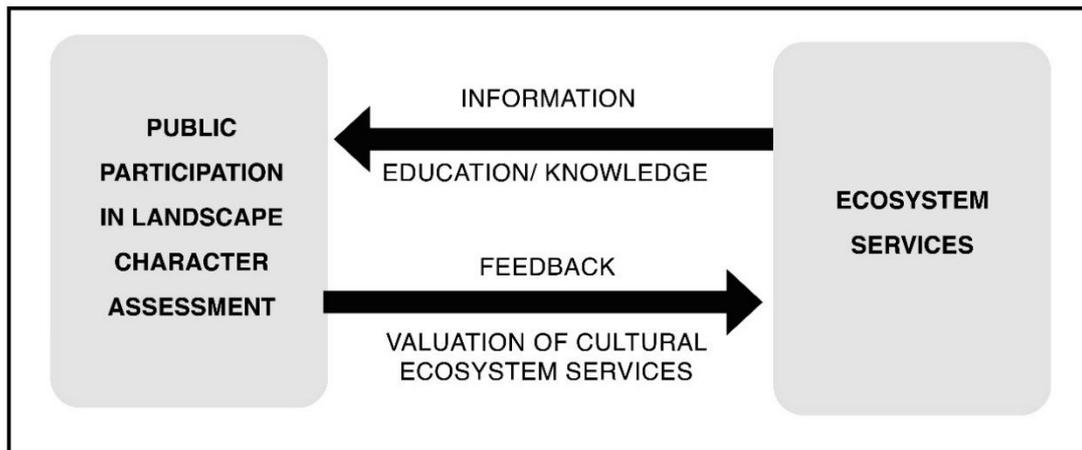


Figure 43: Relationship between public participation process in LCA and ecosystem services.

Image: Ruth Minogue

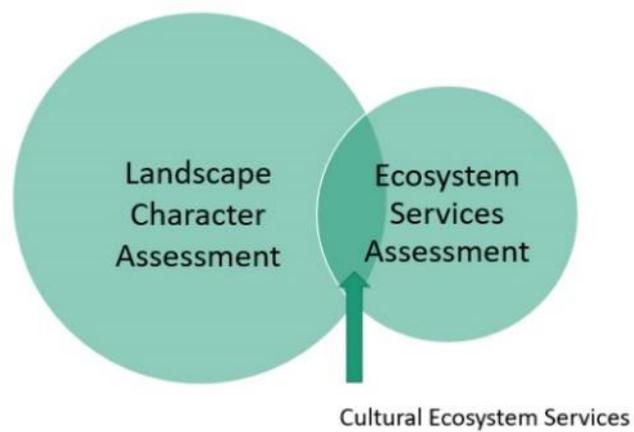


Figure 44: Ecosystem services and relationship with cultural ecosystem services. Image: Ruth Minogue

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5.5 Key Outputs on Completion of Landscape Character Assessment

- Final LCA report with LCTs and landscape character areas confirmed and described.
- Public access to document ensured.
- Final landscape character areas published and available in the local library along with suitably scaled maps.
- Landscape character areas integrated into publicly available mapping, including EPA mapping, heritage maps, etc.
- Original content/data collected on cultural and social associations uploaded to the Digital Repository of Ireland, which is a national digital repository for Ireland’s humanities, social sciences and cultural heritage data.
- GIS data (landscape character areas/LCT boundaries) uploaded to a suitable resource – data.gov.ie or similar.

“Our landscape reflects and embodies our cultural values and our shared natural heritage and contributes to the well-being of our society, environment and economy. We have an obligation to ourselves and to future generations to promote its sustainable protection, management and planning.”⁶⁹

National Landscape Strategy for Ireland 2015 - 2025

⁶⁹ Department of Arts, Heritage and the Gaeltacht (2015), *National Landscape Strategy for Ireland 2015–2025*, Government of Ireland, 2015.

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1. PLANNING AND POLICY RELATED TO LANDSCAPE
2. IRISH LANDSCAPE CHARACTER ASSESSMENTS
3. SAMPLE FIELD SURVEYS
4. GUIDE TO USING LOGAINM
5. LIST OF MAP VIEWERS AND DATA TO DOWNLOAD – SIMPLE SOURCES OF PHYSICAL DATA
6. USING FIELD PAPERS FOR FIELD MAP SURVEYS WITH QUANTUM GIS
7. MAPPING TOOLS FOR DESK AND FIELD STUDIES
8. STRATEGIES FOR ENGAGEMENT – GETTING THE WORD OUT
9. PUBLIC PARTICIPATORY GEOGRAPHICAL INFORMATION SYSTEMS

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ANNEX 1: Planning and Policy Related to Landscape

European Landscape Convention

C Identification and assessment

1 With the active participation of the interested parties, as stipulated in Article 5.c, and with a view to improving knowledge of its landscapes, each Party undertakes:

- a i to identify its own landscapes throughout its territory;
- ii to analyse their characteristics and the forces and pressures transforming them;
- iii to take note of changes;
- b to assess the landscapes thus identified, taking into account the particular values assigned to them by the interested parties and the population concerned.

2 These identification and assessment procedures shall be guided by the exchanges of experience and methodology, organised between the Parties at European level pursuant to Article 8.

Quality Objectives Each Party undertakes to define landscape quality objectives for the landscapes identified and assessed, after public consultation in accordance with Article 5.c.

E Implementation To put landscape policies into effect, each Party undertakes to introduce instruments aimed at protecting, managing and/or planning the landscape.

The National Planning Framework

The National Planning Framework together with the National Development Plan 2021 combine to form Project Ireland 2040, which is the overarching policy and planning framework. The Government has begun the process of revising the current National Planning Framework.⁷⁰

⁷⁰ Department of Housing, Local Government and Heritage (2023), *A Road Map for the First Revision of the National Planning Framework*, Government of Ireland, Dublin.

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Section 10 (2) Planning and Development Act 2000. Sections relevant to LCAs.

(c) the conservation and protection of the environment including, in particular, the archaeological and natural heritage and the conservation and protection of European sites and any other sites which may be prescribed for the purposes of this paragraph;

(d) the integration of the planning and sustainable development of the area with the social, community and cultural requirements of the area and its population;

*(e) the **preservation of the character of the landscape** where, and to the extent that, in the opinion of the planning authority, the proper planning and sustainable development of the area requires it, including the preservation of views and prospects and the amenities of places and features of natural beauty or interest;*

Planning and Development Act 2000, as amended

Section 2(1) of the principal act was amended to state that:

“ ‘landscape’ has the same meaning as it has in Article 1 of the European Landscape Convention done at Florence on 20 October 2000;

And Section 7 (b)(ii) (p)

*(p) landscape, in accordance with relevant policies or objectives for the time being of the Government or any Minister of the Government relating to providing a framework for **identification, assessment, protection, management and planning of landscapes** and developed having regard to the European Landscape Convention done at Florence on 20 October 2000.”*

The Draft Planning Bill 2022⁷¹

Requires the conservation, protection, management and improvement of the landscape.

Content of regional spatial and economic strategy

⁷¹ <https://www.gov.ie/en/publication/c6f60-draft-planning-and-development-bill-2022/>

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28. (1) A regional spatial and economic strategy shall make provision for the following matters

–

(i) a strategy relating to landscape and landscape character that coordinates the categorisation of landscapes, in terms of their capacity to absorb particular types of development, across the region so as to ensure a consistent approach to the protection of the landscape.

Regional Policy

Each of the three regional assemblies, the Northern and Western Regional Assembly, the Eastern and Midland Regional Assembly and the Southern Regional Assembly, have through their RSEs, identified as an RPO to prepare a regional landscape character map. Both the Northern and Western Regional Assembly and the Eastern and Midland Regional Assembly commit to this LCA following the adoption of a national LCA.

The Southern Regional Assembly's RPO is more explicit, stating their objective to develop a regional landscape strategy through "undertaking a Regional Landscape Assessment and Landscape Character map and development of guidance on local landscape character assessments (including urban and historic character assessments) to ensure a consistent approach to landscape character assessment ...".⁷²

Eastern and Midland Regional Assembly Regional Spatial and Economic Strategy⁷³

RPO 6.7: Rural Economy

Support local authorities to develop sustainable and economically efficient rural economies through initiatives to enhance sectors such as agricultural and food, forestry, fishing and aquaculture, energy and extractive industries, the bioeconomy, tourism, and diversification into alternative on-farm and off-farm activities, **while at the same time noting the importance of maintaining and protecting the natural landscape and built heritage.**

RPO 3.7: Sustainable Growth

Local authorities shall have regard to environmental and sustainability considerations for meeting sustainable development targets and climate action commitments, in

⁷² Southern Regional Assembly, Regional Spatial & Economic Strategy for the Southern Region, Waterford, Ireland.

⁷³ https://emra.ie/dubh/wp-content/uploads/2020/05/EMRA_RSES_1.4.5web.pdf

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accordance with the National Adaptation Framework. In order to recognise the potential for impacts on the environment, local authorities shall address the proper site/route selection of any new development and examine environmental constraints, including, but not limited to, biodiversity, flooding, landscape, cultural heritage and material assets, including the capacity of services to serve any new development.

Landscape

RPO 7.27

Following the adoption of a national LCA, the Assembly will prepare a regional LCA to promote better landscape management and planning in the region.

RPO 7.28

Work with local authorities and relevant stakeholders to identify areas of high value agricultural land and to ensure food security in the region and to promote sustainable farming practices that maintain the quality of the natural environment, protect farm landscapes and support the achievement of climate targets.

RPO 7.29

Support collaboration between local authorities, the Bord na Móna Transition Team and relevant stakeholders and the development of partnership approaches to integrated peatland management that incorporate any relevant policies and strategies, such as the Bord na Móna Biodiversity Plan 2016–2021 and the national Climate Mitigation and Adaptation Plans. This shall include support for the rehabilitation and/or re-wetting of suitable peatland habitats.

North and Western Regional Assembly Regional Spatial and Economic Strategy⁷⁴

RPO 5.2

(a) Protect manage and conserve the quality, character and distinctiveness of our landscapes and seascapes.

(b) The Assembly supports co-operation and co-ordination between local authorities in determining landscape character along their borders. A targeted review should be

⁷⁴ <https://www.nwra.ie/pdfs/NWRA-RSES-2020-2032.pdf>

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undertaken to ensure consistency in classification and policy in adjoining areas of similar character. The Northern and Western Regional Assembly will assist collaboration and co-ordination.

(c) Following the completion of the national LCA, and any associated statutory guidelines, the Regional Assembly shall prepare a regional LCA to promote improved landscape management and designation.

RPO 5.3

The Assembly supports the consideration of the zone of:

(i) North Sligo/North Leitrim (Benbulbin and its hinterland); and (ii) the area surrounding and including Lough Arrow/Lough Key as potential National Parks/National Recreation Areas. It supports collaboration in this regard with stakeholders, including NPWS, local authorities, the Department of Culture, Heritage and the Gaeltacht.

Southern Regional Assembly Regional Spatial and Economic Strategy⁷⁵

RPO 129 Landscape

It is an objective to develop a Regional Landscape Strategy to facilitate landscape protection, management and change through undertaking a Regional Landscape Assessment and Landscape Character Map and development of guidance on local landscape character assessments (including urban and historic landscape characterisation) to ensure a consistent approach to Landscape Character Assessment, particularly across planning and administrative boundaries. The Regional Landscape Character Assessment should also address the characterisation of our seascapes and coastal areas. The implementation mechanisms and monitoring structures to be established following the adoption of the RSES will identify the scope and role of the Regional Landscape Strategy for the Region and the timescale for its preparation.

⁷⁵ <https://www.southernassembly.ie/regional-planning/rses>

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The Action Plan for Rural Development 2020⁷⁶

Aims to protect and promote the sense of place and culture and the quality, character and distinctiveness of the Irish rural landscape that make Ireland's rural areas authentic and attractive as places to live, work and visit.

⁷⁶ <https://www.gov.ie/en/publication/091dba-realising-our-rural-potential-action-plan-for-rural-development/>

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ANNEX 2: Irish Landscape Character Assessments

Table 10: List and dates of Irish Landscape Character Assessments

| County | Agency/consultancy | Date | Download LCA* |
|--------------------------------|---|---------------|---|
| Pre 2013: over 10 years | | | |
| Longford | Longford County Council | June 2000 | https://www.longfordcoco.ie/uploadedfiles/longfordcoco/our_departments/planning/documents/draft_county_development_plan/annex%204%20landscape%20character%20assessment.pdf |
| Louth | Louth County Council | December 2002 | https://www.louthcoco.ie/en/services/heritage/publications/louthlandscapecharacterassessment.pdf |
| Kilkenny | CAAS Consultancy for Kilkenny County Council | October 2003 | https://www.kilkennycoco.ie/eng/services/planning/development-plans/city-and-county-development-plan/expired-development-plans/development_plans_2008-2014/kilkenny%20county%20development%20plan%202008-2014/appendix_c_landscape_character_assessment.pdf |
| Mayo | <i>Landscape Appraisal of County Mayo</i> , CAAS Consultancy for Mayo County Council (Development Plan 2003–2009) | 2003 | https://www.mayo.ie/getmedia/d64fadfc-f8b5-4f1c-971d-624fd9527e04/Landscape-Appraisal-of-County-Mayo.pdf |

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| County | Agency/consultancy | Date | Download LCA* |
|-----------------|--|---------------|---|
| Kildare | Kildare County Council | 2004 | https://consult.kildarecoco.ie/sites/default/files/Ch%2013 %20final_0 .pdf |
| Clare | Heritage Council prepared by ERM Ireland Ltd in association with ERA-Maptec, MoLAS, Julie Martin Associates and Gina Johnson | March 2004 | https://www.clarecoco.ie/services/planning/publications/landscape-character-assessment-of-co-clare-2004-26,526.pdf |
| Meath | Soltys: Brewster Consulting | May 2007 | https://meathcountydevelopmentplan.files.wordpress.com/2012/05/appendix-7-landscape-character-assessment1.pdf |
| Cork | Cork County Council Commissioned new LCA in 2023- not available to date | November 2007 | http://corkcocoplans.ie/wp-content/uploads/bsk-pdf-manager/2016/07/Draft-Landscape-Strategy-2007.pdf |
| Monaghan | ERM Ireland Ltd (www.erm.com) for Monaghan County Council | August 2008 | https://monaghan.ie/planning/landscape-character-assessment/ |
| Offaly | Not an LCA but landscape character mapping and sensitivities included in development plan | 2009 | https://www.yumpu.com/en/document/read/32526965/landscape-and-amenitiespdf-offaly-county-council |
| Limerick | Limerick County Council | November 2010 | https://www.limerick.ie/sites/default/files/media/documents/2018-04/Limerick%20County%20Development%20Plan%202010-2016%20%28with%20variation%201-3%2C%205%266%29_0.pdf |

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| County | Agency/consultancy | Date | Download LCA* |
|------------------|--|---|---|
| Post 2013 | | | |
| Roscommon | MosArt Consultants | May 2014 | https://www.roscommoncoco.ie/en/services/planning/roscommon-county-council-planning-publications/roscommon-county-council-planning-publications/county_development_plan_2014_-_2020/county-development-plan-2014-2020/11-landscape-character-assessment.pdf |
| Carlow | Carlow County Council and CAAS consultants | July 2015 | https://consult.carlow.ie/en/consultation/carlow-county-development-plan-2022-2028/chapter/vii-landscape-character-assessment |
| Sligo | Not a full LCA. Limited descriptions and map | 2016 Draft Development Plan (map from earlier CAAS study) | https://www.sligococo.ie/media/SligoCountyCouncil2015/Services/Planning/Downloads/SCDP2011-2017/CDP%2020112017_Appendix_G_County%20landscape%20designations.pdf https://www.sligococo.ie/cdp/DraftCDP2017-2023LandscapeCharacterisationMap.pdf |

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| County | Agency/consultancy | Date | Download LCA* |
|--------------------------------------|--|------------------------------------|---|
| Donegal | Donegal County Council | May 2016 (2013–2016 process) | https://www.donegalcoco.ie/services/planning/developmentplansbuildtheritageincludinggrants/landscape%20character%20assessment%20of%20county%20donegal/ |
| Wicklow | Wicklow County Council | 2016 | https://www.wicklow.ie/Portals/0/Documents/Planning/Development-Plans-Strategies/Nat%20Reg%20County%20Plans/Wicklow%20County%20Dev%20Plan/CDP%202016%202022/v3/Volume_3_-_Appendix_5_-_Landscape_Assessment.pdf |
| Tipperary | CAAS Consultancy for Tipperary County Council | September 2016 | https://consultations.tipperarycoco.ie/sites/default/files/2021-07/Volume%203-Appendix%203-Landscape%20Character%20Assessment%20and%20Views.pdf |
| Fingal (North Dublin) | Fingal County Council. Partial LCA | 2016 | https://consult.fingal.ie/en/consultation/draft-fingal-development-plan-2017-%E2%80%932023-stage-2/chapter/chapter-9-natural-heritage |
| Less than 5 years | | | |
| Leitrim | Leitrim County Council and rpsgroup.com | April 2020 | http://www.leitrimcoco.ie/eng/services_a-z/planning-and-development/development-plans/leitrim-county-development-plan-2023-2029/appendix-vi-leitrim-landscape-character-assessment-review.pdf |

