



Fermanagh & Omagh
District Council
Comhairle Ceantair
Fhear Manach agus na hÓmaí

Landscape Wind Energy Capacity Study for Fermanagh and Omagh



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FINAL REPORT

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CONTENTS

EXECUTIVE SUMMARY

1.0 INTRODUCTION

- 1.1 Background
- 1.2 Consultancy Appointment
- 1.3 National and Local Policy
- 1.4 Landscape Capacity and Cumulative Impacts

2.0 CUMULATIVE IMPACT AND CAPACITY ASSESSMENT METHOD

- 2.1 Purpose of Assessment
- 2.2 Study Stages
- 2.3 Scope of Assessment
 - 2.3.1 Area Covered
 - 2.3.2 Wind Energy Development Types
 - 2.3.3 Use of Geographical Information Systems
- 2.4 Landscape and Visual Baseline
- 2.5 Method for Determining Landscape Sensitivity and Capacity
- 2.6 Defining Landscape Change and Cumulative Capacity
 - 2.6.1 Cumulative Change
 - 2.6.2 Determining Acceptable Levels of Change
- 2.7 How to Use the Assessment Findings and Guidance
- 2.8 Detailed Guidance
- 2.9 Potential Opportunities and Constraints

3.0 LANDSCAPE BASELINE

- 3.1 Study Area
- 3.2 Baseline Landscape Character Assessment
 - 3.2.1 Landscape Context
 - 3.2.2 Landscape Character

Page No

1

1

1

1

2

3

3

3

4

4

4

4

4

5

5

5

6

7

7

7

9

9

9

9

9

3.3 Landscape Designations 10

3.3.1 National Designations 10

3.3.2 Local Landscape Designations 10

3.3.3 Registered Parks, Gardens and Demesnes 11

3.4 Other Designations 11

3.4.1 Local Landscape Policy Areas 11

3.4.2 Country Park/ Forest Parks 11

3.4.3 Historic and Cultural Designations 11

3.4.4 Nature Conservation Designations 11

3.5 Marble Arch Caves UNESCO Global Geopark 11

4.0 VISUAL BASELINE 13

4.1 Visual Receptors 13

4.2 Visibility Analysis 13

4.2.1 Settlements 13

4.2.2 Roads 13

4.2.3 Routes 13

4.2.4 Viewpoints 14

4.2.5 Analysis of Visibility 14

5.0 WIND TURBINES IN THE STUDY AREA 15

5.1 Turbine Numbers and Distribution 15

5.2.1 Operating and Consented Wind Turbines 15

5.2.2 Proposed Windfarms 15

5.3 Landscape Character of Turbine Locations 16

6.0 ASSESSMENT OF LANDSCAPE CAPACITY AND CUMULATIVE CHANGE 17

6.1 Assessment Purpose and Process 17

6.2 Guidance 17

6.2.1 Turbine Size 18

6.2.2	Turbine Group Size	18	6.4.4	Areas with Very Limited or No Underlying Capacity	76
6.2.3	Separation between Turbine Groups	18	6.4.5	Areas of Significant Cumulative Development	77
6.2.4	Windfarm Extensions	19	6.5	Capacity for Further Development	81
6.2.5	Re-powering of Existing Windfarms	19	6.5.1	Areas with Most Remaining Capacity	81
6.2.6	Associated Windfarm Infrastructure	19	6.5.2	Areas with Limited Remaining Capacity	81
6.2.7	Other Factors Which Influence Guidance	19	6.5.3	Other Landscape Areas and Urban Areas	81
1.	FERMANAGH CAVELAND	21	6.6	Existing Developments: Extensions and Repowering	81
2.	LOUGH ERNE LAKELAND	29	6.7	Guidance for Single/Small Turbine Developments	82
3.	CLOGHER VALLEY AND SLIEVE BEAGH	39	REFERENCES		85
4.	OMAGH BASIN	45			
5.	WEST TYRONE HILLS AND VALLEYS	53	FIGURES		
6.	SPERRINS	59	2.1	Cumulative Impact and Landscape Capacity Methodology Flowchart	
7.	CARRICKMORE PLATEAU AND POMEROY HILLS	65	3.1	Study Area	
6.3	Landscape Capacity and Cumulative Development	71	3.2	Topography	
6.3.1	Overview of Landscape Character, Sensitivity and Capacity	71	3.3	Regional Landscape Character Areas	
6.3.2	Fermanagh Caveland: Summary of Capacity and Cumulative Development	71	3.4	Landscape Character Areas	
6.3.3	Lough Erne Lakeland: Summary of Capacity and Cumulative Development	71	3.5	Landscape Designations	
6.3.4	Clogher Valley and Slieve Beagh: Summary of Capacity and Cumulative Development	72	3.6	(a-b) Natural & Cultural Heritage Designations	
6.3.5	Omagh Basin: Summary of Capacity and Cumulative Development	72	3.7	Locations of Landscape Interest	
6.3.6	West Tyrone Hills and Valleys: Summary of Capacity and Cumulative Development	72	4.1	(a-b) Transport Routes, Settlements, Viewpoints, Address Points	
6.3.7	Sperrin: Summary of Capacity and Cumulative Development	73	5.1	(a-b) Existing, Consented and Applications Wind Turbines	
6.3.8	Carrickmore Plateau and Pomeroy Hills: Summary of Capacity and Cumulative Development	73	6.1	(a-f) Landscape Capacity	
6.4	Overall Assessment of Capacity and Cumulative Development	75	6.2	Current Wind Turbine Landscape Typology: Operational and Consented Wind Turbines	
6.4.1	Fermanagh and Omagh Summary: Landscape Character, Sensitivity and Capacity	75	6.3	Wind Turbine Landscape Typology: Proposed Maximum Development Capacity	
6.4.2	Areas with Highest Underlying Capacity.	75	6.4	Wind Turbine Development Opportunities and Constraints	
6.4.3	Areas with Limited Underlying Capacity	76			

APPENDICES

- Appendix 1: Cumulative Impact and Landscape Capacity Assessment**
- Appendix 2: Factors Affecting the Landscape and Visual Impacts of Wind Turbines**
- Appendix 3: Wind Farms and Turbines in Fermanagh and Omagh**
- Appendix 4: Assessments of Landscape Sensitivity for Landscape Character Areas**
- Appendix 5: Viewpoint List**

EXECUTIVE SUMMARY

Study Purpose and Objectives

The purpose of this study is to provide detailed technical assessment on landscape, visual and cumulative development matters for Fermanagh and Omagh District Council in relation to wind energy, providing detailed guidance on the capacity of the landscape within the Local Authority area to accommodate wind turbine developments and associated infrastructure of varying scale, to inform the policies of the Fermanagh and Omagh Local Development Plan 2030.

The key requirements of the study as described by the Local Authority are as follows:

- To identify those areas where due to the sensitivity of the landscape and their special scenic qualities, wind turbines of any size or related infrastructure would not be acceptable;*
- To identify where there is capacity remaining within the different landscape character areas to accommodate further wind farm developments;*
- Consider the landscape and visual issues related to the potential extension and repowering of existing windfarms within the Fermanagh and Omagh area; and*
- Provide guidance within those areas identified as capable of accommodating further wind farms or repowering of existing as to the number and height of turbines and scale of related infrastructure that would be appropriate, in landscape and visual terms.*

Approach to the Study

This study considers the capacity of the Fermanagh and Omagh landscape to accommodate onshore wind energy development. The landscape capacity assessment is based on an assessment of landscape sensitivity and value of the different landscape character types and areas in Fermanagh and Omagh. The key stages and outputs are:

- Carrying out an assessment of the key landscape characteristics within Fermanagh and Omagh using a robust methodology identifying sensitivity criteria;*
- Determining the thresholds of acceptable change and identifying critical factors which are likely to present an eventual limit to development;*
- Setting out a spatial framework for onshore wind energy development and allowing better understanding of the opportunities and constraints on wind energy and how these should be addressed;*
- Identifying areas most suitable for wind energy development, areas which are less suitable and areas which are not suitable at all; and*
- Identifying where remaining capacity for development lies.*

This strategic-level study is based on the premise that, given current renewable energy targets, there will be a need to both acknowledge and manage future landscape change and effects on visual amenity resulting from wind energy development, and to identify where change is acceptable and where it is not acceptable. In applying the assessment process, the study has addressed a number of concepts and issues that affect the perceived significance and acceptability of cumulative changes caused by multiple wind energy developments in the landscape.

Landscape Character

Fermanagh and Omagh covers a large area of south western Northern Ireland. The total land area is approximately 3,000km², much of which is a lowland pastoral landscape, centred around the historical county towns of Omagh in Tyrone to the north and Enniskillen in Fermanagh to the south, the two largest settlements within the Local Authority area. However, there is great diversity in the landscape, from the wild upland landscapes of the Sperrins to the north, the scenic 'lakelands' of Fermanagh, and karst limestone uplands which are unique to Northern Ireland.

At the larger scale the landscape is described by 7 Regional Character Areas (ReCAs), as defined by the Northern Ireland Regional Landscape Character Assessment of 2016 (NIRLCA 2016). At the smaller scale the Local Authority area comprises 26 units of landscape character, as defined by the Northern Ireland Landscape Character Assessment (NILCA 2000). The 7 ReCAs are of varying character, affecting their capacity to accommodate wind energy development. The assessment has been organised by ReCA with assessments for each LCA within the ReCAs undertaken to identify their capacity to accommodate wind energy development of various sizes and typologies.

For the purposes of this assessment, LCAs are grouped according to their broad landscape character type (LCT), to allow areas sharing common landscape characteristics and therefore sensitivities to, and capacity for, wind energy to be identified.

Landscape Capacity and Cumulative Development

This study resolves landscape capacity with levels of cumulative development and involves three stages:

- Firstly, identifying the underlying capacity of the Fermanagh and Omagh landscape to accommodate wind turbine development and associated infrastructure;*
- Secondly, assessing the degree of cumulative change resulting from operating and consented wind turbines in the study area;*
- Thirdly, assessing the level of further development that could acceptably be accommodated within areas of Fermanagh and Omagh, thereby identifying remaining capacity.*

The underlying capacity for different sizes of turbine across the landscape character areas of Fermanagh and Omagh is shown in detail in figures 6.1 a - f. Upland areas of the Sandstone Ridges and Plateau landscape character type (LCT), a broad grouping

of undulating sandstone uplands found in various locations throughout the Local Authority Area, have the greatest underlying capacity for wind energy development. However, the scale and extent of areas of this LCT are typically insufficient to accommodate extensive wind energy developments. While some larger scale landscapes exist in the Sperrins, and also to the south of the Local Authority Area around Cuilcagh, the sensitivity of these landscapes makes them unsuited to larger scale wind energy development, and in some areas wind energy of any size.

Various lowland landscapes have a level of capacity for smaller scale wind energy developments, which can be accommodated within the undulating drumlins found across much of the lowland area. However, the 'lakeland' landscapes to the south of the Local Authority areas are sensitive to intrusion from relatively small-scale developments.

Consented Developments at November 2017

The emerging pattern of development in and around Fermanagh and Omagh reflects the wider pattern of wind energy development in the United Kingdom, where the majority of windfarms and turbines are located in upland areas, with smaller developments in the lowlands.

There are, as of November 2017, a total of 678 operational or consented turbines of 15m or greater height, and a further 38 in planning. Of those turbines consented, a significant proportion (72%) are below 80m to blade tip, i.e. 'medium' sized turbines (<80m) or smaller as defined by the categories used in this assessment. Beyond the Local Authority boundary, smaller turbine typologies extend into the lowland landscapes to the east and north, however some larger windfarms are located to the west and south in the more upland areas of Donegal and Leitrim.

Within Fermanagh and Omagh, there is a relatively clear pattern of wind energy development. The majority of larger scale development has taken place in the Sandstone Ridges and Plateau landscape type, including LCA 14 Lough Braden to the north-west, and 16 Brougher Mountain and 44 Slievemore to the east. Another area of significant wind energy development is the upland landscape of LCA 10 Slieve Russel, Derrylin and Kinawley, on the outlying hill of Slieve Rushen to the south of Fermanagh and Omagh adjacent to the uplands of Cuilcagh. There are various small windfarm developments and frequent small-scale single/ small turbine groups within lowland landscape types. The Sperrins to the north and Cuilcagh to the south are the only larger scale landscape with no significant consented or operational wind energy development.

Analysis of Capacity and Cumulative Development

The current levels of development have led to a landscape in which wind turbines are a key landscape feature in some areas of the Sandstone Ridges and Plateau landscape types, in particular those of LCA14 Lough Braden, LCA44 Slievemore, extending southwards into the LCA 16 Brougher Mountain. The semi-upland Carrickmore Hills also have significant numbers of consented turbines, including two small wind farms. The sandstone uplands, and neighbouring upland landscapes, provide topographic

enclosure to the enclosed lowland landscapes such as the 'Omagh Basin' at the heart of the Local Authority area, and the Clogher Valley to the east, and therefore cumulative issues can arise because of views to various wind energy developments on the horizon, seen in different directions, alongside various smaller typology wind turbines within lowland areas.

Elsewhere there are other concentrations of larger scale wind energy development, for example in LCA 10 Slieve Russel, Derrylin and Kinawley to the very south of the Local Authority area, and on the western edge of LCA 4 Lough Navar and Ballintempo Uplands. While these individual wind farms are quite prominent from some areas, they tend to be seen as more isolated developments, and not part of a wider landscape greatly characterised by wind energy developments.

This study has identified limited additional capacity for larger scale wind energy developments. The greatest residual capacity arises within LCA 14 Lough Braden, towards the north western Local Authority boundary. In this location there is a cluster of existing wind farms, however there would be capacity to further develop this area as a more consolidated wind farm cluster, for example through development within the Lough Braden Forest. This may involve considerable landscape change at the local level, but would broadly maintain the extent of the 'wind farm landscape' which already exists in this area. The repowering of 'medium/ large' (80<120m) turbine typologies with 'large' turbines (120<150m) is likely to be possible for some windfarms in this area, subject to careful assessment.

More limited capacity arises in the upland areas of LCA 16 Brougher Mountain and 44 Slievemore, however with the high level of consented development, these locations appear constrained against further large-scale wind farms. However, opportunities for limited extensions, and repowering of those windfarms currently operating smaller sized turbines, are identified. There are also some limited potential opportunities for small scale wind farm development at the transition from the Macnean Valley to the Lough Navar and Ballintempo Uplands towards the south west of the Local Authority area.

Lowland landscapes have a high density of consented 'small' to 'medium' sized wind turbine developments (<80m), and while some areas appear to have reached capacity, in particular within the 'Omagh Basin', opportunities for further smaller scale development arise within some of these more lowland landscapes.

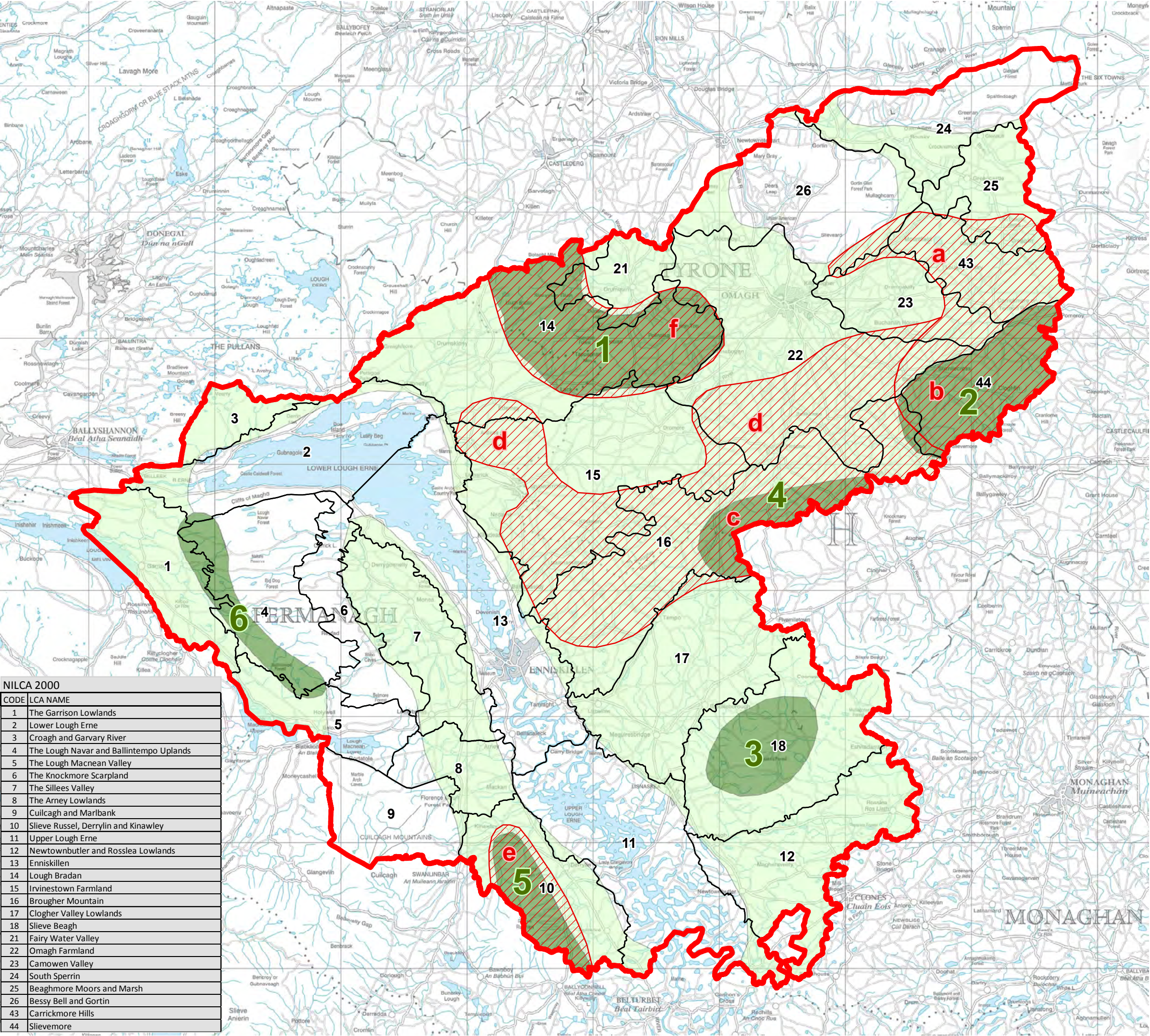
The sensitive landscape of the Sperrins and many areas of the karst landscape to the south including Cuilcagh, and the Fermanagh Lakelands should remain largely free of wind energy development.

The assessment has also considered the capacity of the landscape to accommodate wind farm infrastructure including access tracks, transmission lines, sub stations, control buildings and potential energy storage units. In those locations with capacity for larger scale wind energy developments i.e. commercial wind farms, no overriding constraints to the accommodation of these elements in the landscape are identified assuming that siting, design and other mitigations are given due consideration. Much wind farm infrastructure is low level and can typically be sited to take advantage of the topographic or vegetative screening which typically occurs within those landscapes suited to larger

scales of wind energy development. Transmission lines and pylons for grid connections tend to be taller and potentially contribute to clutter when seen with wind turbines, but minimising their effects to acceptable levels should also be possible with sensitive routing.

Conclusions

The assessment indicates that while much of the capacity for larger scale wind energy in Fermanagh and Omagh has been utilised, some residual capacity does exist within the Lough Braden Forest area, and to a lesser extent around Slievemore and Brougher Mountain. This residual capacity typically arises through the extension or intensification of areas already utilised for wind energy development, or through the repowering of existing developments. Any specific proposals would require full assessment of their landscape and visual impacts to determine their acceptability. There are no significant new areas, currently unaffected by wind energy development, considered suitable for large scale wind energy, and some areas have been assessed as unsuitable for significant wind energy development due to their sensitivity including the landscape of the Sperrins to the north, and that of Cuilcagh and Marlbank to the south.



CODE	LCA NAME
1	The Garrison Lowlands
2	Lower Lough Erne
3	Croagh and Garvary River
4	The Lough Navar and Ballintempo Uplands
5	The Lough Macnean Valley
6	The Knockmore Scarpland
7	The Silles Valley
8	The Arney Lowlands
9	Cuilcagh and Marbank
10	Slieve Russel, Derrilyn and Kinawley
11	Upper Lough Erne
12	Newtownbutler and Rosslea Lowlands
13	Enniskillen
14	Lough Bradan
15	Irvinestown Farmland
16	Brougher Mountain
17	Clogher Valley Lowlands
18	Slieve Beagh
21	Fairy Water Valley
22	Omagh Farmland
23	Camowen Valley
24	South Sperrin
25	Beaghmore Moors and Marsh
26	Bessy Bell and Gortin
43	Carrickmore Hills
44	Slievemore

Legend

- Local Authority Boundary
- Landscape Character Areas

Area Capacity

- Areas with Highest Underlying Capacity
- Areas with Limited Underlying Capacity
- Areas with No Underlying Capacity
- Areas of Significant Cumulative Development

Areas with Highest Underlying Capacity

- 1) Lough Braden
- 2) Slievemore
- 3) Slieve Beagh
- 4) Hunter Hill
- 5) Slieve Rushen
- 6) Loch Navar & Ballintempo Uplands

Areas where Cumulative Impact Limits Development

- a) Carrickmore Hills
- b) Slievemore
- c) Brougher Mountain
- d) Omagh and Irvinestown Farmland
- e) Slieve Rushen
- f) Lough Braden



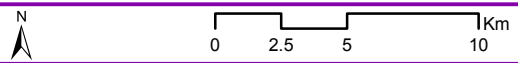
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Figure A

Wind Turbine Development
Opportunities & Constraints



1.0 INTRODUCTION

1.1 Background

Northern Ireland Planning Policy supports the greater use of renewable energy to achieve its targets for carbon emissions and to bring diversity and security of energy supply. The 2013 Onshore Renewable Action Plan (ORAP)¹ published, by the Northern Ireland Department for Enterprise, Trade and Investment (DETI), supports the achievement of a 40% renewable electricity target by 2020. Onshore wind energy provides by far the largest proportion of onshore renewable electricity generation in Northern Ireland and the UK as a whole, and is expected to do so for the foreseeable future.

While onshore wind is already well developed in Fermanagh and Omagh, it can be reasonably expected that there will be continuing pressure to utilise the wind resource through new wind energy development and repowering of existing schemes with wind turbines of greater generating capacity and efficiency.

The potential for unacceptable impacts, including cumulative impacts, from onshore wind energy to landscape character and visual amenity is recognised in the 2015 *Strategic Planning Policy Statement for Northern Ireland* (SPPS)² and the 2009 *Planning Policy Statement 18 'Renewable Energy'* (PPS 18)³. It is therefore desirable that wind energy developments are appropriate to the type of landscape in which they are located. The purpose of this study is to provide Fermanagh and Omagh District Council with a robust basis for developing local wind energy policy in terms of balancing development against landscape character and visual amenity.

1.2 Consultancy Appointment

Ironside Farrar were appointed in October 2017 by Fermanagh and Omagh District Council to undertake a landscape wind energy capacity study for the Local Authority area. The key purpose of the study is to provide detailed guidance on the capacity of the landscape within Fermanagh and Omagh to accommodate wind turbine developments of varying scales, to inform the policies of the Fermanagh and Omagh Local Development Plan 2030.

The key requirements of the study, as described by Fermanagh and Omagh District Council, are as follows:

- To identify those areas where due to the sensitivity of the landscape and its special scenic qualities, wind turbines of any size or related infrastructure would not be acceptable;

- To identify where there is capacity remaining within the different landscape character areas to accommodate further wind farm developments;
- Consider the landscape and visual issues related to the potential extension and repowering of existing windfarms within the Fermanagh and Omagh area; and
- Provide guidance within those areas identified as capable of accommodating further wind farms, or repowering of existing, as to what number and height of turbine and scale of related infrastructure that would be appropriate, in landscape and visual terms.

The basis for achieving these requirements is a comprehensive capacity assessment for wind energy based on landscape character, utilising well-established capacity assessment techniques. To achieve the requirements of the Local Authority, this assessment considers both the underlying or 'baseline' landscape capacity, assuming no wind energy is present, and the 'residual' capacity taking into consideration existing and consented developments at the time of the study.

1.3 National and Local Policy

Both the Strategic Planning Policy Statement (SPPS) and Planning Policy Statement 18 (PPS 18) encourage the development of onshore wind energy. National level policy is supported by accompanying Supplementary Planning Guidance (SPG) *Wind Energy Development in Northern Ireland's Landscapes*⁴, forming the main wind energy guidance for Northern Ireland.

It is noted that while SPPS and PPS 18 both require the acceptability of wind energy proposals to be demonstrated in terms of their landscape and visual effects, there are no absolute landscape constraints on wind energy developments, i.e. locations where wind farms would not be supported, although a minimum separation distance from occupied properties is stated in both PPS 18 and SPPS (the greater of 10 x rotor diameter or 500m). SPPS states that a cautious approach to wind energy development should be applied to proposals within designated landscapes of significant value, including Areas of Outstanding Natural Beauty, where it may be difficult to accommodate wind turbines without detriment to cultural and natural heritage assets.

The SPG aims to facilitate the appropriate siting of wind energy in the environment through the provision of broad strategic guidance. The SPG provides guidance for each of the 130

¹ Northern Ireland Department of Enterprise Trade and Investment (2013) *Onshore Renewable Electricity Action Plan 2013 – 2020*

² Northern Ireland Department of the Environment (2015) *Strategic Planning Policy Statement for Northern Ireland (SPPS) Planning for Sustainable Development*

³ Northern Ireland Department of the Environment, Planning and Environmental Policy Group (2009) *Planning Policy Statement 18 'Renewable Energy'*

⁴ Northern Ireland Environment Agency (2010) *SPG: Wind Energy Development in Northern Ireland's Landscapes*

LCAs of the 2000 Northern Ireland Landscape Character Assessment (NILCA 2000)⁵, including assessments of sensitivity and siting and design considerations. An overview of broader, strategic level considerations is also described at a wider landscape level e.g. for Fermanagh, and for the North West of Northern Ireland including the Sperrins.

While much useful information is found in SPG, the guidance 1) does not provide an assessment of capacity for varying scales and typologies of wind energy development, and 2) does not address the potential for further wind energy development – either at new sites or through the repowering of existing ones – based on current levels of development.

This capacity assessment addresses both issues and provides a single strategic assessment of capacity for wind energy development in the Local Authority area, on which Local Development Plan policies can be based.

1.4 Landscape Capacity and Cumulative Impacts

This study informs the Council on the issues of landscape capacity and cumulative impact. Accordingly, it comprises three main themes:

- A strategic landscape capacity study, investigating the underlying capacity of landscapes within Fermanagh and Omagh to accommodate wind energy development of all but the smallest domestic scale. This is reflected in detailed capacity maps for 6 turbine size ranges described later in this report;
- A cumulative assessment examining the level of cumulative development of operating and consented wind turbines and wind farms in Fermanagh and Omagh;
- Guidance on remaining development capacity and on the size and types of wind energy development throughout the Local Authority that would be acceptable in landscape terms, taking into account the first two considerations. This includes the potential for extension or repowering of currently operational sites.

This study specifically assesses landscape capacity and the impact of cumulative wind energy development to determine where there is existing capacity and where limitation of further development may be required through the development management process. The study addresses these requirements through a staged assessment process described in sections 2.0 to 6.0 of this report.

It is emphasised that this is a strategic level landscape and visual study, providing a context for considering the capacity for, and the cumulative effects of, existing and potential future wind turbine developments in Fermanagh and Omagh. No site-specific conclusions should be drawn from it in relation to current, proposed or future wind energy schemes.

As a strategic landscape and visual study this does not address specific localised impacts such as effects on individual residential receptors or other sensitive receptors. All wind energy proposals should be considered on their own unique locational and design characteristics as well as their strategic context. All proposals should be subject to landscape, visual and cumulative impact assessment including (if required) a full environmental assessment, taking due cognisance of up to date guidance on the landscape and visual assessment and design of wind energy schemes. The assessment does not take into account other environmental factors which may constrain wind energy development.

⁵ Northern Ireland Environment Agency (2000) *Northern Ireland Landscape Character Assessment*, available at <https://www.daera-ni.gov.uk/articles/landscape-character-northern-ireland#toc-1>

2.0 CUMULATIVE IMPACT AND CAPACITY ASSESSMENT METHOD

2.1 Purpose of Assessment

The purpose of the following assessment is to determine the capacity of the Fermanagh and Omagh landscape to accommodate wind energy development and to determine the levels of cumulative development that would be acceptable across the Local Authority area. The assessment takes into account current cumulative development within and around the Local Authority area and is based on the premise that current renewable energy policies may lead to a future level of landscape change within Fermanagh and Omagh that requires careful management.

The key objectives of the study are outlined in Chapter 1. The methodology serves these objectives through a clear assessment of landscape and visual sensitivity and capacity across Fermanagh and Omagh; together with an assessment of the cumulative effects of current consented wind energy development and the potential for accommodating future development, including extension or repowering of currently operating schemes.

Nevertheless, it is recognised in guidance that the assessment of landscape capacity and cumulative impacts is not a straightforward exercise. The background considerations and detailed methodology for this process are detailed in **Appendix 1** of this report. The following summarises the methodology and explains how the findings and recommendations are presented.

2.2 Study Stages

The assessment is a staged process which comprises the following steps:

- 1) Define the study area and characterise the landscape and visual baseline and scope of wind energy types to be included in the strategic study.
- 2) Assess landscape sensitivity based on the landscape character areas (LCAs) of Fermanagh and Omagh. This assessment considers landscape character sensitivity, visual sensitivity and landscape value.
- 3) Assess the capacity of the landscape to accommodate wind energy development of different types and scales based on the assessment of sensitivity and value of the LCA. This is an assessment of the *underlying* landscape without taking the effects of existing or consented wind turbines into account.
- 4) Record the current type and extent of operational and consented wind energy development in Fermanagh and Omagh and the surrounding Local Authorities.
- 5) Determine the extent to which cumulative consented development has occupied the underlying capacity of the landscape to accommodate wind energy developments.
- 6) Further to the assessment of landscape capacity and cumulative development, identify areas in which:
 - there is no underlying landscape capacity for wind energy development;

- cumulative consented development limits landscape capacity for further wind energy development; and
- there is remaining landscape capacity for wind energy development.

The assessment process is summarised as a flow chart in Figure 2.1 below.

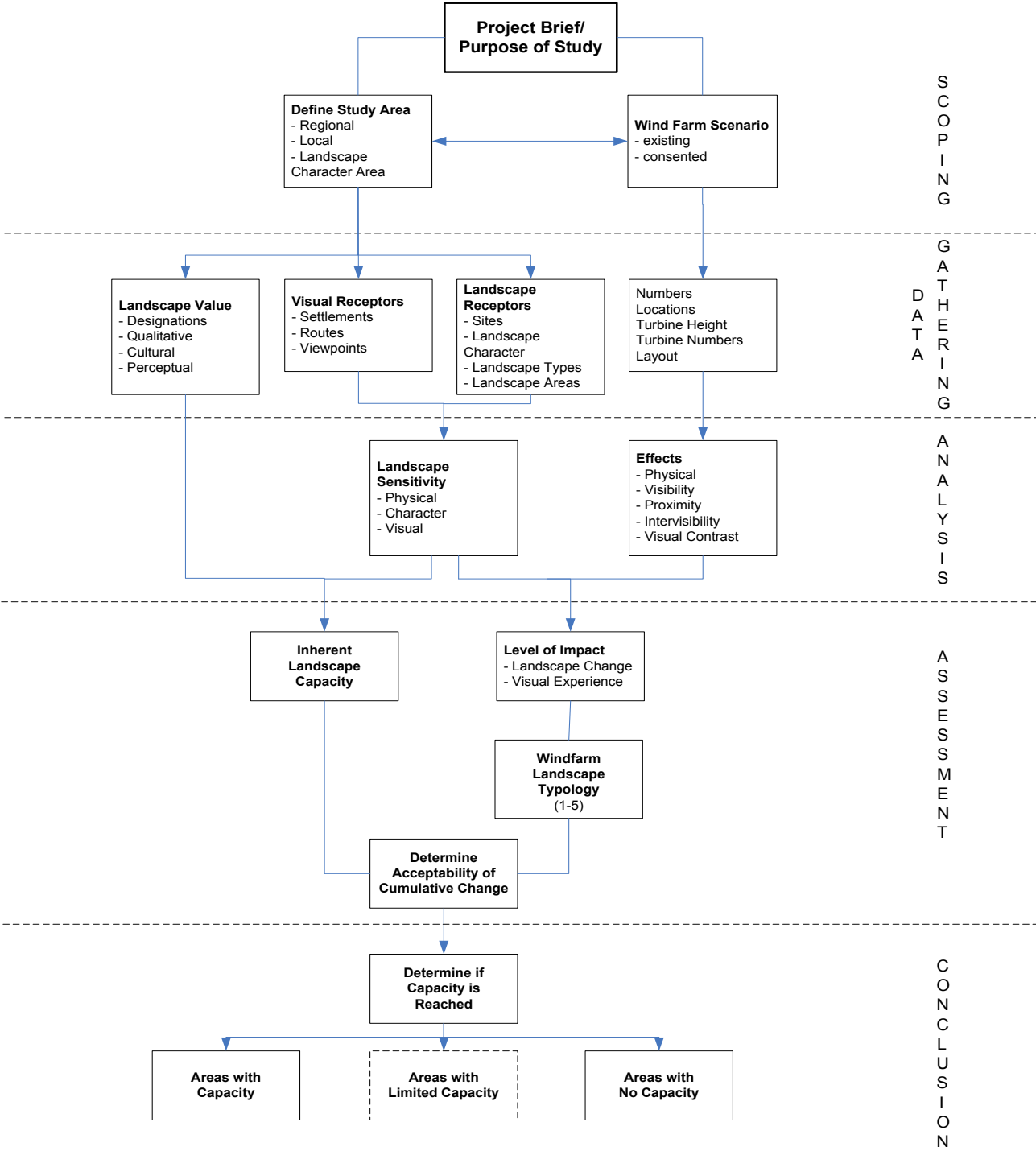


Figure 2.1. Cumulative Impact and Landscape Capacity Assessment Flowchart

The resulting spatial strategy is supported by guidance on appropriate types and levels of wind energy development for the areas in which there is capacity, taking note of the potential limitations imposed by already consented development.

2.3 Scope of Assessment

2.3.1 Area Covered

The study focuses primarily on the Local Authority area of Fermanagh and Omagh. However, the study area extends 15km beyond the Local Authority boundary because of the potential landscape and visual effects of wind energy developments in neighbouring areas.

2.3.2 Wind Energy Development Types

The study considers turbines of 15m and taller, and all scales of wind energy development operating, consented or proposed, as well as potential future scenarios which, based on current trends in UK onshore wind energy development, include turbines greater than 150m. Turbines are categorised in the following six height bands to allow a finer grained assessment of capacity and cumulative effects in relation to development type.

Table 2.1. Turbine Size Categories

Blade Tip Height	Category/ Size	Typical Use (in the Northern Ireland context)
15m to <30m	Category 1 – Small	Typically used for domestic and farm schemes
30m to <50m	Category 2 – Small/ Medium	Typically used for farm and small industrial schemes
50m to <80m	Category 3 – Medium	Single turbine schemes e.g. farms, industrial and smaller turbines used in commercial schemes
80m to <120m	Category 4 – Medium/ Large	Many current commercial windfarms and some single turbines
120m to <150m	Category 5 – Large	Many current and most proposed commercial windfarms
150m ~ 200m	Category 6 – Very Large	Windfarms with turbines > 150m are increasingly being proposed in the UK

Turbines less than 15m to blade tip are not considered to have the same qualities of scale, prominence and widespread visibility that lead to the wider cumulative impacts of larger turbines. Assessment and guidance for turbines less than 15m to blade tip is limited to localised generic siting and design considerations.

2.3.3 Use of Geographical Information Systems

The study has used the GIS application Arcview. This application is used only as a tool to manage, map and illustrate spatial data. The capacity assessment is not based on GIS alone, and the assessment process is described in the following sections.

2.4 Landscape and Visual Baseline

The landscape baseline assessment includes a description and classification of landscape character and records of designations and other features that contribute to landscape value.

The **landscape character assessment** is based on landscape character areas (LCAs) of the Northern Ireland Landscape Character Assessment 2000 (NILCA 2000). The assessment identifies 130 areas of landscape character in Northern Ireland, 26 of which are wholly or in part located within Fermanagh and Omagh.

NILCA 2000 does not categorise landscape character areas into landscape character types (LCTs), i.e. groupings based on common landscape characteristics, as is usual for landscape character assessment in other parts of the UK⁶. For the purposes of this assessment a categorisation into broad landscape character types is undertaken, to allow the sensitivities and capacity common to landscapes of a particular type to be better described and understood.

Furthermore, in 2016, the Northern Ireland Regional Landscape Character Assessment (NIRLCA) was undertaken, providing a higher-level description of the Northern Ireland landscape, but not superseding NILCA 2000. Seven Regional Character Areas (ReCAs) are identified in Fermanagh and Omagh⁷.

Regional and local landscape character areas (ReCAs/ LCAs) and character types (LCTs) in Fermanagh and Omagh are described in Section 3.2 and Table 3.1 of this report. The published assessments of regional and local landscape character were undertaken separately and at different times, and character area boundaries do not coincide.

Landscape value is determined partly through landscape designations. There is one nationally designated area in Fermanagh and Omagh, and four other local landscape or landscape related designations. There are also a number of Registered Parks, Gardens and Demesnes. Related designations that can contribute to landscape value and character are

⁶ SNH/ The Countryside Agency (1999) *Landscape Character Assessment Guidance for England and Scotland*.

⁷ <https://www.daera-ni.gov.uk/articles/landscape-character-northern-ireland#toc-1>

recorded. These include natural and cultural heritage designations, recreational/ visitor facilities and paths/ tracks.

The **visual baseline** assessment is detailed in **Chapter 4**. It involves identification of the types and locations of visual receptors within the study area, and the locations in which wind turbines are most or least likely to be visible to receptors. This approach should not be considered in isolation from other factors determining capacity, such as landscape character.

2.5 Method for Determining Landscape Sensitivity and Capacity

The method for determining landscape sensitivity and capacity is detailed in **Appendix 1**. This involves consideration of the two main elements discussed in 2.4 above:

- 1) The sensitivity of the landscape fabric and character to turbine development, which includes landscape features, elements and characteristics and its visual sensitivity, including intervisibility and affected receptor types.
- 2) The value of the landscape as determined by stakeholders. This may include national or local recognition by landscape designation or cultural association, or value to communities of interest such as local residents or user groups.

Appendix 1 describes a breakdown of the physical and perceptual characteristics that contribute to landscape character, visual sensitivity and value. Each criterion is described and evaluated in terms of its sensitivity to wind energy development. An overall assessment of **high, medium** or **low** is derived from a composite of all the criteria. There is no consistent relative weighting of criteria as, in the case of each landscape type or area, different criteria are likely to be critical in determining the sensitivity assessment.