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| County | Agency/consultancy | Date | Download LCA* |
|-------------------------------|--|----------------------------------|---|
| Waterford | CAAS Consultancy for Waterford County Council | 2020 | https://consult.waterfordcouncil.ie/en/system/files/materials/805/Appendix%208%20Landscape%20%20Seascape%20Characterisation%20Assessment%2018.06.21.pdf |
| Wexford | Wexford County Council | September 2020 | https://consult.wexfordcoco.ie/sites/default/files/Volume%207%20Landscape%20Character%20Assessment.pdf |
| Dún Laoghaire–Rathdown | Dún Laoghaire–Rathdown County Council | 2022 | https://www.dlrcoco.ie/sites/default/files/atoms/files/appendix7.pdf |
| South Dublin | Minogue and Associates with Aegis Archaeology, Michael Cregan and Geoscience Ltd | May 2021 | https://www.sdcc.ie/en/devplan2022/stage-2-draft-plan/appendices/appendix-9-draft-landscape-character-assessment.pdf |
| Galway | Galway County Council and CAAS Consultancy | May 2021 | https://consult.galway.ie/en/consultation/draft-galway-county-development-plan-2022-2028/chapter/appendix-4-landscape-character-assessment |
| Kerry | Kerry County Council | Draft Development Plan 2022–2028 | https://consult.kerrycoco.ie/sites/default/files/Appendix%207.pdf |

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| County | Agency/consultancy | Date | Download LCA* |
|------------------|---|--|---|
| Laois | Laois County Council | January 2022 | https://laois.ie/wp-content/uploads/Appendix-6-LCA-of-Adopted-LCDP-2021-2027.pdf |
| Westmeath | Westmeath County Council | Draft Development Plan 2021–2027 | https://consult.westmeathcoco.ie/en/system/files/materials/5/Chapter%2013%20Landscape%20and%20Lake%20Amenities.pdf |
| Cavan | Cavan County Council. No LCA. Landscape categorisation included in development plan | Preparation of County LCA commissioned in 2024 | https://www.cavancoco.ie/file-library/planning/development-plans/development-plan-2022–2028/development-plan-22–28-appendices/cavan-dp-appendices-volume-1_online.pdf |

*All LCA document links correct at the time of publication. Those in draft form may need to be updated.

Northern Ireland Regional Landscape Character Assessment: The Northern Ireland Regional Landscape Character Assessment provides a strategic overview of the landscape in Northern Ireland and subdivides the countryside into 26 Regional Landscape Character Areas based upon information on people and place and the combinations of nature, culture and perception that make each part of Northern Ireland unique.

[Northern Ireland Regional Landscape Character Assessment \(arcgis.com\)](https://arcgis.com)

The Northern Ireland Landscape Character Assessment subdivided the countryside into 130 LCAs, each based upon local patterns of geology, landforms, land use, and cultural and ecological features. For each LCA, the key characteristics were described and an analysis of landscape condition and its sensitivity to change was made. Completed in 2000. Available in pdf. [Search | DAERA \(daera-ni.gov.uk\)](#)

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ANNEX 3: Sample Field Surveys

Waterways

| | |
|--------|--------------------|
| Date | GPS location |
| Photos | Weather conditions |

| |
|---------------|
| Sketch |
|---------------|

| LAND USES | | |
|----------------------|-------------|-------------|
| TYPE | DESCRIPTION | OBSERVATION |
| Residential | | |
| Industrial | | |
| Commercial | | |
| Other | | |
| Open spaces | | |
| TRANSPORT | | |
| Roads | | |
| Footpaths | | |
| Other | | |
| Boundaries and edges | | |

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| VIEWS AND FEATURES | | |
|---------------------|--|--|
| View of/to what | | |
| Composition of view | | |
| Natural features | | |
| Townscape | | |
| HERITAGE RESOURCES | | |
| Natural | | |
| Industrial | | |
| Historic | | |

Analysis

| URBAN FORM | | |
|--|-------------|-------------|
| TYPE | DESCRIPTION | OBSERVATION |
| General arrangement of streets and the plots lining these streets is described. The orientation of the houses and their position on the plot is described with particular reference to the building line. The building line is an important aspect of the perception of a street and its formality or informality can have a significant influence on the character of an area or sub-area | | |
| TOWNSCAPE CHARACTER | | |
| The predominant types of material are described, distinguishing where necessary between traditional | | |

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| | | |
|---|--|--|
| <p>(vernacular) and modern. The colour, textures, patterning, building techniques, locally distinctive building methods and/or use of materials are mentioned where they are felt to contribute to the character of the area</p> | | |
| <p>PUBLIC REALM</p> | | |
| <p>Description of the public realm using key indicators; presence of older or high-quality surface treatments, parking provision? Are street-trees present? How well-defined is the public realm, for example are pavements lined by mature hedges and trees, strong boundaries? Street furniture, signage, legibility, modern surface treatments, boundary treatments, hard or soft landscaping noted where it is present.</p> | | |
| <p>ACCESS AND CONNECTIVITY</p> | | |
| | | |

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| NODES | | |
|---|--|--|
| | | |
| LANDSCAPE CHARACTER | | |
| | | |
| BUILT HERITAGE FEATURES | | |
| | | |
| NATURAL QUALITIES/ BIODIVERSITY | | |
| Note: any particular trees that add character | | |

Forces for change/pressures/enhancement opportunities

| FORCES FOR CHANGE | DETRACTORS | ENHANCEMENT OPPORTUNITIES |
|-------------------|------------|---------------------------|
| | | |

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Simple Matrix Style Survey

Source: ECOVAST (2006), *Landscape Identification: A Guide to Good Practice*, European Council for the Village and Small Town.

| Matrix for landscape identification | | | | |
|---|--|--|--|--|
| List of determining character elements | | | | |
| 10 | Feelings and associations | | | |
| 9 | Historic features (e.g. castles, monasteries, archaeological sites) | | | |
| 8 | Other man-made features (e.g. industry, tourism, infrastructure) | | | |
| 7 | Characteristic features of houses and settlements | | | |
| 6 | Characteristic features and patterns of agriculture and forestry | | | |
| 5 | Land cover (vegetation, wildlife, habitats) | | | |
| 4 | Soil | | | |
| 3 | Land form (geomorphology) | | | |
| 2 | Climate (hydrology, rivers, lakes, glaciers) | | | |
| 1 | Rocks (surface geology) | | | |

| Name of the landscape unit: | | | | |
|--|------------|--------|----------|-----|
| Relative strength of the features (graduation 1-4) | | | | |
| | Dominating | Strong | Moderate | Low |
| 10 | | | | |
| 9 | | | | |
| 8 | | | | |
| 7 | | | | |
| 6 | | | | |
| 5 | | | | |
| 4 | | | | |
| 3 | | | | |
| 2 | | | | |
| 1 | | | | |

(Outstanding characteristics written in bold)

Short Description
(at least of the dominating characteristics and the total/holistic impression of the landscape)

Assessment
(your first evaluation of the importance of the landscape)

Additional comments(eg reference to regulations due to conservation orders or requirements):

Field Survey Form: Seascape Character Assessment

| | | | |
|---|-------------|------------------|------------|
| CONTEXT AND ASSESSMENT CONDITIONS (weather, visibility and tide) | | | |
| DATE | | SURVEYORS | |
| LOCATION | (TOWNLAND) | COUNTY | GPS |
| EXTENT | | | |
| | FROM | TO | |
| LIMIT OF draft SCT | | | |
| LIMIT OF draft SCA | | | |
| ADJACENT TYPES/AREA | | | |
| DESIGNATIONS FROM DESKTOP | | | |
| SPECIAL AREA OF CONSERVATION | | | |
| SPECIAL PROTECTION AREA | | | |
| NATURE RESERVE | | | |
| NATIONAL PARK | | | |
| World Heritage Site (or tentative) | | | |
| SCENIC VIEWS in County Development Plan | | | |
| Designated tourism route | | | |

| PHYSICAL FORM – MARINE | | | | | | | | |
|---------------------------|--|-----------|---|--|---|------------------|-------------------------|-------------------------|
| MARINE | Tidal dynamics | Max range | Intertidal zone (circle) Broad/Moderate/Narrow | | Tidal State (circle) Ebb, Flow, Full, Low | | | |
| | Tidal range | | | | | | | |
| | Tidal features | | | | | | | |
| PHYSICAL FORM – COASTLINE | | | | | | | | |
| COAST | Coastal geometry | Straight | Shallow | | Deep bay | Convex | General aspect of coast | |
| | Scale of coastal features | Linear | Large bay(s) | | Small bay(s) | Indented cliffs | Estuary/inlet | Other |
| | Islands | | | | | | | |
| | Coastal form | Low Lying | Low cliffs or rocks | | Cliffs: heights | Dunes | Other | Typical minimum height: |
| | Predominant nature of shore | Mud | Sand | | Shingle | Boulders/pebbles | Solid bedrock | |
| | Land geology | | | | | | | |
| | Notable physical features/ landmarks/sea features | | | | | | | |
| | Settlements Installations Onshore Offshore | | | | | | | |

| PHYSICAL FORM – HINTERLAND | | | |
|---|------|--|-------|
| Surrounding hinterland | Flat | Gently undulating | Steep |
| Land cover (habitats) | | | |
| Land use | | | |
| ACTIVITY SURVEY SEA AND COAST – SEA BASED ACTIVITY NOTE PATTERN AND CONDITIONS | | COASTLINE ACTIVITY – NOTE PATTERN AND CONDITION | |
| RECREATION | | SETTLEMENT/HABITATION | |
| SHIPPING | | RECREATION | |
| COMMERCIAL | | COMMERCIAL | |
| FISHING | | FISHING | |
| OTHER | | Other | |
| VIEWS FROM SEA TO LAND –(boat survey) | | | |
| BACKDROP TO COASTLINE | | TYPICAL VIEW (VISTA) COMMENT OR SIMPLE SKETCH | |
| ATTRACTOR | | | |
| DETRACTORS | | | |
| NIGHT LIGHTING | | | |
| Comments/notes | | | |

VIEWS FROM LAND TO SEA (land survey)

COASTAL VISUAL ENVELOPE

TYPICAL VIEW (VISTA) COMMENT OR SIMPLE SKETCH

SKETCH PROPORTION OF LAND/SEA/SKY AND RECORD EXTENT TO WHICH OBJECTS/LANDFORM FILL THE VIEW

FORCES FOR CHANGE

Climate change/natural processes

Visitor pressure

Marine use-commercial and fishing

Offshore energy or minerals

Development pressure/transport routes

Land management changes

Other forces for change

| EVALUATION – QUALITY | | | | | | | |
|-----------------------------|--|--|--|--|--|------------|--------|
| INTACTNESS | complete | | | | | remnant | |
| CONDITION | maintained | | | | | abandoned | |
| DETRACTORS | none | | | | | many | |
| TYPICALITY | representative | | | | | unusual | |
| CLARITY | clear | | | | | muddled | |
| FRAGILITY | delicate | | | | | robust | |
| RARITY | common | | | | | rare | |
| DISTINCTIVENESS | bold | | | | | indistinct | |
| EVALUATION – VALUE | | | | | | | |
| NATURALNESS | natural | | | | | contrived | Figure |
| RE MOTENESS | remote | | | | | crowded | |
| TRANQUILITY | calm | | | | | busy | |
| SENSE OF PLACE | strong | | | | | weak | |
| POPULARITY | high | | | | | low | |
| RECREATION USE | high | | | | | low | |
| AMENITY VALUE | high | | | | | low | |
| ART/LITERATURE | SPECIFIC REFERENCES – ARTISTS, WRITERS, ETC., ASSOCIATED | | | | | | |
| FOLKLORE | | | | | | | |

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ANNEX 4: Guide to Using Logainm

The Placenames Database of Ireland (Logainm.ie) *Ronan Hennessy, Reframe project, 2023*

The following guide provides instructions on how to access Logainm placename data using the Logainm API (Application Programming Interface). The Logainm.ie website is a valuable information resource that provides text search and browse tools, and an associated map viewer, with which to access data relating to placenames in Ireland. The website is an ideal resource for investigating placenames “one by one”, providing an Irish and English pronunciation (audio) for the placename, and its position amid the hierarchical structure of geographic categories (county, barony, civil parish, townland, Gaeltacht, landform, etc.) for each placename. Geographic coordinates for each placename are provided in latitude/longitude (decimal degrees), ITM and Irish Grid (TM65) coordinates. The Logainm API enables users to access data pertaining to numerous placenames at once, based on a place, category or glossary identifier (ID). The examples presented here demonstrate two methods of accessing placename data based on a specific glossary ID.

The first and easier method, using an internet browser, retrieves the metadata in a raw text format that, while data rich, may prove tedious to extract to a standard usable format such as an Excel spreadsheet. The second method, though requiring a certain level of technical attention using Python, retrieves the metadata in a familiar and organised spreadsheet format of row and columns. This format is ideal for use in a GIS, and for spatial analysis and visualisation within LCA and HLCA, as will be demonstrated.

Introduction and Background to Logainm (<https://www.logainm.ie/en/>)

The Placenames Database of Ireland, or Logainm, is a comprehensive management system for the placenames data, records and research of Ireland. The public resource hosts a collection of Irish placenames. Logainm is a research project of the Gaois research group, Fiontar & Scoil na Gaeilge at Dublin City University. The project objectives are (1) to provide state-of-the-art technology to facilitate the research of the Placenames Branch (Government of Ireland) and (2) to disseminate the State’s toponymic data via the public website logainm.ie. The project is funded by the Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media, with support

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from the National Lottery. The public website has been in service since 2008, with the current version of the website launched in 2022.

Logainm Open Data (<https://www.logainm.ie/en/about/open-data>)

Logainm data are publicly available through the Logainm API. Instructions and documentation regarding the API are available via <https://docs.gaois.ie/en/>.

Logainm data are updated regularly, and the service recommends that users access the updates via the API. For due acknowledgement and attribution, the following text is recommended: “Irish-language placename data by Logainm © Government of Ireland and licensed under CC BY 4.0”. Full documentation on accessing data via the Logainm API is provided via <https://docs.gaois.ie/en>.

Using Logainm data for Landscape Character Assessment

Logainm open data can be publicly accessed in raw text format (.TSV or Tab Separated Value file format) using a Python script. The script described here, which enables users to retrieve Townland data relating to Logainm “place” metadata, is attributed to Brian Ó Raghallaigh (Fiontar Dublin City University) and is available on the public github repository (<https://github.com/oraghalb/logainm-api-tools>).

How to Access Logainm Data for Townland Names

The Python script provided on github was modified, replacing “place” with “glossary” in the script, so that the metadata returned pertained to a specific glossary term identified by a unique glossary number (e.g. glossary_id = “45” for glossary term “Cluain”). This method, and modifications of this method, allows users to parse Logainm data based on full or partial geographical placenames.

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ANNEX 5: List of Map Viewers and Data to Download – Simple Sources of Physical Data

These map viewers are particularly useful for local LCAs where it can be difficult to analyse specialised GIS data. These sites are easy to understand and manipulate.