Following the above assessment, an overall professional judgement on capacity for developments of different types is made on the basis of sensitivity and value. Landscape capacity is rated according to the degree to which wind turbines may be accommodated without significant and/or adverse effects on sensitivity and value. The descriptive criteria below for **high, medium** and **low** describe the main thresholds on a continuum between no capacity and high capacity:

Low Capacity: A landscape that is both sensitive to wind turbine development and has a high value, where only a slight level of change can be accommodated without significantly affecting any of the key defining criteria

Medium Capacity: A landscape that has some sensitivity to wind turbine development and has some aspects of value, where a moderate level of change can be accommodated which may significantly affect some of the defining criteria

High Capacity: A landscape that has low sensitivity to wind turbine development and has low value, and can accommodate change that significantly affects most of the key defining criteria

Broadly speaking there is an inverse relationship between landscape sensitivity/value and capacity. However, this is not a simple relationship that can be expressed in a matrix: a balance of judgement is made in each case as landscape value may be a more important factor than sensitivity in some cases; and vice versa in others.

Turbine height and the size and layout of types of turbine development may relate better to some LCTs than others and the limited geographical extent of LCAs within some otherwise suitable LCTs may limit capacity for development.

2.6 Defining Landscape Change and Cumulative Capacity

An understanding of cumulative impacts and change in the landscape is key to determining acceptable levels of development and whether or not areas have reached cumulative capacity. This is discussed below and in further detail in **Appendix 1**.

2.6.1 Cumulative Change

Appendix 2, section 2.7 discusses in detail the issues involved in determining cumulative change thresholds and the acceptability of these changes. Limited guidance is provided in the Northern Ireland SPG in relation to cumulative change, however guidance in Scotland published by Scottish Natural Heritage (SNH) is well developed with several publications advising on best practice in the siting, design and assessment of wind energy developments, including their cumulative effects. SNH guidance on the assessment of cumulative impacts⁸ is referred to in the SPG, while SNH windfarm siting and design guidance^{9,10} is also relevant. Key factors that affect the perception of cumulative change include:

- the distance between individual windfarms and/or turbines;
- the distance over which they are visible;
- the overall character of the landscape and its sensitivity to windfarms;
- the siting and design of the windfarms and/or turbines themselves (particularly turbine height and windfarm size); and
- the way in which the landscape is experienced.

In determining an acceptable level of development, it is necessary to clearly define what differing levels of development actually entail. The methodology therefore sets out, in Table 2.2 below, defined levels of change to the landscape and visual environment that might occur

⁸ SNH (2012) *Assessing the cumulative impact of onshore wind energy developments: March 2012*

⁹ SNH (2017) *Siting and Designing Windfarms in the Landscape v.3*

¹⁰ SNH (2015) *Spatial Planning for Onshore Wind Turbines – natural heritage considerations*

or be experienced depending on the size, number and location of turbines to be built within an area.

The descriptions in Table 2.2 set out a gradated landscape typology that defines increasing levels of cumulative landscape and visual impact of turbines by describing their effect on landscape character and the experience of those living in or travelling through the landscape. These descriptions are used without prejudice as a tool to illustrate cumulative landscape change to all parties involved in planning wind energy development.

Further generic illustration of the concept is provided in Section 4 of SNH's 2017 siting and design guidance (paragraphs 4.5 to 4.6) and illustrative sketches, reproduced in Figure 2.2 below Table 2.2). The extent of current and potential future wind turbine landscape types in Fermanagh and Omagh is described in detail in chapter 6 and illustrated in Figures 6.2 and 6.3.

2.6.2 Determining Acceptable Levels of Change

SNH 2015 *Spatial Planning for Onshore Wind Turbines*¹¹ provides spatial planning guidance aligned to planning policy in Scotland, however the principles underpinning the guidance are considered relevant to the Northern Ireland situation and are adopted for the purposes of this assessment in the absence of similar guidance specific to Northern Ireland. The SNH guidance identifies three broad levels of cumulative change in the landscape that may be set by Local Authorities depending on landscape sensitivity and value and local policy objectives:

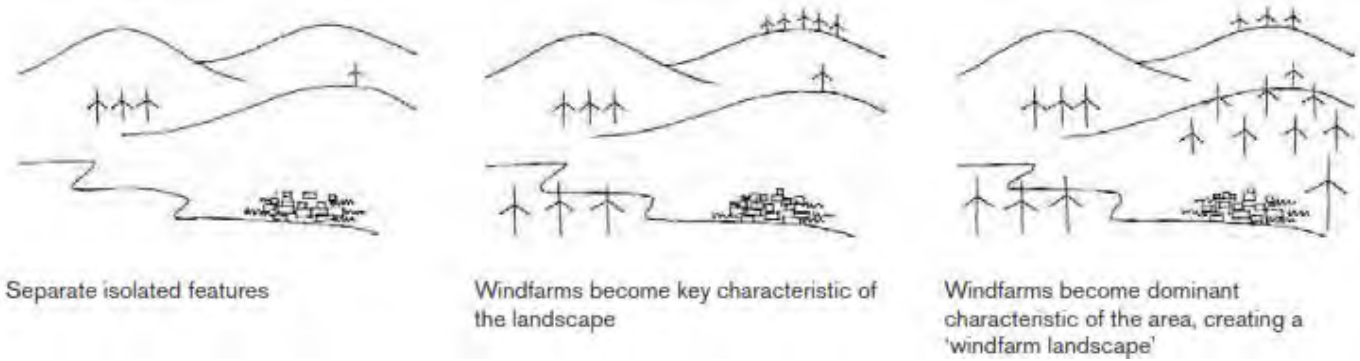
- **Landscape Protection:** Maintain existing landscape character.
- **Landscape Accommodation:** Accept a degree of change providing this does not fundamentally alter key landscape characteristics and visual resources.
- **Landscape Change:** Accept large amounts of change that may fundamentally alter key landscape characteristics and visual resources.

The descriptions in Table 2.2 provide a basis on which to understand and determine levels of change. However, it is the collective decision of stakeholders including Local Authorities and their population that ultimately determines the levels of cumulative landscape change, that are acceptable across their area, and thereby the capacity.

Table 2.2: Description of Levels of Cumulative Wind Turbine Development

Landscape Type	Landscape Character	Visual Experience
Landscape with no Wind Turbines	A landscape type or area in which no, or a minimal number/size of wind turbines is present, or clearly visible from neighbouring areas.	There would be no, or negligible, effects on visual receptors.
Landscape with Occasional Wind Turbines	A landscape type or area in which windfarms or wind turbines are located and/or are close to and visible. Turbines are not of such a size, number, extent or contrast in character that they become one of the defining characteristics of the landscape's character.	Visual receptors would experience very occasional close-quarters views of a windfarm or turbines and more frequent background views of windfarms or turbines. Some of the turbines would not be perceived as being located in the landscape character type or area. No overall perception of wind turbines being a defining feature of the landscape.
Landscape with Wind Turbines	A landscape type or area in which a windfarm, windfarms or wind turbines are located and/or visible to such an extent that they become one of the defining characteristics of the landscape character. However, they are clearly separated and not the single most dominant characteristic of the landscape.	Visual receptors would experience frequent views of windfarms or wind turbines as foreground, mid-ground or background features, affecting their perception of the landscape character. However, there would be sufficient separation between windfarms and turbines and sufficient areas from which wind turbines are not visible such that they would not be seen as dominating the landscape over all other landscape features.
Wind Turbine Landscape	A landscape type or area in which windfarms or wind turbines are extensive, frequent and nearly always visible. They become the dominant, defining characteristic of the landscape. Nevertheless, there is a clearly defined separation between the principal developments.	Visual receptors would experience views of windfarms and wind turbines as foreground, mid-ground and background features, to the extent that they are seen as the most dominant aspect of landscape character. Few areas would be free of views of wind turbines, although the principal groupings would appear separated.
Windfarm	Landscape fully developed as a windfarm with no clear separation between groups of turbines. Few if any areas where turbines not visible.	Visual receptors would always be close to and nearly always in full view of wind turbines, with no clear separation between groups of turbines.

Figure 2.2: Illustrative Sketches of Wind Turbine Development (from SNH)



¹¹ SNH (2015) *Spatial Planning for Onshore Wind Turbines – natural heritage considerations*, Annex 1

2.7 How to Use the Assessment Findings and Guidance

The study assessment, findings and guidance are presented in the following chapters which also refer to figures, tables and appendices:

Chapter 3: Landscape Baseline

This chapter defines and describes the study area, including the geographical extent and landscape character of Fermanagh and Omagh and its surroundings. It also reviews other relevant information including landscape-related constraints, such as natural heritage and cultural heritage designations.

The assessment of landscape capacity and cumulative landscape change is based on the 26 Landscape Character Areas (LCAs) of NILCA 2000 within Fermanagh and Omagh, organised according to Regional Character Areas (ReCAs). The information in Chapter 3 informs the assessment of the sensitivity and value of each landscape character area detailed in Chapter 6.

Chapter 4: Visual Baseline

This chapter defines the visual baseline by identification of the different types of visual receptors in the study areas, their locations, and areas where wind energy development is likely to have greater or lesser visibility. The information in Chapter 4 informs the assessment of landscape sensitivity as detailed in Chapter 6.

Chapter 5: Wind Turbines in the Study Area

This chapter describes the operating, consented and proposed wind turbine developments in Fermanagh and Omagh and the wider study area as of **November 2017**. There is a detailed breakdown of numbers and sizes of turbines and windfarms within the Local Authority and the surrounding study area provided in **Appendix 3**. Locations of turbines are illustrated in Figures 5.1a and b. There is also an analysis of turbine size ranges and distribution in relation to landscape character provided in Appendix 3.

Chapter 6: Assessment of Landscape Capacity and Cumulative Change

This chapter analyses and assesses the information in the previous chapters to determine the landscape and visual impacts of, and capacity for, wind energy development across Fermanagh and Omagh. The assessment is summarised in **Table 6.1** and **Figures 6.1 to 6.3**. The capacity assessment is informed by the detailed assessment of landscape sensitivity and value in **Appendix 4**. A desk and field based assessment was carried out. The assessment informs the subsequent spatial strategy and includes guidance on turbine size and distribution. Further details of how to use Table 6.1 together with the figures are given at the start of Chapter 6.

This assessment is carried out for LCAs within each of the 7 main regional landscape areas of Fermanagh and Omagh, including each of their component LCAs. The capacity assessment and current level of development for the LCAs in each regional area is combined to come to an overall assessment of capacity and cumulative effects for the area.

Finally, the regional assessments are combined to make an overall assessment for the whole Local Authority area. Further spatial guidance regarding areas with restricted capacity and areas with capacity for further development are given at the end of Chapter 6.

2.8 Detailed Guidance

Chapter 6 also gives guidance on turbine sizes, cluster sizes and separation between groups of turbines for each landscape type and/or area that is judged to limit cumulative development to the proposed acceptable level. This relates to turbines of 15m and taller. As highlighted in 2.3.2, guidance on small turbines below 15m to blade tip applies at a local level and is generic.

Appendix 2 of this report contains detailed discussion of how turbine size, group size and group separation affects perceptions of wind energy and landscape character. Further guidance is given in SNH's siting and designing guidance¹² which provides best practice advice on the matter, equally applicable to Northern Ireland. Chapter 6 also briefly outlines the main considerations in developing the specific guidance.

2.9 Potential Opportunities and Constraints

The main spatial findings of the detailed assessment are summarised on a map in **Figure 6.4**. This shows the distribution of the following areas:

- Areas with the highest underlying landscape capacity
- Areas with some underlying landscape capacity
- Areas with little or no underlying landscape capacity
- Areas of significant cumulative development (which may overlap with parts of some or all of the above areas)

Finally, it is emphasised that this assessment is focused on landscape and visual issues. Areas which have been identified as suitable on this basis may be restricted by other unrelated factors such as impacts on wildlife, impacts on residential amenity, tourism and recreation, aviation restrictions or effects on the water environment. These issues are not the subject of this assessment.

¹² SNH (2017) *Siting and Designing Windfarms in the Landscape v.3*

3.0 LANDSCAPE BASELINE

The following section defines and describes the study area, including the geographical extent and landscape character of Fermanagh and Omagh and its surroundings. It also reviews other relevant information including landscape-related designations, natural heritage and cultural heritage constraints. In the latter case it is the extent to which they may have a bearing on landscape character and value that is the primary consideration in this study.

3.1 Study Area

The study area for this assessment is shown in Figure 3.1. The Fermanagh and Omagh Local Authority area comprises most of the landscape of south western Northern Ireland, with Derry and Strabane to the north, and Mid Ulster to the east.

Its border with the Republic of Ireland is defined to the south/ south west by the hills of Cuilcagh and Slieve Rushen, and Loughs Macnean and Melvin. To the west the upland Pettigoe plateau runs into neighbouring Donegal. Drumlin farmland extends eastwards into Mid Ulster and Co. Monaghan, while the Sperrins provide a more defined physical boundary with Derry and Strabane to the north.

The study focuses on the Local Authority area of Fermanagh and Omagh for the purposes of determining landscape capacity. Nevertheless, there are a number of existing, consented and proposed wind energy schemes in neighbouring Local Authority areas and in the neighbouring Republic of Ireland. Some consideration has been given to these, due to the extensive visual influence exerted by most large wind turbines. The study area therefore includes a 15km buffer around the Local Authority boundary.

3.2 Baseline Landscape Character Assessment

3.2.1 Landscape Context

Fermanagh and Omagh is an inland landscape, albeit at its closest no more than 7km from the west coast of Ireland. The total land area is approximately 3,000km², much of which is a lowland pastoral landscape, centred around the historical county towns of Omagh in Tyrone to the north and Enniskillen in Fermanagh to the south, the two largest settlements within the Local Authority area. However, there is great diversity in the landscape, from the wild upland landscapes of the Sperrins to the north, the scenic 'lakelands' of Fermanagh, and karst limestone uplands which are unique to Northern Ireland.

To the south west of the Local Authority area, bordering the Republic of Ireland, are the 'Fermanagh Cavelands', a landscape of distinctive sandstone and limestone uplands including important landscape features such as Cuilcagh Mountain, the Cliffs of Magho, dramatic escarpments and other karst features resulting from the underlying limestone geology. The landscape is sparsely settled and valued for its scenic qualities and recreational value, and includes the UNESCO Marble Arch Caves Geopark.

To the north east of the 'cavelands', Upper and Lower Lough Erne lie within shallow and expansive lowland Lough basins, set within drumlin farmland of the river Erne Valley extending in an arc from County Cavan to the south east and Donegal to the north west. Enniskillen occupies a commanding position between the two loughs. This low-lying landscape is juxtaposed with the dramatic features of the more upland landscape to the west, including the Cliffs of Magho, adding to its scenic value. The area is important for recreation and tourism.

To the north east towards Omagh are low-lying pastoral landscapes characterised to varying extent by rolling drumlins. Enclosed pastures, small woodlands and hedgerows often providing a strong sense of enclosure. This landscape is bounded by the extensive undulating sandstone plateaus of Brougher Mountain to the south, and the hills of West Tyrone to the north which extend into Donegal. The Brougher Mountain uplands separate the farmlands between Irvinestown and Omagh from the lowlands of the Clogher Valley to the south east, with the lowlands of Rosslea and Newtownbutler further separated to the south of the Local Authority area by the uplands of Slieve Beagh. These rolling upland landscapes are typically no more than 300m AOD, in places forested and sparsely populated, forming long, low horizons when seen from lowland areas.

To the north of Omagh the landscape changes dramatically, with the lowland farmland and sandstone plateaus giving way to more pronounced hill summits including Bessy Bell and Mullaghcarn which mark the gateway to the wilder and more dramatic upland landscape of the South Sperrins, comprising a series of ridges separating lowland valleys aligned east to west, and extend northwards into neighbouring Strabane. Much of the landscape north of Omagh is designated as an Area of Outstanding Natural Beauty (AONB) in recognition of its nationally important scenic value.

3.2.2 Landscape Character

The Northern Ireland Regional Landscape Character Assessment (2016), published by the Northern Ireland Environment Agency (NIEA) defines the landscape of Northern Ireland in 26 Regional Character Areas (ReCAs). Seven ReCAs are located within Fermanagh and Omagh.

1. Fermanagh Cavelands
2. Lough Erne Lakeland
3. Clogher Valley and Slieve Beagh
4. Omagh Basin
5. West Tyrone Hills and Valleys
7. Sperrins
12. Carrickmore Plateau and Pomeroy Hills

At a smaller scale, the Northern Ireland Landscape Character Assessment (NILCA 2000) identifies 130 landscape character areas (LCAs) in Northern Ireland, 26 of which are wholly

or in part within the Fermanagh and Omagh Local Authority area. The character area boundaries at the regional and local level do not correspond, and in this study LCAs are included with the most applicable ReCA based on geographical coverage and landscape characteristics. Table 3.1 describes the geographical relationship between ReCAs and LCAs assumed for the purpose of this assessment. The published character assessments do not categorise landscapes into character types, therefore, in the right-hand column of Table 3.1, this assessment provides broad categorisation to group LCAs with common characteristics. Landscape character areas are shown on Figures 3.3 and 3.4.

Table 3.1. Landscape Character Areas in Fermanagh and Omagh (based on NILCA 2000 and NIRCA 2016)

Regional Character Areas	Landscape Character Areas (LCA)	Landscape Character Types (LCT)
FERMANANGH CAVELANDS		
	1. Garrison Lowlands	Lowland Farmland
	4. The Lough Navar and Ballintempo Uplands	Limestone Uplands
	6. The Knockmore Scarpland	
	9. Cuilcagh and Marlbank	
	5. The Lough Macnean Valley	Lough Basin
LOUGH ERNE LAKE LAND		
	2. Lower Lough Erne	Lough Basin
	11. Upper Lough Erne	
	13. Enniskillen	
	7. The Sillees Valley	Lowland Farmland
	8. The Arney Lowlands	
	15. Irvinestown Farmland	
	3. Croagh and Garvary River	Lowland Hills
	10. Slieve Russel, Derrylin and Kinawley	Limestone Uplands
CLOGHER VALLEY AND SLIEVE BEAGH		
	12. Newtownbutler and Rosslea Lowlands	Lowland Farmland
	17. Clogher Valley Lowlands	
	18. Slieve Beagh	Sandstone Ridges and Plateau
OMAGH BASIN		
	16. Brougher Mountain	Sandstone Ridges and Plateau
	22. Omagh Farmland	Lowland Farmland
	23. Camowen Valley	Lowland River Valley
WEST TYRONE HILLS AND VALLEYS		
	14. Lough Braden	Sandstone Ridges and Plateau
	21. Fairly Water Valley	Lowland River Valley

Regional Character Areas	Landscape Character Areas (LCA)	Landscape Character Types (LCT)
SPERRINS		
	24. South Sperrin	Sperrin Upland Hills
	26 Bessy Bell and Gortin	Sperrin Upland Hills
CARRICKMORE PLATEAU AND POMEROY HILLS		
	25. Beaghmore Moors and Marsh	Lowland Hills
	43 Carrickmore Hills	
	44. Slievemore	Sandstones Ridges and Plateau

3.3 Landscape Designations

Landscape designations are an indication of landscape value as determined by society. Landscape designations form part of the baseline for both the assessment of landscape capacity, and the preparation of a spatial framework. Landscape designations within the study area are noted below, and are shown in Figure 3.5, in relation to the landscape character areas.

3.3.1 National Designations

Within Fermanagh and Omagh much of the landscape north of Omagh is designated as part of the Sperrins Area of Outstanding Natural Beauty (AONB), one of only eight such designations in Northern Ireland, and therefore of national significance.

3.3.2 Local Landscape Designations

There are four areas within Fermanagh and Omagh identified in the NILCA 2000 as **Areas of Scenic Quality (ASQ)** in recognition of their local or regionally important scenic qualities. These areas are shown on Figure 3.5 and are listed below:

1. Lough Melvin
2. Derrin Mountain
3. Colebrooke Estate
4. Bessy Bell

Special Countryside Areas (SCAs) are regarded as exceptional landscapes such as stretches of the coast or lough shores and certain views or vistas. The quality of the landscape and amenity value is such that development should only be permitted in

exceptional circumstances. The Islands of Lough Erne, Lough Macnean and Lough Melvin are SCA as identified in the 2007 Fermanagh Area Plan¹³.

3.3.3 Registered Parks, Gardens and Demesnes

There are 20 parks and gardens on the Register of Parks, Gardens and Demesnes within Fermanagh and Omagh and while registered sites are not protected by statute they are a material consideration in planning decisions. Such sites are included on the register in recognition of their historic, horticultural, architectural and archaeological importance, and can make a considerable contribution to landscape character. Registered sites are shown on Figure 3.6.

3.4 Other Designations

There are a number of designations that, whilst not solely landscape related, clearly indicate landscape value and inform the assessment process. These are shown in Figures 3.5 & 3.6. Many of these areas are likely to be significant constraints in themselves, but are not part of the landscape capacity assessment. Nevertheless, the most extensive and sensitive areas are highlighted in the detailed analysis. This is not a systematic exercise and is undertaken only order to inform users of the guidance that, where there is landscape capacity based on landscape criteria, other constraints may apply.

3.4.1 Local Landscape Policy Areas

Many settlements within the Local Authority areas include Local Landscape Policy Areas (LLPA) (Figure 3.5). Such areas are those identified to be of the greatest amenity value and significance within or adjoining settlements, and therefore worthy of protection against undesirable development.

3.4.2 Country Park/ Forest Parks

There are two Country/ Forest Parks within Fermanagh and Omagh; the Gortin Glen Forest Park to the north of Omagh in the Sperrins foothills, and Castle Archdale Country Park on the eastern shore of Lower Lough Erne. Gortin Glen Forest Park provides opportunities for walking and scenic drives within coniferous woodland. Outstanding views are available from a number of points within the park. Castle Archdale Country Park is a former estate situated in a wooded lough side location with opportunities for walking, boating, cycling, wildlife appreciation and the enjoyment of scenic views to Lough Erne.

3.4.3 Historic and Cultural Designations

The Northern Ireland Sites and Monuments Record (NISMR) holds details of sites of cultural heritage interest, the most important of which are Scheduled and/ or under State Care. Such sites can be of landscape significance in their own right and may contribute to the character and value of a landscape. Furthermore, effects on their setting can be a consideration for neighbouring development proposals. Designations related to cultural heritage are shown of Figure 3.6b.

Conservation Areas are primarily an urban designation. Nevertheless, the appearance of a settlement can be a key feature contributing to the surrounding rural landscape and equally the setting of a Conservation Area can be affected by developments in the surrounding countryside. Only the settlements of Omagh, Enniskillen and Lisnaskea have Conservation Areas.

Listed Buildings feature throughout the urban and rural areas, and are scattered throughout the more lowland landscape area, concentrated in centres of population. Listed buildings contribute to landscape character and value and effects on their setting is a consideration for neighbouring development proposals.

Areas of Significant Archaeological Interest (ASAI) are non-statutory designations which identify distinctive areas of the historic landscape in Northern Ireland.

3.4.4 Nature Conservation Designations

Areas designated for their nature conservation interest and importance include SPAs, SACs, RAMSAR Sites, ASSIs and National Nature Reserves (NNRs). All are national or international designations. Whilst these constraints are primarily related to nature conservation interests, such designated areas often contribute to the character and value of a landscape through their relatively undisturbed natural features and potential visitor interest.

Such designations are found throughout the Local Authority area, including concentrations of designations around Upper Lough Erne, the limestone karst landscape, blanket bogs and heath of Mullaghcarra to the north, the Owenkillew River SAC, and the SPA/ SAC/ RAMSAR sites of the uplands around Slieve Beagh.

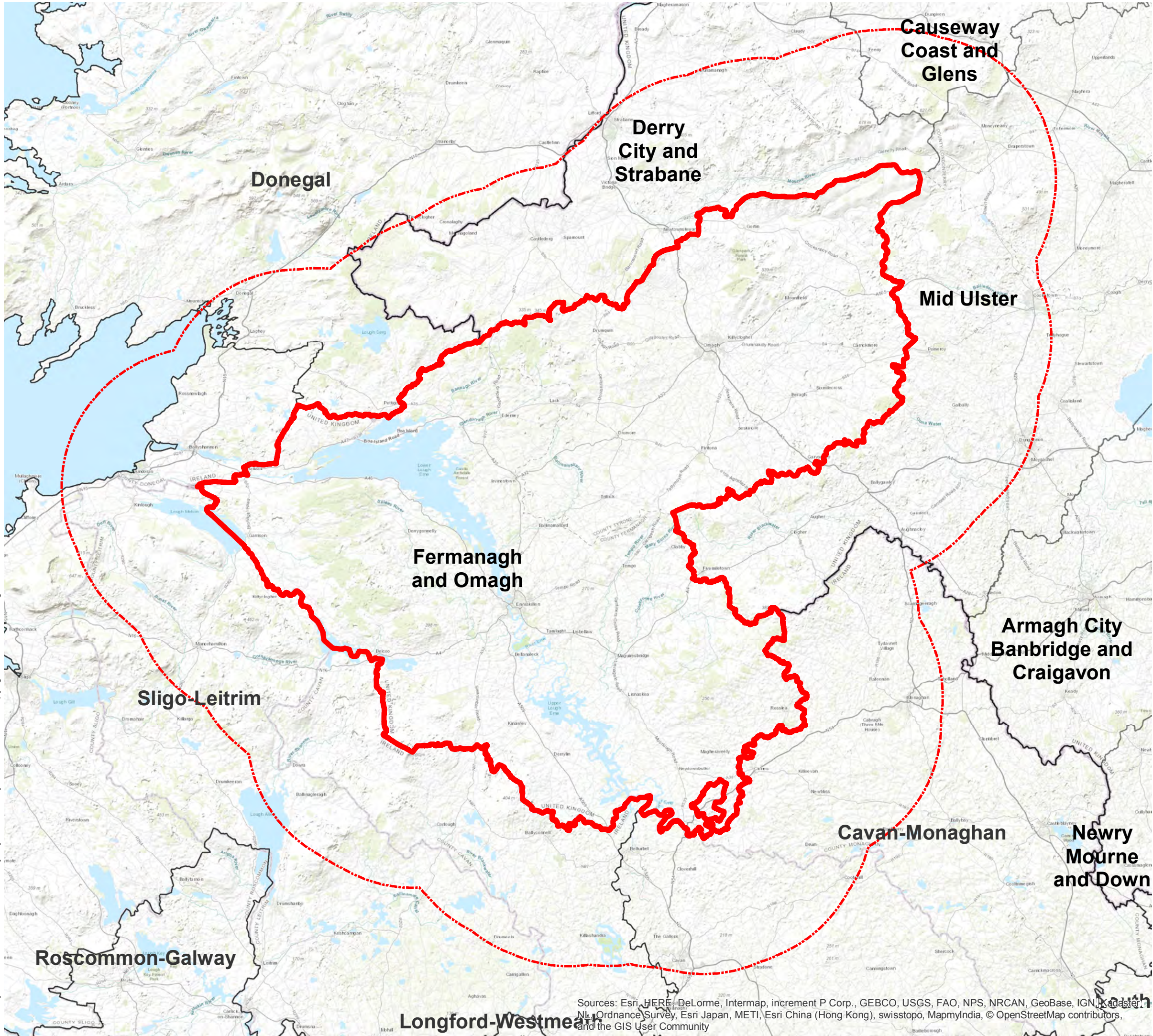
Key natural heritage designations are shown on Figure 3.6a.

3.5 Marble Arch Caves UNESCO Global Geopark

The Marble Arch Caves UNESCO Global Geopark covers an extensive area to the south west of the Local Authority area and crosses into neighbouring County Cavan. The Geopark was established in 2001 in recognition of the importance of its geology, landscape, natural

¹³ Countryside Policy Areas (CPAs) of the 2007 Fermanagh Area Plan, covering the Fermanagh Islands, were replaced by Special Countryside Areas (SCAs) in the NI Department of the Environment (2010) PPS 21 *Sustainable Development in the Countryside*.

and cultural heritage interest. The park was awarded UNESCO status in 2015, becoming one of 119 Global Geoparks. The UNESCO designation aims to promote economic activity through sustainable tourism, and the area is promoted as one of the premier tourist destinations in north west Ireland. While the UNESCO designation is not protected by statute, it includes designated natural and cultural heritage sites of national importance, and is an indicator of a valued landscape occupying much of the south-western part of the Local Authority area.



Legend

- Local Authority Boundary
- Study Area 15km Buffer
- NI Local Government Districts
- Ireland Local Authority Boundaries

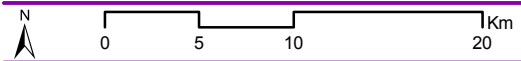


**Fermanagh & Omagh
Wind Energy Capacity Study**

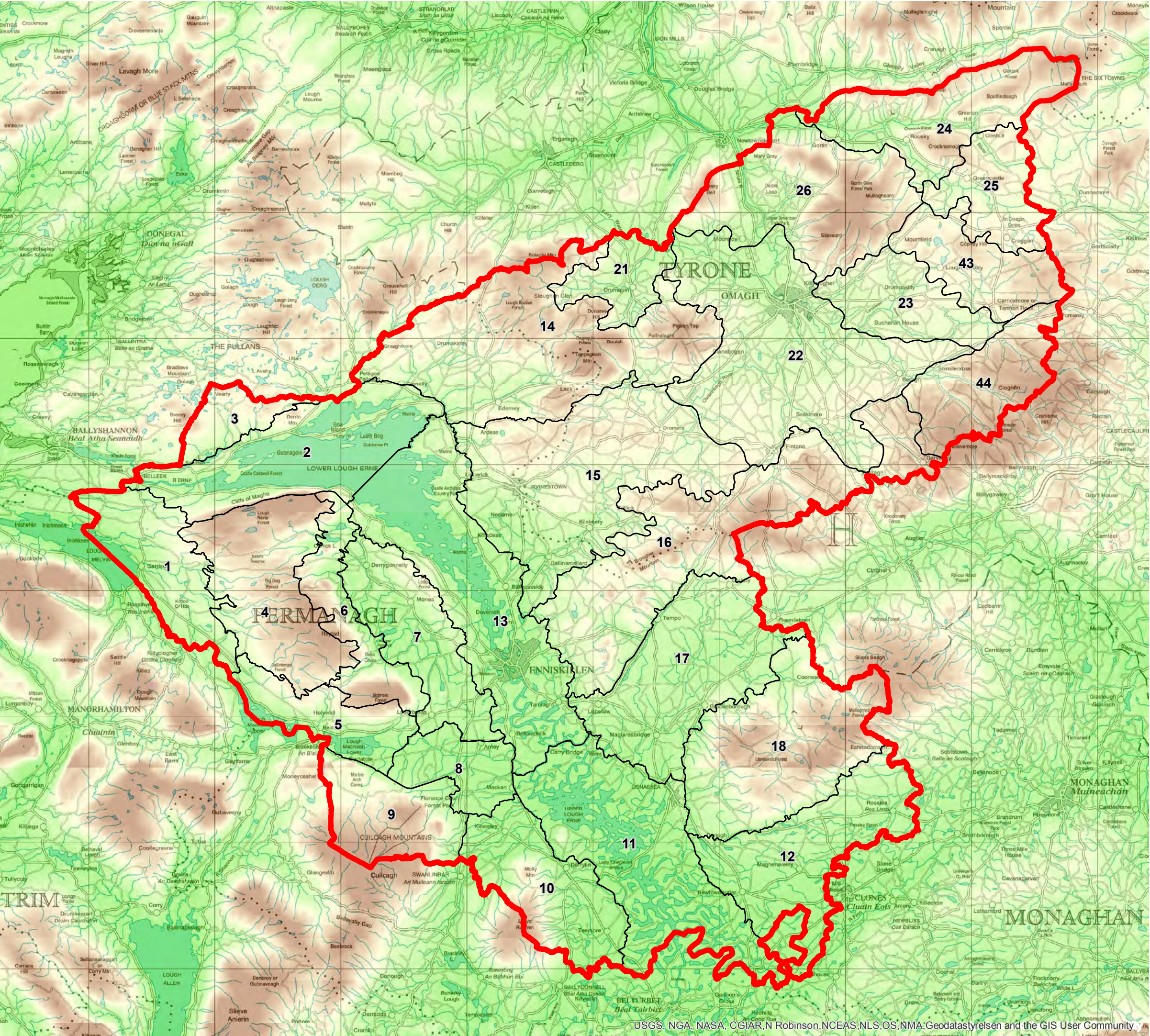
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**Figure 3.1
Study Area**



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen and the GIS User Community

Legend

- Local Authority Boundary
- Landscape Character Areas
- Height Value (AOD)
High : 571.79
Low : 40.9351

NILCA 2000

CODE	LCA NAME
1	The Garrison Lowlands
2	Lower Lough Erne
3	Croagh and Garvary River
4	The Lough Navar and Ballintempo Uplands
5	The Lough Macnean Valley
6	The Knockmore Scarpland
7	The Silles Valley
8	The Arney Lowlands
9	Culcagh and Marlbank
10	Slieve Russel, Derrylin and Kinawley
11	Upper Lough Erne
12	Newtownbutler and Rosslea Lowlands
13	Enniskillen
14	Lough Bradan
15	Irvinestown Farmland
16	Brouher Mountain
17	Clogher Valley Lowlands
18	Slieve Beagh
21	Fairy Water Valley
22	Omagh Farmland
23	Camowen Valley
24	South Sperrin
25	Beaghmore Moors and Marsh
26	Bessy Bell and Gortin
43	Carrickmore Hills
44	Slievemore

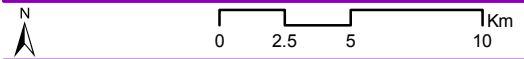


Fermanagh & Omagh
Wind Energy Capacity Study

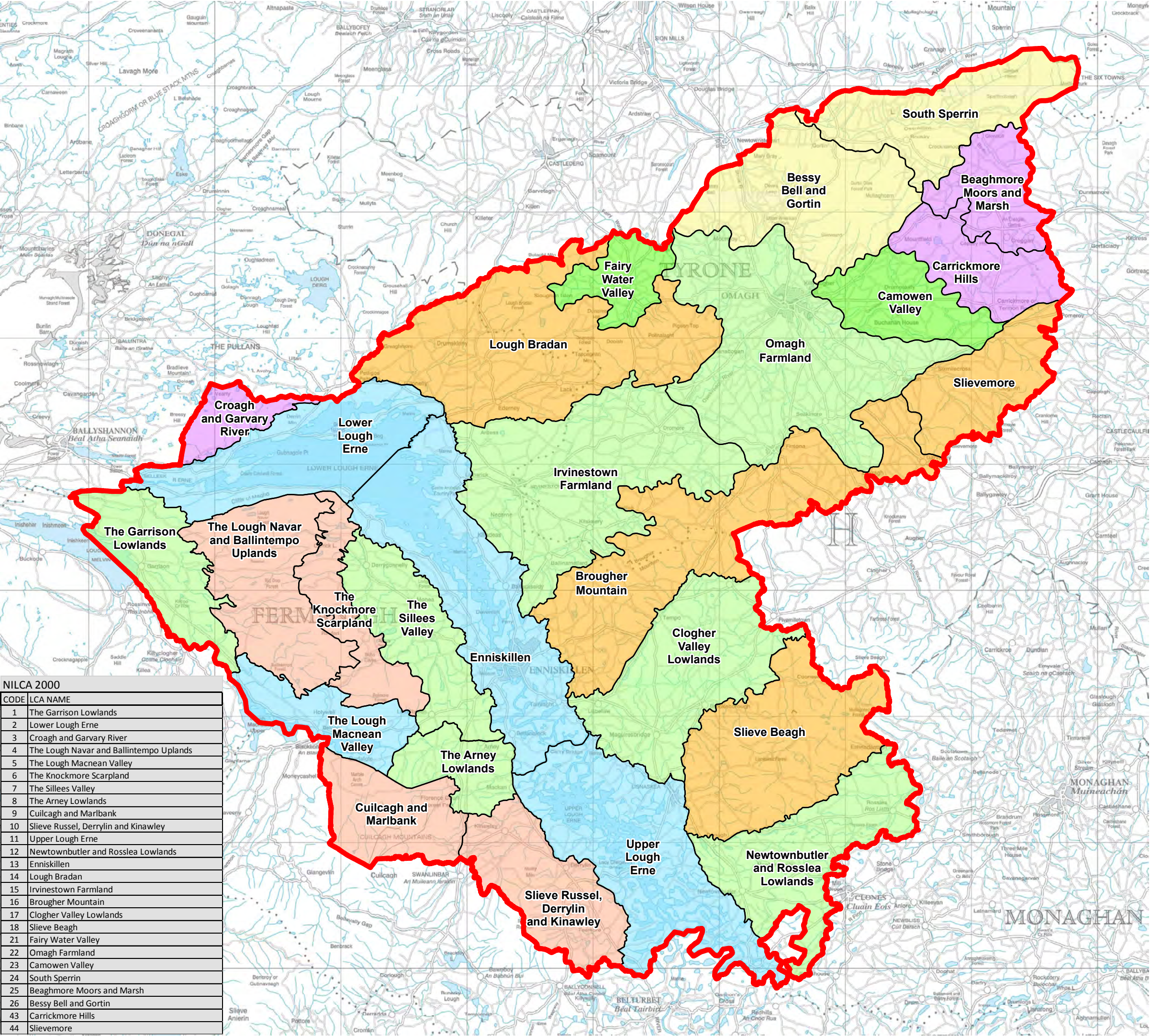
Dec 2017

50087 / GIS / Fig 3.2

Figure 3.2
Topography







NILCA 2000	
CODE	LCA NAME
1	The Garrison Lowlands
2	Lower Lough Erne
3	Croagh and Garvary River
4	The Lough Navar and Ballintempo Uplands
5	The Lough Macnean Valley
6	The Knockmore Scarpland
7	The Silles Valley
8	The Arney Lowlands
9	Cuilcagh and Marlbank
10	Slieve Russel, Derrylin and Kinawley
11	Upper Lough Erne
12	Newtownbutler and Rosslea Lowlands
13	Enniskillen
14	Lough Bradan
15	Irvinestown Farmland
16	Brougher Mountain
17	Clogher Valley Lowlands
18	Slieve Beagh
21	Fairy Water Valley
22	Omagh Farmland
23	Camowen Valley
24	South Sperrin
25	Beaghmore Moors and Marsh
26	Bessy Bell and Gortin
43	Carrickmore Hills
44	Slievemore