Table 11: Sources of physical data

| Organisation | Data | URL |
|--|---|---|
| BASE MAPS AND SATELLITE IMAGERY | | |
| Tailte Éireann | Raster and vector data from Ireland's national mapping agency | https://www.tailte.ie/en/ https://www.geohive.ie/ https://www.tailte.ie/en/surveying/services/mapgenie/ |
| | Open-source Tailte Éireann vector data | https://data-osi.opendata.arcgis.com/ |
| Google | Base maps and satellite imagery | https://www.google.com/maps https://earth.google.com/ https://earth.google.com/ |
| | Create maps and data layers | https://www.google.com/maps/about/mymaps/ |
| Bing | Base maps and satellite imagery | https://www.bing.com/maps/ |
| OpenStreetMap | Raster and vector base maps and data | https://www.openstreetmap.ie/resources/data/ |
| ENVIRONMENTAL DATA | | |
| EPA | Map viewer and data download | https://gis.epa.ie/SeeMaps |
| EPA | Map viewer and environmental sensitivity mapping tool | https://enviromap.ie |

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| | | |
|------------------------------|---|---|
| Geological Survey of Ireland | Geology map viewer and data download | https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx |
| Teagasc | Soil map viewer and data download | http://gis.teagasc.ie/soils/map.php |
| NPWS | Map viewer and data download | https://www.npws.ie/maps-and-data |
| Biodiversity Data Centre | Biodiversity map viewer and data download | https://biodiversityireland.ie/ |

HISTORY AND HERITAGE

| | | |
|--|---|---|
| National Monuments Service | Archaeology map viewer and data download | https://maps.archaeology.ie/HistoricEnvironment/ |
| National Inventory of Architectural Heritage | Database | http://www.buildingsofireland.ie/ |
| Heritage Council | Heritage map viewer | https://www.heritagemaps.ie/ |
| Royal Irish Academy | Irish Historic Town Atlas Online | https://www.ria.ie/irish-historic-towns-atlas-online |
| University College Dublin Digital Library | Historic Tailte Éireann town maps | http://digital.ucd.ie/view/ucdlib:40377 |
| Trinity College Dublin | Down Survey map viewer | https://downsurvey.tchpc.tcd.ie/historical-gis.html |
| British Library | King George III topographical maps of Ireland | https://www.flickr.com/photos/britishlibrary/albums/72157719523865277 |
| Heritage Council | Historic graves map viewer | https://historicgraves.com/graveyards-map |

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IRISH SPATIAL DATA

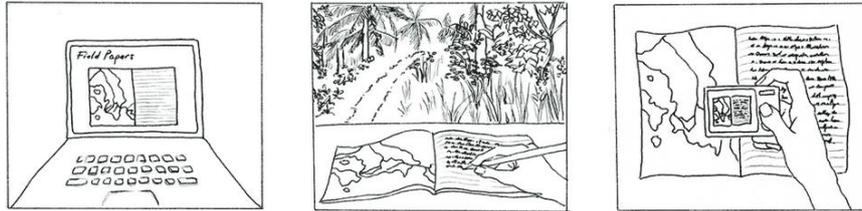
| | | |
|--|--|--|
| Government of Ireland | Data repository for public spatial data | https://data.gov.ie/ |
| Department of Housing, Local Government and Heritage | Zoning and development plan viewer | https://myplan.ie/zoning-map-viewer/ |
| Irish Spatial Data Exchange | Spatial data download | http://www.isde.ie/ |
| Marine Institute | Map viewer and data download | http://data.marine.ie/ |
| All-Island Research Observatory | Spatial data and mapping/visualisation tools | https://airo.maynoothuniversity.ie/ |
| All-Island Research Observatory | Environmental sensitivity mapping viewer | https://enviromap.ie/ https://airomaps.geohive.ie/ESM/ |
| Waterways Ireland | Navigation map viewer and data download | https://wwi.maps.arcgis.com/ |
| Central Statistics Office | Population and demographic data for Ireland | https://www.cso.ie/en/statistics/ |

INTERNATIONAL DATA

| | | |
|--|--|---|
| Open Data NI | Spatial data download for Northern Ireland | https://www.opendatani.gov.uk/ |
| European Marine Observation and Data Network (EMODnet) | European-wide environmental map viewer and data download | https://emodnet.ec.europa.eu/en |
| DIVA-GIS | Free open-source spatial data | http://www.diva-gis.org/data |
| MapCruzin | Free open-source spatial data | https://mapcruzin.com/ |

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ANNEX 6: Using Field Papers for Field Map Surveys with Quantum GIS



In Field Papers (fieldpapers.org):

1. Go to <http://fieldpapers.org/>.
2. Make an atlas to print/make yourself an atlas.
3. Paper size = A4/A3.
4. Set numerical values (number of field sheets) in upper left of Map Viewer to 1 and 1.
5. Click Make Atlas.
6. When Atlas is ready – on next screen Click Download PDF.



Figure 45: Output from Field Papers. © 2024 OpenStreetMap US

7. Save the PDF with an appropriate filename (e.g. Survey_Sheet_1) into a suitable folder.
8. Print Field Papers PDF to hard-copy sheets for field survey.

In the Field:

9. Annotate and sketch on the hard-copy sheet on field survey.

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Post Field Survey:

10. Scan the annotated/inked-in hard-copy sheet to a digital image.
 - Scan/photo/image must be at least 200 dpi.
 - File format must be JPG, PNG, TIF, GIF (PDFs will not work).

In Field Papers (fieldpapers.org):

11. Upload the scanned image of the hard-copy sheet.
12. When upload is complete, click Download GeoTIFF on the next screen.
13. Save the TIF with an appropriate filename (e.g. Survey_Sheet_1_complete.tif) into a suitable folder.

In Quantum GIS:

14. Add the TIF image as a raster layer.
15. The annotations and inked-in features can be digitised as vector features and labels in QGIS.

ANNEX 7: Mapping Tools for Desk and Field Studies

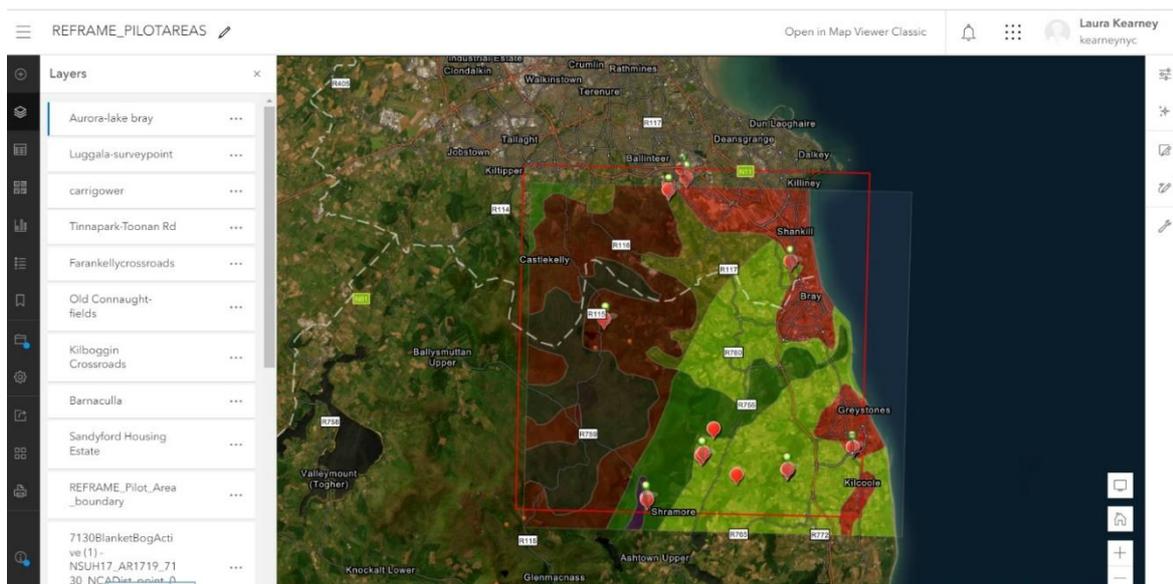


Figure 46: ArcGIS map viewer with imported survey points and geolocated images from field study. Copyright 1995–2024 Esri

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Using map viewers on site: Technical advances in map viewers accessed through a mobile phone on site (Google My Maps, Tailte Éireann Geohive Historical and Townland Viewer maps,⁷⁷ etc.) are very useful, giving extra depth of information when you are in the field.

AlpineQuest,⁷⁸ Google My Maps. Create your own map and add points in the field. These tools are invaluable as you can both access and annotate a large number of data while you are on the move.

Google My Maps (<https://www.google.com/maps/about/mymaps/>). Any useful GIS files available such as geology, habitat, soils, etc., can be transformed into a **CSV or KML/KMZ** format and imported into your “My Map”, with a limit of 10 layers. Include your provisional LCT layers so you can ground-truth their boundaries. Once you create your own map you can share it with the team. On site, you can create georeferenced points on your maps with notes and images. Data layers such as sites and monuments, Carlier landscape classification, bedrock geology, CORINE Land Cover, Special Areas of Conservation and Special Protected Areas and water catchment areas are visible on the below screenshot of the map viewer.

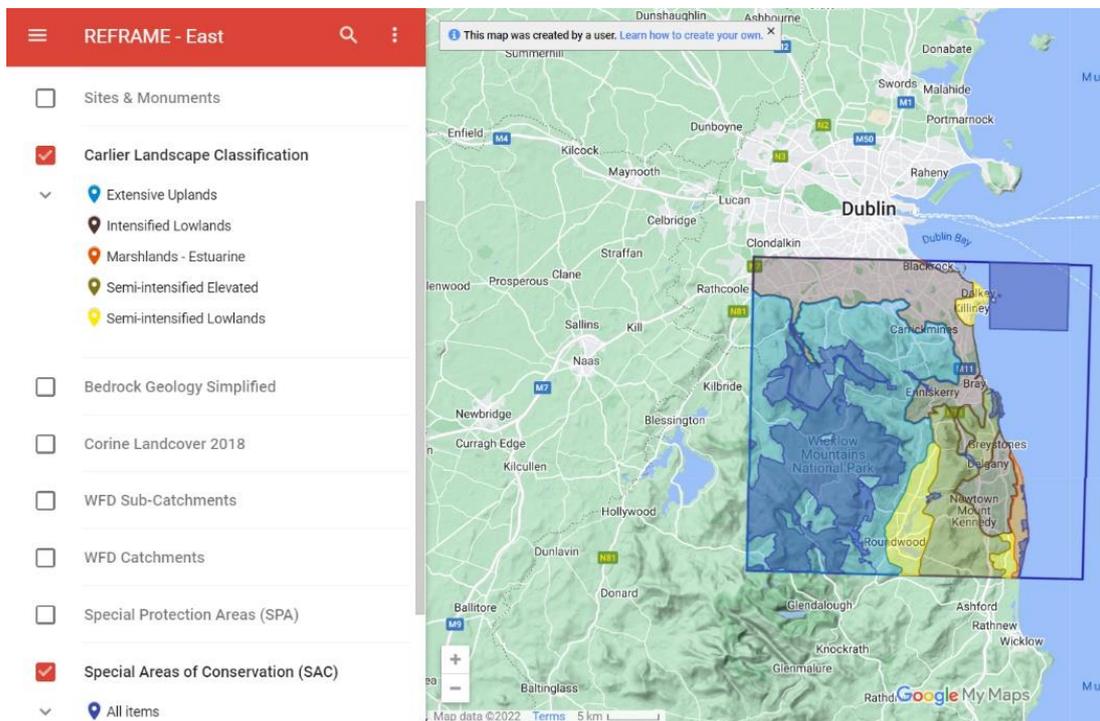


Figure 47: Screenshot of the Reframe East pilot site. Map data © 2022 Google

⁷⁷ The online map viewer with historical 6-inch maps and aerial maps from 1995, viewable where you are geolocated (<https://webapps.geohive.ie/mapviewer/index.html>).

⁷⁸ Create maps and import from GISs and add unlimited waypoints using free version (<https://alpinequest.net/>).

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Desk Study

Organisations conducting an LCA for whom access to GIS technical expertise is limited may consider using Google Earth Pro as a suitable spatial data capture and creation and 2D/3D map visualisation application. Google Earth Pro allows for the importation of numerous GIS data file formats (e.g. vector, raster, grid, tabular), and the ability to add imagery as an overlay (e.g. scanned historical maps) and perform visual analysis using the transparency tool is of particular use for HLCAs. Spatial data, such as point, line (path) and polygon features created in Google Earth, can be enriched with descriptive text information, photographs and hyperlinks, and exported in KML file format. KML files can be imported into most GIS applications, served on the web as Google Maps layers or as shared downloadable data. The ability to generate information-rich 3D fly-through movies (e.g. mp4) that can be served on video platforms such as VIMEO or YouTube is a feature of Google Earth that has potential value for public participatory geographical information systems (PPGISs), community engagement and the communication of LCA outcomes on video sharing and social media platforms. Free online mapping services such as uMap OpenStreetMap may also be considered.

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ANNEX 8: Strategies for Engagement – Getting the Word Out

There are many helpful guides available to support local consultation and engagement processes and increase the value of engagement.

The Heritage Council Village Design Toolkit has clear guidelines on drafting an effective communication plan:

https://www.heritagecouncil.ie/content/files/community_led_village_design_statement_s_toolkit_2012.pdf

The Department of Rural and Community Development's publication *A Guide for Inclusive Community Engagement in Local Planning and Decision Making*⁷⁹ gives clear guidelines on how to identify and co-design with the community.

<https://www.gov.ie/en/collection/bcc24-a-guide-for-inclusive-community-engagement-in-local-planning-and-decision-making/>

Any engagement plan should include multiple forms and channels for input including in person and online.

- **Website:** Dedicated website for collecting and disseminating information.
- **Social media campaigns:** Important part of every LCA to keep the public informed about events, milestones and outputs.
- **Local newspapers:** Advertisements and interviews.
- **PPGIS** and online interactive mapping tools.⁸⁰
- Using **PPNs** or contacting community groups directly.
- **Displays** in libraries and public buildings.
- **Pamphlets/mail outs.**
- Radio/in-person **interviews.**
- **Events** at schools and universities.
- **Local government** officials, heritage officers, etc.

⁷⁹ Department of Rural and Community Development (2023), *A Guide for Inclusive Community Engagement in Local Planning and Decision Making*, Government of Ireland, Dublin.

⁸⁰ Offshore Renewable Energy Development Plan II has used the Google Maps view approach to engage with the public on their Strategic Environmental Assessment for Ireland's Offshore Renewable Energy Development Plan consultation (<https://oredpii-sea-digitalreport.com/>).

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- **Surveys:** Online surveys and questionnaires such as SurveyMonkey and SmartSurvey simplify the process of collecting information from a large pool of people.
- **Workshops:** Town hall meetings, ways to connect to a larger cohort of local people from different interest groups.
- **Exhibitions:** Historical maps, landscape photography, posters, etc.
- Walking interviews.

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ANNEX 9: Public Participatory Geographical Information Systems

With the improving availability and accessibility of technology, there has been greater interest and application of PPGISs. The term PPGIS describes GIS technology that supports public participation by non-expert users in a variety of platforms. PPGISs acquire georeferenced information from the public through various platforms, such as online map-based surveys deriving local place-based knowledge on social and cultural values.⁸¹ The use of digital tools has become more prevalent, especially since the onset of the Covid-19 pandemic, when many government agencies were forced to test online methods for public consultation processes. With any online survey, it is useful to also conduct a paper survey targeting certain locations or demographics. An online survey has the advantage of eliciting wider participation, while a paper version can engage participants in face-to-face discussions and, if needed, target particular groups if there are gaps in online participation.⁸²

PPGISs are used in landscape assessment and planning as a means to:

- Identify place-based values, perceptions or attitudes, such as landscape values, ecosystem services environmental quality factors, perceived problems or unpleasant experiences.
- Analyse spatial behaviour of people, most notably everyday practices and activities, such as mobility patterns, routes travelled or places visited.
- Communicate preferences or visions about future land use.
- Gather place-based observations through “citizen science”, such as trail networks or wildlife observations.

⁸¹ Ryfield, F., *et al.* (2019) Conceptualizing “sense of place” in cultural ecosystem services: a framework for interdisciplinary research, *Ecosystem Services*, **36**, 100907.

⁸² Brannigan, J., *et al.* (2019), *The Cultural Value of Coastlines: A Toolkit for Assessing Cultural Ecosystem Services*, University College Dublin, Dublin.

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Advantages of Public Participatory Geographical Information Systems

- PPGISs can be utilised to collect opinions and perceptions from the public, which is a step towards understanding the landscape in the ELC sense of landscape “as perceived by people”.
- PPGISs can reach a large group of people online.
- PPGISs can enable the collection, management and analysis of crowd-sourced information rapidly.
- PPGISs can associate spatial locations with opinions and feelings.
- PPGISs can combine expert-driven data with socially generated datasets and highlight blind spots in landscape assessments.
- PPGISs collect data in a digital format from the outset, simplifying data sharing and analysis.

Disadvantages of Public Participatory Geographical Information Systems

- The “digital divide”; problems of access to technology or technical know-how.
- Data can sometimes be misleading and lack the depth of in-person interviews.

Resources

There are a wide range of applications that can be used to map spatial information and preferences depending on your needs and budget. Several are well designed and have good technical support if needed. These are usually a paid service, although some are open source and free. From a user perspective, the survey interfaces have a range of ease of use, ranging from intuitive to complex, and it is advised to try out a couple of platforms before committing to one.

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Table 12: Sample PPGIS mapping platforms

| Platforms and software | Sample survey | Access |
|-----------------------------|--|--|
| Map-Me ⁸³ | Map-Me creates online surveys for the collection of vague spatial data. Provides an “airbrush” interface. Used in the public participation part of the Regional Seascape Character Assessment (Marine, 2020). Easy to design, no previous skills required. Data available as a CSV file after survey. Excel/GIS expertise useful for studying the data | Open source. Free but requires acknowledgement |
| Maptionnaire | Creates map-based questionnaires and participation platforms for civic engagement. Customisable/data exports to other GIS software. Used by planning departments and local authorities in several northern European countries | Open source. Pay for customised and supported version |
| My Maps (Google) | Create shareable maps in “My Maps” a subset of Google Maps. Data import of layers and saved pinned locations. Useful in the field for marking specific locations with coordinates and notes | Free |
| Ushahidi | “The Ushahidi Platform helps communities turn information into action with an intuitive and accessible crowdsourcing and mapping tool”. ⁸⁴ Used in a University College Dublin crowd-sourcing research project on cultural opinions of Dublin Bay | Free version but can pay for an upgraded, customised and supported version |

⁸³ Huck, J., Whyatt, D., Coulton, P. (2014), Spraycan: a PPGIS for capturing imprecise notions of place, *Applied Geography*, 55, 229–237.

⁸⁴ <https://www.ushahidi.com/>

Annexes

Public Participatory Geographical Information System Methods for Information Collection using Locative Media

“Locative media” is the term that is used to describe a diverse selection of location-based technologies and practices.⁸⁵ This includes social media apps built for photo sharing and sharing of favoured routes. This passive form of data collection can allow an analysis of a much larger data pool than in-person surveys. Several contemporary research projects link photo sharing online with value judgments on the landscape.⁸⁶ **Flickr** has been used in many studies as it permits the collection and use of data for academic research purposes. Other studies analyse the public’s recreation patterns and favoured places (**Strava**). These research methods can easily be adapted into the LCA process to collect less defined data of value and preference.

Strava

Strava software is an opt-in application where people share running, cycling and hiking routes and personal workouts. This information is then available online in map form. Certain routes and desire lines, sometimes not accessible by car, become apparent on the map. The routes are colour-coded, which show “heat” made by aggregated public activities over the year. In popular areas this crowd-sourced information can be extensive.

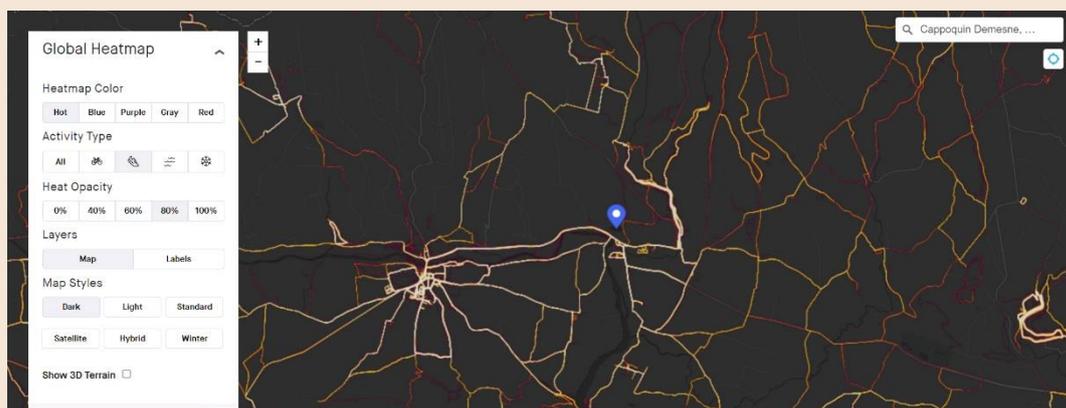


Figure 48: Strava heatmap of walking trails close to Cappoquin in our southern pilot area

⁸⁵ Wilken, R. (2012), Locative media: from specialized preoccupation to mainstream fascination, *Convergence*, **18**(3), 243–247.

⁸⁶ Neill, A.M., O’Donoghue, C., Stout, J.C. (2023), Spatial analysis of cultural ecosystem services using data from social media: a guide to model selection for research and practice, *One Ecosystem*, **8**, e95685.

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Irish Case Studies: Public Participatory Geographical Information System Projects Relevant to Landscape Character Assessments

Reinventing Heritage, EU-funded research project, Maynooth University

Irish EU-funded research project **Reinventing Heritage**, based at Maynooth University, focused on cultural heritage in the cross-border landscape of Derry/Londonderry and Donegal.⁸⁷ They tested several forms of PPGIS at different landscape scales to best map and capture the plurality of cultural heritage values in border communities. The resulting data were mapped online in the REINVENT Project Mapping Viewer and hosted on the website of the All-Island Research Observatory.⁸⁸ Value judgements were based on a hierarchy of cultural ecosystem values.⁸⁹ The respondents also ascribed value based on places they positively or negatively perceived. Using the **Maptionnaire** digital mapping tool, the survey was designed for completion by individuals anonymously at home or work.

Main findings

The online survey required a certain level of know-how to navigate. A workaround would be a parallel process, such as a supervised town hall meeting with people on hand with tablets to assist and explain technology. Simplified, shorter versions of surveys are more effective. Further feedback suggested that online PPGISs would greatly benefit from moving from research into **real land management decision-making**, which would increase the level of engagement of citizens knowing that time invested might have some real-world impact.⁹⁰

⁸⁷ McClelland, A. (2019), Spaces for public participation: valuing the cross-border landscape in North West Ireland, *Irish Geography*, **52**(2), 193–211.

⁸⁸ <https://www.maynoothuniversity.ie/airo>

⁸⁹ Brown, G., Fagerholm, N. (2015), Empirical PPGIS/PGIS mapping of ecosystem services: A review and evaluation, *Ecosystem Services*, **13**, 119–133.

⁹⁰ McClelland, A. (2018), *Participatory Mapping in North West Ireland: Key Observations and Takeaways*, Working Paper 3, Maynooth University, Maynooth, Ireland.

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Using social media to map Cultural Ecosystem Services in West Galway, Trinity College

The data from photos in Flickr identified that environmental characteristics (natural, human and built capital) correlated with visitation and, therefore, the types of places used for in-situ environmental interactions.⁹¹

Cultural Values of Dublin Bay Coastline, EU-funded research project, University College Dublin Earth Institute⁹²

Sense of place is a key concept for assessing cultural ecosystem services about Dublin Bay. Online survey: <https://dublinbayculturalvaluecoastline.usahidi.io/views/map>

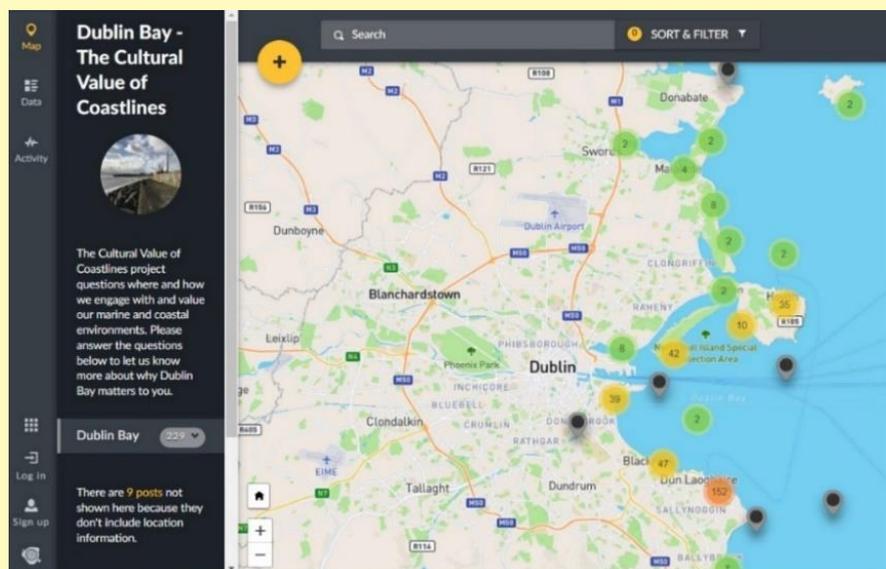


Figure 49: Screenshot of online mapping survey using Ushahidi software

⁹¹ Neill, A.M., O'Donoghue, C., Stout, J.C. (2023), Spatial analysis of cultural ecosystem services using data from social media: A guide to model selection for research and practice, *One Ecosystem*, **8**, e95685.

⁹² Ryfield, F., *et al.* (2019), Conceptualizing "sense of place" in cultural ecosystem services: a framework for interdisciplinary research, *Ecosystem Services*, **36**, 100907.

Regional Seascape Character Assessment of Ireland, Marine Institute

PPGISs were used to gather public responses relating to coastal areas.⁹³

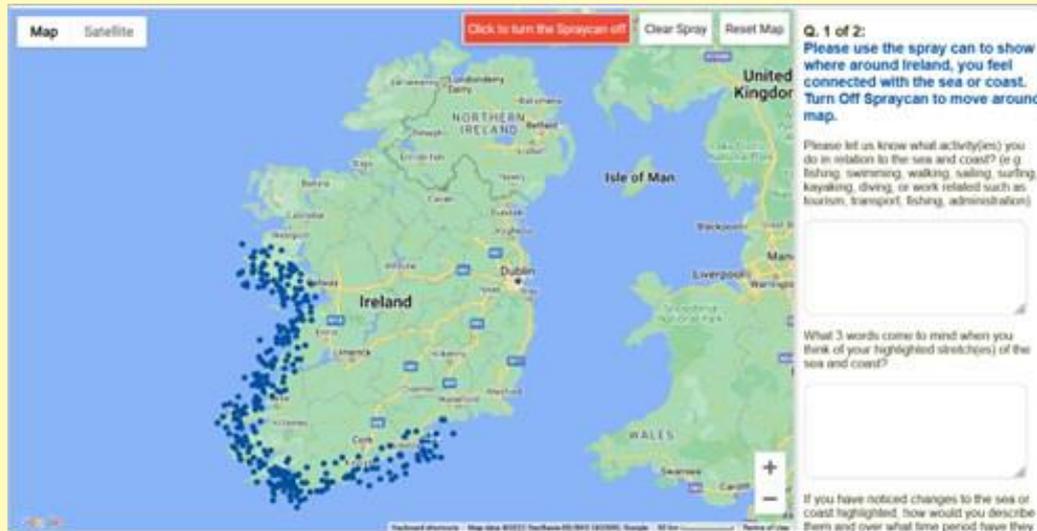


Figure 50: Screenshot of online mapping survey using map.me.org

Pilot Case Study: Waterford and Dungarvan

Interactive online map survey techniques were tested that could potentially be used in the LCA process to collect opinions, behavioural patterns and values from users of a particular landscape. In conjunction with the Waterford Planning Department, a small survey was launched to coincide with the Dungarvan Town Local Economic Area Plan. The survey was hosted on the Waterford County Council site from 7 February to 7 March 2023 and promoted through social media.

⁹³ <https://emff.marine.ie/blue-growth/definition-and-classification-ireland's-seascapes>

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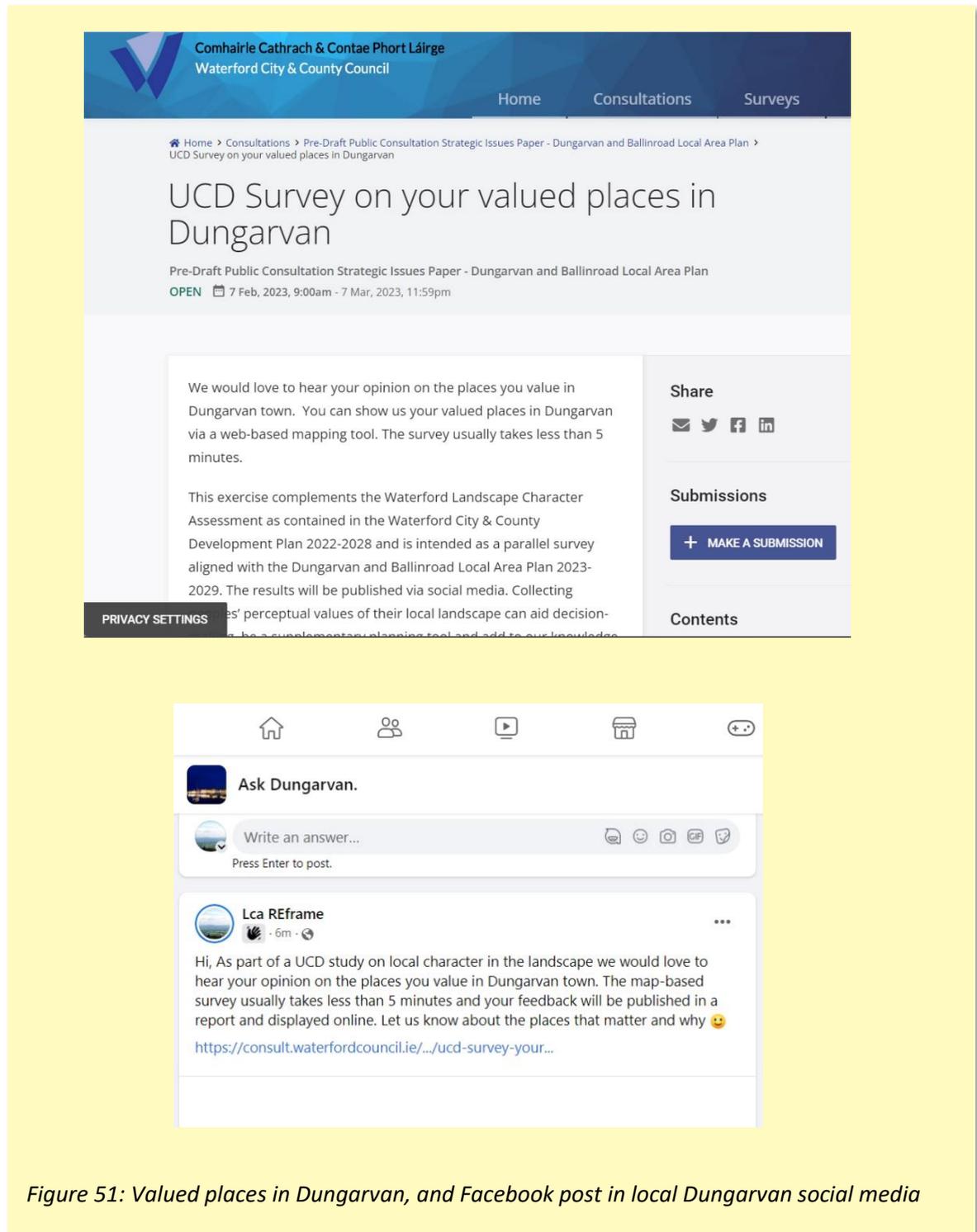


Figure 51: Valued places in Dungarvan, and Facebook post in local Dungarvan social media

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European Case Studies

PPGISs used during the planning process of the Helsinki Master Plan: “when PPGIS tools can be integrated to the mainstream planning practices, the tools have the ability to evolve to a more comprehensive participatory planning support system”.⁹⁴

The Atlas of the Galician Landscape

“The landscape we see in Galicia today is the result of our ways of being, thinking and acting, but also those of the people who lived here in the past”.⁹⁵

PPGISs and participation workshops were used in the identification of the landscapes of Galicia for the Atlas of the Galician Landscape, a catalogue of landscape character areas. The PPGIS was introduced online with a survey. The format was easy to use and required at least 15–30 minutes to complete. Points versus polygons are used to spatially represent the preferences of users that have been found to need less expert knowledge to use.

“Our landscape reflects and embodies our cultural values and our shared natural heritage and contributes to the well-being of our society, environment and economy. We have an obligation to ourselves and to future generations to promote its sustainable protection, management and planning.”⁹⁶

National Landscape Strategy for Ireland 2015–2025

⁹⁴ Kahila-Tani, M., Broberg, A., Kytä, M., Tyger, T. (2016), Let the citizens map – public participation GIS as a planning support system in the Helsinki Master Plan process, *Planning Practice & Research*, **31**(2), 195–214.

⁹⁵ Santé, I., Fernández-Ríos, A., María Tubío, J., García-Fernández, F., Farkova, E., Miranda, D. (2019), The Landscape Inventory of Galicia (NW Spain): GIS-web and public participation for landscape planning, *Landscape Research*, **44**(2), 212–240.

⁹⁶ Department of Arts, Heritage and the Gaeltacht (2015), *National Landscape Strategy for Ireland 2015–2025*, Government of Ireland, 2015.

APPENDICES

1. METHODOLOGY FOR DETERMINING LANDSCAPE CHARACTER TYPES
2. SUPPORTING DATASET INFORMATION
3. LAND COVER DATA FOR LANDSCAPE CHARACTER TYPE ASSESSMENT
4. SUPPORTING LANDSCAPE CHARACTER TYPE MAPPING – THE MIDLANDS AND EAST CASE STUDIES

Appendices

APPENDIX 1: Methodology for Determining Landscape Character Types

An Overview of the Methodology for Determining Landscape Character Types

Two methods of generating LCTs (grid cell type method and polygon feature method) are presented in an attempt to provide users with a methodology suitable to the available GIS technical skillsets, data being used that are deemed appropriate to the desired output and the spatial scale of the required output mapping units. See Appendices 2–4 for summary descriptions of both methods and the suggested procedures and the necessary datasets required to generate examples of LCT maps based on a selection of three baseline datasets.