Local Authority Boundary

Landscape Character Areas

Landscape Character Types

Lowland Farmland

Limestone Uplands

Lough Basin

Lowland Hills

Sandstone Ridges & Plateau

Lowland River Valley

Sperrin Upland Hills

Fermanagh & Omagh District Council

Comhairle Ceantair Fhear Manach agus na hOmaí

Fermanagh & Omagh

Wind Energy Capacity Study

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50087 / GIS / Fig 3.4

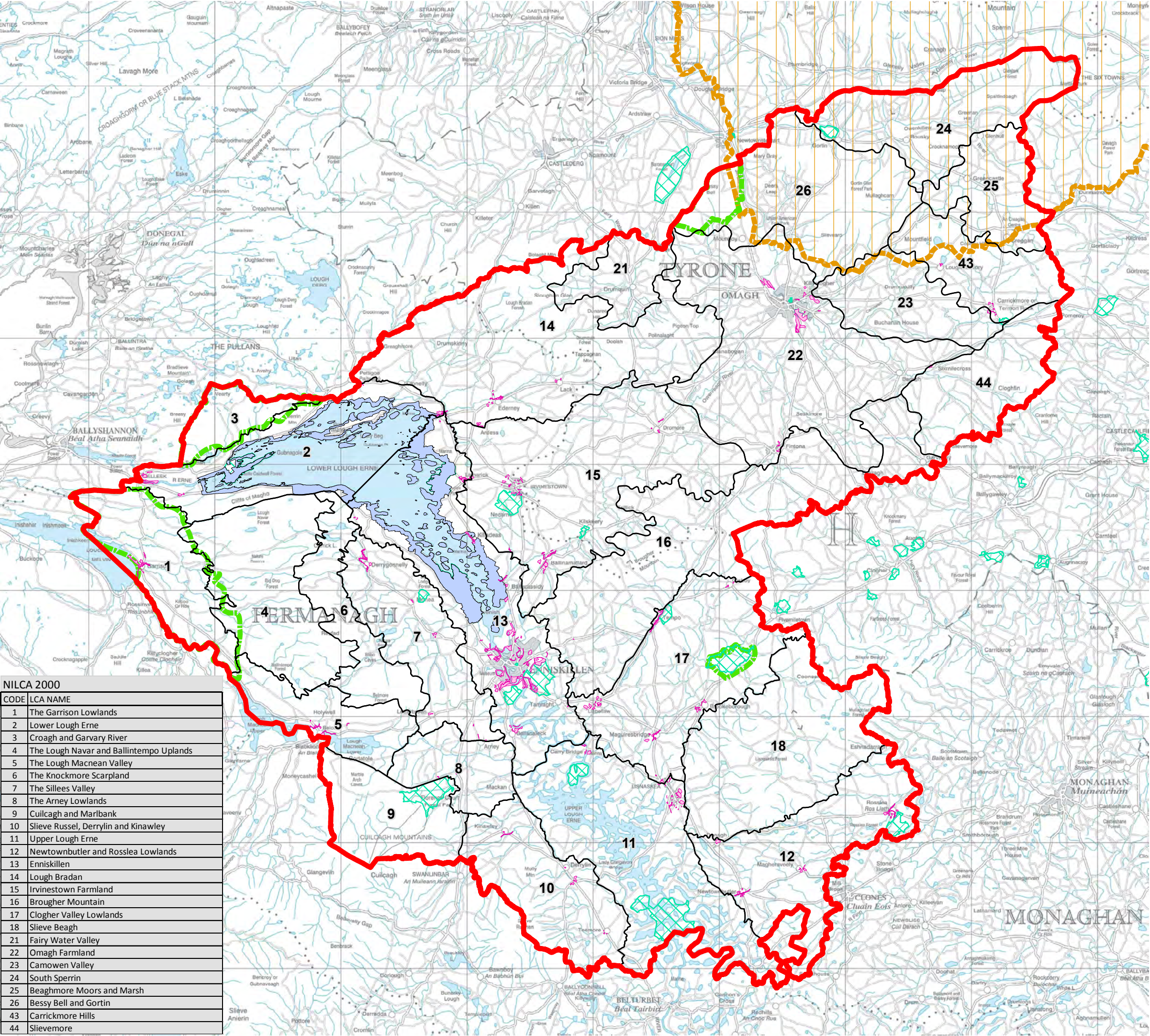
Figure 3.4

Landscape Character

N


02.5510

Km



NILCA 2000	
CODE	LCA NAME
1	The Garrison Lowlands
2	Lower Lough Erne
3	Croagh and Garvary River
4	The Lough Navar and Ballintempo Uplands
5	The Lough Macnean Valley
6	The Knockmore Scarpland
7	The Sillees Valley
8	The Arney Lowlands
9	Cuilcagh and Marlbank
10	Slieve Russel, Derrilyn and Kinawley
11	Upper Lough Erne
12	Newtownbutler and Rosslea Lowlands
13	Enniskillen
14	Lough Bradan
15	Irvinestown Farmland
16	Brougher Mountain
17	Clogher Valley Lowlands
18	Slieve Beagh
21	Fairy Water Valley
22	Omagh Farmland
23	Camowen Valley
24	South Sperrin
25	Beaghmore Moors and Marsh
26	Bessy Bell and Gortin
43	Carrickmore Hills
44	Slievemore

- Legend**
- Local Authority Boundary
 - Landscape Character Areas
 - Local Landscape Policy Areas
 - Lough Erne CPA
 - Registered Parks & Gardens
 - Areas of Scenic Quality
 - Areas of Outstanding Natural Beauty




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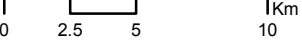
**Fermanagh & Omagh
Wind Energy Capacity Study**

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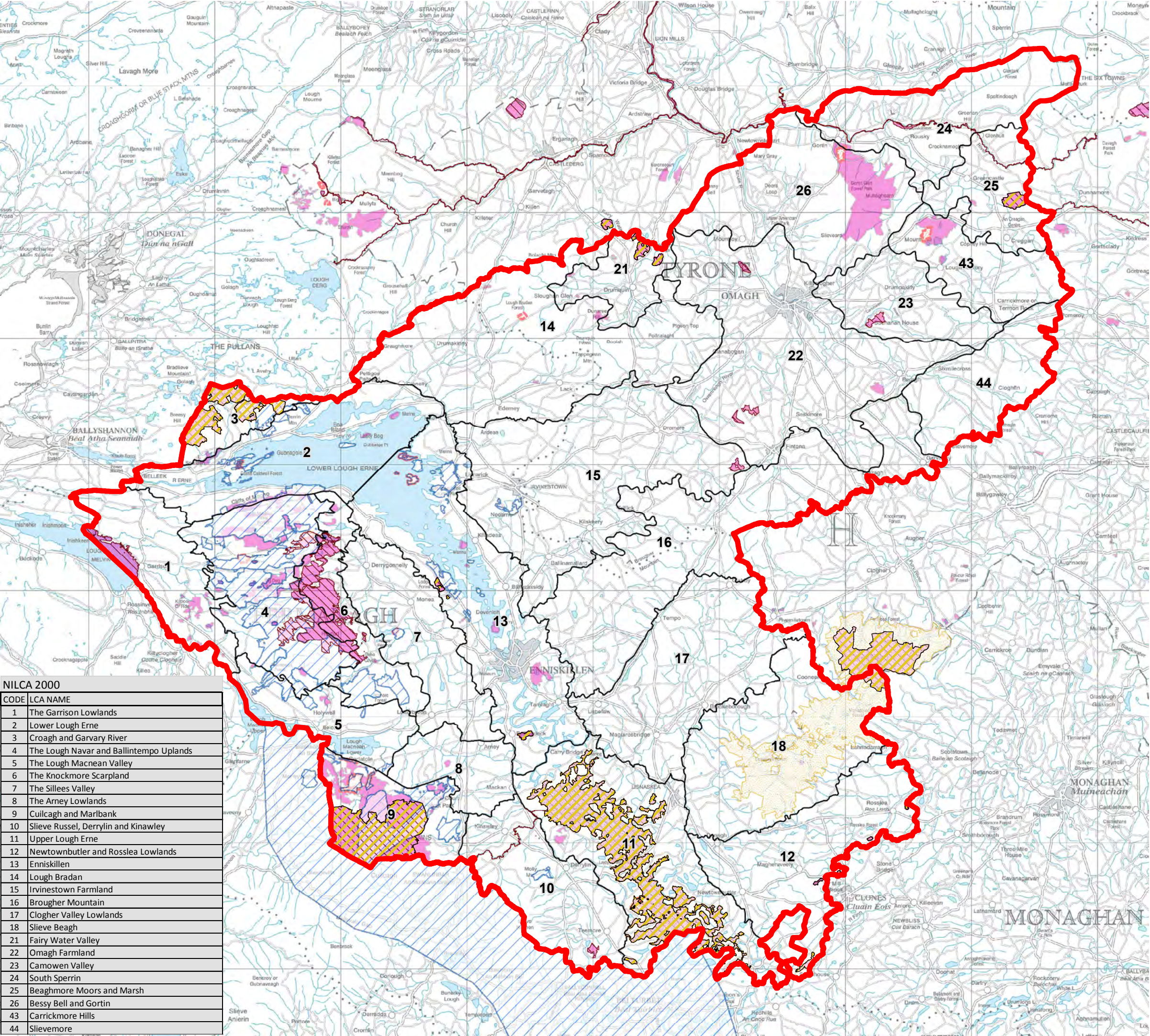
**Figure 3.5
Landscape
Designatations**

N





0 2.5 5 10 Km



NILCA 2000	
CODE	LCA NAME
1	The Garrison Lowlands
2	Lower Lough Erne
3	Croagh and Garvary River
4	The Lough Navar and Ballintempo Uplands
5	The Lough Macnean Valley
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7	The Silles Valley
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16	Brougher Mountain
17	Clogher Valley Lowlands
18	Slieve Beagh
21	Fairy Water Valley
22	Omagh Farmland
23	Camowen Valley
24	South Sperrin
25	Beaghmore Moors and Marsh
26	Bessy Bell and Gortin
43	Carrickmore Hills
44	Slievemore

Legend

Local Authority Boundary

Landscape Character Areas

Natural Heritage

Special Areas of Conservation

RAMSAR Sites

Special Protected Areas


Areas of Special Scientific Importance

Geopark & Expansion Area

Nature Reserves

National

Local



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Dec 2017

50087 / GIS / Fig 3.6a

Figure 3.6a

Natural Heritage

Designations

N

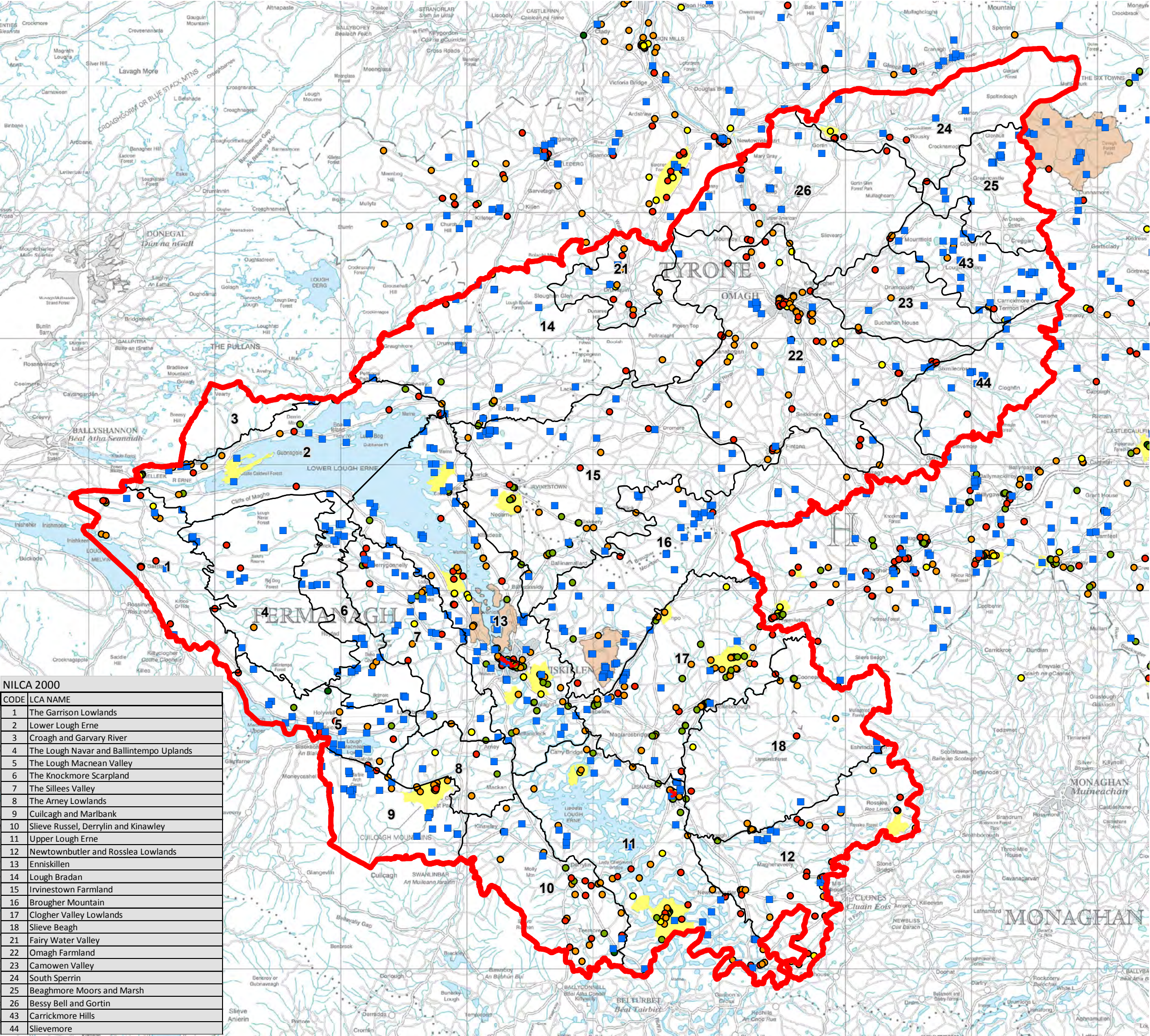
0

2.5


5

10

Km



NILCA 2000	
CODE	LCA NAME
1	The Garrison Lowlands
2	Lower Lough Erne
3	Croagh and Garvary River
4	The Lough Navar and Ballintempo Uplands
5	The Lough Macnean Valley
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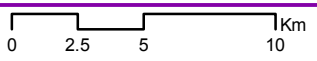
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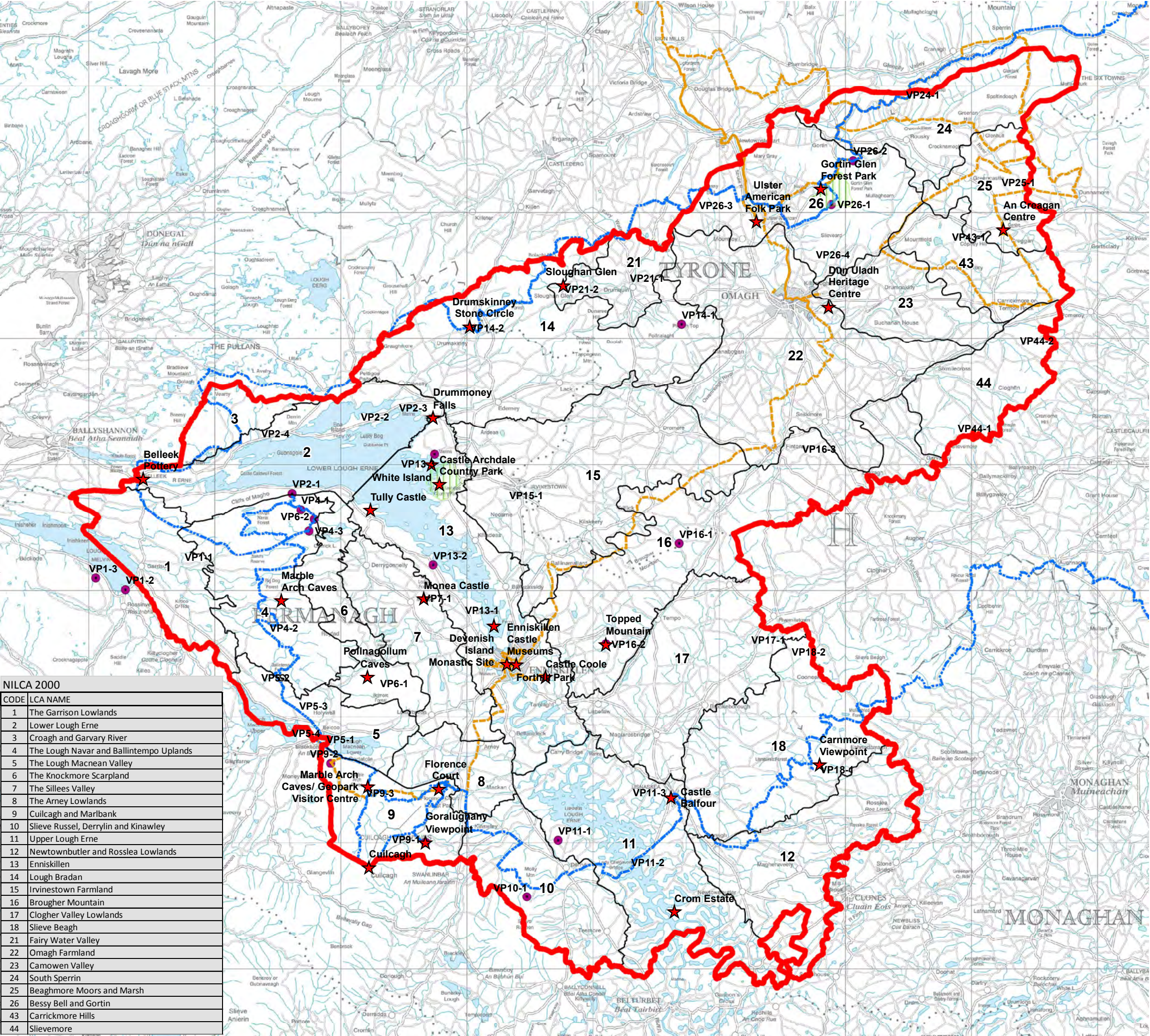
**Figure 3.6b
Cultural Heritage
Designations**

N





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Legend

- Local Authority Boundary
- Landscape Character Areas
- Points of Interest
- Country / Forest Park
- Ulster Way
- Cycle Paths
- Scenic Viewpoints

NILCA 2000	
CODE	LCA NAME
1	The Garrison Lowlands
2	Lower Lough Erne
3	Croagh and Garvay River
4	The Lough Navar and Ballintempo Uplands
5	The Lough Macnean Valley
6	The Knockmore Scarpland
7	The Sillees Valley
8	The Arney Lowlands
9	Cuilcagh and Marlbank
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43	Carrickmore Hills
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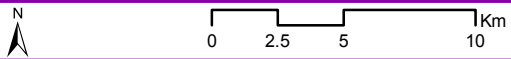
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Fermanagh & Omagh Wind Energy Capacity Study

Dec 2017

50087 / GIS / Fig 3.7

Figure 3.7
Other Locations of
Landscape Interest



4.0 VISUAL BASELINE

The following section describes the main visual receptors and where they would most likely experience views of wind energy development based on empirical observation from desk study and site visits. This provides an overview of potential issues relating to visual impact and those parts of the landscape most sensitive to views, with the subsequent capacity assessments providing more detailed analysis.

4.1 Visual Receptors

In a study of landscape capacity and cumulative landscape impacts, it is important to consider visibility, and the effects of cumulative impact on visual receptors. This not only feeds into the assessment of landscape sensitivity and capacity (see Section 2.2), but also builds up a picture of where visual receptors in and around Fermanagh and Omagh would perceive wind turbines within the landscape.

The types of potentially sensitive visual receptors within Fermanagh and Omagh are broadly categorised into three groups:

- Residents (dwellings and settlements)
- Travellers (principally road users)
- Visitors (visitor destinations, viewpoints, recreational footpaths and cycle routes)

Whilst there are workplace receptors in Fermanagh and Omagh, these have not been included, as people at work are considered to be lower sensitivity visual receptors.

Visibility from the following main locations/ receptor types are considered where identifying those parts of the landscape where wind energy development would be most visible, with visual receptors illustrated on Figure 4.1. Viewpoints used for undertaking the assessment are listed in Appendix 5.

- **Settlements and Properties:** representing concentrations of residential receptors;
- **Roads:** There is a dense network of roads and tracks throughout the Local Authority area and therefore views from A roads and scenic routes are considered.
- **Routes:** The Ulster Way is a promoted walking route through the region, and the National Cycle Network and local cycling routes pass through the Local Authority area.
- **Viewpoints:** Views from recognised viewpoints within the area as identified from OSNI 1:50,000 maps, locations identified by Fermanagh and Omagh District Council, and locations where more sensitive visual receptors may experience views to the landscape.

4.2 Visibility Analysis

4.2.1 Settlements

Settlements are found throughout the Local Authority Area but are concentrated in the farmland of the *Omagh Basin* and extending south west towards Lower Lough Erne,

including the two largest settlements of Omagh and Enniskillen. Settlements often have views to higher ground, where the *Sandstone Ridges and Plateau* landscapes form wide and low horizons to views. Views to the edges of these upland areas are therefore widely available from settlements, and hills and upland areas to the north/ north east such as Bessy Bell, Tappaghan Mountain, and Pollnalaght and the southern fringes of the Sperrins are prominent. The interior of these more upland areas to the north/ north east tend to be less visible from main settlement. Other upland areas are of more limited extent, such as the uplands of *LCA 16 Brougher Mountain*, and their interiors are less hidden, however their undulating terrain tend to screen parts of the landscape from view. The uplands of the karst landscape to the south west are in relatively close proximity to Enniskillen, however they do not feature greatly in views from the settlement. However, small settlements within this area to the south west of Fermanagh and Omagh have views to these uplands, e.g. from Belcoo, Belleek.

Figure 4.1 shows the distribution of residential properties throughout the Local Authority area. This provides an illustration of how population density varies throughout the area, and shows how landscapes with no resident population are very few. It can be concluded that there are few, if any, landscapes within the Local Authority area where there will be no nearby resident population to experience views to wind energy developments.

4.2.2 Roads

There is a dense network of roads within the Local Authority Area. Main transport routes tend to run through lowland areas, for example through the *Omagh Basin* between Omagh and Enniskillen (A32), along the Clogher Valley (A4), and alongside the loughs to the south of the area (A45, A47). Visibility from main routes tends to follow the pattern described from settlements, although in practice views from roads are typically restricted by frequent drumlins and the vegetation of adjacent field boundaries. Scenic routes pass through the Sperrins, often following minor roads, from which the interior of this upland area is in view, as are the more prominent peaks to the north including Bessy Bell, Pollnalaght and Mullaghcarn.

Minor roads are found throughout the Local Authority area, and with the exception of the more upland areas of the Sperrins and Cuilcagh to the north and south respectively, most larger scale areas potentially suited to wind farm development have minor roads passing through or nearby.

4.2.3 Routes

A small number of recreational walking routes and cycle routes pass through the Local Authority area. The Ulster Way passes through a number of the most scenic landscapes including those of the *Lough Navar and Ballintempo Uplands*, *Cuilcagh and Marlbank*, and further north the Sperrins. The route also traverses the less scenic upland fringes including *Slieve Beagh* to the south and *Lough Braden* to the north. Therefore, from the route there is visibility to much of the more upland landscape with potential capacity for wind energy developments.

National Cycle Network (NCN) Routes 91, 92 and 95 pass through the Local Authority area, the routes incorporating both more scenic locations to the south west and north east, as well as more commonplace lowland farmland. A local network of cycle paths is concentrated around the Sperrins to the north covering remoter and hillier terrain. With the exception of the Sperrins, it would be the periphery of upland areas that would be most visible from lowland cycle routes, for example from the farmland of the *Omagh Basin* or the Macnean Valley. Cycle routes through the Sperrins would provide internal visibility of this more upland landscape.

4.2.4 Viewpoints

The Local Authority area includes a number of scenic viewpoints identified on OSNI 1:50,000 mapping and these are concentrated in the south and north of the Local Authority area. To the south there are scenic viewpoints overlooking Lower Lough Erne, across the Lough Navar Forest, and from the Cuilcagh/ Marlbank area. To the north there are scenic viewpoints located within parts of the Sperrins and Gortin Glen. It follows that it is the more scenic landscapes to the north and south of the study areas which have greatest visibility from recognised viewpoints.

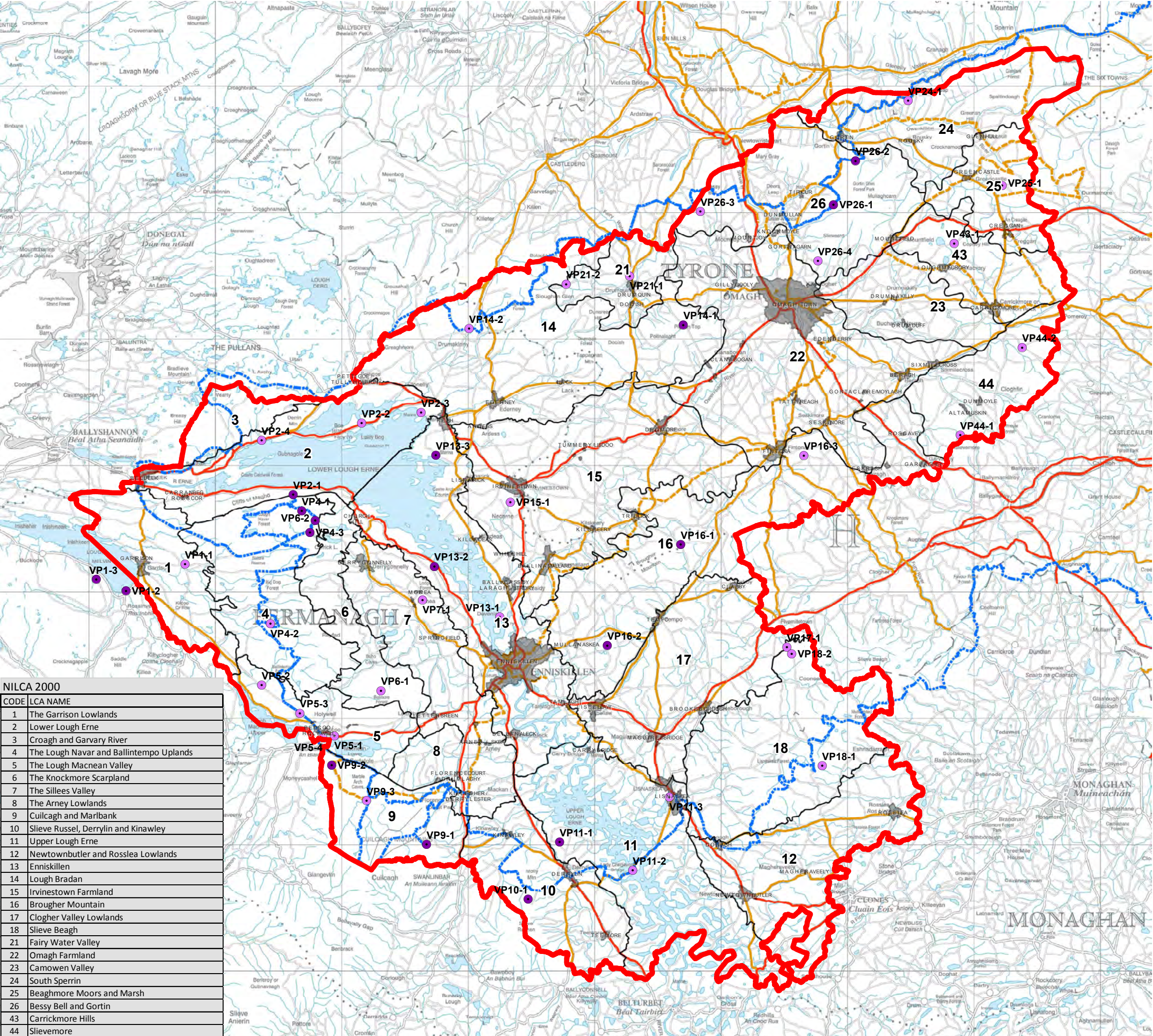
4.2.5 Analysis of Visibility

The Fermanagh and Omagh area is widely settled, but at a low density in the more upland locations. There are few areas not visible to sensitive visual receptors, be they residents or recreational receptors appreciating scenic landscapes. Based on desk study and observations from site visits, it is assessed that the following areas are likely to have the highest visual sensitivity, this having a bearing on their capacity for wind energy development.

- The north facing slopes of Cuilcagh which are visible from near Belcoo and around Upper Lough Macnean to sensitive visual receptors;
- The fringes of the *Lough Navar and Ballintempo Uplands* (LCA4) to the north and east, including the escarpment of the Cliffs of Magho and that immediately west of Lower Lough Erne, and the distinctive Belmore Mountain south of the LCA;
- The more easterly summits of LCA 14 *Lough Braden Forest* overlooking the lowland landscapes an Omagh to the east (i.e. Pollnalaght, Tappaghan Mountain);
- The southern fringes of the Sperrins, including Mullaghcarn and Bessy Bell; and
- The upland landscape of LCAs *Brougher Mountain* and *Slievemore*, visible from both the Clogher Valley and the Omagh Basin farmland.

The areas likely to be least visually sensitive include:

- The more internal parts of LCA 14 *Lough Braden Forest* which are set back from more lowland locations to the south and east; and
- Parts of the interior of LCA 18 *Slieve Beagh*.



Legend

- Local Authority Boundary
- Landscape Character Areas
- Settlements

Viewpoints

- Scenic Viewpoints
- Other Viewpoints

Routes

- Ulster Way
- National & Local Cycle Routes

Roads

- Class M
- Class A
- Class B

NILCA 2000	
CODE	LCA NAME
1	The Garrison Lowlands
2	Lower Lough Erne
3	Croagh and Garvary River
4	The Lough Navar and Ballintempo Uplands
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10	Slieve Russel, Derrynlin and Kinawley
11	Upper Lough Erne
12	Newtownbutler and Rosslea Lowlands
13	Enniskillen
14	Lough Bradan
15	Irvineestown Farmland
16	Brougher Mountain
17	Clogher Valley Lowlands
18	Slieve Beagh
21	Fairy Water Valley
22	Omagh Farmland
23	Camowen Valley
24	South Sperrin
25	Beaghmore Moors and Marsh
26	Bessy Bell and Gortin
43	Carrickmore Hills
44	Slievemore

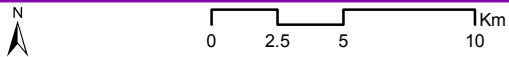


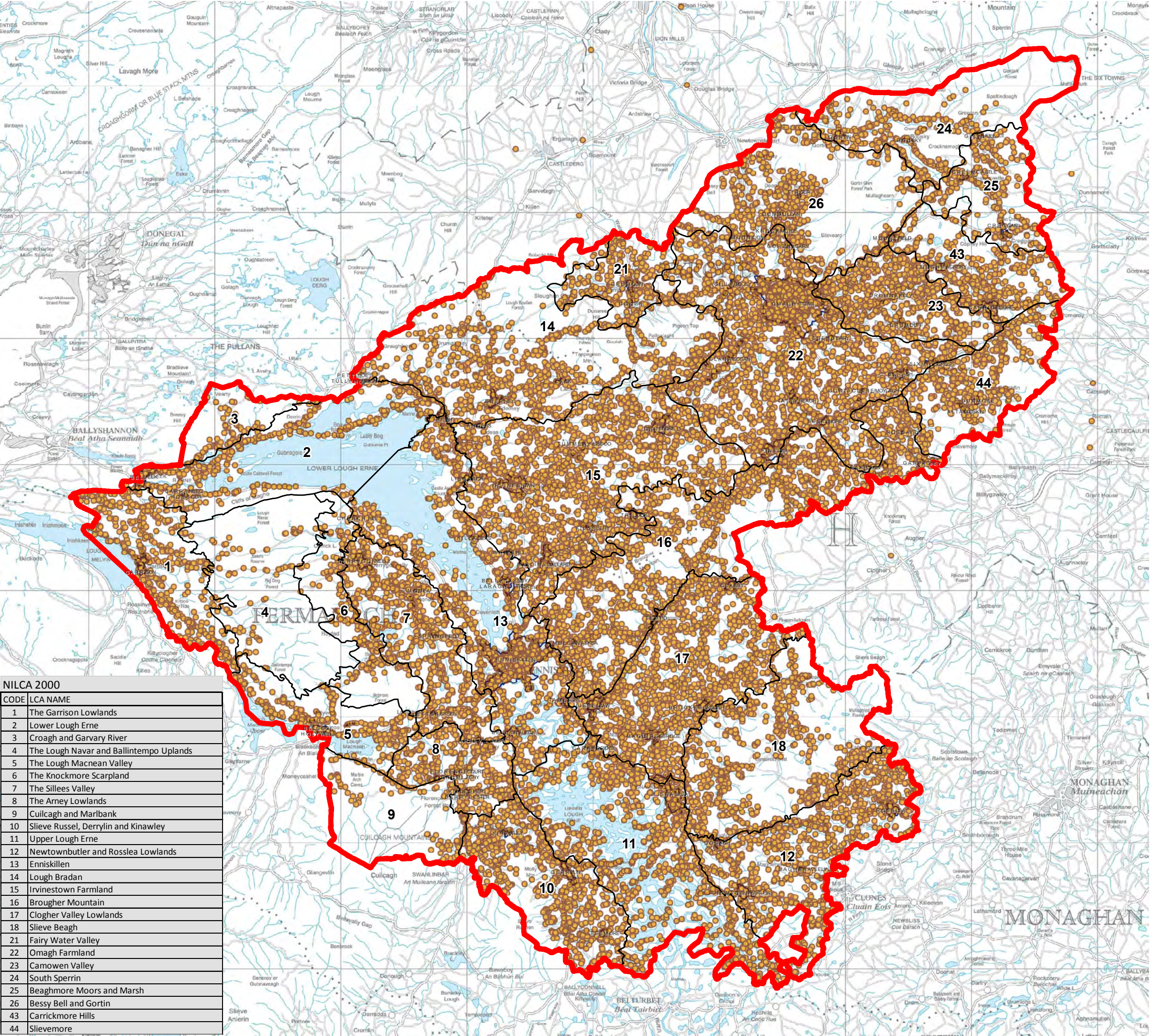
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50087 / GIS / Fig 4.1a

Figure 4.1a
Routes, Settlements
& Viewpoints





Legend

- Local Authority Boundary
- Landscape Character Areas
- Domestic Address Points



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Dec 2017

50087 / GIS / Fig 4.1b

Figure 4.1b Address Points

N

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Km

5.0 WIND TURBINES IN THE STUDY AREA

The following section describes the operating, consented and proposed wind turbine developments in Fermanagh and Omagh and the rest of the study area according to available databases as of **November 2017**. It should be noted that data provided on wind energy development for the Republic of Ireland is partial, and does not include all wind energy developments within the study area.

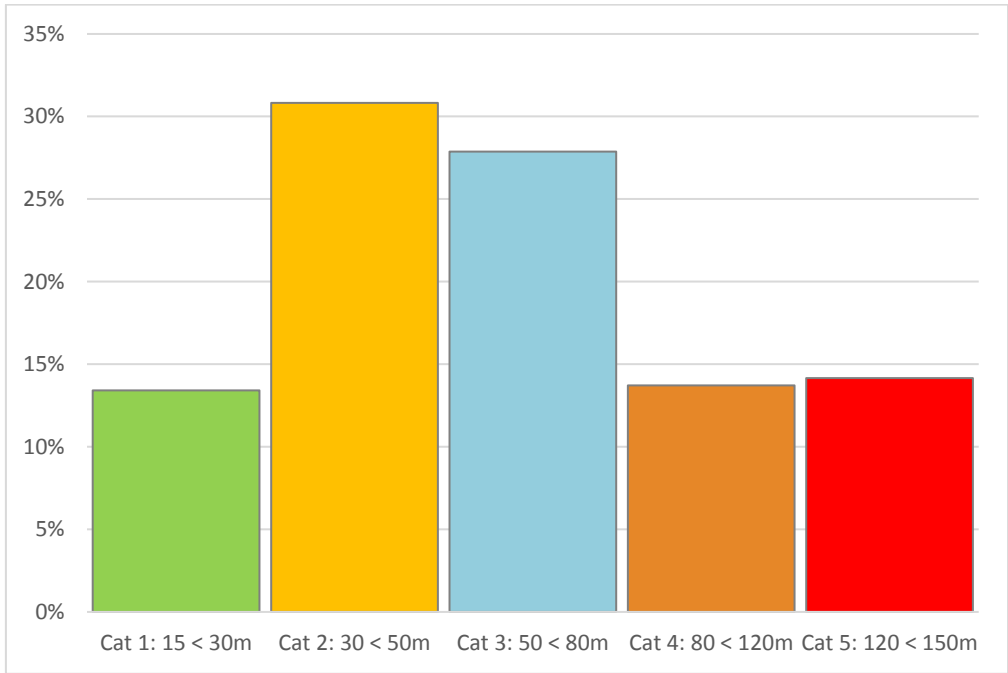
5.1 Turbine Numbers and Distribution

The study area, for the purposes of visibility, landscape and visual impacts of turbines includes the Fermanagh and Omagh area, plus a 15km buffer around its boundary, taking in parts of Mid Ulster, Derry and Strabane within Northern Ireland, and Donegal, Leitrim, Cavan and Monaghan in the Republic of Ireland. The extents of the study area are illustrated on Figure 3.1.

Consented and proposed wind energy developments within the study area are listed, together with details (where available) of location, number and height of turbines, etc, in Appendix 3. The locations are shown in Figure 5.1.

Based on available information there are, within Fermanagh and Omagh, a total of 678 operational or consented turbines of 15m or greater height, with 1164 located within the wider study area of 15km outside the Fermanagh and Omagh boundary. At the time of the assessment there were a small number of application wind turbines within Fermanagh and Omagh or close to its borders.

Of those turbines consented or operational within Fermanagh and Omagh, a significant number (72%) are less than 80m in height ('medium' size or smaller), with 'small/ medium' and 'medium' sized turbines the most frequently occurring typologies.



Operational and Consented Wind Turbines in Fermanagh and Omagh (Nov 2017): Percentage by Height Category.

Within the wider study area smaller wind turbines also predominate, although larger wind farm developments are located to the south and west in Donegal and Leitrim.

5.2.1 Operating and Consented Wind Turbines

While there are significant numbers of consented for wind turbines within the Fermanagh and Omagh area, a notable proportion of these do not appear to have been constructed at the time of the study. With regards to larger scale wind energy developments i.e. windfarms comprising 'medium/ large' or 'large' typology turbines, i.e. those in excess of 80m to blade tip, the following are located within Fermanagh and Omagh:

Wind Farms with Category 5 ('Large') Wind Turbines

Castlecraig Windfarm, Drumquin	10 x 127m
Cornavarrow Wind Farm	9 x 126m
Crockagarran, Ballygawley	7 x 125m
Crockbaravally Wind farm, Sixmilecross	3 x 127m
Gortfinbar	5 x 125m
Inishative Road, Sixmilecross	6 x 120.5m
Killycreen East and Killycreen West near Belcoo	2 x 125m
Molly Mountain, Derrylin	5 x 125m
Ora More Hill, Boho and Belcoo	6 x 125m
Pollnalaght	12 x 125m
Slieve Divena & k/05/1691/F	8 x 125m
Slieve Rushen, Derrylin	18 x 125m
Teiges Mountain, Brookeborough	5 x 120m

Wind Farms with Category 4 ('Medium/ Large') Wind Turbines

Tappaghan Mountain, Lack	19 x 100m
Callagheen, Belleek	13 x 93m
Slieve Divena	12 x 100m
Hunters Hill, Fintona	8 x 101m
Bessy Bell 2	6 x 100m
Clunahill, Drumquin	6 x 100m
Lough Hill, Drumquin	6 x 83m
Crockdun	5 x 100m
Loughmallon Road, Cregganconroe	5 x 101m
Thornog, Drumquin	4 x 110.5m
Altamuskan, Sixmilecross	3 x 110.5m

5.2.2 Proposed Windfarms

Wind turbine data shows only two wind farm applications within or close to Fermanagh and Omagh: Doraville Wind Farm is located to the north east of LCA *South Sperrin* (33 turbines up to 149m); and Murley Wind Farm (9 x 126.5m turbines) is close to the existing Hunters Hill Wind Farm near Fintona, but located in Mid Ulster.