The **grid cell type method** serves as a suitable approach when total grid coverage is applied over large areas (national or regional scale). In this instance, a standard sample unit of a constant grid cell size (e.g. 1 km × 1 km) may be sufficient to generate a representative landscape typology map at national scale, such as was used to generate a landscape typology map of Belgium in 2009. Further examples of grid sample unit-generated landscape typology maps have been demonstrated in Czechia (2 km²) and Central Europe (10 km²). Grid cell sampling methods also allow for point data to be introduced as an input landscape element layer. For example, point location historical data such as sites and monuments records (National Monuments Service) may be represented as a polygon, with an attribute value corresponding to the number of sites occurring with each grid cell. The grid cell sampling method is also suited to ensure a standardisation of scale among input datasets. For example, input feature polygon datasets of varying scales such as bedrock (1:100,000), soil (1:250,000) or land cover (25 ha minimum mapping unit) can each be generalised to, for example, 500 m × 500 m grid cell size and assigned attributes corresponding to the maximum combined area of the input attributes in each cell. A drawback of the grid sample unit method is that a mixture of landforms, geology, soil and land cover types may occur within a single grid unit. The granular or pixelated nature of an LCT map acquired using the grid cell type method requires consideration as to its effectiveness in communicating the typology character for the area of interest. The grid cell type method is suitable for use by state-level or regional organisations conducting LCAs at a national or regional scale.

Appendices

The **polygon feature method** serves as a suitable method when applied to areas of sub-regional spatial coverage (county scale). The output spatial scale is dependent on the scale on the input datasets, which for regional scale may be between 1:50,000 and 1:250,000. The benefit of the vectorized polygon feature method is that it preserves natural boundaries (assuming these boundaries are accurately represented in the input data) and gives the final output dataset a more “natural look” than is acquired using the grid cell type method. Furthermore, the polygon feature method utilises standard GIS geoprocessing tools such as the aggregate, union, dissolve and eliminate features to generate the LCT map dataset. A drawback of the polygon feature method is that it requires the elimination of polygons below user-defined threshold area sizes to generate an output dataset comprising manageable numbers of typologies (e.g. $n < 10$ rather than e.g. $n > 25$). The polygon feature method is suitable for use by regional authorities, local authorities and organisations conducting LCAs in county or smaller areas.

A significant aspect of both the polygon feature and grid cell type methods is that both can be carried out using standard GIS software, either open source (QGIS, SAGA) or proprietary (ESRI ArcGIS). Statistical software (e.g. SPSS, R, JUICE, Fragstats) has been used in other approaches (Ireland, Czechia, Belgium, Europe) to generate landscape character typology and classification maps. However, the methods presented here are designed to be fully achievable using the skillsets of GIS technical personal, and standard GIS software that are common to organisations (e.g. local authorities, statutory bodies) that conduct LCA and LCT studies.

Creating Landscape Character Type Data Using Open Data

The following information outlines the general methodology of generating LCT maps using a combination of up to three baseline landscape element datasets. LCT data can be generated using solely open data (or with the inclusion of licenced data such as National Land Cover data).

Appendices

Physiography (Elevation)

- Open Data: EU Digital Elevation Model (EU-DEM) v1.1 – Copernicus.
- 1a Physiography (landforms) categories (Topographic Position Index (TPI) calculated from EU-DEM 25 m data).
- 1b Physiography (elevation) categories (elevation ranges calculated from EU-DEM 25 m data).

Bedrock

- Open Data: Bedrock Geology 1:1,000,000 – Geological Survey Ireland.
- Attribute: UnitName; AgeBracket.

Soil

- Open Data: Irish Soil Information System Map (1:250,000) – Environmental Protection Agency.
- Attribute: Drainage; Texture

Land Cover

- Open Data: CORINE Land Cover 2018 – National – Environmental Protection Agency.
- Level 1 (first character of three-digit CLC Code corresponds to Level 1 class).
- Attribute: CODE18.

Land Cover

- Licenced Data: National Land Cover Map – Tailte Éireann.
- Level 1 (first character of three-digit Code corresponds to Level 1 class).
- Attribute: CODE.

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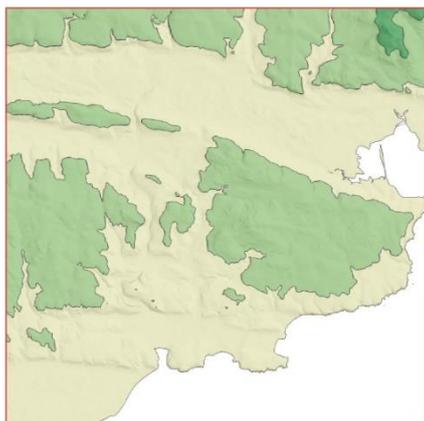
Method 1: Landscape Character Type Mapping – Grid Cell Type Method

This approach to generating LCT data is based on the identification of assemblages of up to three landscape element variables (e.g. elevation, land cover, bedrock) that occur in the grid cells of a grid overlay (e.g. 25 m grid cells) covering the LCA area under investigation. In this example, two baseline datasets are open data (EU-DEM and GSI Bedrock Geology) and one dataset is licensed (EPA National Land Cover data). CORINE Land Cover open data can be used in place of the National Land Cover data. The example presented here uses baseline datasets pertaining to three landscape elements.

Table 13: Baseline datasets – Method 1

| Data | Number of categories | Category description |
|---|----------------------|----------------------|
| EU-DEM 25 m elevation (Copernicus) | 3 | Elevation range |
| National Land Cover data (TÉ) or CORINE Land Cover (EPA) | 5 | Level 1 land cover |
| Bedrock geology 1:1,000,000 (GSI) | 5 | Dominant rock type |

A polygon feature grid layer of 100 m × 100 m cells was used for the LCA area under investigation. In this example, the area was a 30 km × 30 km study area in County Waterford and County Cork, in the south of Ireland.



Three-elevation range (0–100 m; 100–300 m; and > 300 m) vector polygons extracted from EU-DEM data.



Three-elevation range (0–100 m; 100–300 m; and > 300 m) vector polygons after removal of polygons with area < 100 ha

Figure 52: Physiography elevation categories – Reframe south area. Maps created in QGIS and SAGA

Appendices

A grid cell centroid point feature layer captures the attribute values of each of the three baseline data variables at 100 m grid sampling distances across the 30 km × 30 km study area using the QGIS Point Sampling Tool plugin. A unique code is assigned to each variable in each of the three baseline datasets. For example, the three physiography (elevation) categories, 0–100 m, 100–300 m and > 300 m, were assigned codes 1, 2 and 3, respectively. Bedrock geology categories (carbonate, volcanic and clastic) are assigned codes 10,000, 20,000 and 30,000, respectively. National Land Cover categories are assigned unique three-digit codes (e.g. 400). Using a Sum expression, the codes of each of the three baseline variables identified at the centroid of each cell are added to produce a unique LCT code. The LCT code is assigned a variable descriptor. For example, LCT Code 30402 is assigned the descriptor ‘hilly, clastic, grassland’. LCT attributes (elevation range category, bedrock type, land cover type) for each grid cell point are transposed to a 100 m × 100 m grid polygon feature layer. Figure 57 shows the resultant LCT map.

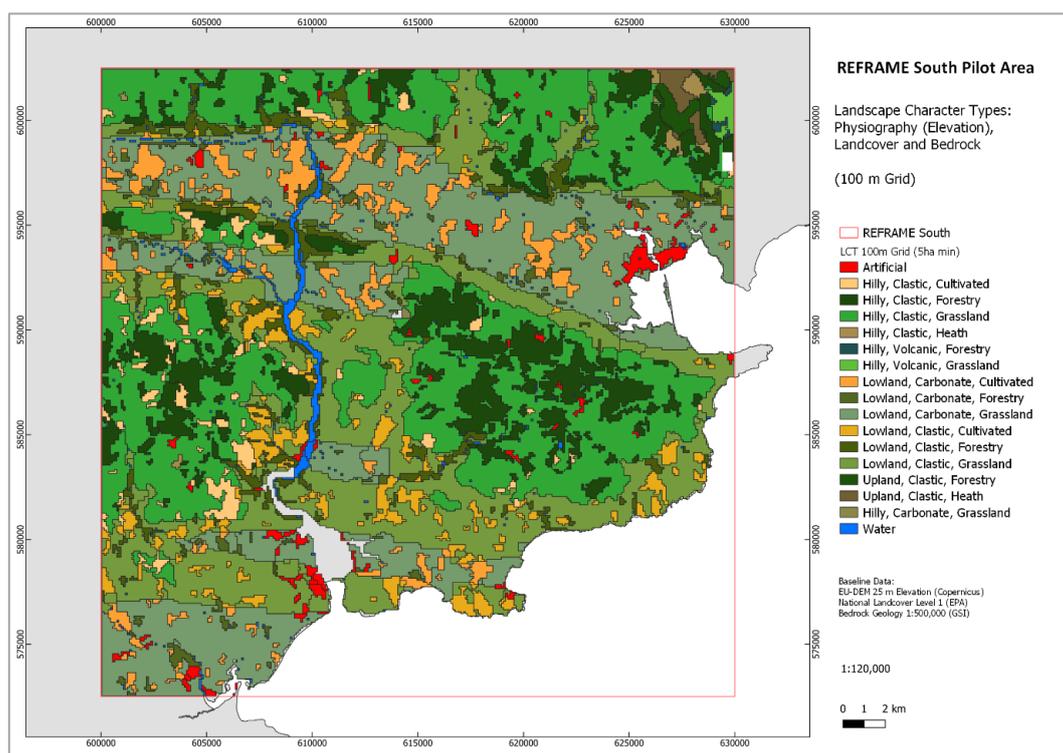


Figure 53: LCT (5 ha minimum mapping unit) map generated from 100 m × 100 m cell centroid point sampling grid (Reframe south area). Map created in QGIS and SAGA.

Appendices

Table 14: Area statistics for LCTs (south area LCT data)

| Landscape Character Type (100 m X 100 m grid cell) | Area (ha) | LCT code |
|---|-----------|----------|
| Hilly, clastic, grassland | 18,960 | 30402 |
| Lowland, carbonate, grassland | 15,811 | 10401 |
| Lowland, clastic, grassland | 15,290 | 30401 |
| Hilly, clastic, forestry | 7932 | 30302 |
| Lowland, carbonate, cultivated | 3285 | 10201 |
| Lowland, clastic, cultivated | 3132 | 30201 |
| Lowland, clastic, forestry | 2731 | 30301 |
| Hilly, clastic, cultivated | 1408 | 30202 |
| Lowland, carbonate, forestry | 1124 | 10301 |
| Artificial | 996 | 10101 |
| Water | 913 | 10101 |
| Upland, clastic, heath | 318 | 30603 |
| Upland, clastic, forestry | 291 | 30303 |
| Hilly, clastic, heath | 232 | 30602 |
| Hilly, volcanic, grassland | 183 | 20402 |
| Hilly, volcanic, forestry | 49 | 20302 |
| Hilly, carbonate, grassland | 17 | 10402 |
| Hilly, carbonate, forestry | 15 | 10302 |
| Lowland, clastic, heath | 9 | 30601 |

The use of baseline variable attributes captured at grid cell centroid locations and then assigned to the associated 100 m × 100 m grid cell polygon can lead to misrepresentations of the dominant variable type within a grid cell. For example, a narrow stream (land cover type = water) located at the centroid occupying 10% area of a 100 m × 100 m cell will result in the cell being represented as ‘water’ land cover, even though the remaining 90% of the cell area may be classed as e.g. ‘grassland’ land cover. To overcome this, it is necessary to ensure land cover type assigned to each 100 m × 100 m grid cell corresponds to the land cover type with the maximum total area in each 100 m × 100 m cell.

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Method 2: Landscape Character Type Mapping – Polygon Feature Method

To determine LCTs at regional scale (> 1:100,000 scale), the following steps provide a methodology for combining three baseline landscape elements: physiography (digital elevation data), land cover (CORINE or National Land Cover Map) and either principal rock type (bedrock geology) or soil type (drainage or texture). Licensed data and proprietary software can be used to achieve similar LCT outputs.

The method presented involves two main preparatory tasks: (1) the generation of a physiography (landform) dataset from DEM data based on Topographic Position Index (TPI) values and elevation ranges; and (2) categorisation and generalisation of baseline datasets based on attribute parameters.

Table 15: Baseline data – Method 2

| Baseline data | Data field | Level 1 categories | Level 2 categories | Source |
|--|---|--------------------|-------------------------------------|---|
| EU-DEM | Elevation (m) and TPI (Slope) (See Appendix 1) | 3 | 5 | European Environment Agency under the framework of the Copernicus programme |
| CORINE Land Cover 2018 <i>or</i> National Land Cover Map | CODE_18 (Level 1) CODE (Level 1) | 5 5 | 5 Use Level 1 categories (5) | Environmental Protection Agency Tailte Éireann |
| Soil Information System | Drainage <i>or</i> Texture | 5 | 5 | Environmental Protection Agency |
| Bedrock Geology | UnitName, AgeBracket | 5 | 7 | Geological Survey Ireland |

Appendices

Table 16: Datasets required and created - Method 2

| Dataset ID | Baseline dataset (input) | Action |
|------------|---|--|
| 0 | LCA/LCT boundary area | |
| 1a | Physiography (landforms) (EU-DEM TPI) | Source from data provider |
| 1b | Physiography (elevation) (EU-DEM elevation ranges) | Source from data provider |
| 2 | Bedrock (geology) | Source from data provider |
| 3 | Soil | Source from data provider |
| 4 | CORINE or National Land Cover Map | Source from data provider Source from data provider |
| | Output dataset | |
| 5 | Physiography–bedrock | Create |
| 6 | Physiography–bedrock–land cover | Create |
| 7 | Physiography–soil (drainage) | Create |
| 8 | Physiography–soil (drainage)–land cover | Create |
| 9 | Physiography–soil (texture) | Create |
| 10 | Physiography–soil (texture)–land cover | Create |
| | <i>Use 1b if 1a not available</i> | |
| | <i>Datasets in bold represent final output LCT datasets</i> | |

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Suggested Procedure

Step 1 – Clip to LCA area boundary

All datasets are clipped to LCA area boundary.

Step 2 – Create physiography

A TPI dataset is calculated from EU-DEM data to generate TPI slope position grid cell standardised values. TPI values between -0.5 and 0.5 standard deviation units less than and equal to 5° (flat) must be distinguished from TPI values -0.5 and 0.5 standard deviation units greater than 5° (middle slope). On completion, the TPI physiography dataset comprises six classes: flat, lower slope, middle slope, upper slope, valley and ridge. The TPI physiography (landforms) categorisation table provides an example of how TPI classes and elevation ranges can be used to generate a physiography (landforms) dataset. On completion, the physiography (landforms) data is converted to a feature polygon layer.

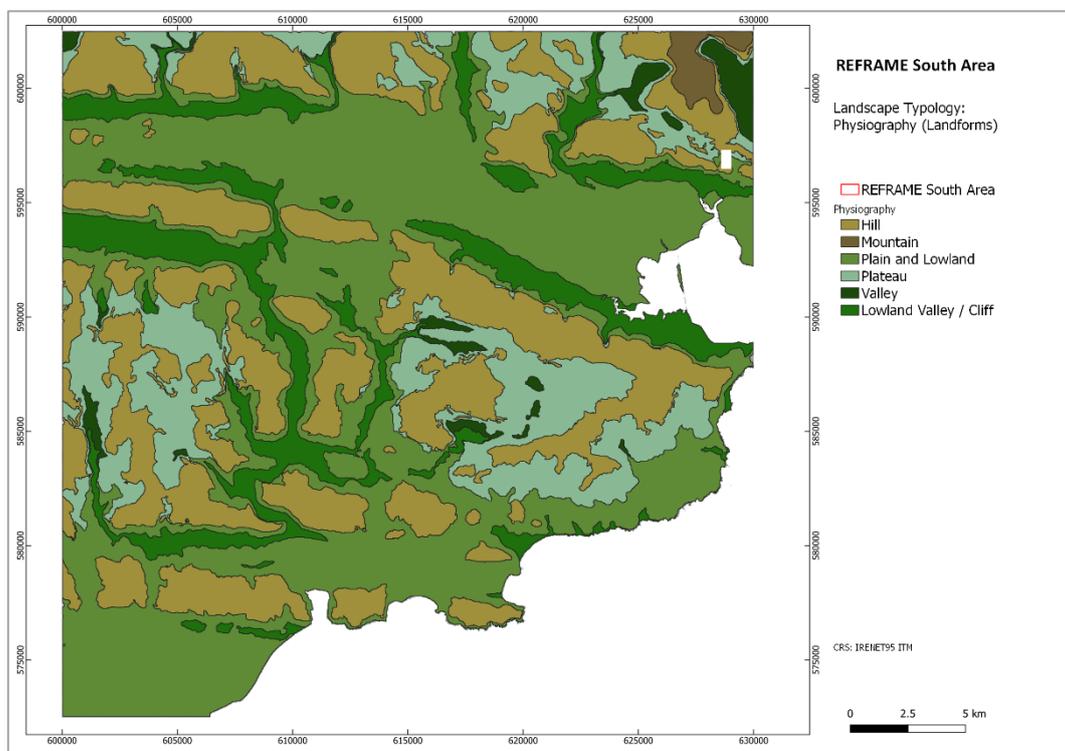


Figure 54: Physiography (landforms) map of Reframe south area. Map created in QGIS and SAGA.