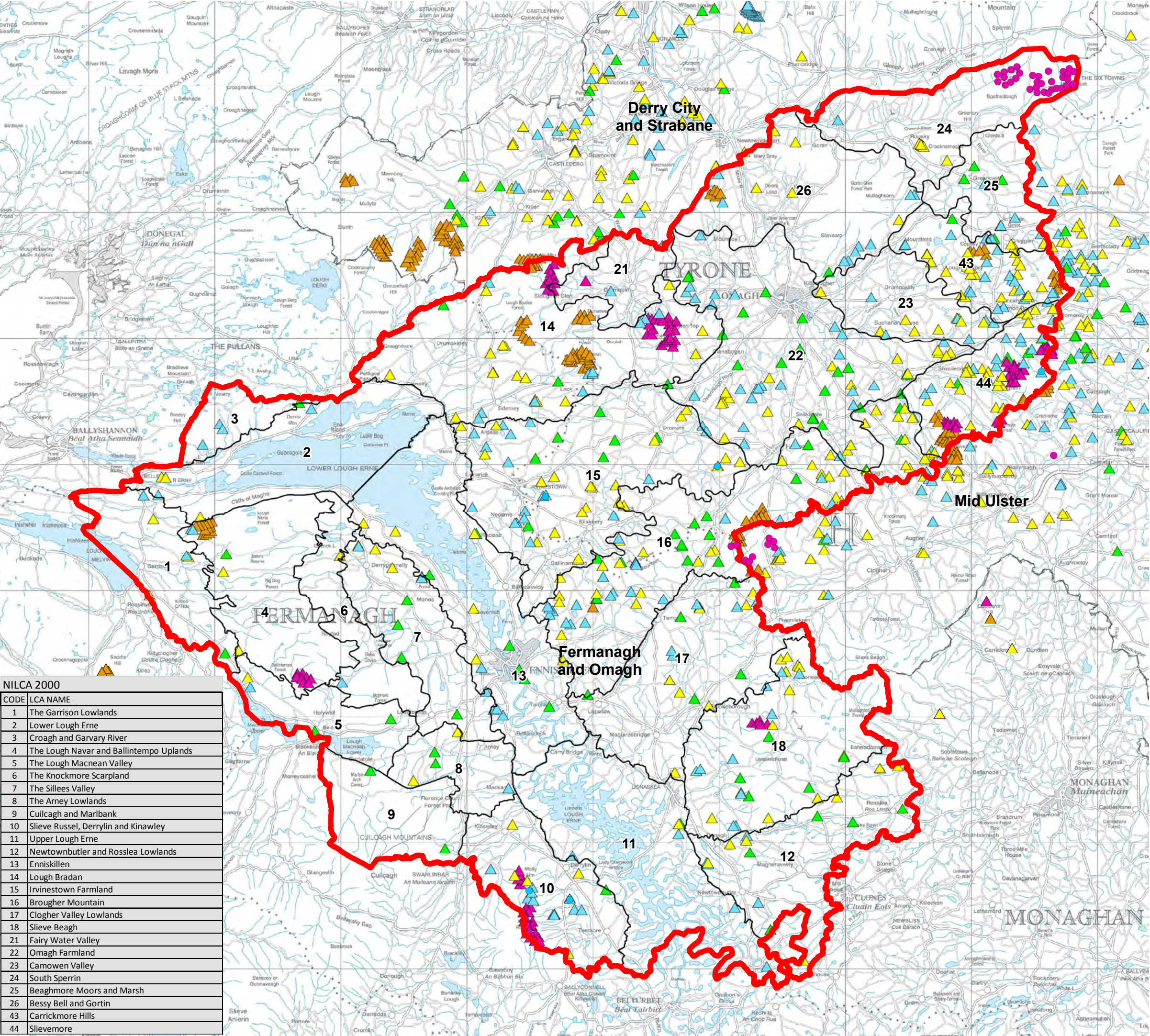
5.3 Landscape Character of Turbine Locations

A clear pattern of operational and consented wind energy developed has emerged in Fermanagh and Omagh. The majority of larger scale wind energy development has taken place in the *Sandstone Ridges and Plateau* landscape types, in particular those of *LCA 14 Lough Braden* close to the north-western boundary of the Local Authority Area, within *LCA 16 Brougher Mountain* and *44 Slievemore* to the east. Wind farms in *LCA 14 Lough Braden* are clustered around a series of low hills, some of which are located at the southern and eastern edge of the LCA and overlooking more lowland farming areas to the east from prominent hill tops. Wind energy development in LCAs *16 Brougher Mountain* and *44 Slievemore* are situated along the alignment of the undulating ridge running from south west to north east.

Another area of significant wind energy development is the upland landscape of *LCA 10 Slieve Russel, Derrylin and Kinawley*, on the outlying hill of Slieve Rushen to the south of Fermanagh and Omagh adjacent to the uplands of Cuilcagh.

Further smaller windfarms are located in other more upland landscapes, including Bessy Bell 2 located in *LCA 26 Gortin and Bessy Bell* towards the north of the study area, within *LCA 4 Lough Navar and the Ballintempo Uplands* and *LCA 18 Slieve Beagh*. Wind turbines of smaller typologies are located in many lowland farming landscapes, which are unsuited to larger scales of wind energy development.

There are few wind turbine applications within Fermanagh and Omagh. However, it is notable that the single current major application is located within *LCA 24 South Sperrin*, an area currently free of major wind energy development and designated as an Area of Outstanding Natural Beauty (AONB). The scheme proposes turbines up to 149m in height, which would be largest turbines in the Local Authority area. This scheme may be an indication of pressure for development in more sensitive landscape areas due to constrained capacity elsewhere, and reflects the trend for larger wind turbines, which can be difficult to accommodate in smaller scale upland landscapes close to populated lowland areas.



NILCA 2000	
CODE	LCA NAME
1	The Garrison Lowlands
2	Lower Lough Erne
3	Croagh and Garvary River
4	The Lough Navar and Ballintempo Uplands
5	The Lough Macnean Valley
6	The Knockmore Scarpland
7	The Sillees Valley
8	The Arney Lowlands
9	Culcagh and Marbank
10	Slieve Russel, Derrilyn and Kinawley
11	Upper Lough Erne
12	Newtownbutler and Rosslea Lowlands
13	Enniskillen
14	Lough Bradan
15	Irvinestown Farmland
16	Brougher Mountain
17	Clogher Valley Lowlands
18	Slieve Beagh
21	Fairy Water Valley
22	Omagh Farmland
23	Camowen Valley
24	South Sperrin
25	Beaghmore Moors and Marsh
26	Bessy Bell and Gortin
43	Carrickmore Hills
44	Slievemore

Legend

Local Authority Boundary

Landscape Character Areas

Existing Turbine Categories

15-30m Height

30-50m Height

50-80m Height

80-120m Height

120m Height and over

Proposed Turbine Categories

15-30m Height

30-50m Height

50-80m Height

80-120m Height

120m Height and over

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Fermanagh & Omagh

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Dec 2017

50087 / GIS / Fig 5.1a

Figure 5.1

Existing, Consented & Proposed Turbines

N

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Km

6.0 ASSESSMENT OF LANDSCAPE CAPACITY AND CUMULATIVE CHANGE

6.1 Assessment Purpose and Process

The purpose of the following assessment is to determine the capacity of the Fermanagh and Omagh landscape to accommodate wind turbine development and to determine what levels of cumulative development could be considered acceptable across the Local Authority area. The assessment also takes into account the level of cumulative development that already exists within and around the Local Authority area and is based on the premise that current renewable energy policies have and will continue to lead to landscape change.

This capacity assessment resolves landscape capacity with levels of cumulative development and involves four stages:

- 1) Firstly, identifying the *underlying* capacity of the Fermanagh and Omagh landscape to accommodate wind turbine development;
- 2) Secondly, assessing the degree of cumulative change resulting from operating and consented wind turbines in the study area and within specific areas of Fermanagh and Omagh;
- 3) Thirdly, assessing the extent to which cumulative consented development has reached the limit of the landscape's capacity to acceptably accommodate wind energy developments; and
- 4) Finally, assessing the level of further development that could acceptably be accommodated within areas of Fermanagh and Omagh thereby identifying *remaining* capacity.

An assessment methodology is given in Chapter 2.0 and further detailed in **Appendix 1**. The assessments are set out in **Tables 6.1(i)-(vii)** and illustrated in **Figures 6.1 to 6.4**, which show landscape capacity, the current wind energy landscape typology, proposed limits to wind energy development by landscape typology, and opportunities and constraints for wind energy development.

The assessment of landscape capacity and cumulative landscape change is based on the 26 Landscape Character Areas of Fermanagh and Omagh, organised by Regional Character Area.

- 1) Fermanagh Cavelands
- 2) Lough Erne Lakeland
- 3) Clogher Valley and Slieve Beagh
- 4) Omagh Basin
- 5) West Tyrone Hills and Valleys

- 6) Sperrins
- 7) Carrickmore Plateau and Pomeroy Hills

Detailed assessment of the sensitivity and value of each landscape character area is shown in a tabulated form in **Appendix 4** and summarised in left hand columns of Tables 6.1(i)–(vii) which are interleaved with the relevant LCT maps. This information is used to determine the capacity for accepting different turbine sizes, detailed in Table 6.1(i)–(vii) and as maps in Figures 6.1a – f. The maps are indicative, showing the geographical location of each LCA and *overall* rating of capacity for a particular turbine size based on the assessed sensitivities. Capacity may vary across each of the areas and reference should be made to the detailed assessment and guidance which follows the tabulated assessment.

This assessment accounts for the range of turbine sizes and variations between areas of the same landscape character type as well as the underlying and remaining capacities. This is discussed further in 6.2.4 below.

An assessment is then made of the current level of cumulative change based on the distribution of operational and consented wind energy developments, as listed in Table 5.1 and illustrated in Figure 5.1. The landscape character types are shown indicatively in Figure 6.2 as a map of areas of current wind turbine landscape typologies (based on types detailed in Table 2.2 of this report).

The proposed acceptable landscape capacity for development is detailed in Table 6.1 and illustrated indicatively in Figure 6.3 as a map of areas of proposed wind turbine landscape typologies which can be compared with the current situation in Figure 6.2.

Guidance on wind turbine sizes, numbers and distribution is given in the right-hand side of Table 6.1(i)–(vii) for managing development to the appropriate level within each landscape type.

The assessment concludes with a summary for the whole Local Authority area (refer to section 6.4). Spatial guidance regarding areas with residual capacity for further development (refer to section 6.5) is given at the end of this chapter and schematically illustrated in Figure 6.4.

6.2 Guidance

Table 6.1 also gives guidance on turbine sizes, cluster sizes and separation between groups of turbines for each landscape area that would limit cumulative development to the proposed acceptable level. This relates to turbines of 15m to blade tip and greater. As highlighted in section 2.7, guidance on small turbines below 15m to blade tip applies at a local level.

Appendix 2 of this report contains detailed discussion of how turbine size, group size and group separation affects perceptions of wind energy and landscape character. Further

guidance is given in SNH siting and design guidance^{14,15}. The following briefly outlines the main considerations in developing the specific guidance for this assessment given in Table 6.1.

6.2.1 Turbine Size

The height of turbines which can be accommodated within a particular landscape is influenced by its scale and openness. Landscape scale varies with the presence or absence of detailed features such as buildings, trees, walls and hedgerows which can provide a visual reference point to compare turbines with. In general, the larger the scale of the landscape and the more open and simple the landscape, the greater the ability to relate to larger development typologies. Smaller turbine sizes may also be accommodated in such landscapes, although it may be more appropriate or appear rational to utilise such landscapes for larger scale turbines. Some discussion of the general issues associated with the siting of 'very large' (150m+) turbines in the landscape is provided in Appendix 2.

Smaller size turbines are more suitably located in smaller scale landscapes with more complex patterns and smaller scale reference features. They may also be accommodated in the lower edges of large scale landscape types, although their proximity to larger size turbines within these areas would need to be carefully controlled and large groups of such turbines would not be appropriate.

The landscapes of Fermanagh and Omagh vary in their scale and complexity and are potentially suited to the full range of wind turbine sizes current employed in contemporary on-shore wind energy developments. However, there are other significant constraints to the appropriateness of large wind turbines in these larger scale landscapes, discussed further in the assessment.

6.2.2 Turbine Group Size

Turbine group sizes relate to the scale and complexity of the landscape, particularly to landform and pattern. In general, larger scale more simple landscapes with gentle landforms and simpler patterns can accommodate larger groups of turbines, subject to having the physical capacity (i.e. available area). In the case of Fermanagh and Omagh, as noted above, there are few areas of sufficient extent to accommodate very extensive wind farm developments, and in some upland areas the landscape character is enhanced by the complexity of the landform and its features. However, there are also smaller areas of simpler upland landscape potentially able to accommodate smaller size windfarm developments.

6.2.3 Separation between Turbine Groups

Turbine size and group size can be generically related to landscape character when applied to a single turbine or windfarm, or across a number of windfarms. However, separation

between groups of turbines is the single most important factor in controlling cumulative effects. This is because of the high prominence and extensive visibility of most turbines, leading to effects on landscape character well beyond the turbines and between individual schemes, as discussed in detail in Appendix 4.

The guidance in Table 6.1 therefore gives approximate separation distances that should be applied between turbine groupings (including single turbines) in order to achieve the planned wind turbine landscape types as described in Table 2.2. Existing and proposed distribution of landscape types are shown in Figure 6.3.

The main factors controlling the proposed separation distance relate to the proposed wind turbine landscape type, turbine size, turbine group size and the character of the host landscape:

- 1) Proposed Turbine Landscape Typology: each proposed typology detailed in Table 2.2 requires a different separation distance between turbines or schemes to achieve the landscape and visual criteria described.
- 2) Turbine Size: due to their lesser prominence and visibility, smaller turbines would require closer spacing than larger turbines to achieve the defined landscape typology.
- 3) Group Size: smaller groups of turbines would be less dominant and require closer spacing to achieve the same landscape typology than would larger groups of the same size of turbine.
- 4) Underlying Landscape Character Type: this has an effect on all the above criteria. More open, flatter landscapes are more easily affected by intervisibility of turbines and are likely to require greater separation distances between groups. Landscapes with significant topography and woodland cover have the potential to reduce intervisibility. Scale and pattern can have a more subjective effect, but in general smaller scale landscapes are more likely to be affected by wind energy development compared with larger scale landscapes. The presence of other tall objects such as electricity pylons also affects the perception of turbine development.

The distances given in Table 6.1 are approximate, relating primarily to (1) and (2) above. Landscape character including topography is also important: where landforms are capable of visually separating turbine groups the distance between landforms is a consideration in setting distances.

In the case of small LCAs, the separation distances for larger turbines might mean that, in theory, only one grouping would be comfortably accommodated within the area. Separation distances also apply between a development in one landscape type and another in an adjacent type, or between turbines of different size categories. In such situations an average of the two recommended distances would be most appropriate.

¹⁴ SNH (2017) *Siting and Designing Windfarms in the Landscape v.3*

¹⁵ SNH (March 2012) *Siting and Design of Small Scale Wind Turbines of between 15 and 50 metres in height*

In all cases the distances are an approximate range intended for guidance. Separation distances between specific proposals should therefore be considered in more detail on a case by case basis.

6.2.4 Windfarm Extensions

In some cases, it is more appropriate to extend an existing windfarm than to create a new focus of development with a new set of separation distances. The acceptability of such extensions depends upon the extent to which the original approved site has occupied the space available and whether additional turbines will push on to visually sensitive areas or sensitive landscapes. Extensions should fit harmoniously to form a single coherent composition with the previously existing windfarm.

6.2.5 Re-powering of Existing Windfarms

Re-powering involves the replacement of existing turbines with more modern and generally larger turbines located within the site of an existing windfarm. In practice, this will involve new turbine positions and different turbine separation distances set for the new parameters. Effectively, it involves the creation of a new windfarm on the site of an old one. In assessing the acceptability of such developments, it will be necessary to assess the potential change to wind turbine landscape type that could result from increased turbine size, as the scaling relationships of larger turbines and the associated Zones of Theoretical Visibility may be radically different and may exceed an established landscape capacity. The existing windfarm usually forms part of the baseline for assessment.

6.2.6 Associated Windfarm Infrastructure

Wind farm developments require ancillary infrastructure including control buildings, sub-stations, transformer units, access tracks, power and grid connections. With advances in battery technology, energy storage systems co-located with wind farm developments may also become more commonplace.

While the form and likely effects of common ancillary elements can be predicted from existing wind farm developments, energy storage systems are a new technology and it is currently difficult to predict with certainty the likely size and scale of such systems which might usually be associated with a wind farm. However, based on current installations, these are assumed to be centralised low level containerised systems, with landscape and visual effects comparable to a typical wind farm sub-station.

It is usually the case that the landscape and visual effects of associated infrastructure are secondary to effects from the wind turbines themselves, however they do have the potential to contribute to adverse effects. The overriding objective for the design and siting of such features should be to avoid adding complexity or clutter to the image of the wind farm, and this can be achieved through measures including appropriate siting of elements in relation

to landforms or other landscape features, the use of appropriate colours for built elements, mitigation planting, undergrounding, and minimising the numbers of elements in view e.g. through utilising turbines with integrated transformer units, or the concentration of features in a limited number of locations.

The subsequent guidance also considers the landscape capacity for accommodating such elements in those locations identified with capacity for larger scale wind energy developments, taken as groups of turbines >80m in height. For smaller developments, ancillary infrastructure will tend to comprise only of minor elements which should be sited bearing in mind local small scale landscape features such as buildings, walls, local landforms or field patterns.

Advice on the siting and design of these ancillary elements is provided in SNH guidance¹⁶ and included with the LCA assessments. General siting and design considerations for ancillary infrastructure associated with small scale wind energy development is provided in Section 6.7.

6.2.7 Other Factors Which Influence Capacity

It is emphasised that this assessment is focused on landscape and visual issues. Areas which have been identified as suitable on this basis may be restricted by other unrelated factors such as protection of wildlife, effects on residential amenity, tourism and recreation, aviation restrictions, or lack of grid connection.

¹⁶ SNH (2017) *Siting and Designing Windfarms in the Landscape* v3, §2.20 – 2.24

Explanation of Table 6.1

Key: <div><div></div> No Capacity</div> <div><div></div> Low Capacity</div> <div><div></div> Medium Capacity</div> <div><div></div> High Capacity</div>																	
UNDERLYING LANDSCAPE CAPACITY (i.e. not taking account of current wind energy development)					CURRENT CONSENTED DEVELOPMENT				PROPOSED LIMITS TO FUTURE DEVELOPMENT (i.e. proposed acceptable level of wind energy development)								
Landscape Sensitivity to Wind Energy Development				Landscape Capacity (Related to turbine size)				Existing/ Consented Developments	Current Wind Energy Landscape Type(s)	Future Wind Energy Landscape Type(s)	Remaining Landscape Capacity (Related to turbine size)				Comments on Sensitivity and Capacity		
Landscape Character Sensitivity	Visual Sensitivity	Landscape Sensitivity	Landscape Value	15-<30m	30-<50m	50-<80m	80-<120m				15-<30m	30-<50m	50-<80m	80-<120m			
Landscape Character Area: <i>Name of Landscape Character Area/ Sub-Area</i>																	
Med/ High	Med/ High	Med/ High	Med/ High	<div></div>	<div></div>	<div></div>			Brief description of consented wind energy developments (at time of report), including numbers size range, distribution, with key developments named.	Wind Turbine Landscape Type(s) within the area resulting from current consented levels of development (refer to Table 2.1 for description of type and map in Figure 6.2 for distribution of types across study area)	Proposed limits to future Wind Energy development expressed as a Wind Turbine Landscape Type (refer to Table 2.1 for description of type and Figure 6.3 for proposed distribution of types across the study area)	<div></div> <div></div> <div></div> <div></div> <div></div> <div>Residual landscape capacity for development of different turbine size categories. This is derived from the underlying landscape capacity and the proposed limits to future development by considering the extent to which current wind energy development already occupies the underlying landscape capacity</div>	Landscape Analysis: Brief description of key qualities and characteristics of the landscape character area/ sub-area affecting its capacity to accommodate different types of wind turbine development. Development Capacity: Brief comment on landscape capacity and on current developments and future proposals in relation to landscape capacity. Further guidance is provided in text following the tabulated assessment.				
Assessment of landscape sensitivity and value of the landscape character area or sub-area (from detailed assessment in Appendix 4)				Assessment of landscape capacity for different turbine sizes derived from the sensitivity and value assessment and mapped in Figures 6.1a-f . This represents the 'underlying' capacity of the landscape and does not take into account the cumulative effects of existing/ consented wind energy development.							Max. Numbers in Group Suggested range/ maximum number of turbines in groupings to ensure capacity is not exceeded	1-3	1-3				
												Min Group Separation Distances (km) Suggested separation distance between turbine groupings to ensure capacity is not exceeded	2-4	3-5			

1. FERMANAGH CAVELAND



LCAs 1. Garrison Lowlands, 4. Lough Navar and Ballintempo Uplands, 5. The Lough Macnean Valley, 6. The Knockmore Scarpland, 9. Cuilcagh and Marlbank

The *Fermanagh Caveland* is a limestone upland landscape to the south west of Fermanagh bordering the Republic of Ireland, and to the south west of the Erne river valley. Much of the area comprises an upland of undulating forested plateau, the northern and eastern extents of which are defined by a dramatic limestone escarpment, including the Cliffs of Magho overlooking Lower Lough Erne to the north. The transition to the adjoining valley landscape to the west, containing Loughs Macnean and Melvin, is less dramatic, with forested uplands giving way to more gentle sloping pastures towards the valley floor. Near Belcoo, Upper Lough Melvin is enclosed to the south by the rugged foothills of Cuilcagh, containing Florence Court estate and the Marble Arch Caves, rising to

the distinctive flat-topped sandstone summit of Cuilcagh itself, the highest point in Fermanagh. The landscape area is largely rural and undeveloped, but includes small settlements of Belcoo and Garrison in the valley linking Lough Macnean and Lower Lough Melvin which runs from south east to north west close to the Republic of Ireland border. Main transport routes tend to circumnavigate rather than cross the main central plateau, and do not penetrate far into the upland landscape of Cuilcagh. Much of the area is within the Marble Arch Caves UNESCO Global Geopark.

Lowland Farmland LCT

LCA 1. Garrison Lowlands

LCA1. The Garrison Lowlands share many characteristics with other *Lowland Farming* areas, characterised by drumlins, enclosed small pastures bounded by wooded hedges and hedgerows, and scatterings of small farms and properties. Towards the north of the character area drumlins become less of a landscape feature, and instead the landform is more clearly that of sloping lough basin forming the north-eastern enclosure to Lough Melvin and features in scenic views from its southern shore. Most of the LCA is identified as an Area of Scenic Quality (ASQ).

Limestone Uplands LCT

LCAs 4. The Lough Navar and Ballintempo Uplands; 6. The Knockmore Scarpland; 9. Cuilcagh and Marlbank

These landscapes form the most scenic parts of the *Fermanagh Caveland*. **LCA 4 The Lough Navar and Ballintempo Uplands** are an extensive upland plateau of undulating forestry which tend to mask the more rugged features of this landscape, but there are various outcroppings, ridges and loughs which contribute to landscape character. The Cliffs of Magho mark the northern extent of the LCA, while the more rounded hill summit of Tullybrack (386m AOD) lies to the south. The wind farm developments of Callagheen and Ora Moor lie at the north and south ends of this LCA respectively. **LCA 6. The Knockmore Scarpland** lies immediately east of the *Lough Navar and Ballintempo Uplands*, forming a steep escarpment including gorges and cliffs, with more lowland character as it transitions into the Silles Valley to the east. To the south of the *Knockmore Scarpland* is the rounded but pronounced hill summit of Belmore Mountain (398m AOD). Both of these landscapes are sparsely populated and of mostly upland character. They are promoted for recreation and are part of the Global Geopark.



The rugged landscape of the Knockmore Scarpland as seen towards the south from the Lough Navar Forest

LCA 9. Cuilcagh and Marlbank is separated from the limestone plateau landscape described above by Upper Lough Macnean. Above the lough there is a distinctive rugged karst landscape with features such as Hanging Rock which are important as local landmarks. This landscape gives way to a more uniform upland which rises to the summit of Cuilcagh at 666m AOD. While the area is not designated for landscape quality, it is of high scenic value, and includes the estate at Florence Court, and the Marble Arch cave system.



Cuilcagh and Marlbank viewed from the north of the Lough Macnean Valley looking south (Cuilcagh Mountain in cloud)

Lough Basin LCA

LCA 5. The Lough Macnean Valley

LCA 5. The Lough Macnean Valley encompasses the entirety of Upper Lough Macnean and the northern half of Lower Lough Macnean that lies within the United Kingdom, meeting the *Garrison Lowlands* to the north west. It also includes the lower slopes of the limestone upland plateau and Belmore Mountain as they transition to the lowlands around the loughs. The valley of Upper Lough Macnean is of particular scenic value, appearing as a small to medium scale landscape with great interest provided by the rugged geology of the enclosing landscape at *Cuilcagh and Marlbank*, and which provides the setting to the attractive settlement of Belcoo. There is however some quarrying to the southern slopes of Belmore Mountain to the north east of the LCA. Lower Lough Macnean is more expansive, of larger scale and more remote, with its shoreline more wooded, bordered by small scale enclosed pastures similar to those of the *Garrison Lowlands* described above.



Upper Lough Macnean seen from the Marlbank Viewpoint looking north east towards Belmore Mountain

Table 6.1(i). Summary of Landscape Capacity and Cumulative Effects and Guidance for Future Wind Energy Development: Fermanagh Caveland

1. FERMANAGH CAVELAND																			
Key: <div><div></div> No Capacity</div> <div><div></div> Low Capacity</div> <div><div></div> Medium Capacity</div> <div><div></div> High Capacity</div> Turbine Size: Small 15<30m; Small/ Medium 30<50m; Medium 50<80m; Medium/ Large 80<120m; Large 120<150m; Very Large 150~200m																			
UNDERLYING LANDSCAPE CAPACITY (i.e. not taking account of current wind energy development)										CURRENT CONSENTED DEVELOPMENT			PROPOSED LIMITS TO FUTURE DEVELOPMENT (i.e. proposed acceptable level of wind energy development)						
Landscape Sensitivity to Wind Energy Development				Landscape Capacity (Related to turbine size)						Existing/ Consented Developments (November 2017)	Current Wind Energy Landscape Type(s)	Future Wind Energy Landscape Type(s)	Remaining Landscape Capacity (Related to turbine size)						Comments on Sensitivity and Capacity
Landscape Character Sensitivity	Visual Sensitivity	Landscape Sensitivity	Landscape Value	15-<30m	30-<50m	50-<80m	80-<120m	120-<150m	150 ~ 200m				15-<30m	30-<50m	50-<80m	80-<120m	Over 120m	150 ~ 200m	
LOWLAND FARMLAND																			
Landscape Character Area: 1. Garrison Lowlands																			
Med/ High	Med/ High	Med/ High	Med/ High	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	5 consented wind turbines, the tallest of which is 59m.	Landscape with No Wind Turbines/ Landscape with Occasional Wind Turbines (LNWT/ LOWT)	LOWT	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: The landscape is more open with less varied terrain than some other lowland 'drumlin farmland'. The landscape is important to the setting of Lough Melvin and to views north across the lough. ASQ indicates landscape value. Development Capacity: Limited capacity for small scale wind energy developments associated with farms and properties. Care to be taken to avoid cumulative issues with the wind farm at Callagheen by providing clear separation between upland and lowland turbines.
												Max. Numbers in Group	1-3	1-3	1				
												Min Group Separation Distances (km)	3-4	4-5	5				
LIMESTONE UPLANDS																			
Landscape Character Area: 4. The Lough Navar and Ballintempo Uplands																			
Med	Med	Med	Med/ High	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Windfarms at Callagheen (13 x 93m) and Ora Moor (8 x 125m), 5 turbines up to 80m size.	Landscape with Wind Turbines/ Landscape with No Wind Turbines (LWT/ LNWT)	LWT/ LNWT	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: A mixture of larger scale uplands with forestry of lower sensitivity, with other areas of complex topography and landform features, of greater sensitivity. Development Capacity: Some parts suited to small wind farm developments with 'medium/ large' or 'large' wind turbines.
												Max. Numbers in Group	1-2	1-2	1-5	5-15	5-15		
												Min Group Separation Distances (km)	3-4	3-4	5-7	7-12	7-12		

1. FERMANAGH CAVELAND																			
Key: <div><div></div> No Capacity</div> <div><div></div> Low Capacity</div> <div><div></div> Medium Capacity</div> <div><div></div> High Capacity</div> Turbine Size: Small 15<30m; Small/ Medium 30<50m; Medium 50<80m; Medium/ Large 80<120m; Large 120<150m; Very Large 150~200m																			
UNDERLYING LANDSCAPE CAPACITY (i.e. not taking account of current wind energy development)										CURRENT CONSENTED DEVELOPMENT			PROPOSED LIMITS TO FUTURE DEVELOPMENT (i.e. proposed acceptable level of wind energy development)						
Landscape Sensitivity to Wind Energy Development				Landscape Capacity (Related to turbine size)						Existing/ Consented Developments (November 2017)	Current Wind Energy Landscape Type(s)	Future Wind Energy Landscape Type(s)	Remaining Landscape Capacity (Related to turbine size)						Comments on Sensitivity and Capacity
Landscape Character Sensitivity	Visual Sensitivity	Landscape Sensitivity	Landscape Value	15-<30m	30-<50m	50-<80m	80-<120m	120-<150m	150 ~ 200m				15-<30m	30-<50m	50-<80m	80-<120m	Over 120m	150 ~ 200m	
Landscape Character Area: 6. The Knockmore Scarpland																			
Med/ High	Med	Med/ High	Med	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	2 consented wind turbines, 76m and 44m	Landscape with No Wind Turbines (LNWT)	LNWT	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Complex landscape is very sensitive to wind energy development, and overlooks a small-scale lowland landscape to the east. Development Capacity: This landscape should remain essentially free of wind turbine development, other than at the extreme eastern edge of the LCA at the transition to the Sillees Valley or at the foot of Belmore Mountain.
												Max. Numbers in Group	1	1					
												Min Group Separation Distances (km)	3	3					
Landscape Character Area: 9. Cuilcagh and Marlbank																			
Med/ High	High	High	Med/ High	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	2 small turbines; 20m and 25m.	Landscape with No Wind Turbines (LNWT)	LNWT	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Highly scenic upland landscape with complex karst landscape features, Florence Court estate landscape and Marble Arch caves. Development Capacity: Almost no capacity for wind energy development other than the occasional turbine of the smallest typology in lowland areas associated with farms and properties.
												Max. Numbers in Group	1						
												Min Group Separation Distances (km)	3						

1. FERMANAGH CAVELAND																			
Key: <div><div></div> No Capacity</div> <div><div></div> Low Capacity</div> <div><div></div> Medium Capacity</div> <div><div></div> High Capacity</div> Turbine Size: Small 15<30m; Small/ Medium 30<50m; Medium 50<80m; Medium/ Large 80<120m; Large 120<150m; Very Large 150~200m																			
UNDERLYING LANDSCAPE CAPACITY (i.e. not taking account of current wind energy development)										CURRENT CONSENTED DEVELOPMENT				PROPOSED LIMITS TO FUTURE DEVELOPMENT (i.e. proposed acceptable level of wind energy development)					
Landscape Sensitivity to Wind Energy Development				Landscape Capacity (Related to turbine size)						Existing/ Consented Developments (November 2017)	Current Wind Energy Landscape Type(s)	Future Wind Energy Landscape Type(s)	Remaining Landscape Capacity (Related to turbine size)						Comments on Sensitivity and Capacity
Landscape Character Sensitivity	Visual Sensitivity	Landscape Sensitivity	Landscape Value	15-<30m	30-<50m	50-<80m	80-<120m	120-<150m	150 ~ 200m				15-<30m	30-<50m	50-<80m	80-<120m	Over 120m	150 ~ 200m	
LOUGH BASIN																			
Landscape Character Area: 5. The Lough Macnean Valley																			
Med/ High	Med/ High	Med/ High	Med	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	5 wind turbines, typically small or small/ medium. The largest is 56m.	Landscape with No Wind Turbines/ Landscape with Occasional Wind Turbines (LNWT/ LOWT)	LOWT	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Eastern parts of the LCA are of high scenic quality with the rugged karst landscape at Cuilcagh and Marlbank forming the setting to Upper Lough Macnean. Western parts are less scenic and of remoter character. Development Capacity: Landscape has a low capacity for wind energy, which should be limited to smaller turbine typologies, particularly if developing windfarms at the fringe of the Lough Navar and Ballintempo Uplands. Greatest capacity is in the landscape around Lower Lough Macnean.
												Max. Numbers in Group	1-3	1-2	1				
												Min Group Separation Distances (km)	3-4	4-7	7				

SUMMARY OF LANDSCAPE CAPACITY: FERMANAGH CAVELAND

Overall, the *Fermanagh Caveland* has a relatively high sensitivity to wind energy development. Although the landscape is mostly undesignated for its landscape qualities, it has a complex and rugged landform which contribute to its scenic qualities. Parts of the landscape are small scale, for example around Upper Lough Macnean. Other areas, including parts of the forested plateau of *LCA 4 The Lough Navar and Ballintempo Uplands* are of a larger scale and less complex because of widespread forestry. The sections below provide a summary of the sensitivity, capacity, and guidance for future development for each landscape character type of the Regional Character Area.

LOWLAND FARMLAND LCT

LCA 1. Garrison Lowlands

Underlying Landscape Capacity

As a small-scale farming landscape, the *Garrison Lowlands* have a limited capacity for small scale wind energy development. This landscape is also of a more open character than other landscapes of a similar type with fewer drumlins and some more open views. The importance of the landscape to the setting of Lough Melvin, especially when viewed from the south, also reduces its capacity for wind energy development. This landscape has low capacity for wind turbines, of no greater than ‘medium’ size (50<80m).

The landscape objective should be to maintain this area as *landscape with occasional wind turbines*.

Consented Wind Energy Landscape and Wind Energy Applications

There are very few wind turbines within the area, with the largest turbines 59m high. The consented wind energy landscape is a *landscape with occasional or no wind turbines*. There are no known applications within the LCA.

Residual Capacity and Guidance for Future Development

Wind Turbines

A low level of wind energy development could be supported within the LCA, but no more than occasional scattered wind turbines, typically ‘small’ or ‘small/ medium’ size (<50m). ‘Medium’ size turbines (50<80m) tend to be prominent when seen from the south across Lough Melvin, and therefore there is only limited capacity for this typology, which should be well separated single turbine developments only. With the nearby existing windfarm at Callagheen, there is the potential for cumulative issues if smaller typology turbines become too closely associated with this larger wind farm in views, therefore a clear separation should be maintained between this upland windfarm and the more lowland small-scale wind energy developments.

Ancillary Elements

Ancillary elements for small scale wind energy developments (<80m) including access tracks, transformer units, power connections and energy storage units to be sited to suit local conditions. Refer to Section 6.7 for general guidance.

LIMESTONE UPLANDS LCTs

LCAs 4. *The Lough Navar and Ballintempo Uplands*; 6. *The Knockmore Scarpland*; 9. *Cuilcagh and Marlbank*

Underlying Landscape Capacity

The greatest capacity for wind energy development in this area is in the more extensive forested upland landscape of the *Lough Navar and Ballintempo Uplands*. In general, the western parts of this LCA have the greater capacity, sited away from the more rugged landscape with exposed features towards the east and in particular where relatively distant from loughs Melvin and Upper Lough Macnean. Small scale and well separated wind farm developments, including turbines of 120<150m (‘large’) typology, can be supported in this area, creating a *landscape with wind turbines*. The landscape provides opportunities for the screening of associated infrastructure within existing or new forestry/ woodland. Other parts of this landscape should remain free of wind energy development i.e. a *landscape with no wind turbines*, because of the rugged character, of geological interest, and to avoid having detrimental impacts on recreational resources.

Neither the *Knockmore Scarpland* or *Cuilcagh and Marlbank* have any capacity for wind energy development other than very occasional smaller typology wind turbines of at the character areas’ lowland fringes. The rugged undeveloped character of *Cuilcagh and Marlbank* would be particularly susceptible to intrusion from wind energy development, with wind turbines and related infrastructure likely to be high prominent on the bare slopes. The landscape objective should be to maintain these LCAs as *landscapes with no wind turbines*.

Consented Wind Energy Landscape and Wind Energy Applications

The windfarms at Callagheen and Ora More are located within the *Lough Navar and Ballintempo Uplands*, with 93m and 125m turbines respectively and a small number of turbines <80m are located at the western fringe of this LCA. Wind energy developments within the other LCAs are very limited. The current wind energy landscape is largely a *landscape with no wind turbines*. There are no known wind energy applications.

Residual Capacity and Guidance for Future Development

Wind Turbines

There is almost no capacity for wind farm development in much of this landscape other than very localised small-scale developments in lowland fringes.

However, the north west and southern parts of the *Lough Navar and Ballintempo Uplands* have been utilised for relatively small-scale commercial wind farm developments. Subject to careful siting and design, there is potentially scope for limited further development of small scale windfarms

at this western fringe, with 80<120m or potentially 120<150m wind turbines. This may include small extensions to the existing wind farm developments, repowering with larger wind turbines, or potentially a further small wind farm development sited between the two existing schemes, albeit in practice there may be significant constraints from the presence of properties and sites of recreation/ tourism interest. All developments should be perceived as discrete wind farm developments, occupying a minor extent of the upland horizon. Smaller typology windfarm development in this landscape should be limited so as to better accommodate larger development, avoiding small and large wind turbines being seen close together.

Ancillary Elements

For larger wind energy development in upland areas of the *Lough Navar and Ballintempo Uplands* ancillary infrastructure should be sited to make use of screening provided by existing trees/ woodland, or where necessary additional woodland planting is likely to be appropriate within this landscape. Transmission lines should not be sited so as to appear skylined above the plateau and to avoid conflicting with views to wind turbines as far as possible. For small scale wind energy development general guidance is provided in Section 6.7.



93m turbines at Callagheen wind farm overlooking Lough Melvin



View towards the western parts of LCA4 The Lough Navar and Ballintempo Uplands which have some limited capacity for larger scale wind energy development

LOUGH BASIN LCT

LCA5. The Lough Macnean Valley

Underlying Landscape Capacity

The scenic qualities and lowland character of this landscape result in very limited capacity for wind energy development. The landscape is generally less sensitive towards the north west, and away from the more scenic Upper Lough Melvin. Overall there is capacity for a low level of wind energy development of no greater than 80m turbines as single turbine developments, or as small groups of smaller typologies.

The landscape objective should be to maintain this area as *landscape with occasional wind turbines*.

Consented Wind Energy Landscape and Wind Energy Applications

There are very few wind turbines within the area, with the largest turbines 56m high. The consented wind energy landscape is a *landscape with occasional or no wind turbines*. There are no known applications within the LCA.