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Table 17: Baseline Landscape Element Level 1 and Level 2 Categories

| Level 1 (1:250,000) | Data source and landscape element variables (categories) | Level 2 (1:100,000–1:50,000) | Data source and landscape element variables (categories) |
|------------------------|---|---------------------------------|---|
| Physiography | <p>EU-DEM TPI (three classes)</p> <ol style="list-style-type: none"> 1. Plain, lowland and low valley/cliff* 2. Hill, plateau and upper valley** 3. Mountain <p>* < 100 m OD</p> <p>** 100–300 m OD</p> | Physiography | <p>EU-DEM TPI (five classes)</p> <ol style="list-style-type: none"> 1. Plain, lowland and low valley/cliff 2. Hill 3. Plateau 4. Upper valley 5. Mountain |
| Geology | <p>Bedrock Geology 1 million (five categories)</p> <ol style="list-style-type: none"> 1. Igneous/metamorphic 2. Palaeozoic clastic 3. Palaeozoic carbonate 4. Mesozoic rocks 5. Cenozoic rocks | Geology | <p>Bedrock Geology 1 million (seven categories)</p> <ol style="list-style-type: none"> 1. Proterozoic igneous/metamorphic 2. Palaeozoic igneous/metamorphic 3. Palaeozoic clastic 4. Palaeozoic carbonate 5. Palaeozoic volcanic 6. Mesozoic rocks 7. Cenozoic rocks |

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| | | | |
|--|---|--|---|
| <p style="text-align: center;">Land cover</p> | <p>CORINE Level 1 (five categories)</p> <ol style="list-style-type: none"> 1. Artificial 2. Agricultural 3. Forestry and semi-natural areas 4. Wetlands 5. Water body | <p style="text-align: center;">Land cover</p> | <p>CORINE Level 1 (five categories)</p> <ol style="list-style-type: none"> 1. Artificial 2. Agricultural 3. Forestry and semi-natural areas 4. Wetlands 5. Water body |
| <p style="text-align: center;">Land cover</p> | <p>National Land Cover Level 1 (five categories)</p> <ol style="list-style-type: none"> 1. (CODE 100 and 200) Artificial surfaces; exposed surfaces 2. (CODE 300 and 500) Cultivated land; Grassland, saltmarsh and swamp 3. (CODE 400 and 700) Forestry, woodland and scrub; Heath and bracken 4. (CODE 600) Peatland 5. (CODE 800) Waterbodies | <p style="text-align: center;">Land cover</p> | <p>National Land Cover Level 1 (five categories)</p> <ol style="list-style-type: none"> 1. (CODE 100 and 200) Artificial surfaces; exposed surfaces 2. (CODE 300 and 500) Cultivated land; Grassland, saltmarsh and swamp 3. (CODE 400 and 700) Forestry, woodland and scrub; Heath and bracken 4. (CODE 600) Peatland 5. (CODE 800) Waterbodies |
| <p style="text-align: center;">Soil</p> | <p>Soil SIS Drainage (three categories)</p> <ol style="list-style-type: none"> 1. Wet 2. Dry 3. Other | <p style="text-align: center;">Soil</p> | <p>Soil SIS Drainage (three categories)</p> <ol style="list-style-type: none"> 1. Wet 2. Dry 3. Other |

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| | | | |
|-------------|---|-------------|---|
| Soil | <p>Soil SIS Texture (four categories)</p> <ol style="list-style-type: none"> 1. Loam-type 2. Clay-type 3. Peat 4. Other | Soil | <p>Soil SIS Texture (four categories)</p> <ol style="list-style-type: none"> 1. Loam-type 2. Clay-type 3. Peat 4. Other |
|-------------|---|-------------|---|

Alternatively, a physiography (elevation) dataset can be generated based on elevation ranges. For example, a three-class range may consist of lowlands (0–100 m), hilly ground (100–300 m) and uplands (> 300 m). This elevation range option is used in the LCT grid cell type method.

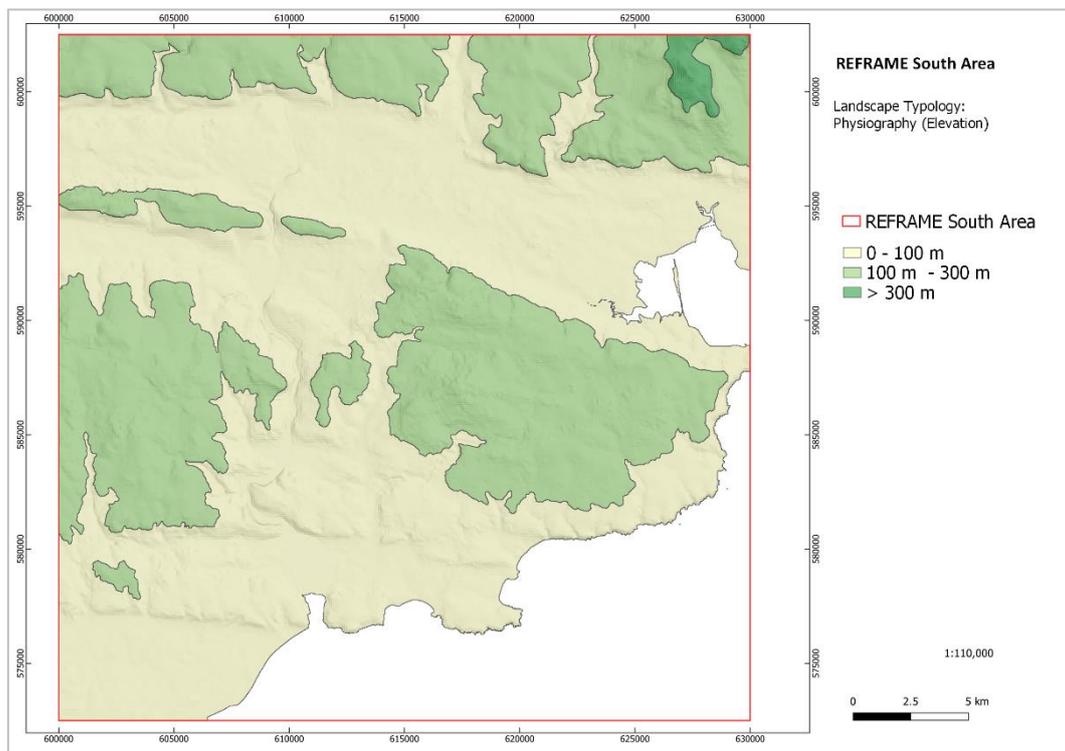


Figure 55: Physiography (elevation) map of Reframe south area. Map created in QGIS and SAGA.

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Step 3 – Categorise land cover/geology/soil data

A land cover Category Level 1 attribute is assigned to each feature type (CLC Code) in the CORINE Land Cover dataset (see “CORINE Land Cover (Level 1) Categorisation” in Appendix 2).

A geology Category Level 1 (or 2) attribute is assigned to each feature type (UnitName, AgeBracket) in the bedrock geology dataset (see “Geology Categorisation (Bedrock Geology 1:1,000,000)” in Appendix 2).

A drainage category (or texture category) attribute is assigned to each feature type (drainage, texture) in the soil dataset (see “Soil Drainage Categorisation (Soil Information System 1:250,000)” and “Soil Texture Categorisation (Soil Information System 1:250,000)” in Appendix 2).

Step 4 – Union physiography and geology/soil

Physiography (elevation) and bedrock (or physiography and soil (drainage) or physiography and soil (texture)) is ‘unioned’ to create a landscape character type layer corresponding to the combination of two baseline inputs layers (Table 15, Dataset 5).

A new attribute field can be generated to reflect the combined landscape element attributes (e.g. Mountain, Palaeozoic clastic) for each polygon feature.

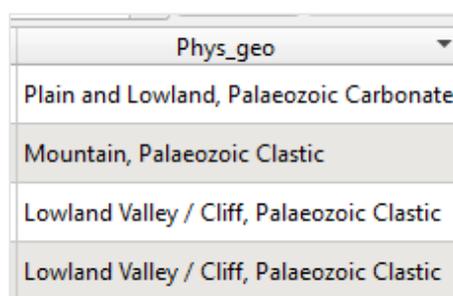


Figure 56: Creating new attribute field.

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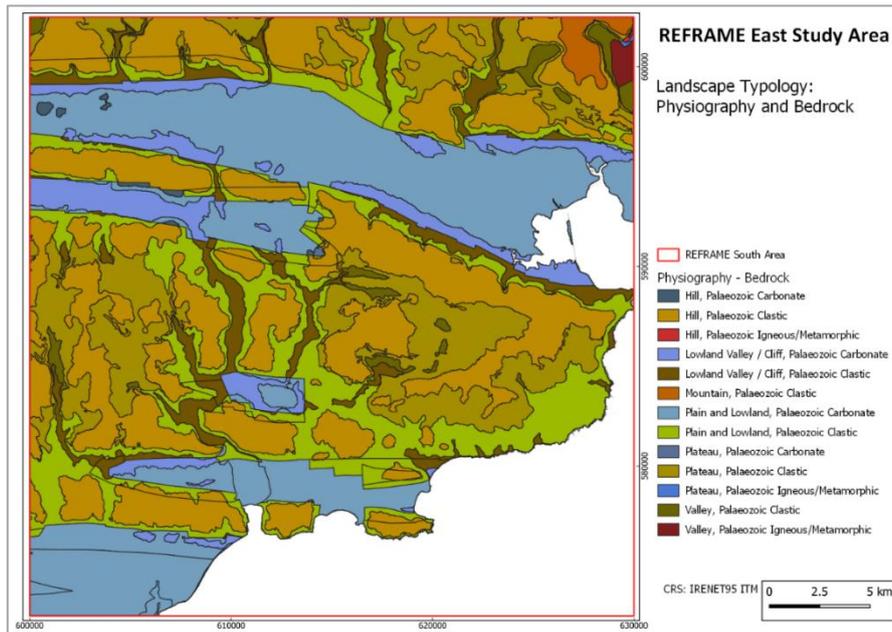


Figure 57: Physiography-bedrock LCT map of Reframe south area. Map created in QGIS and SAGA.

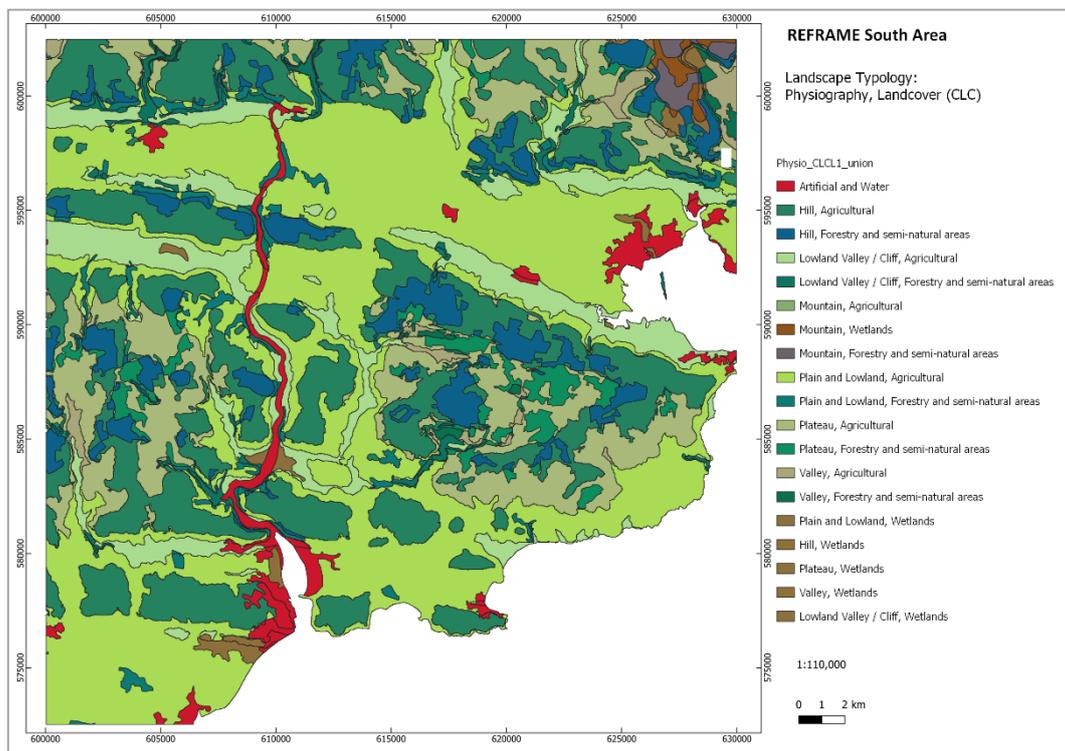


Figure 58: Physiography-land cover (CORINE) LCT map of Reframe south area. Map created in QGIS and SAGA.

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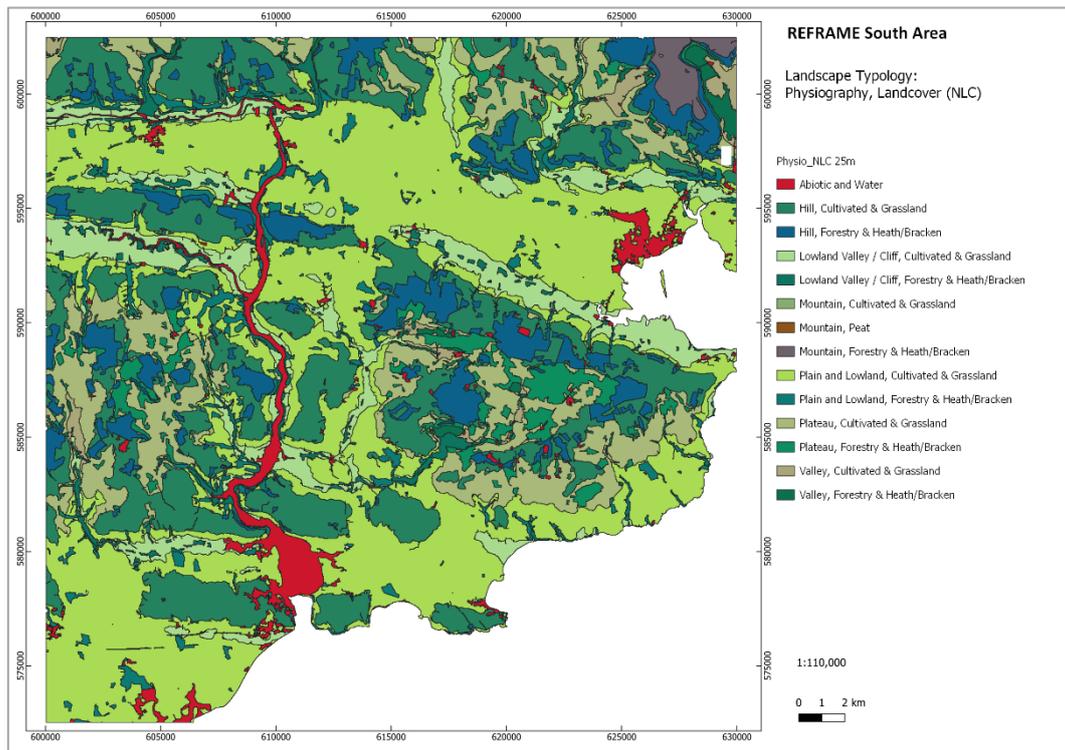


Figure 59: Physiography–land cover (EPA National Land Cover data – generalised to 25 m resolution data based on dominant land cover type in each cell) LCT map of Reframe south area. Map created in QGIS and SAGA.

At this stage of the process, it is worth considering if physiography categories can be combined in order to reduce the number of LCT descriptors in the final output, while still preserving a sense of landscape character. Furthermore, individual polygons with an area below a specific area threshold (e.g. 50 hectares) may be eliminated and merged with adjoining polygons based on specific criteria (e.g. largest shared boundary).

On completion, the following two-baseline landscape elements datasets are generated and named accordingly (note: number in brackets corresponds to dataset ID in Table 15):

- (5) physiography–bedrock
- (7) physiography–soil (drainage)
- (9) physiography–soil (texture).