Residual Capacity and Guidance for Future Development

Wind Turbines

Wind energy development should typically be of well separated single ‘medium’ sized turbines (<80m) or small clusters of ‘small’ or ‘small/ medium’ (<50m) sized turbines. Development close to the shores of either Upper or Lower Lough Macnean should be avoided

Capacity for wind energy development is somewhat greater towards the west of this LCA, away from the more scenic landscapes of Upper Lough Macnean. However, development in this location is also constrained by the presence of the wind farm at Ora Moor in the neighbouring upland landscape, where it would be desirable to maintain clear separation between the larger scale upland development and smaller lowland turbines to avoid undesirable cumulative effects.

Wind energy development around Upper Lough Macnean should be concentrated toward the north and away from the more sensitive landscapes of *Cuilcagh and Marlbank*. The lower slopes of Belmore Mountain provide backclothing for single turbines of the 'medium' typology (50<80m) or small groups of 'small' or 'small/ medium' (<50m) wind turbines. Any such development should be well separated to largely retain the existing character of the landscape.

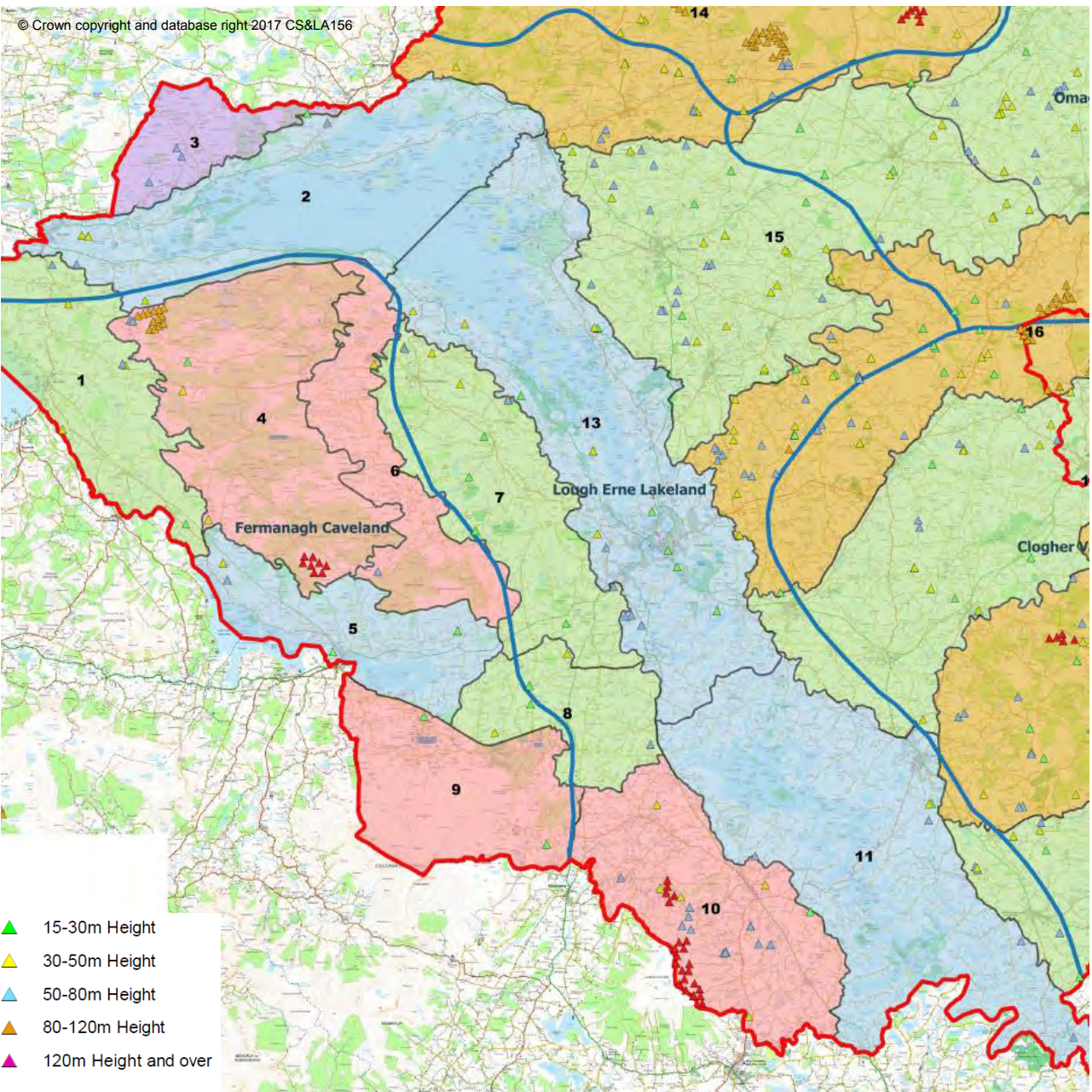
Ancillary Elements

Ancillary elements for small scale wind energy developments (<80m) including access tracks, transformer units, power connections and energy storage units to be sited to suit local conditions. Refer to Section 6.7 for general guidance.



Limited expansion of Ora Moor wind farm may be acceptable, however turbines of significantly larger typology would most likely appear out of scale with the enclosed Upper Lough Melvin basin

2. LOUGH ERNE LAKELAND



LCAs 2. Lower Lough Erne, 3. Croagh and Garvary River, 7. The Sillees Valley, 8. The Arney Lowlands, 10. Slieve Russel, Derrylin and Kinawley, 11. Upper Lough Erne, 13. Enniskillen, 15. Irvinestown Farmland

The Lough Erne Lakeland occupies the broad, arcing, river corridor of the Erne Valley. To the south east the river drains through drumlin farmland, creating a complex interconnected series of water bodies which form Upper Lough Erne, while to the north west the river broadens into the more defined Lower Lough Erne, overlooked by the dramatic Cliffs of Magho, before exiting into neighbouring Donegal. The loughs are bounded by pastoral farmed landscapes and wooded estates, with the south-western boundary of the area defined by the slopes of Slieve Rushen. While the scenic qualities of the islands of Lough Erne are recognised through designation as a Special Countryside Area (SCA), and to the north is the Derrin Mountain ASQ, the area is not covered by

wider landscape designation. The area is however highly valued for its scenic qualities and importance for tourism and recreation, and also is the setting for Enniskillen which lies between Upper and Lower Lough Erne. While the *Lough Basins* of Upper and Lower Lough Erne are the principle landscape types, several others contribute to the overall character of the area.

Lough Basin LCT

LCAs 2. Lower Lough Erne, 11. Upper Lough Erne, 13. Enniskillen

These three LCAs comprise the River Erne corridor, and while having some commonality as broad and expansive landscapes defined by water, there are some significant differences in their character through the change in the River Erne Valley from a complex and fragmented water body to the south east to more defined lough to the north west.

Upper Lough Erne (LCA 11) is intricate and complex, appearing as a ‘drowned’ lowland landscape, where from many locations the waterbody does not exert a strong influence on landscape character due to the screening effects of surrounding pastures with drumlins, hedgerows and woodland, tending to prevent outward views. The landscape is mostly flat excepting the prominent limestone outcrop of Knockinny Hill. The area is sparsely settled, although the busy town of Lisnaskea lies on the eastern boundary of the LCA.



Upper Lough Erne

By contrast **Lower Lough Erne (LCA 2)** is a much more expansive waterbody characterised by elongated islands and promontories and the Cliffs of Magho which rise from its southern shoreline, and while the lough shore is by no means heavily developed, it supports a larger scale of recreational and tourism interest, for example through a marina at Kesh and a nearby caravan park. The settlement of Belcoo sits at the exit of the lough as it flows west into Donegal. The Lough shore is a mix of open pastures and woodland, and views of the waterbody are revealed intermittently when travelling close to the shore by road.



Lower Lough Erne viewed from the north east

Enniskillen (LCA 13) represents a transition between Upper and Lower Lough Erne with the waterbody varying in character from fragmented to the south east and more defined to the north west, but having most in common with Upper Lough Erne in terms of its character. The shore line tends to be well wooded including parkland landscapes at Castle Archdale and Ely Lodge, and the farmland landscape appear to be of good condition and prosperous. As with Upper and Lower Lough Erne, the water body is often hidden from view from the surrounding landscape. The central part of this area is characterised by development in an around Enniskillen, and the industrial sites and airport at Ballycassidy. The area north of Enniskillen, including Devenish Island is an Area of Significant Archaeological Interest.

Lowland Farmland LCT

LCAs 7. The Sillees Valley, 8. The Arney Lowland, 15. Irvinestown Farmland

These farmed landscapes border the *Lough Basins*, with the *Sillees Valley* and *Arney Lowlands* to the west, and the *Irvinestown Farmland* to the east. All are of the 'drumlin farmland' pastures commonly found within the Local Authority area. **The Sillees Valley (LCA 7)** is shallow river valley which the Sillees River winds through, and has a sense of enclosure created by a limestone ridge separating the area from Lough Erne to the east, and the Knockmore Scarpland to the west. Drumlins are tightly packed and steep sided, and the landscape is further enclosed by hedgerows and woodlands. To the south the landscape gives way to the **Arney Lowlands (LCA 8)**, the landscape of which is broader with less enclosure created by drumlins and surrounding landforms, and forms a shallow valley for the Arney River outflowing from Upper Lough Erne towards Lough Macnean. Both landscapes are quite sparsely settled, with small villages, hamlets and single properties scattered throughout.



Enclosed pastures of The Sillees Valley seen from the Lough Navar Forest

The **Irvinestown Farmland (LCA 15)** lies to the east of Upper Lough Erne and is a broad area of farmland extending north eastwards between the sandstone uplands on either side and into the neighbouring *Omagh Basin* Regional Character Area. This is a pastoral landscape of generally good quality farmland, with rolling drumlins hedgerows and small woods. The area contains the larger settlements of Irvinestown and Dromore, connected by the A32 which is a principal transport corridor linking Enniskillen and Omagh.

Lowland Hills LCT

LCA 3. Croagh and Garvary River

The **Croagh and Garvary River (LCA 3)** is an area of rugged small hills to the north of Lower Lough Erne forming part of the wider Pettigo Plateau. The notable high point is the summit of Bressy Hill just outside of the Local Authority area. Farming and small settlement is concentrated on the lower slopes near Lough Erne, while at higher elevations there is rough grazing and moorland, and forestry covers much of the character area to the east. This area is identified as an ASQ, and contributes to the setting of Lower Lough Erne, particularly when seen from the popular Cliffs of Magho viewpoint. Much of the area is also designated as SPA.

Limestone Uplands LCT

LCA 10. Slieve Russel, Derrylin and Kinawley

To the very southwest of the ReCA lies the landscape of **Slieve Russel, Derrylin and Kinawley (LCA 10)**. This area includes both upland and lowland landscapes; its eastern parts, where close to Upper Lough Erne, are largely flat and of the *Lowland Farmland* character type, while further west the ground rises steeply to the flat topped elongated hill of Slieve Rushen at 404m AOD, with a secondary summit of Molly Mountain lying to the north. The lower lying ground is more settled, but the uplands also contain farms, rough grazing and pastures, and limestone quarries are found at all

elevations. Wind farms and single turbines are present in the upland area, contributing to the sense of a semi-industrialised landscape. The landscape appears as a background feature in views from Upper Lough Erne and is visible approximately 12km south east from the summit of Cuilcagh.



'Large' (125m) and 'Small/ Medium' (45m) turbines seen together to the south west of Molly Mountain

Table 6.1(ii). Summary of Landscape Capacity and Cumulative Effects and Guidance for Future Wind Energy Development: Lough Erne Lakeland

2. LOUGH ERNE LAKELAND																			
Key: <div><div></div> No Capacity</div> <div><div></div> Low Capacity</div> <div><div></div> Medium Capacity</div> <div><div></div> High Capacity</div> Turbine Size: Small 15<30m; Small/ Medium 30<50m; Medium 50<80m; Medium/ Large 80<120m; Large 120<150m; Very Large 150~200m																			
UNDERLYING LANDSCAPE CAPACITY (i.e. not taking account of current wind energy development)										CURRENT CONSENTED DEVELOPMENT				PROPOSED LIMITS TO FUTURE DEVELOPMENT (i.e. proposed acceptable level of wind energy development)					
Landscape Sensitivity to Wind Energy Development				Landscape Capacity (Related to turbine size)						Existing/ Consented Developments (November 2017)	Current Wind Energy Landscape Type(s)	Future Wind Energy Landscape Type(s)	Remaining Landscape Capacity (Related to turbine size)						Comments on Sensitivity and Capacity
Landscape Character Sensitivity	Visual Sensitivity	Landscape Sensitivity	Landscape Value	15-<30m	30-<50m	50-<80m	80-<120m	120-<150m	150 ~ 200m				15-<30m	30-<50m	50-<80m	80-<120m	Over 120m	150 ~ 200m	
LOUGH BASIN																			
Landscape Character Area: 11. Upper Lough Erne																			
Med/ High	Med	Med/ High	Med/ High	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	6 consented wind turbines within Upper Lough Erne, with a maximum height of 59m and located at the fringes of the character area only.	Landscape with No Wind Turbines (LNWT)	LNWT	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Enclosed and intimate landscape that susceptible to the effects of wind energy development, but enclosed character reduces internal visibility. Development Capacity: Small-scale wind energy developments at the LCA fringes can be accommodated because of the enclosed nature of the landscape. Where the perception of a LNWT can be maintained there may be limited further opportunities for small scale developments.
												Max. Numbers in Group	1-3	1-2	1				
												Min Group Separation Distances (km)	3-4	4-7	7				
Landscape Character Area: 13. Enniskillen																			
Med/ High	Med	Med/ High	Med/ High	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	17 consented wind turbines, small to medium size, maximum 59m	Landscape with No Wind Turbines/ Landscape with Occasional Wind Turbines (LNWT/ LOWT)	LNWT/ LOWT	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Generally small scale, intimate and sensitive, enclosed rural character, while around Enniskillen the landscape is more urbanised and of lower sensitivity e.g. at Ballycassidy. Development Capacity: The rural landscape has very limited capacity to accommodate some small-scale development, while some opportunities for siting turbines within urban/ industrial/ commercial developments may exist.
												Max. Numbers in Group	1-3	1-2	1				
												Min Group Separation Distances (km)	2-3	2-4	5				

2. LOUGH ERNE LAKELAND																			
Key: <div><div></div> No Capacity</div> <div><div></div> Low Capacity</div> <div><div></div> Medium Capacity</div> <div><div></div> High Capacity</div> Turbine Size: Small 15<30m; Small/ Medium 30<50m; Medium 50<80m; Medium/ Large 80<120m; Large 120<150m; Very Large 150~200m																			
UNDERLYING LANDSCAPE CAPACITY (i.e. not taking account of current wind energy development)								CURRENT CONSENTED DEVELOPMENT			PROPOSED LIMITS TO FUTURE DEVELOPMENT (i.e. proposed acceptable level of wind energy development)								
Landscape Sensitivity to Wind Energy Development				Landscape Capacity (Related to turbine size)				Existing/ Consented Developments (November 2017)	Current Wind Energy Landscape Type(s)	Future Wind Energy Landscape Type(s)	Remaining Landscape Capacity (Related to turbine size)						Comments on Sensitivity and Capacity		
Landscape Character Sensitivity	Visual Sensitivity	Landscape Sensitivity	Landscape Value	15-<30m	30-<50m	50-<80m	80-<120m				120-<150m	150 ~ 200m	15-<30m	30-<50m	50-<80m	80-<120m		Over 120m	150 ~ 200m
Landscape Character Area: 2. Lower Lough Erne																			
Med/ High	High	Med/ High	Med/ High	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	6 consented wind turbines, small/ medium or medium size, up to 69m.	Landscape with Occasional Wind Turbines (LOWT)	LOWT	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Overall a medium – large scale landscape but with smaller scale features and high scenic qualities. Open views across lough. Development Capacity: Due to the large scale of the landscape a limited amount of small scale development could be accommodated without affecting key landscape characteristics.	
												Max. Numbers in Group	1-3	1-2	1				
												Min Group Separation Distances (km)	3-4	4-7	7				
LOWLAND FARMLAND																			
Landscape Character Area: 7. The Sillees Valley; 8. The Arney Lowlands																			
Med/ High	Med	Med/ High	Med	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	10 (Sillees Valley) 5 (Arney Lowlands) consented wind turbines, mostly small or small/ medium but occasionally medium up to 55m.	Landscape with No Wind Turbines/ Landscape with Occasional Wind Turbines (LNWT/ LOWT)	LOWT/ LNWT	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Small scale enclosed pastoral landscapes, which feature in views from scenic upland areas. Arney Lowlands less enclosed than Sillees Valley. Development Capacity Limited capacity for small scale wind energy developments associated with farms and small settlement.	
												Max. Numbers in Group	1-3	1-2	1				
												Min Group Separation Distances (km)	3-4	4-7	7				
Landscape Character Area: 15. Irvinestown Farmland																			
Med/ High	Low/ Med	Med	Med	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	47 consented wind turbines, mostly of small/ medium typology occasionally up to 60m approx.	Landscape with Occasional Wind Turbines (LOWT)	LOWT	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Broad, undulating lowland landscape, often enclosed by drumlins and trees. Development Capacity: Enclosed character of the landscape creates opportunities for accommodating smaller scale wind turbines, however the landscape is approaching capacity to the west.	
												Max. Numbers in Group	1-3	1-3	1-2				
												Min Group Separation Distances (km)	2-3	3-5	4-7				

2. LOUGH ERNE LAKELAND																			
Key: <div><div></div> No Capacity</div> <div><div></div> Low Capacity</div> <div><div></div> Medium Capacity</div> <div><div></div> High Capacity</div> Turbine Size: Small 15<30m; Small/ Medium 30<50m; Medium 50<80m; Medium/ Large 80<120m; Large 120<150m; Very Large 150~200m																			
UNDERLYING LANDSCAPE CAPACITY (i.e. not taking account of current wind energy development)										CURRENT CONSENTED DEVELOPMENT			PROPOSED LIMITS TO FUTURE DEVELOPMENT (i.e. proposed acceptable level of wind energy development)						
Landscape Sensitivity to Wind Energy Development				Landscape Capacity (Related to turbine size)						Existing/ Consented Developments (November 2017)	Current Wind Energy Landscape Type(s)	Future Wind Energy Landscape Type(s)	Remaining Landscape Capacity (Related to turbine size)						Comments on Sensitivity and Capacity
Landscape Character Sensitivity	Visual Sensitivity	Landscape Sensitivity	Landscape Value	15-<30m	30-<50m	50-<80m	80-<120m	120-<150m	150 ~ 200m				15-<30m	30-<50m	50-<80m	80-<120m	Over 120m	150 ~ 200m	
LOWLAND HILLS																			
Landscape Character Area: 3. Croagh and Garvary River																			
Med	Med	Med	Med/ High	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	4 consented wind turbines, up to 'medium size.	Landscape with No Wind Turbines/ Landscape with Occasional Wind Turbines (LNWT/ LOWT)	LOWT/ LNWT	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Transitional landscape, with lowland, upland plateau and forested areas. Sensitive as part of setting to Lower Lough Erne and close to Castle Caldwell. Development Capacity: Site is unsuitable for a wind farm development, but the expansive landscape context would allow a level of smaller scale development to be absorbed.
												Max. Numbers in Group	1-3	1-3	1-3				
												Min Group Separation Distances (km)	2-3	3-5	4-7				
LIMESTONE UPLANDS																			
Landscape Character Area: 10. Slieve Russel, Derrylin and Kinawley																			
Low/ Med	Med	Low/ Med	Low/ Med	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	41 consented turbines, including 18x125m turbines at Slieve Rushen, and 5x125m at Molly Mountain, various single turbines of 'medium' size.	Landscape with Occasional Wind Turbines/ Wind Turbines Landscape (LOWT/ WTL)	LOWT/ WTL	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Landscape with a varying character including a larger scale upland landscape, affected by wind energy and other industrial land uses. Development Capacity: Upland areas of the landscape have underlying capacity for substantial wind farm development, while lowland areas would also have some capacity for smaller turbine typologies.
												Max. Numbers in Group	1-3	1-3	1-3	25	25		
												Min Group Separation Distances (km)	1-2	2-3	3-5	15	15		

SUMMARY OF LANDSCAPE CAPACITY: LOUGH ERNE LAKELAND

The majority of the *Lough Erne Lakeland* has very limited opportunities for larger scale wind energy development, however there are opportunities for siting smaller typologies of wind turbines up to 'medium' size (50<80m) due to the enclosed nature of the landscape where internal visibility tends to be restricted by frequent drumlins and well wooded field boundaries. The only areas with landscapes potentially able to accommodate larger scale wind energy development are *LCA 3. Croagh and Garvary River* to the north, and *LCA10. Slieve Russel, Derrylin and Kinawley*. However, any sizeable development in the former area it most likely to have a significant impact to the character of Lower Lough Erne. There is already considerable wind energy development within *LCA10. Slieve Russel, Derrylin and Kinawley* but there appear to be few remaining areas suited to turbines in excess of 80m ('medium/ large').

LOUGH BASIN LCT

LCAs 2. Lower Lough Erne, 11. Upper Lough Erne, 13. Enniskillen

Underlying Landscape Capacity

All three landscape areas have a relatively high sensitivity to wind energy development, having small scale features, the character of which could easily be overwhelmed by larger scale or frequent wind turbines. The landscape of *Lower Lough Erne* is the largest scale of the three LCAs, with the waterbody of more prominence in views, but is of high scenic quality. However, the enclosed nature of these landscapes inland from the loughs does provide a limited capacity for wind energy development, with landscapes typically able to accommodate occasional, relatively small wind turbines typically of domestic/ farm scale in single/ small groups, with up to 'medium' sized turbines (50<80m).

The landscape objective should be to maintain these areas as *landscapes with occasional or no wind turbines*.

Consented Wind Energy Landscape and Wind Energy Applications

All areas have a low level of wind energy development, with occasional turbines up to the 'medium' size (50<80m), typically as single turbines or small groups. The greatest concentration of development is around the urban area of Enniskillen. The consented wind energy landscape is a *landscape with occasional or no wind turbines*. There are no known applications in this area.

Residual Capacity and Guidance for Future Development

Wind Turbines

In all landscape areas there would be only limited opportunities for future development while maintaining the desired wind energy landscape type. Maximum turbine sizes will depend on locations, but it is unlikely that wind turbines in excess of 'medium' size (50<80m) would be acceptable.

The enclosed landscape of *Upper Lough Erne* could potentially support a very low level of additional wind energy development at sites towards the periphery of the area so as not to encroach upon the central water body, maximising the screening effects of vegetation and landform. The prominence of wind turbines can be reduced by avoiding siting turbines directly on top of drumlins or other local landforms.

In *LCA Enniskillen* the urbanised character of parts of this LCA may allow capacity for additional developments associated with commercial/ industrial land uses. However, the objective should be to maintain the rural parts of the character area as largely free of wind energy developments. Developments close to the shores of Lower Lough Erne should be avoided, and there should be no development on any islands within the lough.

Wind energy development within *Lower Lough Erne* is currently very limited, and views from the Lough shores should remain largely free of wind energy development. There may be very limited opportunities for wind turbine developments away from the lough shore, but there should be no development on the islands of the loughs. Any turbines below the Cliffs of Magho should be of the small typology only (15<30m), sited in lowland areas associated with farms and other properties.

Ancillary Elements

Lough Basin landscapes are generally well enclosed in the locations more suited to wind turbines and therefore ancillary features should take advantage of screening provided by vegetation and topography, according to local conditions. Refer to Section 6.7 for general guidance.

LOWLAND FARMLAND LCT

LCAs 7. The Sillees Valley, 8. The Arney Lowland, 15. Irvinestown Farmland

Underlying Landscape Capacity

The Sillees Valley is the smallest scale and most enclosed of these landscape character areas. Its small-scale results in a relatively high sensitivity to wind energy development, however its enclosed character means that a level of wind energy development could be accommodated due to restricted visibility when moving around the landscape. The *Arney Lowlands* are less enclosed and flatter, and of a larger scale, but form the immediate lowland setting to the sensitive upland landscapes at Cuilcagh. Both therefore have low capacity for wind energy development, and can accommodate only occasional, small scale wind energy developments typically of domestic/ farm scale in single/ small groups, up to a maximum of 'medium' sized turbines (50<80m). Turbines of this larger typology are more suited to the more southerly *Arney Lowlands* due to its larger landscape scale.

The landscape objective should be to maintain these areas as *landscapes with occasional wind turbines or no wind turbines*.

The *Irvinestown Farmland* is mostly of a lower sensitivity than the above landscape areas, being a relatively extensive lowland farming landscape within a less sensitive landscape context. The landscape is well settled including the main A32 transport corridor, but its enclosed character can accommodate some smaller scale wind energy development, with a medium capacity for 'small or 'small/ medium' sized turbines (<50m), and some capacity for turbines up to 80m. However, the landscape objective should be to retain this area as a *landscape with occasional wind turbines*.

Consented Wind Energy Landscape and Wind Energy Applications

The Sillees Valley and *Arney Lowlands* have a low level of wind energy development, with occasional turbines up to the ‘medium’ size (50<80m), typically as single turbines or small groups. The consented wind energy landscape is a *landscape with occasional or no wind turbines*. There are no known wind energy applications in this area.

Wind energy development within the *Irvineestown Farmland* is more prevalent, with concentrations of larger wind turbines (50 – 60m) located towards the west of the character area, and fewer, smaller turbines towards the east. The consented wind energy landscape is a *landscape with occasional wind turbines*, but approaching a *landscape with wind turbines* towards the west. There is a current application for a single ‘medium’ size turbine (50<80m) east of Irvineestown.

Residual Capacity and Guidance for Future Development

Wind Turbines

There is limited potential for further development within the *Sillees Valley* and *Arney Lowlands*. Development within *The Sillees Valley* should be limited principally to smaller scale developments of the ‘small’ or ‘small/ medium’ size (<50m) which can be associated with farms and settlements. There is difficulty in siting larger typology turbines in such a way that they do not dominate smaller scale landscape features of the LCA including the enclosing scarp to the west of the limestone ridge in the east.

The small extent of the *Arney Lowlands* restricts the potential for further wind energy developments, but its flatter landscape presents fewer difficulties in siting turbines of the ‘medium’ (50<80m) typology as they would be seen in a more open and less complex landform. These larger turbines should be sited away from the sensitive landscape of Florence Court to the south of the LCA.

Consented wind energy development towards the west of the *Irvineestown Farmland* is approaching capacity, with a relatively high number of ‘medium’ sized turbines (50<80m) already consented/ constructed. Remaining capacity is mostly in the east of the LCA. Single turbines/ small turbine groups of ‘medium’ size (50<80m) should be well separated in this landscape to prevent the occurrence of ‘windfarm landscapes’ in this lowland environment.

Ancillary Elements

The enclosed nature of these landscape areas provides opportunities for mitigating the effects of ancillary elements of small scale wind energy developments (<80m). Ancillary elements should be sited to suit local conditions utilising screening provided by topography and vegetation. Refer to Section 6.7 for general guidance.

LOWLAND HILLS LCT

LCA 3. Croagh and Garvary River

Underlying Landscape Capacity

This landscape is of small extent, and while its character is not particularly sensitive to wind energy development, it forms part of the setting to Lower Lough Erne and is close to the Registered Park and Garden at Castle Caldwell. This landscape area is typically seen in expansive views to the wider Pettigo Plateau, and the larger scale context of the LCA provides some opportunities for a level of wind energy development to be absorbed. The simpler forested eastern part of the landscape is of lower sensitivity to wind energy development than the more rugged western parts. The SPA designation encompassing much of the more upland parts of the LCA may be a significant constraint to wind energy development because of its high value for conservation purposes.

The capacity of the landscape is generally low, suited to occasional turbines of the ‘medium’ size (50<80m).

The landscape objective should be to maintain this area as a *landscape with occasional wind turbines* or *landscape with no wind turbines*.

Consented Wind Energy Landscape and Wind Energy Applications

The landscape includes only 4 consented wind turbines, mostly of the ‘medium’ typology with the tallest turbine 64m tall, situated to the west of the character area. The consented wind energy landscape is a *landscape with occasional or no wind turbines*.

Residual Capacity and Guidance for Future Development

Wind Turbines

Any future development of the ‘medium’ (50<80m) typology turbines would be more suited to eastern parts of the LCA, associated with the simpler forested landscape found here. Within this landscape it would be preferable to group wind energy developments and avoid an apparent proliferation of single turbine developments within more upland parts of the landscape. Wind turbines should be sited such that they avoid apparently dominating small landscape features, such as knolls, rock outcrops. Smaller scale turbines <30m should be sited in more lowland areas, associated with farms and other properties.

Ancillary Elements

Parts of the landscape are relatively open and exposed, and therefore ancillary elements have the potential to be locally intrusive, exacerbating effects of wind turbines. In more open locations infrastructure should respect local topography, with forested parts of the LCA providing better opportunities for screening infrastructure from view.

LIMESTONE UPLAND LCT

LCA 10. Slieve Russel, Derrylin and Kinawley

Underlying Landscape Capacity

Parts of this landscape are of relatively simple upland character with the ability to accommodate larger scale wind energy developments, while others are of more lowland character and therefore have capacity for smaller wind energy typologies only. The landscape is also separated from more sensitive landscapes, and therefore developments here have limited impacts on views and wider landscape character.

The landscape has a medium capacity for large wind turbines (80<120m), and also has capacity for smaller wind turbines types within lowland areas. The landscape has capacity to appear as a *wind turbine landscape* in upland areas, but the extent of upland landscape is limited, with windfarms only suited to a small part of the character area as a whole. Subject to careful siting and design the landscape also has capacity to accommodate associated wind farm infrastructure within the more upland areas, with guidance provided below.

Consented Wind Energy Landscape and Wind Energy Applications

Upland parts of the landscape are almost fully developed for wind energy, with 23 wind turbines of 125m, with additional turbines extending across the border into County Cavan. The upland areas also include various 'medium' size wind turbines of around 60m. Lowland areas include occasional 'small/ medium' or 'medium' size turbines (<80m), either singly or in small groups. The wind energy landscape varies from a *wind turbine landscape* to a *landscape with occasional wind turbines*. There are current applications for two 'medium' sized wind turbines (50<80m) within the LCA.

Residual Capacity and Guidance for Future Development

Wind Turbines

There are very limited opportunities for further large-scale wind farm development, as most areas of 'upland' character have been fully developed, although there may be some scope for linking the Molly Mountain and Slieve Rushen turbines e.g. through replacement of existing 'medium' typology turbines. While large turbines (120<150m) can be accommodated within this landscape, there is no capacity for very large (150m+) turbines as these are likely to be appear out of scale with the landform on which they would be sited, and the scale of the landscape within the LCA and surrounding landscapes is insufficiently large to absorb such development. Development in this area should continue to avoid the summit of Molly Hill or being sited on its forward slopes when viewed from the north and east.

There are some opportunities for smaller scale wind energy development within the lowland areas, up to the 'medium' (50<80m) size of wind turbines. There is greater capacity within the more lowland landscape towards the east and north of the LCA rather than the lower slopes of Slieve Rushen, to provide separation between the upland windfarms and lowland single/ small turbine group developments.

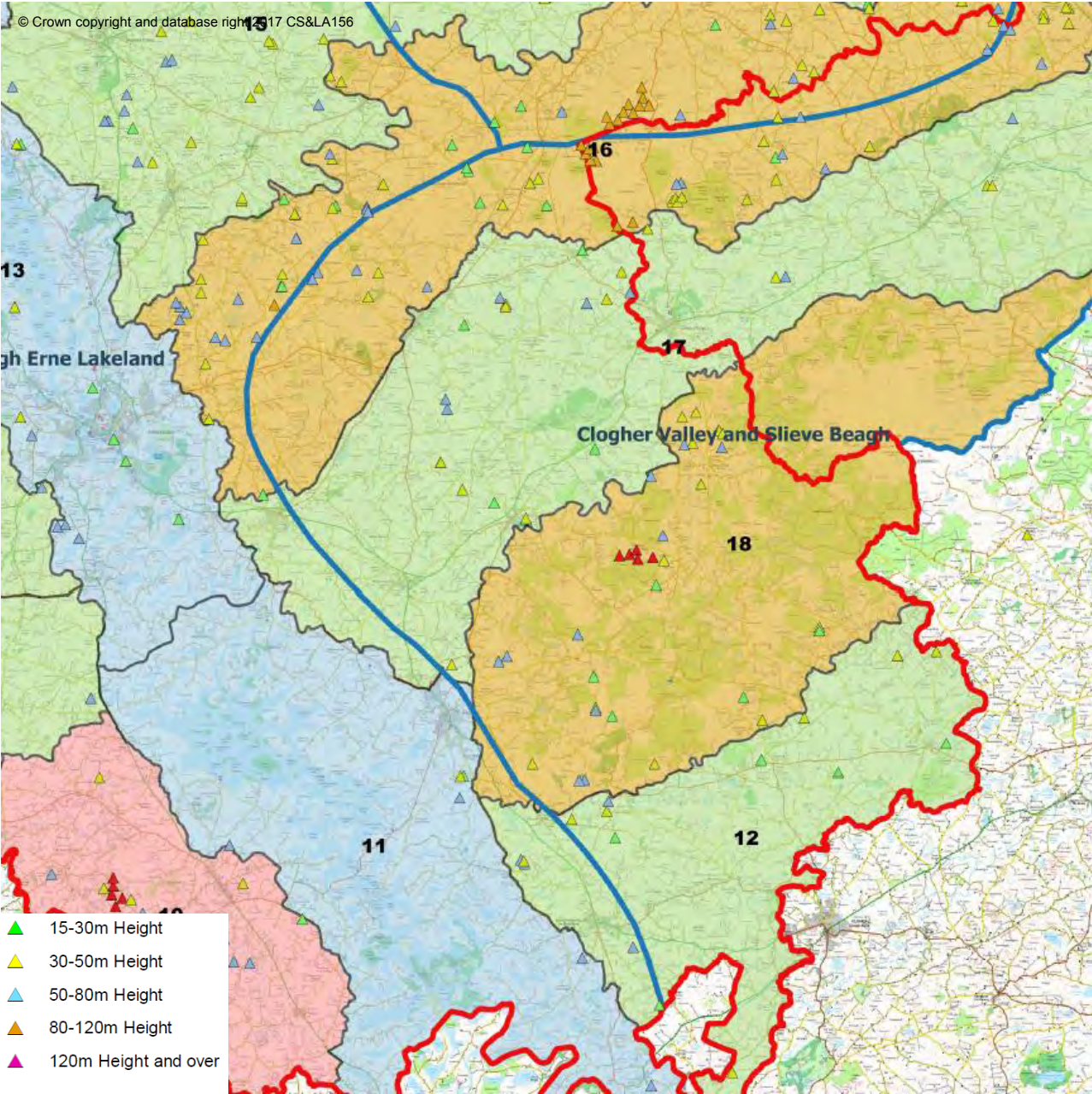
Ancillary Elements

In the case of larger wind farms, associated low level infrastructure can be accommodated either in more upland areas, taking advantage of variations within the landform, but set back from the main ridge, or within nearby areas of more lowland character, where sub-stations, control rooms or energy storage units would be of a similar scale to the various farm buildings already present in the landscape. Infrastructure should not be sited on east facing slopes where it would be seen with wind turbines in views from the lowlands, including from Upper Lough Erne. Power lines/ pylons have the potential to add to visual clutter within this landscape, and should not be seen with wind turbines along the Slieve Rushen/ Molly Mountain ridge.



At Slieve Rushen and Molly Mountain (LCA 10) different turbines sizes add complexity to the wind energy landscape. Consistent use of 'large' typologies only would add capacity and create a more coherent appearance

3. CLOGHER VALLEY AND SLIEVE BEAGH



LCAs 12. Newtownbutler and Rosslea Farmland, 17. Clogher Valley Lowlands, 18. Slieve Beagh

To the south of the Local Authority Area are the lowland farming landscapes of the Clogher Valley, and those around the settlements of Newtownbutler and Rosslea, extending across the border into County Monaghan. These two lowland landscapes are separated by the uplands of Slieve Beagh, with the two lowland areas meeting to the south west as they transition into the Upper Lough Erne basin. To the north the sandstone ridge including Brougher Mountain extends north eastwards and provides a physical barrier between these landscapes and the farmlands between Omagh and

Irvinestown. The area therefore has a varied character, the more rugged, partly forested uplands contrasting with the lowland drumlin farmland. The Clogher Valley has a more linear character, enclosed on either side by *Sandstone Ridges and Plateau* uplands, while the farmland around Newtownbutler and Rosslea is less enclosed. The area includes Registered Parks and Gardens at Rosslea Manor, Colebrook and Tempo Manor, but is not otherwise designated for its landscape qualities. The area does not have strong interest for recreation and tourism, however the Ulster Way does pass along the uplands of Slieve Beagh. Much of this upland area is designated as SPA for its importance to birds.

Lowland Farmland LCT

LCAS 12. Newtownbutler and Rosslea Lowlands; 17. Clogher Valley Lowlands

These landscapes shares characteristics with the other lowland farmlands, characterised by drumlins, small pastures enclosed by well wooded field boundaries. The **Newtownbutler and Rosslea Lowlands (LCA 12)** is a broad landscape but of a small scale and enclosed. The Finn River passes through the landscape and small loughs are present throughout, but in particular at the foot of Slieve Beagh to the north, a number of which are designated wildlife sites. The landscape is widely settled with single/ small collections of properties, and some small settlements.



Looking across the Newtownbutler and Rosslea Farmland to the east

The **Clogher Valley Lowlands (LCA 17)** forms one of the main transport corridors within Fermanagh and Omagh, with the A4 the most direct route between Enniskillen and Belfast. The landscape is of productive farmland, again characterised by smaller scale topographic features of drumlins and eskers, and there are areas of parkland landscape at Colebrook and Tempo with the former identified as an ASQ. Outside of the main A4 corridor the landscape remains rural and tranquil with settlement that is small scale and dispersed. To the north of the LCA the pastures of this landscape extend to the higher rounded uplands of Brougher Mountain (LCA 16, see below).



View east across the drumlin farmland of the Clogher Valley from Topped Mountain

Sandstone Ridges and Plateau LCT

LCA 18. Slieve Beagh

















The upland landscape of **LCA 18. Slieve Beagh** separates these lowland landscapes. This landscape is an undulating sandstone plateau, with a mosaic of pastures, forestry and moorland, but at higher elevations of more distinct upland character. The high point of Slieve Beagh (370m AOD approx.) lies just to the north east of the Local Authority boundary, but there are a number of rounded hills within Fermanagh and Omagh including Teiges Mountain and Doocarn which provides excellent views to the east from a recognised viewpoint. The area is sparsely settled and traversed by a network of minor roads and tracks, and there is a wind farm consented at Teiges Mountain. Much of this area is designated as a SPA, which in practice could be a significant constraint to wind energy development. The Ulster Way passes through the LCA.



The interior of LCA 18. Slieve Beagh, towards the location of the consented Tiegies Mountain windfarm, located to the left of the valley

Table 6.1(iii). Summary of Landscape Capacity and Cumulative Effects and Guidance for Future Wind Energy Development: Clogher Valley and Slieve Beagh

3. CLOGHER VALLEY AND SLIEVE BEAGH																			
Key: <div><div></div> No Capacity</div> <div><div></div> Low Capacity</div> <div><div></div> Medium Capacity</div> <div><div></div> High Capacity</div> Turbine Size: Small 15<30m; Small/ Medium 30<50m; Medium 50<80m; Medium/ Large 80<120m; Large 120<150m; Very Large 150~200m																			
UNDERLYING LANDSCAPE CAPACITY (i.e. not taking account of current wind energy development)									CURRENT CONSENTED DEVELOPMENT				PROPOSED LIMITS TO FUTURE DEVELOPMENT (i.e. proposed acceptable level of wind energy development)						
Landscape Sensitivity to Wind Energy Development				Landscape Capacity (Related to turbine size)					Existing/ Consented Developments (November 2017)	Current Wind Energy Landscape Type(s)	Future Wind Energy Landscape Type(s)	Remaining Landscape Capacity (Related to turbine size)						Comments on Sensitivity and Capacity	
Landscape Character Sensitivity	Visual Sensitivity	Landscape Sensitivity	Landscape Value	15-<30m	30-<50m	50-<80m	80-<120m	120-<150m				150 ~ 200m	15-<30m	30-<50m	50-<80m	80-<120m	Over 120m		150 ~ 200m
LOWLAND FARMLAND																			
Landscape Character Area: 12. Newtownbutler and Rosslea Lowlands																			
Med/ High	Low/ Med	Med	Med	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	18 consented turbines ranging from small to medium sized, maximum 56m.	Landscape with No Wind Turbines/ Landscape with Occasional Wind Turbines (LNWT/ LOWT)	LOWT	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Broad lowland landscape, small scale but enclosed character. Development Capacity: Landscape can accommodate a level of smaller scale wind energy development associated with farms and properties, and some residual capacity exists in the LCA.
												Max. Numbers in Group	1-3	1-3	1-2				
												Min Group Separation Distances (km)	2-3	3-5	4-7				
Landscape Character Area: 17. Clogher Valley Lowlands																			
Med/ High	Low/ Med	Med	Med	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	26 consented turbines ranging from small to medium sized, maximum 63m.	Landscape with No Wind Turbines/ Landscape with Occasional Wind Turbines (LNWT/ LOWT)	LOWT	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Valley landscape enclosed by uplands to the north and south, but relatively broad, lowland farming landscape, small scale features. The area includes the ASQ at Colebrook. Development Capacity: Landscape would accommodate a level of smaller scale wind energy development associated with farms and properties, and some residual capacity exists in the LCA.
												Max. Numbers in Group	1-3	1-3	1-2				
												Min Group Separation Distances (km)	2-3	3-5	4-7				

3. CLOGHER VALLEY AND SLIEVE BEAGH																				
Key:  No Capacity  Low Capacity  Medium Capacity  High Capacity Turbine Size: Small 15<30m; Small/ Medium 30<50m; Medium 50<80m; Medium/ Large 80<120m; Large 120<150m; Very Large 150~200m																				
UNDERLYING LANDSCAPE CAPACITY (i.e. not taking account of current wind energy development)										CURRENT CONSENTED DEVELOPMENT				PROPOSED LIMITS TO FUTURE DEVELOPMENT (i.e. proposed acceptable level of wind energy development)						
Landscape Sensitivity to Wind Energy Development				Landscape Capacity (Related to turbine size)						Existing/ Consented Developments (November 2017)	Current Wind Energy Landscape Type(s)	Future Wind Energy Landscape Type(s)	Remaining Landscape Capacity (Related to turbine size)					Comments on Sensitivity and Capacity		
Landscape Character Sensitivity	Visual Sensitivity	Landscape Sensitivity	Landscape Value	15-<30m	30-<50m	50-<80m	80-<120m	120-<150m	150 ~ 200m				15-<30m	30-<50m	50-<80m	80-<120m	Over 120m		150 ~ 200m	
SANDSTONE RIDGES AND PLATEAU																				
Landscape Character Area: 18. Slieve Beagh																				
Med	Med	Med	Low/ Med							33 consented wind turbines including Teiges Mountain wind farm (5 x 120m). Other are single or small turbine groups of small to medium sized turbines.	Landscape with Wind Turbines (LWT)/ Landscape with Occasional Wind Turbines (LOWT)	LWT							Landscape Analysis: The upland landscape is broad and undulating in character, modified by forestry and not of particular scenic or landscape quality.	
													Max. Numbers in Group	1-3	1-3	1-5	5-10	5-10		Development Capacity: The undulating nature of the landscape allows wind energy developments to be partly concealed in valleys and hollows. The landscape scale is sufficient for larger wind energy developments and there is some residual capacity. However, the SPA is a potentially significant non-landscape constraint.
													Min Group Separation Distances (km)	2-3	3-5	4-7	7-12	7-12		

SUMMARY OF LANDSCAPE CAPACITY: CLOGHER VALLEY FARMLAND AND SLIEVE BEAGH

The lowland landscapes of this regional landscape area are broadly typical of other 'drumlin' farmlands within the Local Authority area. Both are relatively broad, low lying landscapes. Small features and enclosure can create an intimate character, but on the other hand limit internal visibility and provide some capacity for wind turbine development. Both landscapes are visible from frequented viewpoints within neighbouring upland areas (e.g. Carnmore Viewpoints, Topped Mountain) but are not seen as areas of high scenic value. As an upland landscape, Slieve Beagh has a capacity to accommodate larger scale wind farm developments, although some of that capacity has been utilised by the Teiges Mountain wind farm.

LOWLAND FARMLAND LCTS

LCA 12. Newtownbutler and Rosslea Lowlands; 17. Clogher Valley Lowlands

Underlying Landscape Capacity

Both of these landscapes have similar sensitivities and capacity for wind energy development, and are therefore assessed together. The small scale of these landscapes results in a susceptibility to larger scale wind energy development. However, their enclosed character and frequently curtailed internal visibility results in a medium capacity for accommodating smaller scale wind turbine developments, and a low capacity for 'medium' sized single turbine/ turbines in small groups (<80m).

The landscape objective should be to maintain these areas as *landscapes with occasional wind turbines*.

Consented Wind Energy Landscape and Wind Energy Applications

Both areas have a low level of wind energy development, with occasional turbines up to the 'medium' size (50<80m), typically as single turbines or small groups. The *Clogher Valley Lowlands* have a slighter greater level of wind energy development, with a greater number of 'medium' (50<80m) turbines. The consented wind energy landscape is a *landscape with occasional or no wind turbines*. There are no known applications within either LCA.

Residual Capacity and Guidance for Future Development

Wind Turbines

There is some opportunity in both LCAs for further wind energy development up to the 'medium' (50<80m) size of turbines. With smaller scale typologies of <50m ('small', 'small/ medium' sized turbines) these should be logically associated with the features of the farming landscape i.e. associated with farms and properties. 'Medium' sized turbines (50<80m) have the greater potential to overwhelm or appear out of scale with smaller landscape elements and these should be sited in more open areas away from smaller scale elements, particularly small buildings, against which they can be scaled. The edges of the LCAs at the transition to the more upland landscapes may provide

the best sites, also providing backclothing of the turbines in views. Siting should be mindful of the more sensitive estate landscapes found in both areas, which larger turbines could dominate.

Ancillary Elements

The enclosed nature of these landscapes provides opportunities for mitigating the effects of ancillary elements of small scale wind energy developments (<80m). Ancillary elements should be sited to suit local conditions utilising screening provided by topography and vegetation. Refer to Section 6.7 for general guidance.

SANDSTONE RIDGES AND PLATEAU LCT

LCA 18. Slieve Beagh

Underlying Landscape Capacity

This landscape is an undulating upland plateau of no particular scenic value and a relatively large scale, although the landscape is limited in its extent. While the landscape character has quite low sensitivity to wind energy development, it is visible from the lowlands on either side where it appears as a long and low forested horizon. Wind energy development therefore has the potential to be quite prominent in this landscape, but the undulating terrain does provide opportunities for concealing wind turbines to a degree, lessening their visual impact. Varied topography and forestry also provide opportunities concealing wind farm infrastructure into the landscape. The landscape includes quite frequent single properties, and large areas suited to more extensive wind energy development are limited. The landscape has a medium capacity for 'medium/ large' turbines (80<120m), but a lesser capacity for the largest typologies because of their potential to appear out of scale with the landform when seen from the lowland areas. There is no capacity for very large 150m+ turbines. The SPA designation may significantly constrain the capacity of the area in terms of locations where wind turbines would be acceptable.

The landscape has capacity for development as a *landscape with wind turbines*.

Consented Wind Energy Landscape and Wind Energy Applications

The 5 x 120m turbines at Teiges Mountain is the largest wind energy development in the LCA. There are a number of single and small turbine groups, particularly in the more transitional lowland areas, up to a maximum height of 77m. There are no known applications within the LCA. The consented wind energy developments create a mixture of *landscape with wind turbines/ landscape with occasional wind turbines*.

Residual Capacity and Guidance for Future Development

Wind Turbines

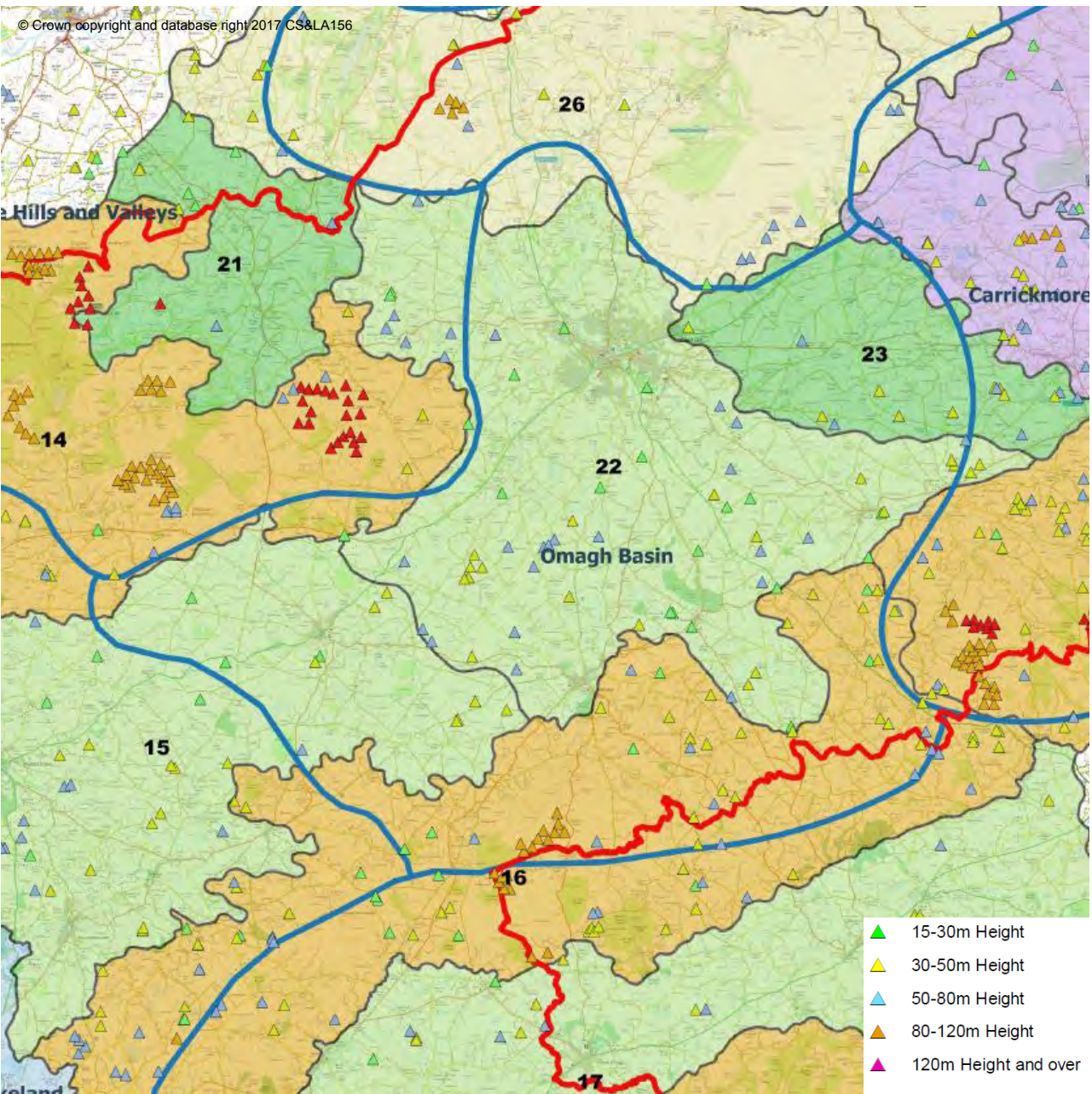
There is some capacity for further wind energy development of the larger scale in this landscape. Due to the limited geographical extent of the area, it is preferable that future wind farm development appears as a limited extension to the existing Teiges Mountain wind farm avoiding the outward facing slopes of the LCA and more prominent hill tops to reduce the visual prominence from adjacent lowland landscapes, and wind farms seen to encroach upon the summit of Slieve Beagh should be

avoided. Small groups of turbines, typically 'medium/ large' (80<120m) so as not to appear out of scale with the landform and its features, could be accommodated in various location within the undulating landscape, taking advantage of topographic screening, but separated from the larger windfarm developments to avoid cumulative issues from intervisibility of different scales of wind energy development. Recommended separation distances should be maintained to avoid creating a *windfarm landscape* of varying wind turbine sizes and development types.

Ancillary Elements

Wind farm infrastructure should be sited to take advantage of screening or backclothing provided by undulating topography and forestry found within the more upland parts of the landscape character area.

4. OMAGH BASIN



LCAs 16. Brougher Mountain, 22. Omagh Basin, 23. Camowen Valley

The *Omagh Basin* is a large area of mostly lowland farmland which extends towards the north east from the lowlands of the *Lough Erne Lakeland*. The landscape area is broad and extensive, but contained by the Brougher Mountain ridge to the south east, the Carrickmore Hills to the east, South Sperrin to the north and the West Tyrone Hills to the west. The landscape forms a shallow drainage basin for several rivers, with the Drumragh and Camowen meeting at Omagh outflowing to the north along the Strule. Omagh is the largest town in Fermanagh and Omagh, located at the heart of the basin landscape. Outside of Omagh, the landscape is entirely pastoral, except for some of the more elevated upland areas of *LCA 16 Brougher Mountain* which are included within this assessment. This sandstone ridge rises to 370m AOD at Brougher Mountain itself, extending northwards to the

Carrickmore Hills, and separates the *Omagh Basin* from the Clogher Valley to the south. There are no landscape designations within the area, but the area is located at the southern edge of the Sperrins AONB.

Lowland Farmland LCT

LCA 22. Omagh Farmland

The *Omagh Farmland (LCA 22)*, together with the *Irvinestown Farmland (LCA 15)* included with the assessment of the *Lough Erne LakelandReCA*) forms the largest expanse of lowland pastoral landscape within Fermanagh and Omagh, forming a continuous pastoral landscape which extends from Lower Lough Erne north eastwards until meeting the Sperrins and Carrickmore Hills to the north. The landscape is typically small scale 'drumlin farmland', with densely packed drumlins, occasional loughs, dense hedgerows, becoming less enclosed around Omagh, where farmland appears to be of better quality. North of Omagh, the farmland rises towards the outer Sperrins foothills. The area includes the key transport corridor of the A32 which links Omagh to Fermanagh. The enclosure provided by the surrounding upland landscape becomes more defined towards the north, where the landscape is overlooked by the prominent summits of Bessy Bell, Pollnalaght and Mullaghcarn, partially surrounding Omagh.



View to the north east across LCA 22 Omagh Farmland, with Bessy Bell to the right of the photograph

Lowland River Valley LCT

LCA 23. Camowen Valley

The *Camowen Valley (LCA 23)* lies to the north east of the *Omagh Farmland*, draining the uplands of the Carrickmore Hills and Slievemore. This landscape is undulating with occasional rocky outcrops, and with fewer drumlins than the *Omagh Farmland*. While much of the landscape is pastoral, there are also extensive areas of bog, marsh and some conifer plantations, and the farmed landscape is more marginal and of poorer quality than that of the *Omagh Farmland*. The area has

a remote and neglected character and settlement is sparse. The importance of some of the wetland habitats is recognised by designation, including the SAC at Deroran Bog.

Sandstone Ridges and Plateau LCT

LCA16. Brougher Mountain

This landscape forms an elongated ridge running approximately from Topped Mountain in the south west to Slievemore and the Carrickmore Hills to the north, bounding the *Omagh Basin* to the south east. Much of this ridge extends only to 250 – 300m and it is only the most elevated parts which are of true upland character, such as at Lendrum’s Bridge and at Brougher Mountain. The upland areas comprise a series of undulating hills which are typically rounded, some of which form quite distinct features when viewed from lowland areas, in particular Brougher Mountain itself which can be identified by telecommunication masts. Elsewhere there are conifer plantations and some poorer quality enclosed pastures, extending towards the lowland areas where landscape quality improves. The area has no landscape designations, but from southern parts there are scenic views to the *Lough Erne Lakeland* and the limestone uplands beyond. The area includes a wind farm at Hunters Hill, at the edge of the Local Authority area. The area includes no landscape designation, however the area around Topped Mountain, a noted viewpoint, is identified as an Area of Significant Archaeological Interest.



View north east within the LCA16 Brougher Mountain. Brougher Mountain itself is to the right of the photograph

Table 6.1(iv). Summary of Landscape Capacity and Cumulative Effects and Guidance for Future Wind Energy Development: Omagh Basin

4. OMAGH BASIN																			
Key: <div><div></div> No Capacity</div> <div><div></div> Low Capacity</div> <div><div></div> Medium Capacity</div> <div><div></div> High Capacity</div> Turbine Size: Small 15<30m; Small/ Medium 30<50m; Medium 50<80m; Medium/ Large 80<120m; Large 120<150m; Very Large 150~200m																			
UNDERLYING LANDSCAPE CAPACITY (i.e. not taking account of current wind energy development)										CURRENT CONSENTED DEVELOPMENT				PROPOSED LIMITS TO FUTURE DEVELOPMENT (i.e. proposed acceptable level of wind energy development)					
Landscape Sensitivity to Wind Energy Development				Landscape Capacity (Related to turbine size)						Existing/ Consented Developments (November 2017)	Current Wind Energy Landscape Type(s)	Future Wind Energy Landscape Type(s)	Remaining Landscape Capacity (Related to turbine size)						Comments on Sensitivity and Capacity
Landscape Character Sensitivity	Visual Sensitivity	Landscape Sensitivity	Landscape Value	15-<30m	30-<50m	50-<80m	80-<120m	120-<150m	150 ~ 200m				15-<30m	30-<50m	50-<80m	80-<120m	Over 120m	150 ~ 200m	
LOWLAND FARMLAND																			
Landscape Character Area: 22. Omagh Farmland																			
Med/ High	Low/ Med	Med	Med	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	68 consented wind turbines, all of small to medium typology as single turbines/ small groups. The tallest turbine is 77m.	Landscape with Occasional Wind Turbines (LOWT) approaching Landscape with Wind Turbines (LWT)	LOWT	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: A broad and largely flat landscape overall, but with numerous small-scale landform features, enclosed by trees and hedgerows. Development Capacity: Landscape would accommodate a level of smaller scale wind energy development associated with farms and properties. Undulating topography provides local screening.
												Max. Numbers in Group	1-3	1-3	1-2				
												Min Group Separation Distances (km)	2-3	3-5	4-7				
LOWLAND RIVER VALLEYS																			
Landscape Character Area: 23. Camowen Valley																			
Med	Low/ Med	Med	Low/ Med	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	15 consented wind turbines, all of which are small/ medium or medium size, either single or small turbine groups. The tallest turbine is 56m.	Landscape with Occasional Wind Turbines (LOWT)	LOWT	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Small scale Landscape with varied landform, small scale features, mosaic of pastures, bog and small woodland areas. Some wildness of character. Development Capacity: A limited capacity for smaller scale development, a greater wildness and openness of character lessens capacity to some extent.
												Max. Numbers in Group	1-3	1-3	1-2				
												Min Group Separation Distances (km)	2-3	3-5	4-7				

4. OMAGH BASIN																			
Key: <div><div></div> No Capacity</div> <div><div></div> Low Capacity</div> <div><div></div> Medium Capacity</div> <div><div></div> High Capacity</div> Turbine Size: Small 15<30m; Small/ Medium 30<50m; Medium 50<80m; Medium/ Large 80<120m; Large 120<150m; Very Large 150~200m																			
UNDERLYING LANDSCAPE CAPACITY (i.e. not taking account of current wind energy development)								CURRENT CONSENTED DEVELOPMENT			PROPOSED LIMITS TO FUTURE DEVELOPMENT (i.e. proposed acceptable level of wind energy development)								
Landscape Sensitivity to Wind Energy Development				Landscape Capacity (Related to turbine size)				Existing/ Consented Developments (November 2017)	Current Wind Energy Landscape Type(s)	Future Wind Energy Landscape Type(s)	Remaining Landscape Capacity (Related to turbine size)					Comments on Sensitivity and Capacity			
Landscape Character Sensitivity	Visual Sensitivity	Landscape Sensitivity	Landscape Value	15-<30m	30-<50m	50-<80m	80-<120m				120-<150m	150 ~ 200m	15-<30m	30-<50m	50-<80m		80-<120m	Over 120m	150 ~ 200m
SANDSTONE RIDGES AND PLATEAU																			
Landscape Character Area: 16. Brougher Mountain																			
Med	Med	Med	Low/ Med	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	85 consented turbines, the largest of which are 101m turbines of Hunters Hill windfarm. All others are of small to medium size single turbines or small turbine groups	Landscape with Wind Turbines/ Wind Turbine Landscape (LWT/ WTL)	LWT	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Upland landscape of larger scale, albeit in places not wide, and the landscape forms part of the enclosure to neighbouring lowlands, and therefore has some importance to the setting of and views from lowland landscapes. Development Capacity: Some areas with more defined upland character have capacity for wind farm developments, other areas of more lowland character are less suitable, however residual capacity is very limited.
												Max. Numbers in Group	1-3	1-3	1-5	5 - 15	5- 15		
												Min Group Separation Distances (km)	2-3	3-5	4-7	7- 12	7- 12		

SUMMARY OF LANDSCAPE CAPACITY: OMAGH BASIN

Taken as a whole, this area has an underlying capacity to accommodate a range of scales of wind energy development. The extensive lowland landscapes of ‘drumlin farmland’ have a reasonable capacity for accommodating wind turbine developments of ‘medium’ size turbines or smaller (<80m), with the undulating landform providing screening from within these landscape areas, while the more upland landscape of Brougher Mountain has underlying capacity for wind farm development.

LOWLAND FARMLAND LCT

LCA 22. Omagh Farmland

Underlying Landscape Capacity

While extensive, this landscape character area is primarily small scale and has susceptibility to larger scale wind energy development. However, due to its enclosed character and often limited internal visibility there is a ‘medium’ capacity to accommodate wind turbine developments with ‘small’ or ‘small/ medium’ size wind turbines (<50m), and some developments of ‘medium’ size (50<80m).

The landscape objective should be to maintain the area as a *landscape with occasional wind turbines*.

Consented wind Energy Development and Wind Energy Applications

This area has been quite extensively developed with turbines up to ‘medium’ size (<80m), and with development spread throughout the LCA. The consented wind energy development creates a *landscape with occasional wind turbines* in some areas, verging on a *landscape with wind turbines*, where there are clusters of single turbine developments. There are no known wind energy applications in the area.

Residual Capacity and Guidance for Future Development

Wind Turbines

Opportunities for further wind energy development in this landscape are low if maintaining a landscape with occasional wind turbines. ‘Medium’ sized turbines (50<80m) are quite prevalent throughout the area and there may be only very limited scope for further developments of this turbine size, but perhaps somewhat greater residual capacity for smaller turbines. Developments should be sited to maintain recommended separation distances and to account for local sensitivities in landscape character. It is desirable that larger turbines (50<80m) should be sited in more open areas away from smaller scale elements, particularly small buildings, against which they can be scaled. Turbines should not be sited directly on top of drumlins or other small scale but prominent landscape features in order to reduce their dominance. It may be appropriate to site larger scale turbines toward the periphery of the character area, where they can be backclothed by larger

landforms, however siting should be mindful of potential cumulative issues when seen with the larger wind farm developments of these neighbouring upland areas.

Ancillary Elements

The enclosed nature of the landscape provides opportunities for mitigating the effects of ancillary elements of small scale wind energy developments (<80m). Elements including access tracks, transformer units, power connections and energy storage units should be sited to suit local conditions utilising screening provided by topography and vegetation. Refer to Section 6.7 for general guidance.

LOWLAND RIVER VALLEY LCT

LCA 23. Camowen Valley

Underlying Landscape Capacity

Extending down into the *Omagh Farmland* from the east, this LCA has similarities in character to the wider farmed landscape of the ReCA, and therefore its underlying capacity for wind energy development is similar to that of the *Omagh Farmland* described above, with the ability to accommodate ‘medium’ (50<80m) size wind turbine developments of single or small turbine groupings.

The landscape objective should be to maintain the area as a *landscape with occasional wind turbines*.

Consented wind Energy Development and Wind Energy Applications

There are relatively few wind energy developments in the LCA, and all are of the ‘low/ medium’ and ‘medium’ size wind turbines (<80m). Almost all developments are south of the B4 which runs east – west through the valley. The consented wind energy landscape is a *landscape with occasional wind turbines*. There are no known wind energy applications in the area.

Residual Capacity and Guidance for Future Development

Wind Turbines

There are few wind energy developments within the area, however the valley is of relatively small extent and could therefore accommodate only limited further development. There are few wind turbines north of the B4, and this area is most likely to contain the greatest residual capacity for turbines, possibly making use of the backclothing to the north of the LCA provided by higher ground of the *Carrickmore Hills* and *South Sperrin*, although the southern fringes of these upland areas already include a number of consented wind energy developments.

Ancillary Elements

Ancillary elements for small scale wind energy developments (<80m) including access tracks, transformer units, power connections and energy storage units to be sited to suit local conditions. Refer to Section 6.7 for general guidance.

SANDSTONE RIDGES AND PLATEAU LCT

LCA 16. Brougher Mountain

Underlying Landscape Capacity

Upland parts of this LCA have the capacity to accommodate a level of wind farm development, however those areas are limited in number and extent. The more notable peaks, and in particular Brougher Mountain itself, would be unsuited to wind farm development because of their prominence from the local lowland landscape. While to the south west, for example around Topped Mountain, the landscape is of too small a scale for wind farm development and is approaching the more sensitive landscapes around Upper and Lower Lough Erne. The upland area at Hunters Hill/ Lendrum's Bridge is the only area considered suitable for wind farm development utilising 'large' (120<150m) wind turbines. However, there is some capacity also for small sized wind energy developments, typically small clusters of 'medium' or 'small/ medium' (<80m) sized turbines away from more settled lowland landscapes, taking advantage of folds in the landscape where possible to reduce visual prominence.

The parts of the landscape of more upland character and better suited to larger scale wind energy development tend to be undulating and have capacity for accommodating associated wind farm infrastructure, where features can be sited to take advantage of topographic screening.

This landscape has capacity to be a *landscape with wind turbines* and locally a *wind turbine landscape* at Hunters Hill.

Consented wind Energy Development and Wind Energy Applications

This landscape is well developed for wind energy including the 101m ('medium/ large') turbines of Hunters Hill wind farm which extends across the border to Mid Ulster. Wind turbines of smaller size are found throughout the LCA. The landscape is perceived as a *landscape with wind turbines*. There are no known application wind energy developments within the LCA, however the proposed Murley Windfarm is located adjacent to Hunters Hill in Co. Tyrone (9 x 126m turbines).

Residual Capacity and Guidance for Future Development

Wind Turbines

The site of Hunters Hill wind farm is the most suited to wind farm development within the LCA. It is the case therefore that residual capacity remains with the potential repowering of this site, which could accommodate a development of 'large' (120<150m) typology wind turbines. There may also be some limited capacity to extend the area occupied by wind turbines at this location, however nearby residential properties are likely to be a constraint to significant expansion. A key issue is likely to be the avoidance of unacceptable impact to the settlement of Fintona, which lies only 4km from the closet turbine at present, requiring careful turbine siting and avoidance of the more prominent forward slopes. It should be ensured that wind turbines here appear as a single clustered development, and not be seen to extend excessively across the horizon.

Elsewhere there is limited residual capacity for smaller typology developments, with consented turbines already often separated by no more than 1- 2km.

Slopes to the north of the existing Hunters Hill wind farm should remain free of wind farm development to avoid significant cumulative effects in views towards to the windfarm from lowland locations.

Ancillary Elements

Windfarm infrastructure has the potential to appear prominently on the bare slopes of the upland areas, and should therefore be sited away from hill to tops and front facing slopes, and preferably within valleys and on back slopes away from visual receptors. Transmission lines and pylons should not be sited on the horizon, so as not to be seen with wind turbines.

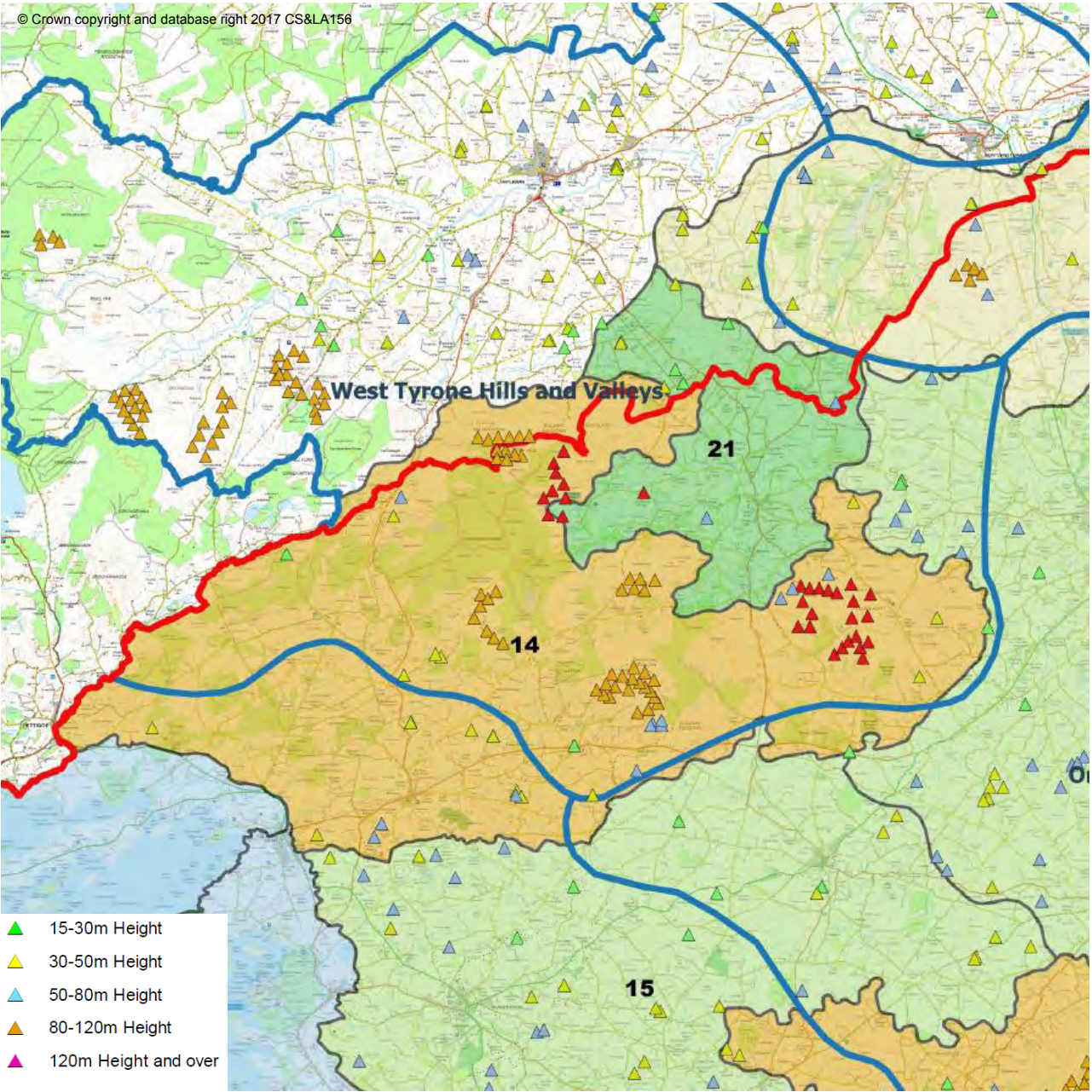


South western parts of LCA 16 Brougher Mountain have high levels of consented wind energy development. To avoid a 'wind farm landscape' future development would need to be limited



The undulating western fringes of LCA 16 Brougher Mountain which provides screening to 'medium' sized wind turbines, however the siting of turbines directly on top of local topographic features should be avoided to reduce their prominence in the landscape

5. WEST TYRONE HILLS AND VALLEYS



LCA 14 Lough Braden, 21 Fairy Water Valley

The *West Tyrone Hills and Valleys* lie to the north west of the Local Authority area and comprise an undulating sandstone plateau extending into Northern Ireland from Donegal to the west, and the regional character area encompasses a large expanse of landscape outside of Fermanagh and Omagh. Within the Local Authority area, the eastern extent of the plateau ends in some distinct peaks which overlook the lowland landscape of the Omagh Farmland to the south and east. To the north the upland landscape provides the enclosure to the Fairy Water Valley which drains the upland area through the Drumquin and Fairy Water. The landscape within the Local Authority areas is

mostly of upland character and sparsely settled, but does include areas of more lowland pastoral character within the Fairy Water Valley and to the west closer to Lower Lough Erne.

Sandstone Ridges and Plateau LCT

LCA 14. Lough Braden

The landscape of *Lough Braden* (LCA 14) is variable in character. To the west, and extending into the *Lough Erne Lakeland* ReCA, the landscape is a pastoral one of steep drumlin farmland. The quality of the pastures seems mixed but often rush infested and of apparently low productivity. Towards the east the undulating drumlins give way to more substantial topographic features of sandstone outcrops, rising to an undulating plateau typically of around 200m AOD in elevation, much of which is used for coniferous forestry. Further east, there are the more defined upland hills of Tappaghan Mountain, Greenan, Dooish and Pollnalaght, and a number of these hills have wind farm developments. The topography is mostly undulating and rounded, except where enclosing the Fairy Water Valley to the north where the landscape is steeper and craggier. The landscape to the west is thinly settled farmland, with settlement diminishing towards the higher ground, where it is found mostly along the upper Drumquin valley. The landscape has no landscape designations however some areas are designated for natural heritage value.



Western parts of LCA 14 Lough Braden close to the transition with the more upland landscape to the east

Lowland River Valley LCT

LCA 21. Fairy Water Valley

North east of *Lough Braden* the sandstone uplands drop to the broad, *Fairy Water Valley* (LCA 21), and at the transition of this landscape there are some steep sided incised valleys with rock outcrops and waterfalls at Sloughan Glen. Elsewhere the landform is generally irregular and hummocky including small areas of woodland, small loughs marshes, peat bogs and small branching watercourses. To the north of the settlement of Drumquin, the valley floodplain becomes

notably flatter and more open. Drumquin is the main centre of settlement, but the landscape is mostly of rural lowland character. Overall the landscape is small scale. There are no landscape related designations within the LCA, but natural heritage designations (ASSI and SAC) related to bogs to the north and oakwoods at the more upland fringes.



View north west from within LCA 14 Lough Braden towards the enclosed Fairy Water Valley

Table 6.1(v). Summary of Landscape Capacity and Cumulative Effects and Guidance for Future Wind Energy Development: West Tyrone Hills and Valleys

5. WEST TYRONE HILLS AND VALLEYS																				
Key: <div><div></div> No Capacity</div> <div><div></div> Low Capacity</div> <div><div></div> Medium Capacity</div> <div><div></div> High Capacity</div> Turbine Size: Small 15<30m; Small/ Medium 30<50m; Medium 50<80m; Medium/ Large 80<120m; Large 120<150m; Very Large 150~200m																				
UNDERLYING LANDSCAPE CAPACITY (i.e. not taking account of current wind energy development)									CURRENT CONSENTED DEVELOPMENT				PROPOSED LIMITS TO FUTURE DEVELOPMENT (i.e. proposed acceptable level of wind energy development)							
Landscape Sensitivity to Wind Energy Development				Landscape Capacity (Related to turbine size)					Existing/ Consented Developments (November 2017)	Current Wind Energy Landscape Type(s)	Future Wind Energy Landscape Type(s)	Remaining Landscape Capacity (Related to turbine size)						Comments on Sensitivity and Capacity		
Landscape Character Sensitivity	Visual Sensitivity	Landscape Sensitivity	Landscape Value	15-<30m	30-<50m	50-<80m	80-<120m	120-<150m				150 ~ 200m	15-<30m	30-<50m	50-<80m	80-<120m	Over 120m		150 ~ 200m	
SANDSTONE RIDGES AND PLATEAU																				
Landscape Character Area: 14. Lough Braden																				
Med	Med	Med	Low/ Med	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	104 consented turbines including 6 main windfarm developments/ clusters of medium/ large or large turbines. The consented tallest consented turbines are those at Castlecraig Windfarm (127m).	Landscape with Occasional Wind Turbines/ Wind Turbine Landscape (LOWT/ WTL)	LWT/ WTL	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Landscape with larger scale upland areas of forestry and undulating topography. Outer slopes to the south and east, and steep glen enclosures are more sensitive. Development Capacity: The landscape within Fermanagh and Omagh most suited to larger scale wind farm developments, this may include limited opportunity for 'very large' (150m+) turbines if sited within the core of this upland area.	
LOWLAND RIVER VALLEY																				
Landscape Character Area: 21. Fairy Water Valley																				
Med/ High	Low/ Med	Med	Low/ Med	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	There is only 1 wind turbine within the LCA (50m).	Landscape with No Wind Turbines (LNWT/ LOWT)	LWT/ LOWT	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Small scale lowland landscape, enclosed by more upland landscapes to the south and west. Development Capacity: Very limited capacity for small scale development associated with farms and properties.	

SUMMARY OF LANDSCAPE CAPACITY: WEST TYRONE HILLS AND VALLEYS

This landscape includes a relatively expansive upland area with a low population, and the scale of the landscape is suitable for larger scale wind energy development. Constraints to development are the proximity of the area to more lowland landscapes, from which the hilly areas form the northern and western horizon. The area is also visible from Omagh, a major population centre, and from the sensitive landscape of Lower Lough Erne. The landscape of the Fairy Water Valley is small scale and intimate in character, which is susceptible to larger scale developments, including the presence of dominant windfarms on its enclosing upland landforms.

SANDSTONE RIDGES AND PLATEAU LCT

LCA 14. Lough Braden

Underlying Landscape Capacity

Capacity in this landscape derives from the relatively large scale of its rounded hills, and their simple topography and landcover. The arrangement of the landform is such that a degree of internal enclosure is created by surrounding hills, although the lightly populated valley containing the upper reaches of the Drumquin River passes through this more remote area, presenting a likely constraint to windfarm development. Parts of Lough Braden Forest lie within this area, the landscape of which would be suited to wind energy development due to its simple character and relatively remote location. The Ulster Way passes through this area, which may present some constraint to development, however the landscape through which this section passes is not of particular scenic quality. The landscape has capacity for wind farm development of 'large' wind turbines (up to 150m), and potentially there may be capacity for limited numbers of 'very large' (150m+) turbines if sited away from more prominent outer hills or sensitive valley sides. Varied topography and forestry provide opportunities for accommodating wind farm infrastructure.