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Each two-baseline landscape element dataset is subsequently combined with a third baseline dataset (e.g. land cover) to generate an LCT dataset derived from three landscape element datasets.

Step 5 – Union physiography and land cover/geology/soil

Two-baseline landscape element data is 'unioned' with a third baseline landscape element dataset (e.g. physiography–bedrock LCT data unioned with land cover data to create a physiography–bedrock–land cover LCT dataset).

On completion, the following output LCT datasets are as follows (note: number in brackets corresponds to dataset ID in Table 15):

- (6) physiography–bedrock–land cover
- (8) physiography–soil (drainage)–land cover
- (10) physiography–soil (texture)–land cover.

LCT datasets can be examined and compared in GIS with other data (e.g. satellite imagery, cultural, historical) and LCT statistics can be determined.

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APPENDIX 2: Supporting Dataset Information

Table 18: Geology

| Geology Categorisation (Bedrock Geology 1:1,000,000) | | |
|--|---|------------------------------------|
| UNITNAME | Geology Category Level 1 | Geology Category Level 2 |
| UnitName (Attribute): Use Lithology Type to categorise Geology Category Level 1 | Igneous/metamorphic | Proterozoic igneous/metamorphic |
| | | Palaeozoic igneous/metamorphic |
| | | Palaeozoic volcanic |
| | | Palaeozoic clastic |
| Use Geological Age and Lithology Type to categorise Geology Category Level 2 | Palaeozoic carbonate Cenozoic/Mesozoic rocks | Palaeozoic clastic |
| | | Palaeozoic carbonate |
| | | Mesozoic rocks Cenozoic rocks |
| <i>Lake</i> | <i>Not included as a category</i> | <i>Not included as a category</i> |

Table 19: Soil Drainage

| Soil Drainage Categorisation (Soil Information System 1:250,000) | | |
|--|--------------|-------------------|
| Soil drainage | Soil texture | Drainage category |
| <i>Null</i> | Sandy | Dry |
| Well | (All) | Dry |
| Moderately | (All) | Dry |
| Imperfectly | (All) | Wet |
| Poor | (All) | Wet |
| Other | (All) | Other |

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Table 20: Soil Texture

| Soil Texture Categorisation (Soil Information System 1:250,000) | |
|---|------------------|
| Soil texture | Texture category |
| Coarse loamy | Loam type |
| Loamy | Loam type |
| Fine loamy | Loam type |
| Clayey | Clay type |
| Peat | Peat |
| Blown sand/dune | Other |
| Marine | Other |
| Rock | Other |
| Sandy | Other |
| Tidal, salt marsh and island | Other |
| Urban | Other |
| Water body | Other |

Table 21: Land cover - CORINE

| CORINE Land Cover (Level 1) Categorisation | |
|--|-------------------------------|
| CLC Code | Land cover category |
| 1XX | Artificial surfaces |
| 2XX | Agricultural areas |
| 3XX | Forest and semi-natural areas |
| 4XX | Wetlands |
| 5XX | Water bodies |

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Table 22: Land cover - CORINE

| National Land Cover (Level 1) Categorisation | |
|--|--------------------------------|
| NLC Code | Land cover category |
| 1XX | Artificial surfaces |
| 2XX | Exposed surfaces |
| 3XX | Cultivated land |
| 4XX | Forestry, woodland and scrub |
| 5XX | Grassland, saltmarsh and swamp |
| 6XX | Peatland |
| 7XX | Heath and bracken |
| 8XX | Waterbodies |

Table 23: Physiography - Landforms

| Physiography (Landforms) Categorisation (Topographic Position Index – EU Digital Elevation Model) | | |
|---|------------------------------|-----------------|
| Physiography (landform) | TPI morphologic class (SAGA) | Elevation range |
| Plain and lowland | Flat area | 0–100 m |
| | Lower slope | 0–100 m |
| | Middle slope | 0–100 m |
| Lowland valley/cliff | Valley | 0–100 m |
| Valley | Valley | > 100 m |
| Plateau | Flat area | 100–300 m |
| | Lower slope | 100–300 m |
| Hill | Ridge | 0–100 m |
| | Ridge | 100–300 m |
| | Upper slope | 0–100 m |
| | Upper slope | 100–300 m |
| | Middle slope | 100–300 m |
| Mountain | Flat | > 300 m |
| | Lower slope | > 300 m |
| | Upper slope | > 300 m |
| | Ridge | > 300 m |
| | Middle slope | > 300 m |
| Sea | Sea | |

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Table 24: Physiography - Elevation

| Physiography (Elevation) Categorisation – EU Digital Elevation Model | | |
|---|--|---|
| Elevation range | Physiography elevation category | Physiography elevation category descriptor |
| 0–100 m | 1 | Lowland |
| 100–300 m | 2 | Hilly |
| > 300 m | 3 | Upland |

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APPENDIX 3: Land Cover Data For Landscape Character Type Assessment

National Land Cover Data

The new (2023) National Land Cover data model and classification system brings together land cover, land use, habitats and other geospatial information into one platform. The data are based on reference year 2018. Compared with CORINE, the National Land Cover data have a higher spatial resolution at approximately 250 times greater than CORINE. The National Land Cover data were compiled from primary raster data sources that included Tailte Éireann 50 cm orthoimagery, OSI 1 m DSM, Sentinel2 imagery, primary vector data sources such as Tailte Éireann PRIME2, Land Parcel Identification System, Forest Service and Coillte data, and habitat data (NPWS, National Biodiversity Data Centre, Heritage Council, etc.). Data for the pilot area were provided by the EPA for the purposes of the project.

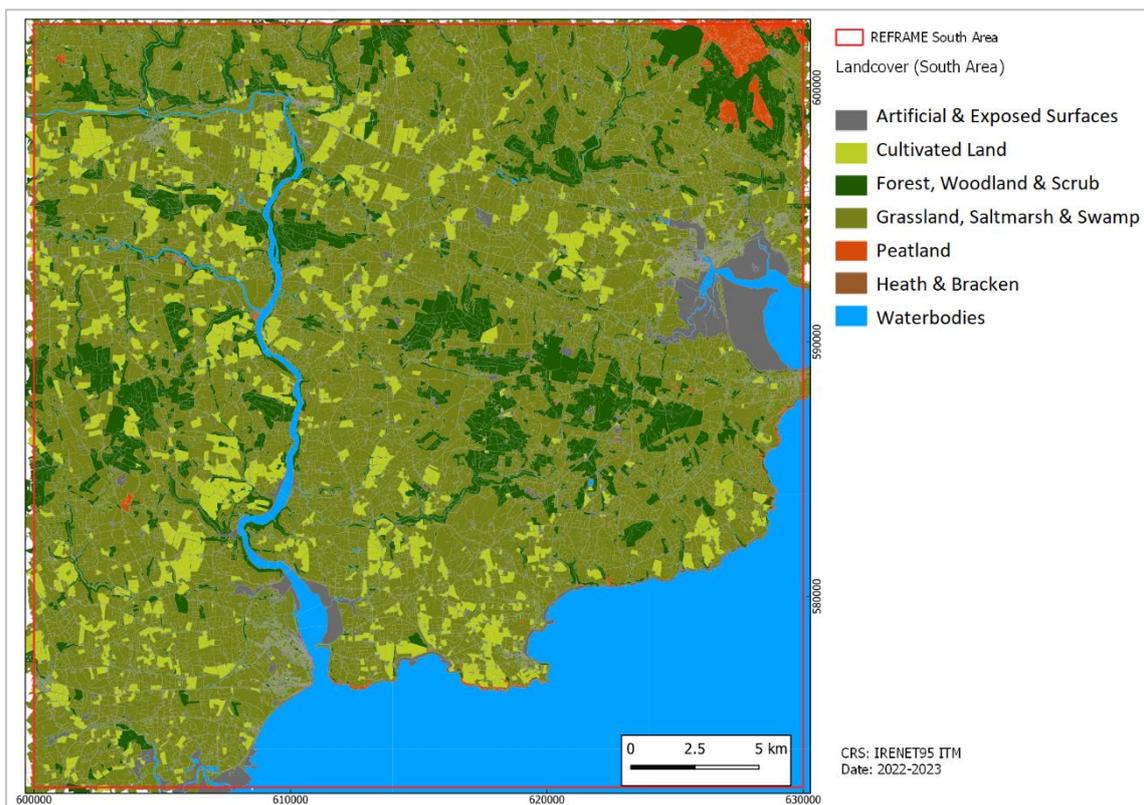


Figure 60: National Land Cover Level 1 Category map of the Reframe south area. Map created in QGIS and SAGA.

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CORINE Land Cover 2018 Data

The CORINE Land Cover 2018 dataset is the 2018 update of the Copernicus pan-European land cover data series. The data are based on interpretation of satellite imagery and national in-situ vector data. It is mapped to the standard CORINE classification system. The data specifications comprise a minimum mapping unit (mmu) of 25 ha and a minimum feature width of 100 m.

CORINE Land Cover data are openly available under a Creative Commons licence and is recommended for use in LCA if National Land Cover data are not available.

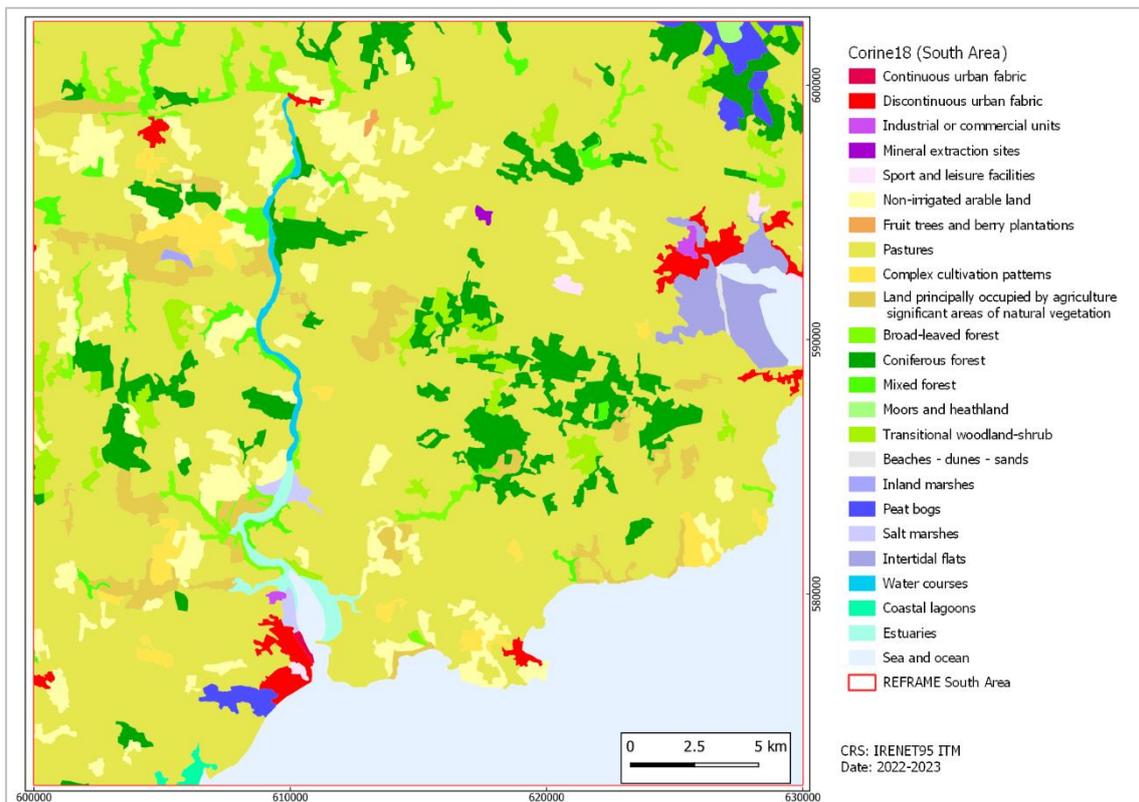


Figure 61: CORINE Land Cover 2018 map of the Reframe south area. Map created in QGIS and SAGA.

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APPENDIX 4: Supporting Landscape Character Type Mapping – The Midlands and East Case Studies

Maps of Reframe Midlands Study Area

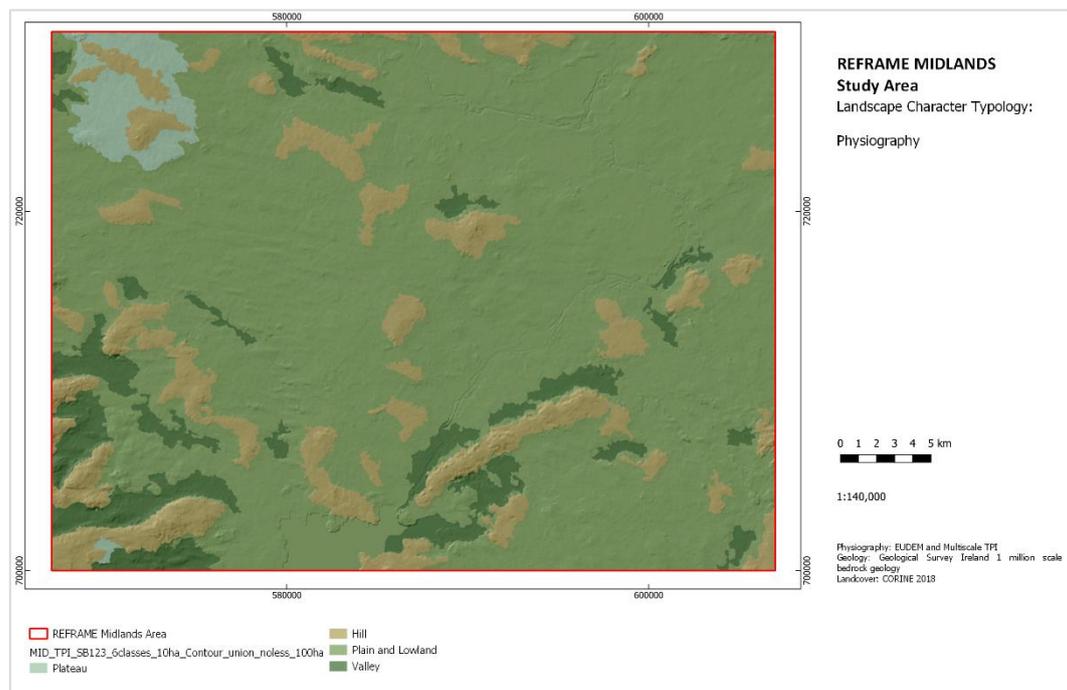


Figure 62: Physiography (landforms) map of the Reframe midlands area. Map created in QGIS and SAGA.

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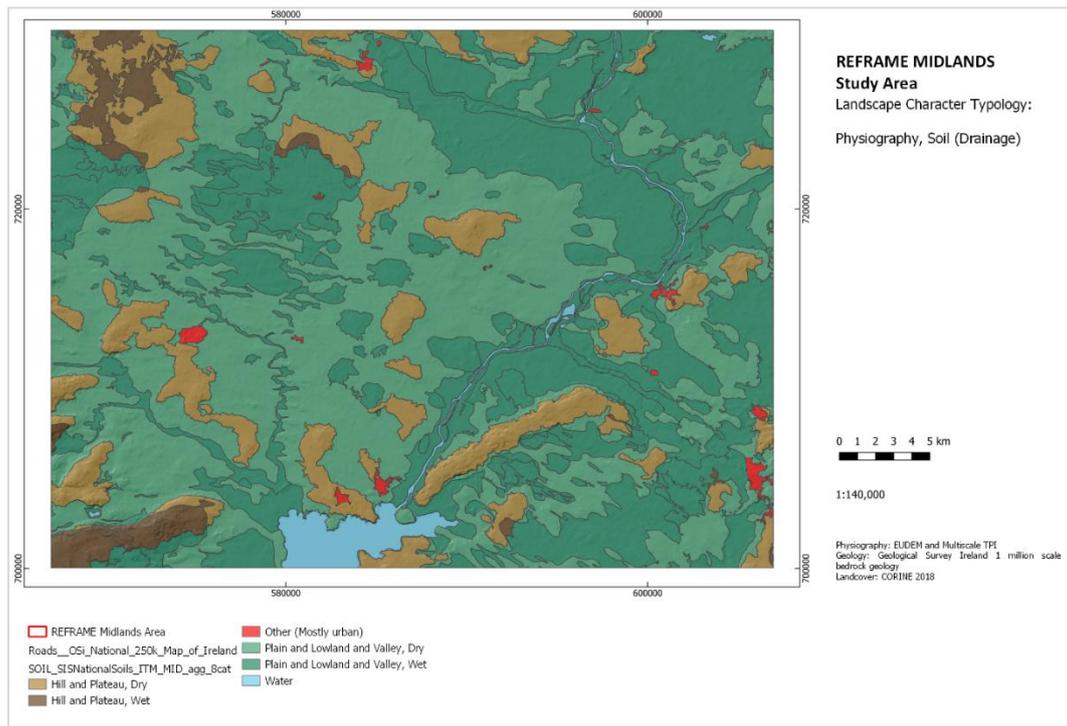


Figure 63: Physiography (landforms)–soil (drainage) map of the Reframe midlands area. Map created in QGIS and SAGA. (Note: Landform polygon features < 100 ha merged with adjacent polygons with largest area.)

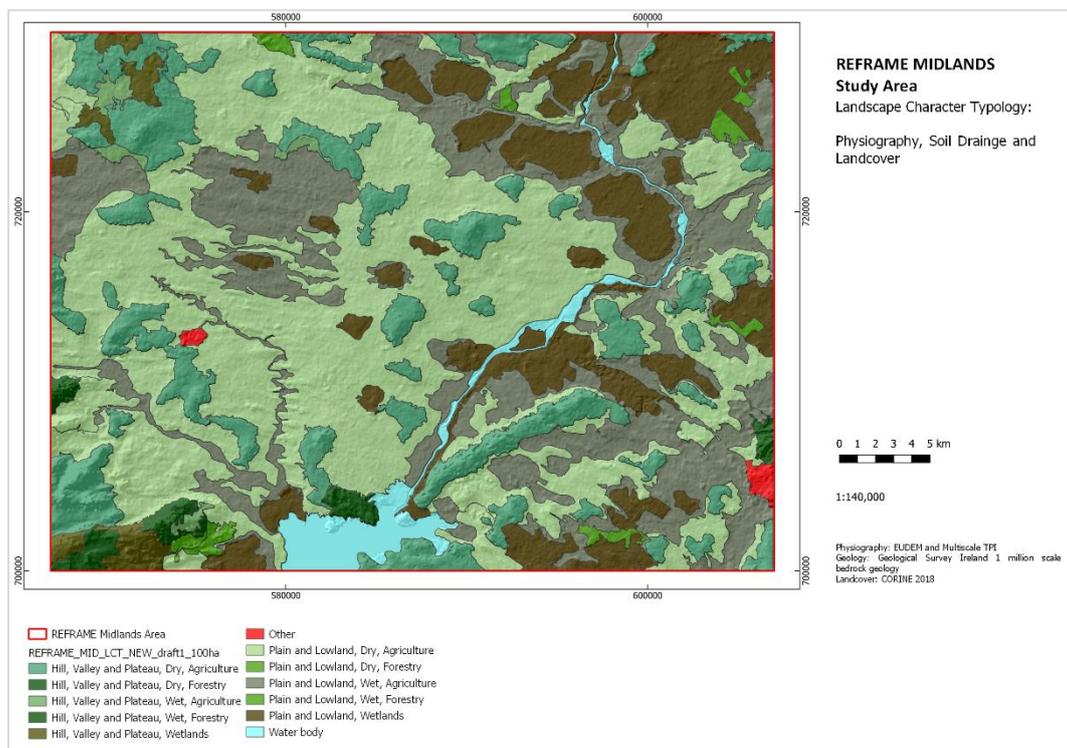


Figure 64: Physiography (landforms)–soil (drainage)–land cover map of the Reframe midlands area. Map created in QGIS and SAGA.

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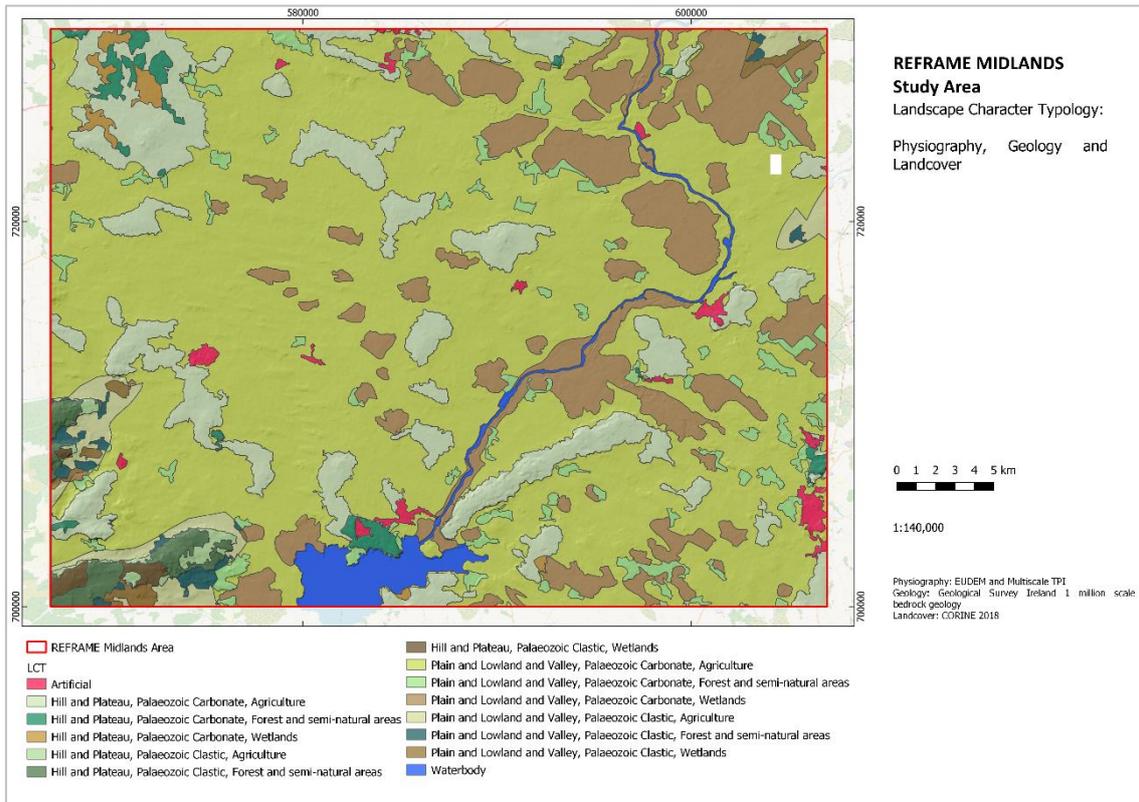


Figure 65: Physiography (landforms)–bedrock–land cover LCT map of the Reframe midlands area. Map created in QGIS and SAGA.

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Maps of Reframe East Study Area

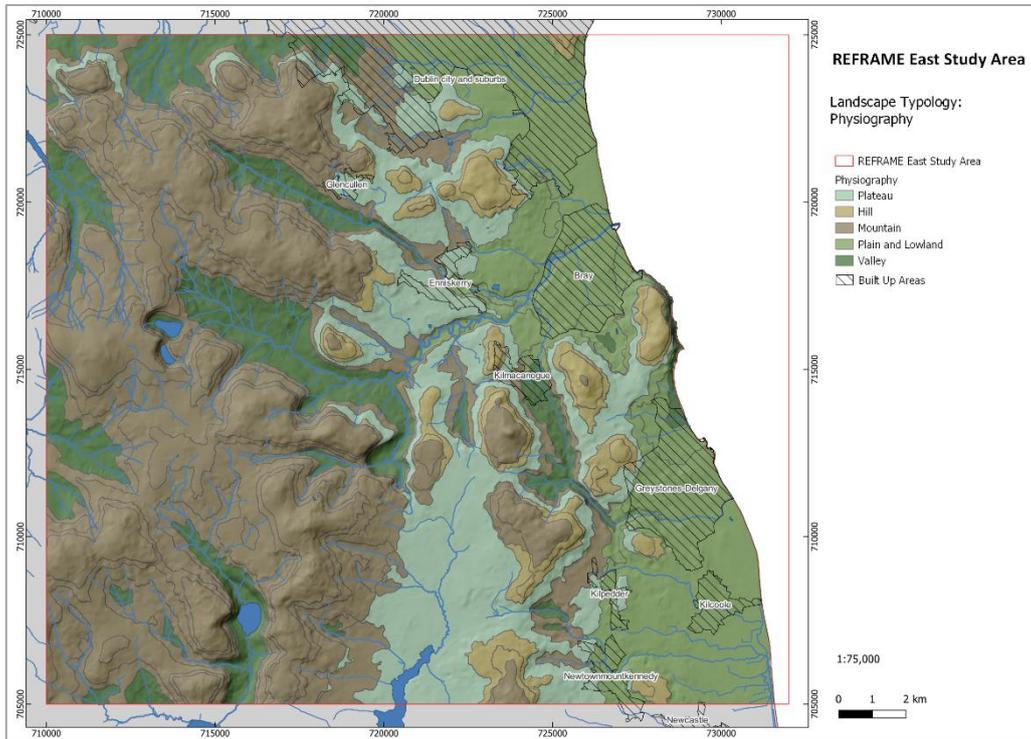


Figure 66: Physiography (landforms)LCT map of the Reframe east area. Map created in QGIS and SAGA.

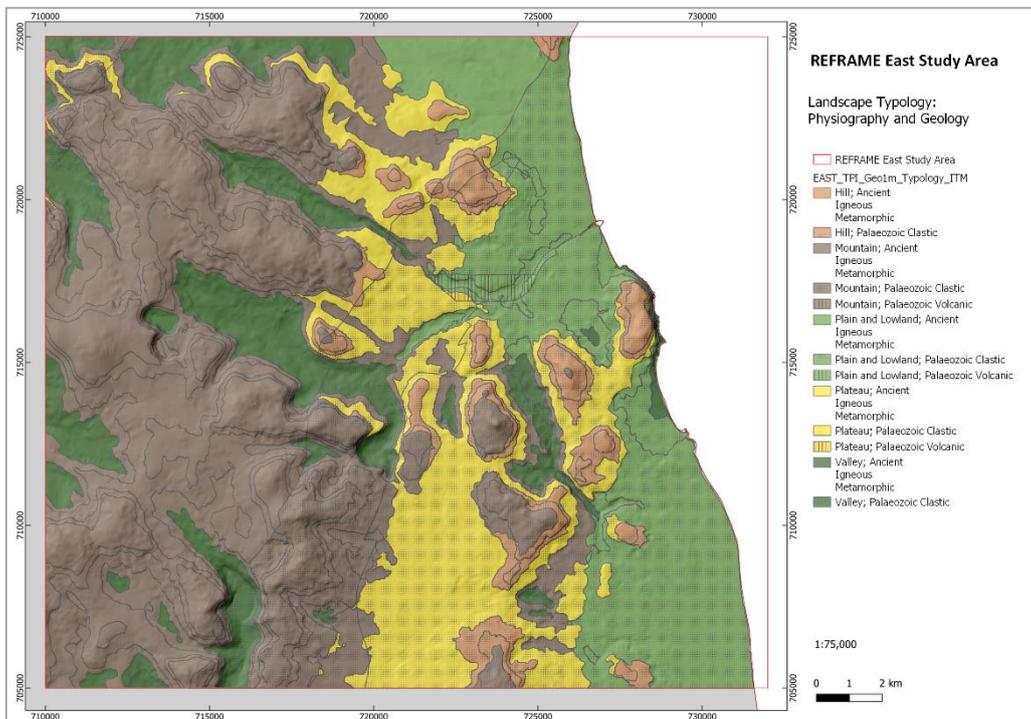


Figure 67: Physiography (landforms)-bedrock LCT map of the Reframe east area. Map created in QGIS and SAGA.

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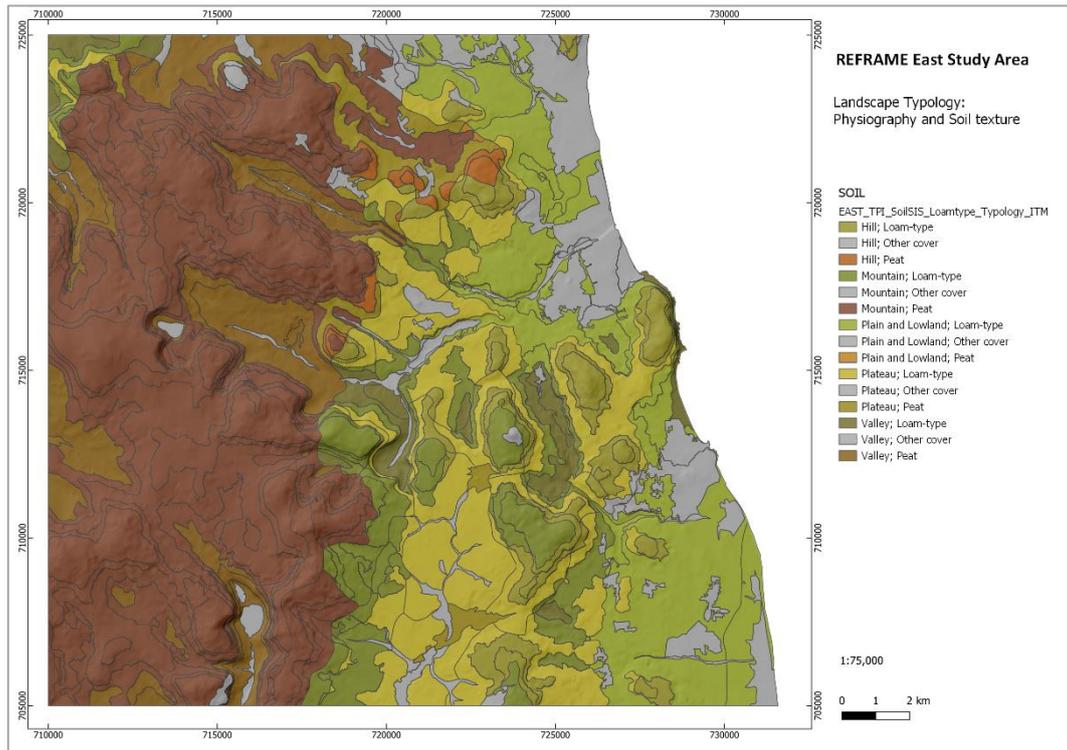


Figure 68: Physiography (landforms)–soil (texture) LCT map of the Reframe east area. Map created in QGIS and SAGA.

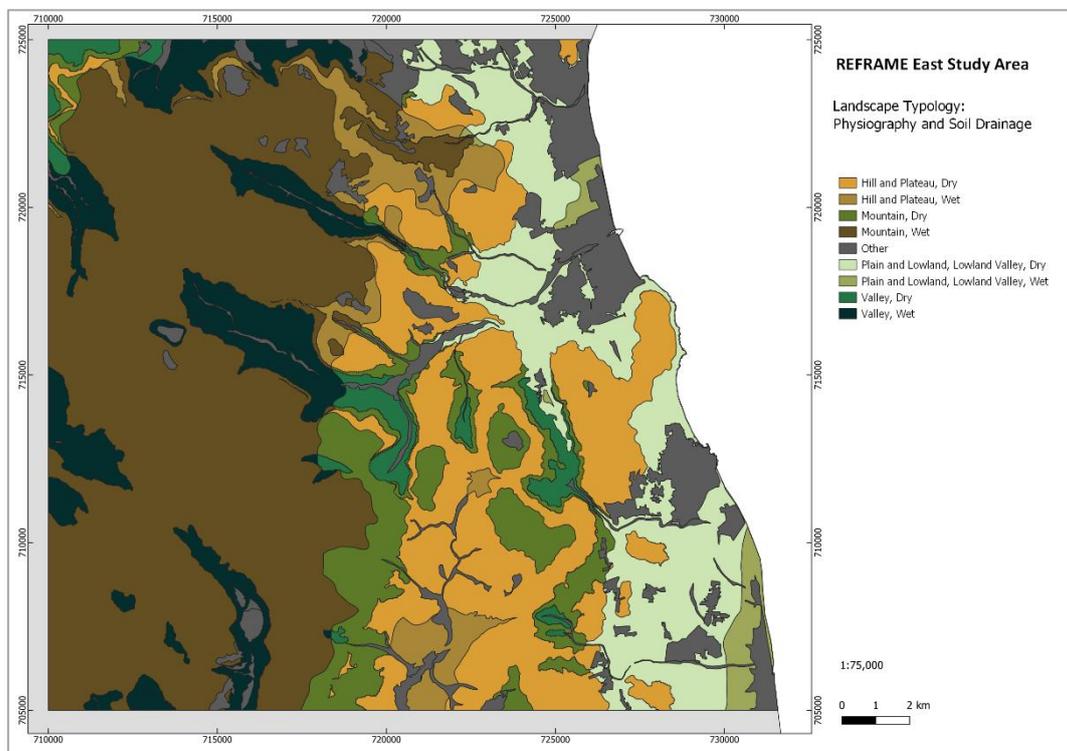


Figure 69: Physiography (landforms)–soil (drainage) LCT map of the Reframe east area. Map created in QGIS and SAGA.