The landscape has the capacity for a *landscape with wind turbines*, and locally a *wind turbine landscape* to the east, but is more sensitive towards the west approaching Lower Lough Erne.

Consented wind Energy Development and Wind Energy Applications

The more upland areas have been quite extensively developed with medium sized wind farms clustered around hill tops, typically using 'medium/ large' and 'large' wind turbines (<150m). The largest development is that on Pollnalaght at the eastern extent of the character area, including an operational windfarm of 12 x 125m turbines and the under-construction wind farm at Cornavarrow comprising 9 x 126m turbines. Cornavarrow wind farm will be sited on the slopes facing the Fairy Water Valley, which will affect the capacity of the valley to accommodate wind energy developments. The consented wind energy landscape across the area as a whole varies from a *landscape with occasional wind turbines* (to the west), to a *wind turbine landscape* to the east.

There are no known wind farm or wind turbine applications within the character areas.

Residual Capacity and Guidance for Future Development

Wind Turbines

Some existing wind farm developments have potential for repowering with larger typology wind turbines i.e. 'medium/ large' turbines replaced by 'large' (120<150m) turbines. However, wind farm development at Pollnalaght has reached capacity, currently using 'large' typology machines and it is unlikely that 150m+ wind turbines would be acceptable in this location overlooking the Fairy Water Valley to the north and quite close to lowland landscapes to the south and east. Development here should not extend to the eastern parts of Pollnalaght, the landform of which currently screens views to wind farm development from Omagh. There may be other limited opportunities for the extension of existing windfarms, with turbines sited sympathetically to the local landform, however these landforms are typically small in extent, limiting opportunities for large extensions. The wind farm at Tappaghan Mountain currently comprises turbines of 88m which are relatively small by modern commercial wind farm standards. This windfarm is less than 2km from the village of Lack to the south and overlooks the *Omagh Basin* on outward facing slopes, and therefore while repowering with larger typology turbines may be possible, this would require careful consideration with respect to effects on this settlement.

The greatest opportunities for further wind farm development appear to be in parts of the Lough Braden Forest, where development would be distant from larger centres of population and sufficiently distant from the more sensitive landscape of Lower Lough Erne. Wind turbines located here would usually be seen close to existing and consented wind farms, presenting a relatively consolidated windfarm cluster. Future developments should be sited sensitively so as not to encroach excessively into the upper Drumquin river valley, or the neighbouring Fairy Water Valley. For any proposals of 150m or greater, aviation lighting would most likely be required, the impact of which should be carefully considered.

The western part of the character area would be suited to additional wind turbine developments up to 'medium' (50<80m) size with greater capacity toward the east where larger turbines can be sited against bigger landform features and away from the more sensitive landscape of Lower Lough Erne, however larger turbines would need to be considered in relation to any future large-scale development to the east of the character area and potential cumulative effects.

Ancillary Elements

The parts of the landscape of more upland character and better suited to larger scale wind energy development tend to be undulating and the landscape is partly forested. Therefore, this landscape also has capacity for accommodating associated wind farm infrastructure, where features can be sited to take advantage of topographic screening provided by undulations in the landscape and forestry, or in more enclosed parts of the lowland landscape where screen planting could further mitigate landscape and visual effects. Visible infrastructure should be avoided on the more exposed rounded hillsides of Pollnalaght and Tappaghan Mountain. General guidance for infrastructure associated with smaller scale wind energy developments in more lowland locations is provided in Section 6.7.



View across the Omagh Basin towards LCA 14 Lough Braden and Tappaghan wind Farm

LOWLAND VALLEY LCT

LCA 21. Fairy Water Valley

Underlying Landscape Capacity

This landscape has low capacity for wind energy development because of its small scale and enclosed lowland character, but which also includes a relatively open and flat landscape to the north where wind turbines could be visually prominent. The landscape would be suited only to occasional wind turbines up to the 'medium' typology (<80m).

The landscape should be maintained as a *landscape with no or occasional wind turbines*.

Consented wind Energy Development and Wind Energy Applications

There is only 1 single consented wind turbine of 50m within the LCA, and no known application developments.

Residual Capacity and Guidance for Future Development

Wind Turbines

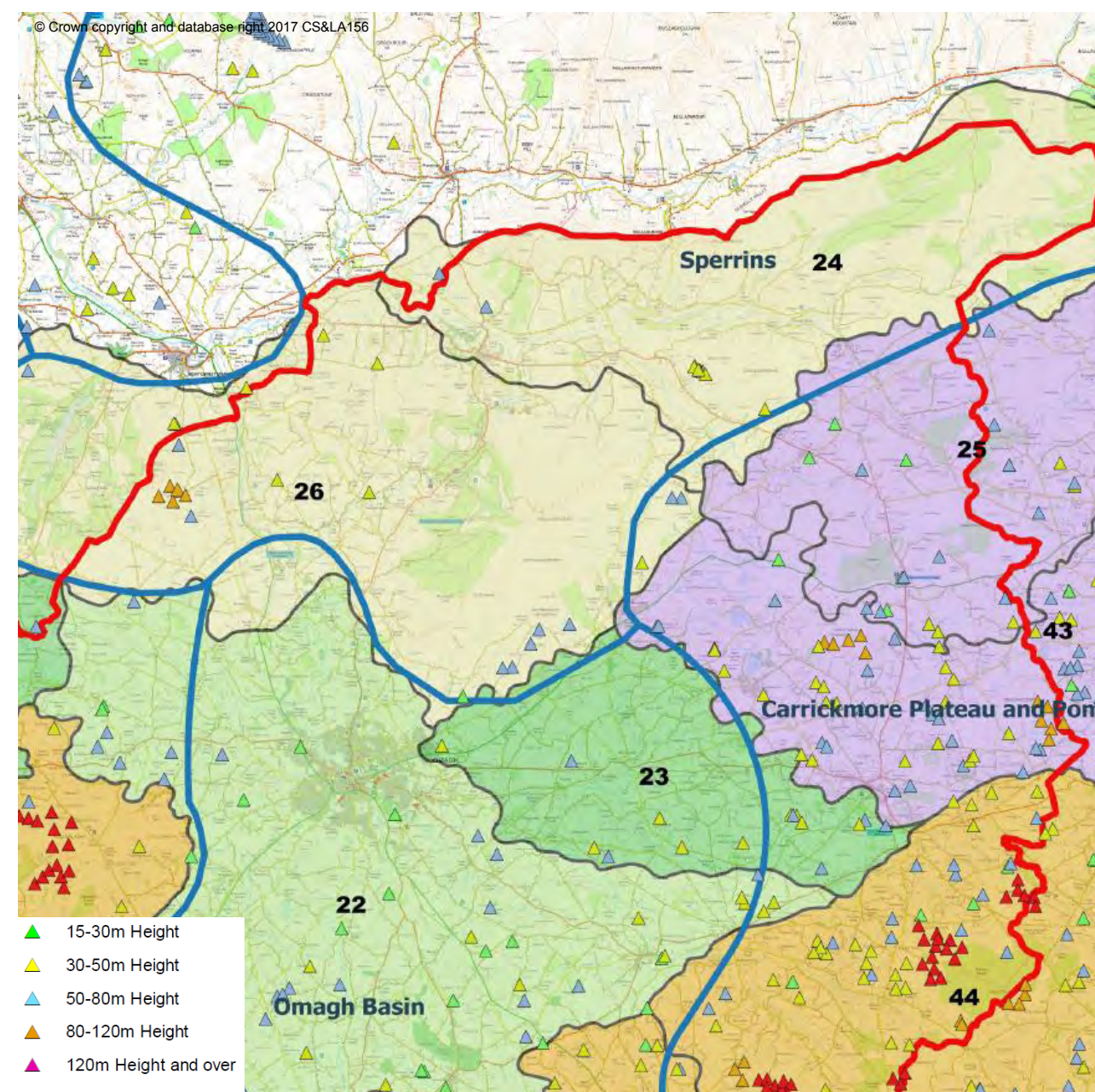
The under-construction Cornavarrow wind farm on the northern slopes of Pollnalaght is likely to be prominent in views from much of this character area, located close to its southern boundary. This southern more undulating part of the LCA would be most suited to wind energy developments, which could be concealed more easily in landforms and sited against rising ground, however the new windfarm would present some constraints to development here to avoid undesirable cumulative effects from smaller lowland turbines being seen with larger wind farm-scale machines. There is

very little wind energy development within the LCA, however occasional 'small' to 'medium' (<80m) size wind turbines could be accommodated if well-spaced and sited to respect smaller scale features of the landscape.

Ancillary Elements

Ancillary elements for small scale wind energy development should be sited to take advantage of screening provided by local landform features and vegetation, and should respect the undulating local topography. General guidance is provided in Section 6.7.

6. SPERRINS



LCAs 24. *South Sperrin*, 26. *Bessy Bell and Gortin*

The Sperrins form a mountainous boundary between Fermanagh and Omagh and neighbouring Derry and Strabane to the north. The NILCA 2000 identifies two landscape character areas which fall within this larger area of regional character, but they have similarities of character and are considered in this assessment to be of broadly the same landscape type, both containing mountainous uplands and more settled lowland landscapes. The Sperrins range extends north well beyond the Local Authority area, with its highest and most remote summits to the north of the Glenelly Valley in Derry and Strabane. The scenic qualities of the region are recognised as nationally important through designation as an Area of Outstanding Natural Beauty (AONB).

SPERRIN UPLAND HILLS LCT

LCA 24. *South Sperrin*; LCA 26. *Bessy Bell and Gortin*

South Sperrin (LCA 24) lies to the very north of the Local Authority area centred on the valley of the Owenkillev River and its tributaries. The landscape is of a large scale, defined by ridges and elongated hills along the east to west valley alignment, with the highest summits rising to approximately 500m AOD at more elevated locations to the east. Western parts of the character area in the lower reaches of the valley are more populated, including the small town of Gortin, where the valley of the Owenkillev River broadens. Upper parts to the west include extensive areas of forestry. Much of the landscape has a sense of remoteness and wildness of character, however the relatively large scale simple landforms with coniferous plantations are not of the highest scenic value, with the more dramatic landscapes north of the Glenelly Valley in Derry and Strabane. As noted above, the area is entirely designated as AONB, with the Ulster Way and local cycle routes passing through. There are various viewpoints from which the landscape can be appreciated including a scenic drive through the Sperrins. The area is therefore important as a recreational resource based on its landscape qualities. The Owenkillev River is designated as a SAC.

Bessy Bell and Gortin (LCA 26) lies to the south of *South Sperrin*, forming the gateway to the wider Sperrins range. Here the landscape takes the form of a basin for the Strule River flowing northward from Omagh towards Newtownstewart, joining with the westward flowing Owenkillev. The basin is bounded to the east by the mass of Mullaghcarn, which includes the coniferous woodland of Gortin Glen Forest Park on its western flanks, and the rounded landmark hill of Bessy Bell to the west. The Strule meanders northwards from Omagh through pastures which appear of good quality, becoming more direct as it is channelled between Bessy Bell and the hills of Deer's Leap and Mary Gray which form the Sperrins foothills. The Cappagh Burn flows from Gortin Glen south westwards around Curraghchosaly Mountain into the Strule, with the narrow and steep sided glen continuing northwards towards the settlement of Gortin. Most of the landscape lies within the AONB designation, with the exception of Bessy Bell hill. The landscape is scenic and important as a recreational resource, and the hill at Bessy Bell is identified as an ASQ.



The simple upland character of the north-eastern parts of LCA24 South Sperrin



View across the lowlands of LCA26 Bessy Bell and Gortin, with Bessy Bell 2 windfarm to the left of the photograph

Table 6.1(vi). Summary of Landscape Capacity and Cumulative Effects and Guidance for Future Wind Energy Development: Sperrins

6. SPERRINS																			
Key: <div><div></div> No Capacity</div> <div><div></div> Low Capacity</div> <div><div></div> Medium Capacity</div> <div><div></div> High Capacity</div> Turbine Size: Small 15<30m; Small/ Medium 30<50m; Medium 50<80m; Medium/ Large 80<120m; Large 120<150m; Very Large 150~200m																			
UNDERLYING LANDSCAPE CAPACITY (i.e. not taking account of current wind energy development)								CURRENT CONSENTED DEVELOPMENT				PROPOSED LIMITS TO FUTURE DEVELOPMENT (i.e. proposed acceptable level of wind energy development)							
Landscape Sensitivity to Wind Energy Development				Landscape Capacity (Related to turbine size)				Existing/ Consented Developments (November 2017)	Current Wind Energy Landscape Type(s)	Future Wind Energy Landscape Type(s)	Remaining Landscape Capacity (Related to turbine size)						Comments on Sensitivity and Capacity		
Landscape Character Sensitivity	Visual Sensitivity	Landscape Sensitivity	Landscape Value	15-<30m	30-<50m	50-<80m	80-<120m				120-<150m	150 ~ 200m	15-<30m	30-<50m	50-<80m	80-<120m		Over 120m	150 ~ 200m
SPERRIN UPLAND HILLS																			
Landscape Character Area: 24. South Sperrin																			
Med	Med/ High	Med	High	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	The area includes 10 consented wind turbines, all of small/ medium or medium size, up to 73m AOD. (Note 7 of these are close together at Mullydoo, and most likely represent revisions to the single turbine on site)	Landscape with Occasional Wind Turbines/ No Wind Turbines (LOWT/ LNWT)	LOWT/ LNWT	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Large scale in upland areas, but more intimate and enclosed in the valleys. Simple upland landform and landcover in the uplands of forestry and moorland. AONB indicates a high value landscape.
												Max. Numbers in Group	1-2	1-2	1				Development Capacity: The character of parts of the upland landscape would support larger scale wind energy developments, however the high landscape value significantly constrains development potential. Lowland landscapes are also small scale, enclosed and sensitive. Limited smaller scale wind energy developments within broader river valley areas only.
												Min Group Separation Distances (km)	2-3	3-5	5				
Landscape Character Area: 26. Bessy Bell and Gortin																			
Med	Med/ High	Med/ High	High	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	21 consented turbines including 6 x 100m turbines at Bessy Bell 2 windfarm, there are a small number of turbines of smaller sizes, including a series of 'medium' sized turbines NE of Omagh.	Landscape with Occasional Wind Turbines (LOWT)	LOWT	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Some larger scale upland landscape areas, however lowland landscapes are small scale, enclosed and sensitive. AONB designation indicates a high value landscape.
												Max. Numbers in Group	1-3	1-3	1-2				Development Capacity: Limited capacity for small scale development associated with farms and properties, larger turbines sited against higher landforms at basin edge.
												Min Group Separation Distances (km)	2-3	3-5	4-7				

SUMMARY OF LANDSCAPE CAPACITY: SPERRINS

While this landscape is large scale and in places of a relatively simple landform which could accommodate wind energy development, the AONB designation recognises the wider Sperrins range as one of the most scenic of Northern Ireland's landscapes, and the landscape is also an important recreational resource. While the quality of the landscape varies, and not all is highly scenic, this does not necessarily provide a justification for large scale wind energy development, as such a development may risk compromising the integrity of the AONB as a whole.

SANDSTONE RIDGES AND PLATEAU LCT

LCA's 24. *South Sperrin*; 26. *Bessy Bell and Gortin*

Underlying Landscape Capacity

North eastern parts of the *South Sperrin* LCA contain remote upland areas of forestry partly contained by ridges, and in an area of low visibility from surrounding lowland landscapes. However, this area is also likely to be easily visible from the more upland landscapes north of the Glenelly Valley. While characteristics of this landscape suggest suitability for a large-scale windfarm development, the high value of the landscape resulting from the AONB designation renders this landscape highly sensitive to this scale of development. Many of the other upland areas are visible from either within the AONB or from lowland areas to the south (e.g. Mullaghcarra) retaining these landscapes as wild and remote uplands should be a key landscape objective to ensure the integrity of the AONB designation.

Therefore, for both LCA's, capacity exists only in the more lowland valley locations. Within *Bessy Bell and Gortin* there is limited potential for up to 'medium' sized turbines (<80m) and single developments or small groups, however the basin-like form of the landscape means that wind turbines would appear prominently in central locations, particularly when viewed from scenic viewpoints in Gortin Glen Forest Park.

The enclosed character of *South Sperrins* valleys means that even 'medium' sized turbines can appear very prominent, and there is capacity only for 'small' or 'small/ medium' sized turbines (<50m) in the more populated valleys to the west, with 'medium' (50<80m) turbines only suited to some of the larger scaled lowland areas to the east, in locations where they can be visually contained by surrounding landforms.

Consented wind Energy Development and Wind Energy Applications

There are very few wind energy developments within either LCA, the largest being within *Bessy Bell and Gortin Glen*. Bessy Bell 2 windfarm appears prominently on the south-eastern slopes of Bessy Bell, close to Bessy Bell 1 in the neighbouring Local Authority area. Bessy Bell 2 wind farm comprises 6 x 100m turbines. There is also a loose grouping of wind turbines on the lower south-eastern flanks of Mullaghcarra to the south east of the LCA. Elsewhere there are a small number of 'small/ medium' and 'medium' (<80m) sized wind turbines. The landscape of both areas appears largely as a *landscape with no/ occasional wind turbines*.

The only known wind energy application is for Doraville Wind Farm, a major 33 turbine development of 136m and 149m turbines in the north east of the *South Sperrin LCA*.

Residual Capacity and Guidance for Future Development

Wind Turbines

Due to its high value, the landscape has very low capacity for wind energy development and the objective should be to maintain the area as a landscape largely free of or with no wind turbines. There may be very limited capacity for developments of 'medium' (50<80m) sized turbines. In general, these would be best sited adjacent to landforms which provide backclothing, or where siting can take advantage of variations in landform to provide topographic screening. Siting of larger turbines centrally within enclosed valley landscapes should be avoided, particularly when close to smaller scale landscape features, as this tends to accentuate the size of larger turbines. 'Small' and 'small/ medium' size turbines (<50m) are best associated with farms and other properties, but siting on prominent local landscape features should be avoided. Care should be taken to maintain separation distances so that wind turbines appear as very infrequent landscape features.

Wind turbines at Bessy Bell are very prominent from nearby lowland areas, and there is no capacity to significantly extend, or utilise larger typology machines in this location.

Proposals for other wind farm developments should be considered very carefully, not only in relation to their immediate landscape and visual effects, but also how such development affects the character, views to/ from, and integrity of the wider AONB.

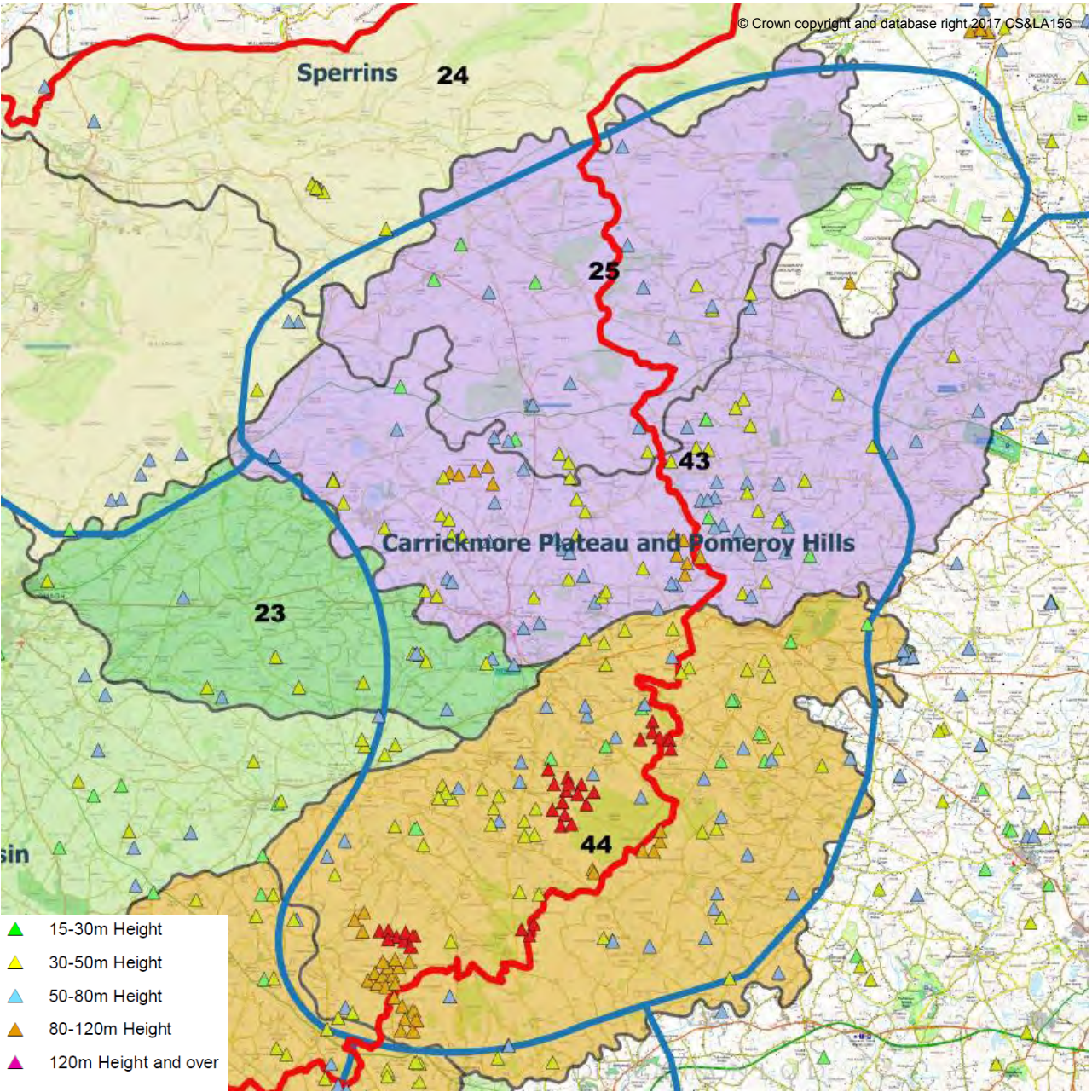
Ancillary Elements

Ancillary wind farm elements also have the potential to be prominent in these landscapes and contribute to landscape and visual effects. In particular, power lines and pylons may be prominent in the more exposed upland landscapes, or potentially dominate enclosed valleys, and which should therefore be sited so as to respect sky lines, landform and the scale of terrain in which they are located. Ancillary features associated with smaller scale wind energy developments should be sited according to local conditions, and general guidance is provided in Section 6.7.



LCA 24 South Sperrin, near Gortin. Care should be taken when siting even 'medium' size (50<80m) in lowland landscapes to ensure they do not appear out of scale with lowland features

7. CARRICKMORE PLATEAU AND POMEROY HILLS



LCAs 25. Beaghmore Moors and Marsh, 43. Carrickmore Hills, 44 Slievemore

The Carrickmore Plateau and Pomeroy Hills form a broad undulating upland plateau extending south from the Sperrins. This landscape of mostly low lying small rounded hills separates the Omagh Basin to the west from that around Cookstown to the east, and links to the Brougher Mountain ridge which extends to the south west and defines the eastern extent of the Local Authority area. The area comprises 3 LCAs as defined in the NILCA 2000 but they share some characteristics, being defined by low rounded hills of semi-upland character, mostly not rising above

250m AOD, but reaching higher elevations towards the south. The northern part of this ReCA is within the Sperrins AONB.

LOWLAND HILLS LCT

LCA 25. Beaghmore Moors and Marsh; LCA 43. Carrickmore Hills

The **Beaghmore Moors and Marsh (LCA 25)** form the foothills of South Sperrin and lie to the north of this ReCA, and the great majority of this landscape in Fermanagh and Omagh lies within the AONB. Towards the north of the LCA the hills are relatively large, rounded and steep sided, but to the south they transition to a more undulating landscape. The landscape is a mixture of enclosed pastures of low quality, with peat bogs, some coniferous planting and various small watercourses winding through the landscape. The area is sparsely settled throughout, although the main A505 passes through the south of the area.

The igneous underlying geology of the **Carrickmore Hills (LCA 43)** manifests itself in a more varied and craggy landscape than found in areas towards the north and south. The landscape is a relatively open elevated plateau, much of which is marginal farmland, and with a rough character, including small loughs and bogs. The landscape is largely undeveloped, with small scale settlement throughout the landscape including the town of Carrickmore. There is some quarrying found in the area. The Murrins in the north west of the LCA are within the Sperrins AONB, and are designated as an ASSI because of its blanket bog.



View towards the Carrickmore Hills from the north.

SANDSTONE RIDGES AND PLATEAU LCT

LCA 44. Slievemore

The Camowen River provides the nominal separation between the Carrickmore Hills to the north and **Slievemore (LCA 44)** to the north, however the change in landscape character is subtle either

side of this division. Once again, this landscape is of undulating hills, although in this instance the landform is divided by a series of small but defined rivers - the Cloghfin, Altanagh and Camowen - traversing the landscape towards the lowlands to the west, between which are a series of low sandstone ridges. There are larger areas of plateau moorland and forestry at Altmore Forest and at Slievemore. Lower areas are of enclosed pastures which are of marginal viability. The area also has some sand and gravel quarrying and there is quite extensive wind energy development. The area is not within any landscape designation.

Table 6.1(vii). Summary of Landscape Capacity and Cumulative Effects and Guidance for Future Wind Energy Development: Carrickmore Plateau and Pomeroy Hills

7. CARRICKMORE PLATEAU AND POMEROY HILLS																			
Key: <div><div></div> No Capacity</div> <div><div></div> Low Capacity</div> <div><div></div> Medium Capacity</div> <div><div></div> High Capacity</div> Turbine Size: Small 15<30m; Small/ Medium 30<50m; Medium 50<80m; Medium/ Large 80<120m; Large 120<150m; Very Large 150~200m																			
UNDERLYING LANDSCAPE CAPACITY (i.e. not taking account of current wind energy development)								CURRENT CONSENTED DEVELOPMENT			PROPOSED LIMITS TO FUTURE DEVELOPMENT (i.e. proposed acceptable level of wind energy development)								
Landscape Sensitivity to Wind Energy Development				Landscape Capacity (Related to turbine size)				Existing/ Consented Developments (November 2017)	Current Wind Energy Landscape Type(s)	Future Wind Energy Landscape Type(s)	Remaining Landscape Capacity (Related to turbine size)					Comments on Sensitivity and Capacity			
Landscape Character Sensitivity	Visual Sensitivity	Landscape Sensitivity	Landscape Value	15-<30m	30-<50m	50-<80m	80-<120m				120-<150m	150 ~ 200m	15-<30m	30-<50m	50-<80m		80-<120m	Over 120m	150 ~ 200m
LOWLAND HILLS																			
Landscape Character Area: 25. Beaghmore Hills and Marsh																			
Med	Med	Med	Med/ High	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	7 consented wind turbines, all small or medium sized as single turbines. Tallest of which is 50m.	Landscape with Occasional Wind Turbines (LOWT)	LOWT	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Landscape is almost entirely within the AONB and is therefore of high landscape value. Landscape has an upland character, comprising low rounded hills forming foothills to the wider Sperrins range. Development Capacity: The area can support a low level of wind energy development of the smaller typologies only.		
												Max. Numbers in Group	1-2	1-2	1				
												Min Group Separation Distances (km)	2-3	3-5	5				
Landscape Character Area: 43. Carrickmore Hills																			
Med/ High	Med	Med	Med	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	49 consented wind turbines, of varies sizes, including windfarms at Crockdun (5 x 101m) and Cregganconroe (5 x 100m)	Landscape with Wind Turbines/ Wind Turbine Landscape (LWT/WTL)	LWT	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Landscape is partly of an upland character, but the scale of the landscape is not large or particularly elevated and topography is quite complex. Development Capacity: Landscape has underlying capacity for smaller scale wind farm development/ small wind farms, however due to the numbers of consented turbines there is little residual capacity within the LCA.		
												Max. Numbers in Group	1-3	1-3	1-5				
												Min Group Separation Distances (km)	2-3	2-3	3-5				

7. CARRICKMORE PLATEAU AND POMEROY HILLS																			
Key: <div><div></div> No Capacity</div> <div><div></div> Low Capacity</div> <div><div></div> Medium Capacity</div> <div><div></div> High Capacity</div> Turbine Size: Small 15<30m; Small/ Medium 30<50m; Medium 50<80m; Medium/ Large 80<120m; Large 120<150m; Very Large 150~200m																			
UNDERLYING LANDSCAPE CAPACITY (i.e. not taking account of current wind energy development)									CURRENT CONSENTED DEVELOPMENT			PROPOSED LIMITS TO FUTURE DEVELOPMENT (i.e. proposed acceptable level of wind energy development)							
Landscape Sensitivity to Wind Energy Development				Landscape Capacity (Related to turbine size)					Existing/ Consented Developments (November 2017)	Current Wind Energy Landscape Type(s)	Future Wind Energy Landscape Type(s)	Remaining Landscape Capacity (Related to turbine size)					Comments on Sensitivity and Capacity		
Landscape Character Sensitivity	Visual Sensitivity	Landscape Sensitivity	Landscape Value	15-<30m	30-<50m	50-<80m	80-<120m	120-<150m				150 ~ 200m	15-<30m	30-<50m	50-<80m	80-<120m		Over 120m	150 ~ 200m
SANDSTONE RIDGES AND PLATEAU																			
Landscape Character Area: 44. Slievemore																			
Med	Med	Med	Low/ Med	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	92 consented turbines of sizes up to 'large'. Large wind farms at Slieve Divena and Crockagarran.	Wind Turbine Landscape (WTL)	WTL	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	Landscape Analysis: Landscape has areas of both larger scale upland character and smaller scale lowlands, however settlement and pastures often extend well into higher elevations, with the simpler upland areas of relatively small extent. Development Capacity: Upland landscape areas are suited to larger scale wind energy development/ wind farms. Lower elevations have a varied landform in which medium sized developments can be partly concealed within folds in the landscape. There may be some scope of wind farm expansion in the Altmore Forest area.
												Max. Numbers in Group	1-3	1-3	1-5	5-15	5-15		
												Min Group Separation Distances (km)	2-3	3-5	4-7	4-10	4-10		

SUMMARY OF LANDSCAPE CAPACITY: CARRICKMORE PLATEAU AND POMEROY HILLS

This region is one of the few within the Local Authority area which has capacity for larger scale wind energy development. Underlying capacity is greatest in the south owing to its larger scale landforms and more expansive areas of simpler upland character. While these do form a backdrop to views from lowland areas, hills tend to have broad profiles and are not particularly distinct in views. Areas to the north have lower capacity because of the smaller scale and more complex characteristics of the Carrickmore Hills, and because the AONB designation is an indicator of high landscape value, restricting capacity for wind energy development.

LOWLAND HILLS LCT

LCA 25. *Beaghmore Moors and Marsh*; 43. *Carrickmore Hills*

Underlying Landscape Capacity

The *Beaghmore Moors and Marsh* form the lower foothills to the Sperrins and are of a smaller scale than the core of the AONB area further to the north. While its character suits a level of smaller scale wind energy development, the AONB designation results in no capacity for turbines greater than 'medium' size (<80m), and then only as scattered single or small turbine groups. This landscape should be maintained as a *landscape with occasional wind turbines*.

While mostly outside the AONB apart from the Murrins, the character of the Carrickmore Hills is sensitive to wind energy development due its more irregular and craggy landform, lacking the simplicity of landscapes most suited to wind energy development. The hills are also small scale, with landscapes of lowland character. However small-scale windfarm development, comprising a limited number of 'medium' or 'medium/ large' (<120m) sized turbines can be accommodated in this landscape, making use of variations in topography to partially screen and conceal wind turbines and infrastructure. Smaller wind turbine typologies can be sited with farms and properties. This landscape has capacity to appear as a *landscape with wind turbines*, however the landscape around the Murrins has a lower capacity.

Consented wind Energy Development and Wind Energy Applications

The *Beaghmore Moors and Marsh* have limited wind energy development, with consented turbines of no more than 'medium' size (<80m). The *Carrickmore Hills* are significantly more developed for wind energy, including 2 small wind farms using 'medium/ large' typology turbines (101 and 100m turbines). The *Beaghmore Moors and Marsh* are of the *landscape with occasional wind farms* typology, while the *Carrickmore Hills* are approaching a *wind turbine landscape* based on consented levels of development.

There are no known wind energy applications within this area.

Residual Capacity and Guidance for Future Development

Wind Turbines

Residual capacity in both areas is very limited, and additional development within the *Carrickmore Hills* would need to be carefully considered to ensure that the area does not develop into a *wind turbine landscape* which would overwhelm the relatively small scale of the hills. Sites most suited to 'medium/ large' (80<120m) typology turbine groups are already utilised, and while some other sites may be of character suited to small wind farms, e.g. west of existing turbines at Cregganconroe, it may be desirable to leave areas such as these wind farm free to provide relief from views to wind farms and retain rural landscape characteristics. Capacity for future development is likely to be for well sited developments of 1-2 turbines associated with farms or rural properties, taking advantage of landform screening particularly for larger turbine sizes. Development around the Murrins and within the AONB should be very limited to maintain their scenic qualities, and views to Mullaghcarn and other prominent Sperrin hills should be maintained.

Ancillary Elements

The varied terrain provides opportunities for accommodating low level infrastructure associated with wind energy developments, with tree planting likely to be an effective landscape and visual mitigation. Buildings such as control buildings, substations etc should be of a scale similar to farm buildings already within the landscape. Large transmission lines and pylons would add to visual clutter in a landscape already characterised by wind energy. Overhead transmission lines and pylons should be sited so as not to appear dominant against small scale hills, and the siting of pylons close to larger scale wind turbines should be avoided.

SANDSTONE RIDGES AND PLATEAU LCT

LCA 44. *Slievemore*

Underlying Landscape Capacity

Larger scale wind energy development can be accommodated in higher parts of this landscape, however there are more lowland areas, and areas where the landform is a smaller scale where only smaller wind energy typologies are suitable. The plateau landscapes near Altmore Forest and Slieve Divena have capacity for 'large' (120<150m) wind turbines, albeit if wind farms are to be sited in areas of upland character turbine numbers will be limited. Smaller landforms, typically ridges between valleys and smaller hills towards the west and north, have a much lower capacity due to their smaller scale and lowland character. The upland areas are in relatively close proximity to a number of small settlements, such as Carrickmore, Sixmilecross and Beragh, while some of the valleys running through the LCA are relatively populated, and this presents a constraint to the size and scale of wind farm development. Undulating terrain and forestry/ woodland provides opportunities for accommodating wind farm infrastructure within the landscape.

Parts of this landscape can be developed as a *wind turbine landscape*, with other areas more suited to the less intense development typology of a *landscape with wind turbines*.

Consented wind Energy Development and Wind Energy Applications

The main wind farm developments, with turbines of 'medium/ large' or 'large' size, are located at Slieve Divena (12x100m and 8x125m turbines), Crockagarran (7x125m), Gortinfinbar (5x125m), Croackbaravally (3x127), Altamuskan (3x110m) and Inshative (6x125m, 4 in FODC). There are various single or small groups of 'medium' (<80m) or smaller sized turbines throughout the LCA sited on smaller scale landforms. Much of this landscape is therefore a *wind turbine landscape*.

There is only one known application wind turbine, a 'medium' sized single turbine, potentially replacing an existing consented development of the same size.

Residual Capacity and Guidance for Future Development

Wind Turbines

The more upland part of the landscape area has capacity for 'large' typology turbines (120<150m). However, it is not likely that larger typology turbines (i.e. 150m+) could be successfully used in this area due to the limited extent of the upland area available, the presence of relatively higher numbers of residential properties nearby and the absence of suitable large-scale screening landforms that could contain very large scales of development.

In the south of the LCA there appear to be few opportunities to expand the windfarm area near Slieve Divena, however the existing 100m turbines may be suited to repowering with a larger typology, although the maximum acceptable height would need to be carefully assessed particularly in relation to small settlement nearby, for example Garvaghy 4km to the south west. Further north, the elongated ridge located between the Cloghfin River and its southern tributary appears mostly unsuited to larger scale wind farm development due to its smaller scale character, however there may be capacity for a limited expansion of Crockbaravally wind farm, located where the ridge transitions to a more plateau like landform, although nearby properties are a constraint. There are potentially opportunities for expanding wind farm development at Altmore Forest adjacent to the existing Crockagarran wind farm. This would create some limited change to the existing pattern of wind farm development, with a series of more prominent and closely spaced wind farms clusters seen on the eastern horizon. Turbine sizes should be of no more than 'large' (120<150m), to avoid the domination of the ridge that is likely to arise from 'very large' (150+) wind turbines.

There appears to be very limited capacity for smaller scale wind energy development taking into account consented levels of development. Any further schemes should generally avoid north west facing lower slopes, particularly close to wind farms, to avoid undesirable cumulative visual effects due to intervisibility of larger and smaller typology schemes. Smaller scale schemes should be carefully sited so as not to overwhelm smaller scale hills and enclosed valleys.

Ancillary Elements

Much of this landscape area is of an undulating character and with areas of woodland or forestry, and so there are opportunities for siting wind farm infrastructure in more enclosed parts of the landscape, screened by topography and/ or vegetation. Windfarm infrastructure should not be sited in conspicuous locations within more upland parts of the landscape, and transmission lines and pylons should be sited so as not to be visible on the horizon when the landscape is seen from neighbouring lowland locations. Infrastructure for smaller scale developments (<80m) should be sited according to local conditions, and general guidance is provided in Section 6.7.



Crockagarran wind farm seen from the south, with the forested Altmore Forest to the left of the photograph, a site with potential capacity for future wind energy development, however small-scale lowlands nearby are a constraint

6.3 Landscape Capacity and Cumulative Development

This section summarises capacity and cumulative effects for the seven regional landscape character areas of Fermanagh and Omagh shown in Figure 3.3. Figures 6.1 a-f show underlying landscape capacity for differing sizes of wind turbines by LCA. Refer to Figure 6.2 for a map of current cumulative wind turbine landscape types and Figure 6.3 for a map illustrating the proposed future limit to wind turbine landscape types, as described in Table 6.1 above and summarised in the sections below.

6.3.1 Overview of Landscape Character, Sensitivity and Capacity

The landscape of the Fermanagh and Omagh is varied, comprising a number of different landscape types. While many of these are not uncommon in Northern Ireland, the karst landscape of the Fermanagh Cavelands are unique, and the interrelationship between this landscape and the nearby lakelands results in a landscape of high scenic quality and sensitivity. Elsewhere, much of the landscape is of a relatively commonplace lowland drumlin farmland, but bounded and divided by areas of upland plateau extending typically to 200 – 300m AOD. The landcover of these upland areas is also often of enclosed pasture and forestry, with areas of open upland character of limited extent. Areas of true large-scale upland character are mostly found to the north of the Local Authority area in the Sperrins, however the AONB designation covering this landscape area reduces its capacity for wind farm development. While population is concentrated in the main towns of Enniskillen and Omagh, low density settlement is found throughout much of the area, often providing a constraint to larger scale wind energy developments. In summary therefore, much of the landscape is of small scale and populated, and opportunities for significant wind farm development are limited, while the special qualities of upland areas make them unsuited to wind energy developments. However, limited parts of the landscape do have opportunities for larger scale developments, with some scope for increasing the capacity of existing installations through limited extensions or repowering with larger turbine typologies.

6.3.2 Fermanagh Caveland: Summary of Capacity and Cumulative Development

The *Fermanagh Caveland*, including the limestone plateau of the Lough Navar and Ballintempo Forest, loughs Macnean and Melvin, and the limestone uplands of Cuilcagh, is one of the most sensitive landscapes in the Local Authority area. Its rugged and complex karst landscape has a high sensitivity to large scale wind energy development. Upper Lough Macnean, enclosed by scenic upland landscapes on either side, is also sensitive to intrusion from turbines. Parts of this landscape are unsuited to wind energy development of any scale, in particular the core of the limestone plateau and scarp (*LCA 4 The Lough Navar and Ballintempo Uplands* and *LCA 6 The Knockmore Scarpland*); and the slopes of Cuilcagh (*LCA 9 Cuilcagh and Marlbank*). Elsewhere capacity is only for small scale infrequent wind energy development of 'medium' size (<80m). Within this area the south-western transition from the limestone plateau of *LCA 4 The Lough Navar and Ballintempo Uplands* has some capacity for larger scale wind energy development, overlooking the less sensitive Lower Lough Melvin and the southern parts *LCA 1 Garrison Lowlands*, with small wind farms comprising wind turbines with up to 'large' sized turbines (<150m).

The most substantial wind energy developments in the area are those at the north western and south-eastern extremes of *LCA 4 The Lough Navar and Ballintempo Uplands*, comprising the wind farm developments at Ora Moor and Callagheen, with 'medium/ large' (80<120m) and 'large' (120<150m) turbine sizes respectively, elsewhere wind energy development is very limited.

The recommended landscape objective of maintaining this landscape largely free of wind energy development limits remaining capacity in the area. However, there may be some capacity some expansion of wind energy along the south-western edge of *LCA 4 The Lough Navar and Ballintempo Uplands*, where 'large' typology turbines are likely to be acceptable at the current location of the Callagheen wind farm, albeit the windfarm not greatly extended in size. The Ora Moor windfarm may be suited to limited expansion towards the north but away from Upper Lough Macnean. In between the two windfarms there is potential capacity for a turbine cluster/ small wind farm of 'medium/ large' or 'large' typology turbines, sited away from the more sensitive landform features of the area, although suitable sites of sufficient distance from residential properties are few.

6.3.3 Lough Erne Lakeland: Summary of Capacity and Cumulative Development

This landscape area comprises the main lough basins of Upper and Lower Lough Erne in between which lies the main settlement of Enniskillen, overlooked to the west by *LCA 4 The Lough Navar and Ballintempo Uplands* including the escarpment of the Cliffs of Magho. This area also includes *LCA 10 Slieve Russel, Derrylin and Kinawley*, an upland area marking the south-western extent of the Local Authority area. This landscape is mostly of lowland character, with Upper Lough Erne a complex and enclosed body of water, while Lower Lough Erne is much more expansive. Landscape capacity is mostly for occasional wind turbines of 'medium' size or smaller (<80m), making use of the screening provided by the undulating landscape and its enclosing vegetation. Parts of the landscape at *LCA 10 Slieve Russel, Derrylin and Kinawley* are of more upland character, and therefore suited to wind farm development. As the lowland landscape extends from Lower Lough Erne towards Omagh capacity for smaller scale development within the extensive lowland farming landscape increases somewhat. The landscape objective for most of this area is one of a *landscape with no or occasional wind turbines*, within localised exceptions where more intensive wind energy development can be accommodated, as identified above.

Consented wind energy development comprises mostly single and small groups of turbines of 'medium' (<80m) or smaller, dispersed through the landscape area. However, the upland landscape at *LCA 10 Slieve Russel, Derrylin and Kinawley* includes a larger scale 18 turbine wind farm (125m) on Slieve Rushen, 5 x 125m turbines at nearby Molly Mountain, plus various 'medium' sized single turbines. *LCA 15 Irvinestown Farmland* has a significant number of consented 'small' to 'medium' size wind turbines, although many of these had not been constructed at the time of the assessment.

Capacity for significant wind energy development within the area has been largely utilised, although there may be limited capacity for additional 'large' (<150m) typology turbines. The closer linking of the Molly Mountain and Slieve Rushen turbines, e.g. through replacement/ repowering of smaller intermediate turbines may be acceptable in landscape and visual terms, subject to more detailed further assessment. Because of the limited scale of the landform it is unlikely that 'very large' (150m+) turbines could be accommodated in this

location. Elsewhere, there is limited capacity for occasional small-scale wind energy developments of 'medium' sized turbines (<80m) and smaller.

6.3.4 Clogher Valley and Slieve Beagh: Summary of Capacity and Cumulative Development

This landscape is mainly one of lowland drumlin farmlands, which is not of particular sensitivity, but due to its small scale and settled character is unsuited to larger scale wind energy development. However, the landscape could accommodate a level of smaller scale development due to the enclosure provided by frequent drumlins and the wooded boundaries to the enclosed pastures which characterise this landscape. Lying between *LCA 12. Newtownbutler and Rosslea Lowlands* and *17. Clogher Valley Lowlands* is the upland plateau of *LCA18 Slieve Beagh*, an undulating upland of rounded hills and small valleys with forestry, pastures and open areas of moorland. This landscape has a capacity for larger scales of wind turbine development, but typically as small groupings of turbines up to 'large' size (120<150m), and utilising the topography to conceal smaller developments of up to 'medium/ large' turbines (<120m). Frequent properties, neighbouring settlements, and the pastoral landscape pattern present a constraint to more extensive levels of development. The SPA designation covering much of this area may also be a significant constraint in relation to natural heritage rather than landscape character. The landscape objective should be a *landscape with occasional wind turbines* in the lowland areas; however, the more upland landscape has capacity to become a *landscape with wind turbines*.

Currently the 5 turbines of the Teiges Mountain wind farm (120m) are the main consented wind energy development in the area, and there are a number of scattered single/ small turbine groups of 'medium' size or smaller.

Some residual capacity for smaller scale wind farm development exists in the more lowland locations, with turbines of 'medium' size or smaller (<80m). In the more upland landscape of *LCA18 Slieve Beagh* there is some residual capacity for wind turbine clusters/ small wind farms of 'medium/ large' turbines (<120m) where they can be successfully concealed in folds in the landscape, so as to reduce their prominence from lowland locations. There may be limited opportunities to extend Teiges Mountain windfarm, however a single large wind farm in this landscape is unlikely to be acceptable because of the relatively small scale of landscape, the frequent presence of settlement, and the limited extent of the larger scale upland areas.

6.3.5 Omagh Basin: Summary of Capacity and Cumulative Development

The *Omagh Basin* is a lowland farming landscape which is bounded in most directions by higher landforms, including the low sandstone plateaus to the north west and south east, and the more elevated landform of the Sperrins and its outlying hills. The more upland sandstone ridge of Brougher Mountain is included within this regional area for the purposes of this assessment. As a predominantly low lying, populated farming landscape, capacity is mostly for small scale wind energy developments of 'medium sized turbines or smaller (<80m), either singly or in small groups. The landscape is relatively enclosed by drumlins, wooded field boundaries and other areas of woodland, reducing internal visibility and enhancing capacity for smaller scale wind energy developments. Parts of the upland area of Brougher Mountain are suited to wind farm development because of their upland character and relatively large scale, while others are of too small a scale e.g. near Topped Mountain,

while Brougher Mountain itself is a notable landmark hill, on which wind farm development would be prominent and widely visible. The landscape objective should be one of a *landscape with occasional wind turbines* in lowland areas, however the more upland landscape area has capacity as a *landscape with wind turbines*, with a localised *wind turbine landscape*.

Lowland areas have a relatively high number of consented wind turbines of 'medium' size or smaller although at the time of assessment many of these had not been constructed. The uplands of Brougher Mountain contain the wind farm at Hunters Hill (8 x 101m turbines) which extends into Mid Ulster across the Local Authority boundary.

Cumulative development in this area is reaching the limits of acceptability assuming an approach of 'landscape accommodation', with generally quite limited residual capacity in lowland areas, on the assumption that all consented turbines will at some point be constructed. In the uplands of Brougher Mountain the most suitable site for wind energy development has been utilised, with no other sites for larger scale development identified in this assessment. Opportunities for additional capacity mostly lie in the potential repowering of the Hunters Hill site, which is likely to be suited to the 'large' typology of turbine size (120<150m), subject to careful assessment and siting, with particular consideration given to effects on the nearby settlement of Fintona.

6.3.6 West Tyrone Hills and Valleys: Summary of Capacity and Cumulative Development

The sandstone plateau of the West Tyrone Hills is an undulating landscape of upland character and includes some notable rounded hills at its eastern extent, while to the west the landscape is of a smaller scale and of more defined lowland character as *LCA 14 Lough Braden* approaches Lower Lough Erne. To the north east *LCA 21 Fairy Water Valley* is a lowland, enclosed landscape contained to the south by the neighbouring uplands. The sandstone uplands in this location are relatively extensive, continuing westwards beyond the Local Authority boundary, and include a large expanse of forestry at Lough Braden Forest. Therefore, the landscape has capacity for larger scales of wind energy development at a greater level than that in any other landscape within the Local Authority area. The upland landscape area can accommodate 'large' wind turbines (120<150m), and potentially 'very large' (150m+) turbines in more remote localised areas. Many of the mid-sized, rounded hills are of insufficient size to accommodate expansive wind farm development, and are separated by quite steep sided valleys, some of which are populated, and the outer hills to the east and south overlook more sensitive lowland landscapes. However, to the north around Lough Braden Forest, the landscape is of a more plateau like form and possibly suited to a more extended area of development. This more 'internal' landscape which benefits from screening in some directions from higher landforms may potentially be suited to 'very large' (150m+) turbine developments, subject to careful site assessment and consideration of issues such as turbine lighting. Therefore, within the core upland areas of the landscape a *wind turbine landscape* could potentially be accommodated.

The more upland landscape at the heart of this Regional Character Area is already well developed with 7 wind farm developments, utilising turbines of up to 127m. There is very little development within *LCA 21 Fairy Water Valley*, while to the west there are various existing and consented smaller turbines as single developments or small groups.

The greatest residual capacity therefore lies in the Lough Braden Forest area, where a more consolidated development, incorporating Lough Hill and Castle Craig wind farms may be acceptable. To the west of *LCA 14 Lough Braden* there is some residual capacity for 'medium' sized turbines and smaller (<80m), preferably sited with larger scale landforms when of the 'medium' size (50<80m). The existing windfarms at Pollnalaght have utilised most capacity in this area, and wind farm development extending onto the eastern slopes of the hill is likely to be unacceptable because of impacts to nearby Omagh. Residual capacity at Tappaghan windfarm may be very limited because of its proximity to the settlement of Lack a short distance to the south and its position on outward facing slopes overlooking the *Omagh Basin*. The acceptability of repowering with larger typology turbines here can only be determined through detailed assessment.

6.3.7 Sperrin: Summary of Capacity and Cumulative Development

The Sperrin mountains are the largest scale of landscape within Fermanagh and Omagh. The upland parts of the landscape are of a mostly simple landform and landcover, although valleys located between ridges and hills can be more enclosed, intimate and sensitive. This area also includes *LCA 26 Bessy Bell and Gortin* which comprises a mixture of upland and lowland landscapes, but is important as a 'gateway' to the Sperrins and is of recreational value. While considering landscape character alone, the more upland parts of *LCA 24 South Sperrin* might be suited to sizable wind farm development. However, the AONB designation indicates a nationally valued landscape, and it is unlikely that this level of landscape change could be accepted in the AONB, which is currently free of any wind farm development. Elsewhere, in the valley landscapes, occasional single or small turbine groupings could be accommodated in more enclosed parts. The more lowland parts of *LCA 26 Bessy Bell and Gortin* are of a relatively open basin like character, overlooked by the wind farm at Bessy Bell and surrounded by higher landforms and therefore sensitive to development, with potential undesirable cumulative issues should smaller lowland turbines be seen frequently with those in the uplands. Overall the landscape should remain as a *landscape with no wind turbines/ occasional wind turbines*.

There are very few existing and consented wind energy developments within this area, however Bessy Bell 2 windfarm is at the edge of the area, with 6 x 100m turbines. However, there is a major wind farm application for the Glenlark Forest in the north east of the *LCA 24 South Sperrin* (Doraville Wind Farm), which would create a localised 'wind farm landscape' in the heart of the Sperrins AONB, visible from some of its most remote areas.

Therefore, there is very limited residual capacity for wind energy development within South Sperrin, and because of the prominence of wind turbines on Bessy Bell, including the adjoining windfarm outside of the Local Authority area, there is no capacity for further development on this hill. Further development of turbines up to the 'medium' size (<80m) should be so as to appear as only infrequent features of the more lowland parts of the landscape.

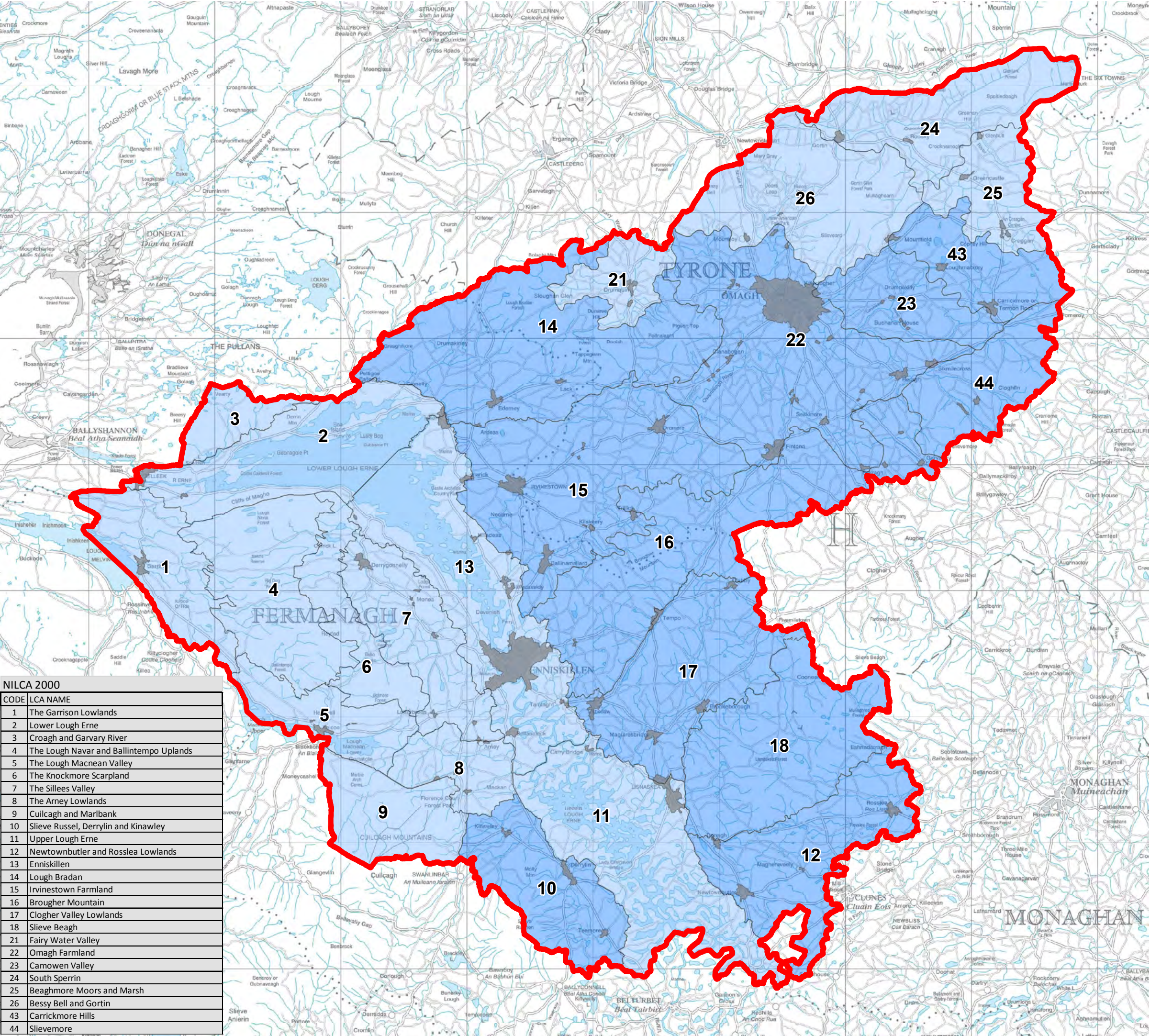
6.3.8 Carrickmore Plateau and Pomeroy Hills: Summary of Capacity and Cumulative Development

This landscape is of a semi-upland character extending southwards from the Sperrins and partly included within the Sperrins AONB designation. While there is a small and well

dispersed resident population, the landscapes have some remoteness and roughness of landscape character. The AONB designation is a significant constraint to development to the north of the area within *LCA 25. Beaghmore Hills and Marsh* which has only limited capacity for smaller scale wind energy development. To the south there is some variation in the character of *LCA 43 Carrickmore Hills* and *44. Slieve Beagh*, with the latter of larger scale than the former, with a less complex topography and correspondingly a higher capacity for larger scale energy developments. Areas of true, larger scale upland character are relatively limited in extent, with enclosed pastures often extending well into the hills, with the largest capacity locations at Slieve Divena and Crockagarran, already occupied by wind farm developments. With the exception of the areas of AONB within both LCAs *43 Carrickmore Hills* and *25 Beaghmore Hills and Marsh* there is capacity for these landscapes to appear as *landscapes with wind turbines* and localised *wind turbine landscapes*. While the landscape is of sufficient scale to accommodate 'large' sizes of wind turbine, it is likely that 'very large' typologies of 150m+ turbines would not be acceptable on even the larger scale landforms, because of their low elevation, rising to a maximum of approximately 300m AOD, their 'convex' form without enclosure from surrounding hills, the small extent for the upland character area, and their proximity to and likely visibility from nearby small settlements.

There are significant wind energy developments within this area, at Slieve Divena, Sixmilecross and Crockagarran, with turbines of 'large' size up to 125m, and within the Carrickmore Hills there are smaller wind farm developments of small groups of 100m turbines. The *Carrickmore Hills* and *Slieve Divena* LCAs also have considerable concentrations of consented small-scale wind energy developments with turbines of 'medium' size (<80m) or smaller throughout the landscape area. However, at the time of the assessment many of these turbines did not appear to have been constructed.

There is therefore limited residual capacity if the desired landscape objective of mostly a *landscape with wind turbines* is to be maintained, but there is some capacity for wind farm expansion and repowering in the more upland landscapes close to the eastern boundary of the Local Authority area. The repowering of existing 100m turbines at Slieve Divena with 'large' typology turbines (120<150m) may be acceptable, subject to careful assessment and in particular in relation to visual effects from nearby settlements and properties. Elsewhere there appears to be some potential for expansion of wind farm developments at Crockbaravally and Crockagarran into the nearby forestry, but avoiding siting turbines on or immediately around prominent hill tops. Elsewhere the area is largely constrained against further wind farm development.



NILCA 2000	
CODE	LCA NAME
1	The Garrison Lowlands
2	Lower Lough Erne
3	Croagh and Garvary River
4	The Lough Navar and Ballintempo Uplands
5	The Lough Macnean Valley
6	The Knockmore Scarpland
7	The Sillees Valley
8	The Arney Lowlands
9	Cuilcagh and Marbank
10	Slieve Russel, Derrylin and Kinawley
11	Upper Lough Erne
12	Newtownbutler and Rosslea Lowlands
13	Enniskillen
14	Lough Bradan
15	Irvinestown Farmland
16	Brougher Mountain
17	Clogher Valley Lowlands
18	Slieve Beagh
21	Fairy Water Valley
22	Omagh Farmland
23	Camowen Valley
24	South Sperrin
25	Beaghmore Moors and Marsh
26	Bessy Bell and Gortin
43	Carrickmore Hills
44	Slievemore

Legend

- Local Authority Boundary
- Landscape Character Areas

Underlying Landscape Capacity

- High Capacity
- Medium Capacity
- Low Capacity
- No Capacity
- Urban

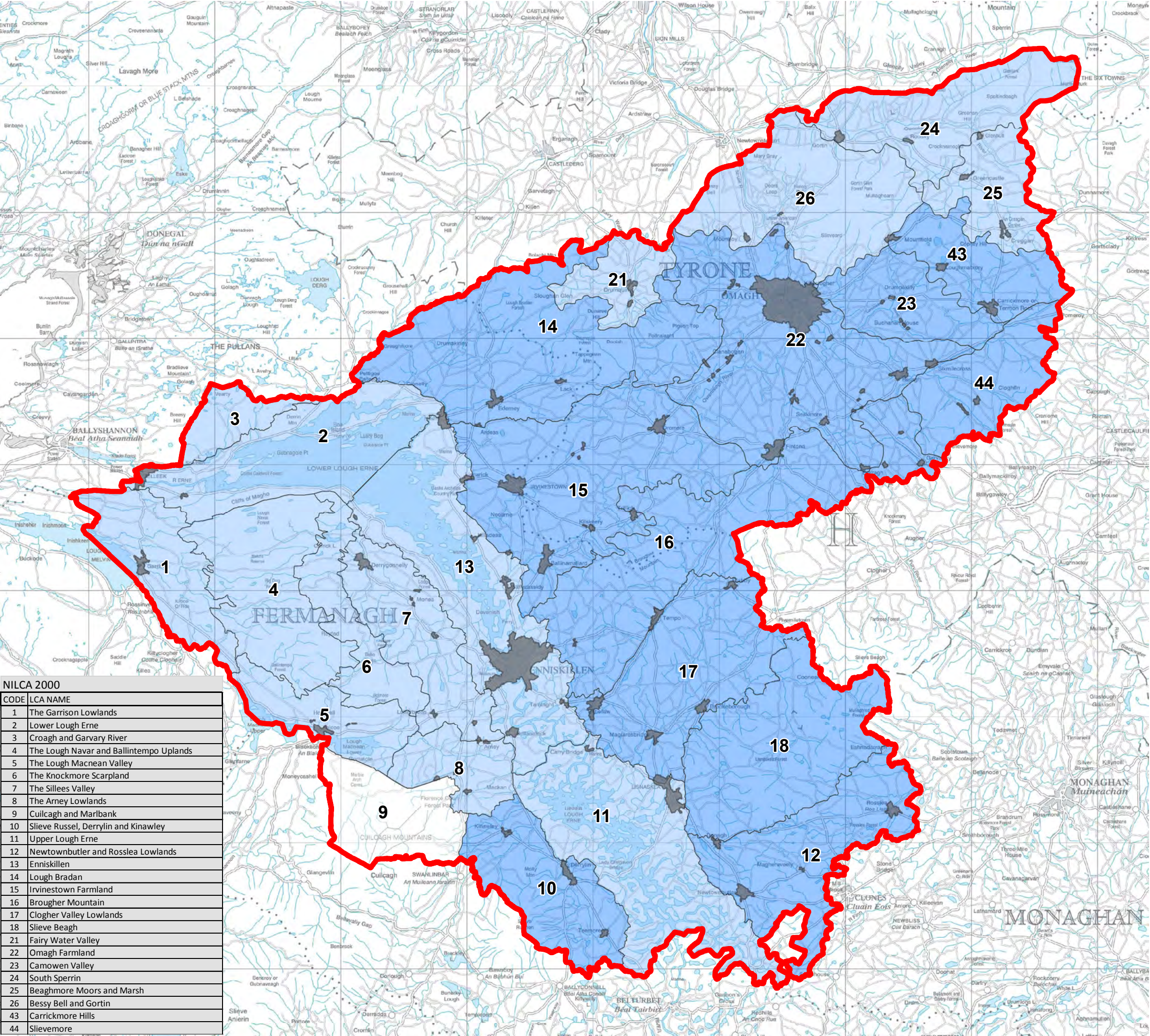
Fermanagh & Omagh District Council
Comhairle Ceantair Fhear Manach agus na hOmaí

Fermanagh & Omagh Wind Energy Capacity Study

Dec 2017 50087 / GIS / Fig 6.1a

Figure 6.1a

Underlying Landscape Capacity (15-30m Turbines)



Legend

Local Authority Boundary

Underlying Landscape Capacity

High Capacity


Medium Capacity

Low Capacity

No Capacity

Urban

NILCA 2000	
CODE	LCA NAME
1	The Garrison Lowlands
2	Lower Lough Erne
3	Croagh and Garvary River
4	The Lough Navar and Ballintempo Uplands
5	The Lough Macnean Valley
6	The Knockmore Scarpland
7	The Sillees Valley
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13	Enniskillen
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15	Irvinestown Farmland
16	Brougher Mountain
17	Clogher Valley Lowlands
18	Slieve Beagh
21	Fairy Water Valley
22	Omagh Farmland
23	Camowen Valley
24	South Sperrin
25	Beaghmore Moors and Marsh
26	Bessy Bell and Gortin
43	Carrickmore Hills
44	Slievemore



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Wind Energy Capacity Study

Dec 2017

50087 / GIS / Fig 6.1b

Figure 6.1b

Underlying Landscape Capacity

(30-50m Turbines)

N

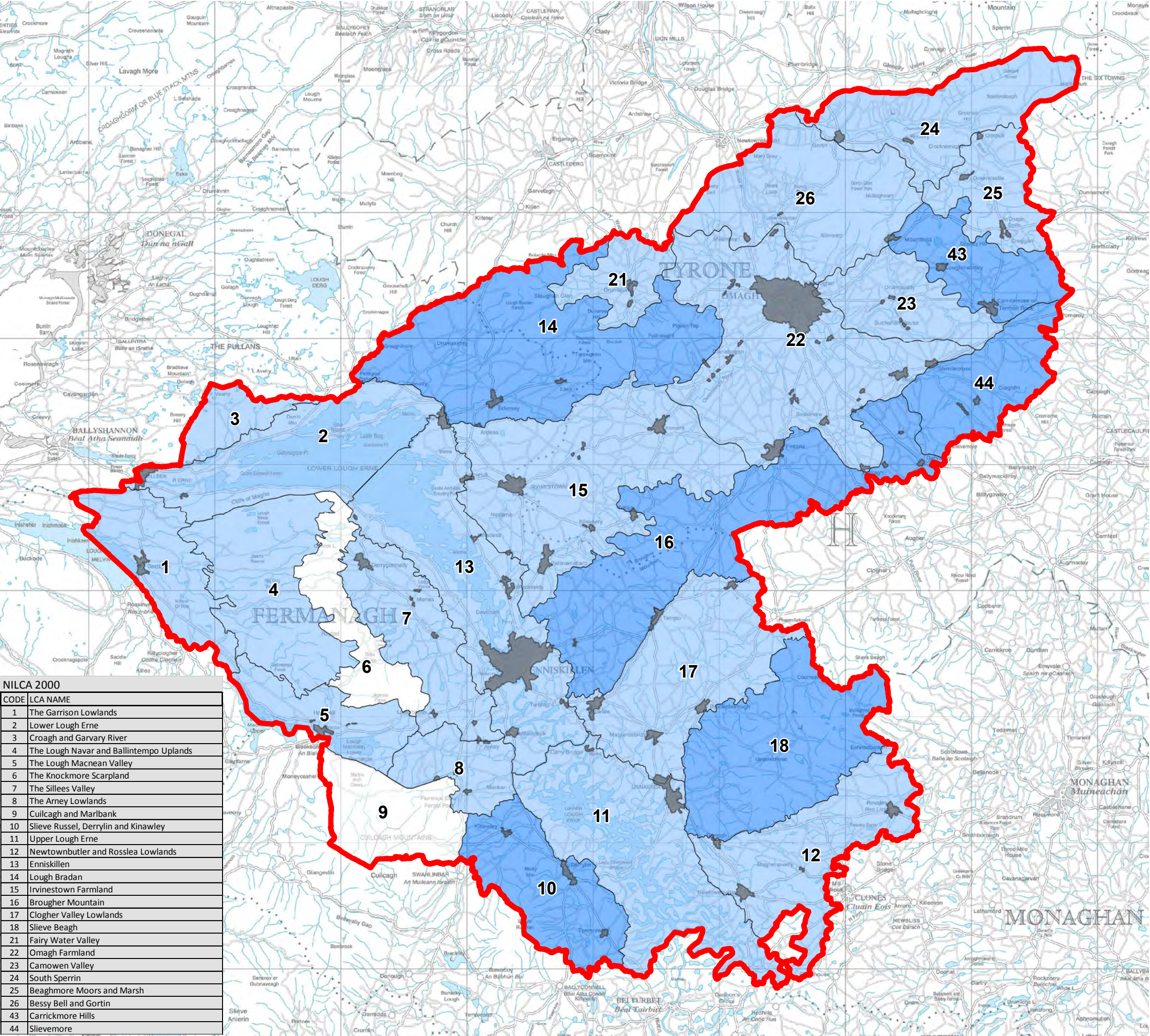
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2.5

5

10

Km



NILCA 2000	
CODE	LCA NAME
1	The Garrison Lowlands
2	Lower Lough Erne
3	Croagh and Garvary River
4	The Lough Navar and Ballintempo Uplands
5	The Lough Macnean Valley
6	The Knockmore Scarpland
7	The Sillees Valley
8	The Arney Lowlands
9	Culcagh and Marbank
10	Slieve Russel, Derrylin and Kinawley
11	Upper Lough Erne
12	Newtownbutler and Rosslea Lowlands
13	Enniskillen
14	Lough Bradan
15	Irvinestown Farmland
16	Brougher Mountain
17	Clogher Valley Lowlands
18	Slieve Beagh
21	Fairy Water Valley
22	Omagh Farmland
23	Camowen Valley
24	South Sperrin
25	Beaghmore Moors and Marsh
26	Bessy Bell and Gortin
43	Carrickmore Hills
44	Slievemore

Local Authority Boundary

Underlying Landscape Capacity

High Capacity

Medium Capacity

Low Capacity

No Capacity

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Wind Energy Capacity Study

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50087 / GIS / Fig 6.1c

Figure 6.1c

Underlying Landscape Capacity
(50-80m Turbines)

N

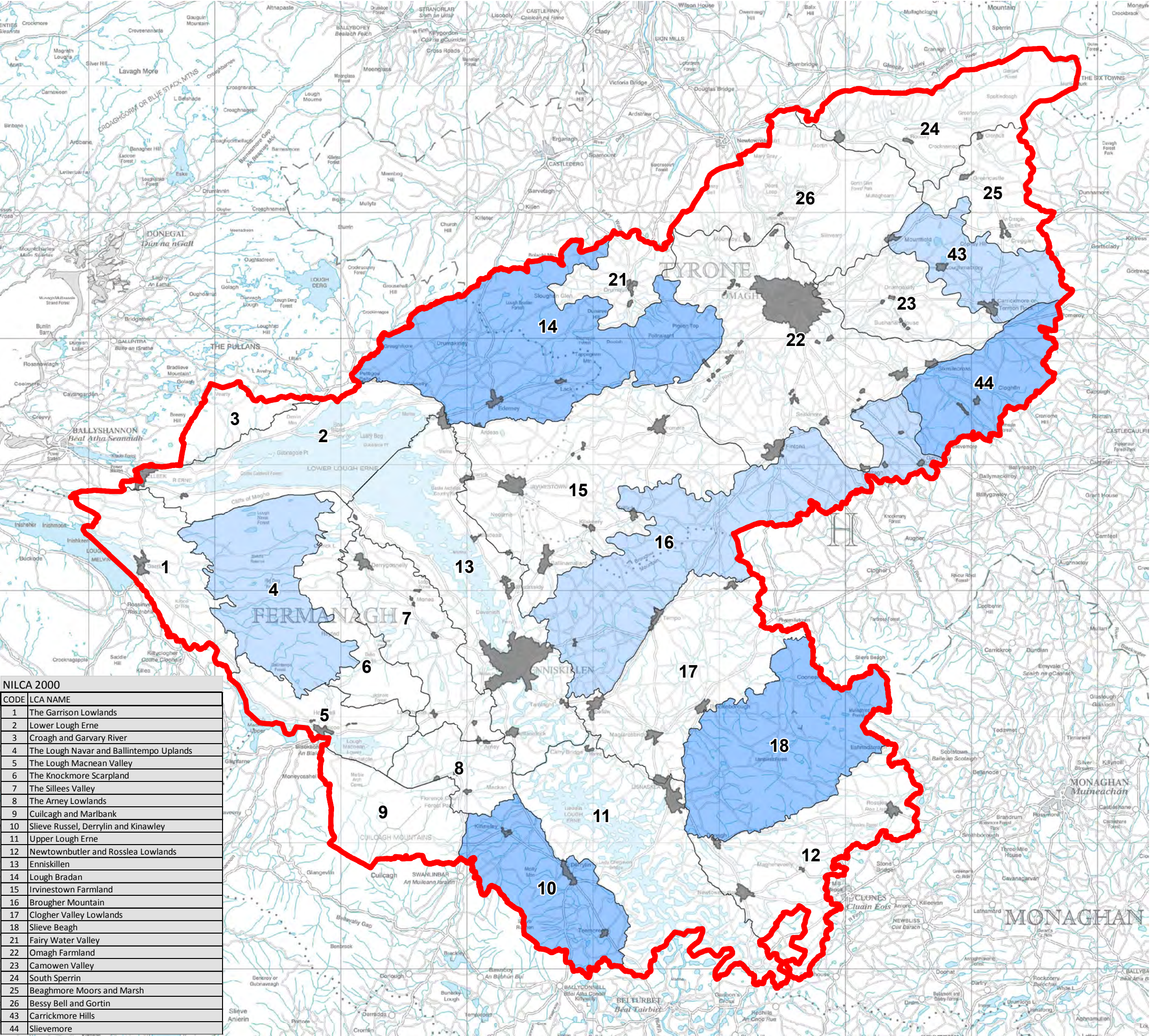
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10


Km



NILCA 2000	
CODE	LCA NAME
1	The Garrison Lowlands
2	Lower Lough Erne
3	Croagh and Garvary River
4	The Lough Navar and Ballintempo Uplands
5	The Lough Macnean Valley
6	The Knockmore Scarpland
7	The Sillees Valley
8	The Arney Lowlands
9	Culcagh and Marbank
10	Slieve Russel, Derrylin and Kinawley
11	Upper Lough Erne
12	Newtownbutler and Rosslea Lowlands
13	Enniskillen
14	Lough Bradan
15	Irvinestown Farmland
16	Brougher Mountain
17	Clogher Valley Lowlands
18	Slieve Beagh
21	Fairy Water Valley
22	Omagh Farmland
23	Camowen Valley
24	South Sperrin
25	Beaghmore Moors and Marsh
26	Bessy Bell and Gortin
43	Carrickmore Hills
44	Slievemore

Legend

- Local Authority Boundary
 - Landscape Character Areas
- Underlying Landscape Capacity
- High Capacity
 - Medium Capacity
 - Low Capacity
 - No Capacity
 - Urban




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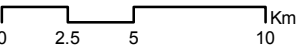
**Fermanagh & Omagh
Wind Energy Capacity Study**

Dec 201750087 / GIS / Fig 6.1d

Figure 6.1d
Underlying Landscape Capacity
(80-120m Turbines)

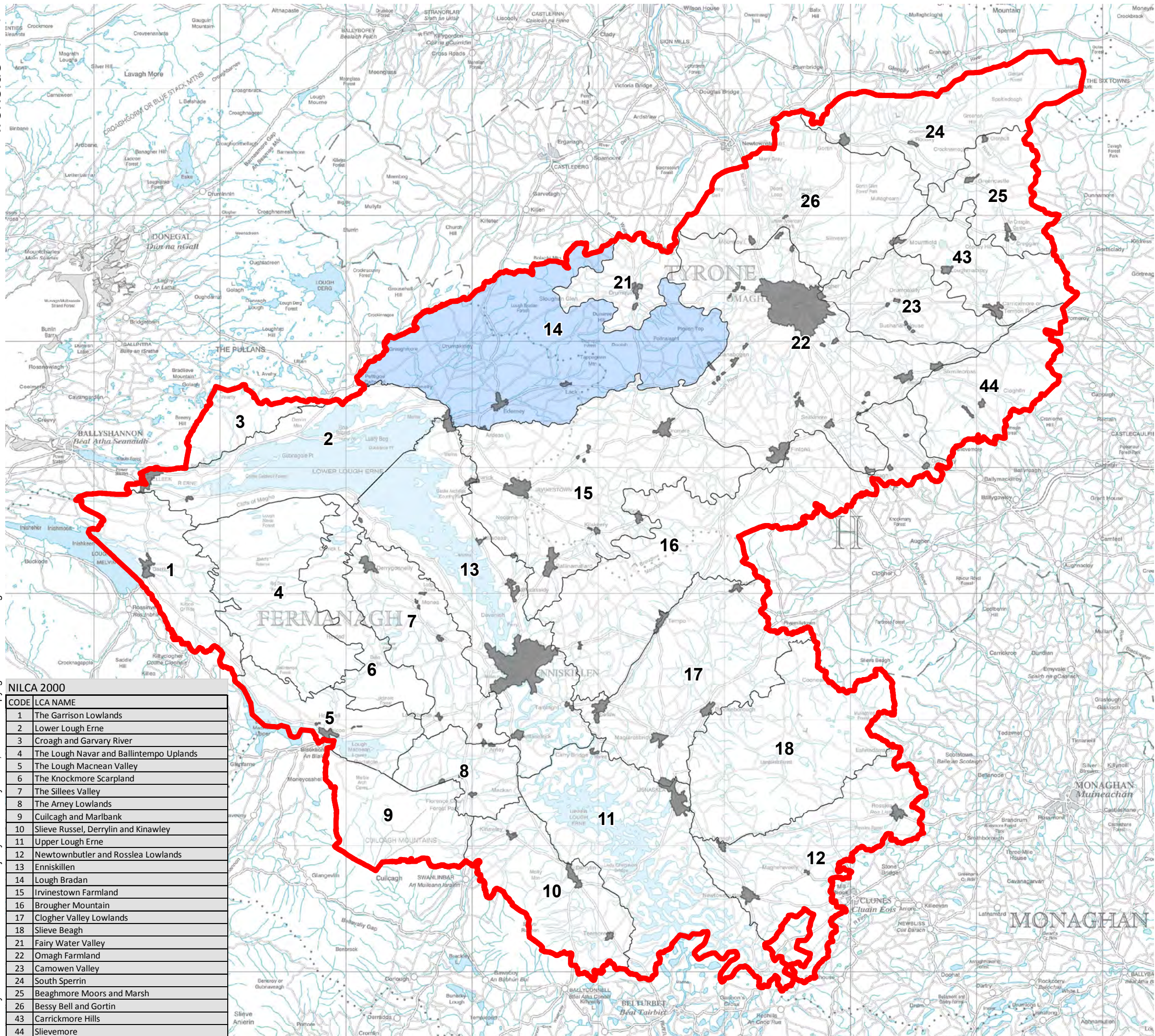
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






02.5510km





 High Capacity
 Medium Capacity
 Low Capacity
 No Capacity
 Urban


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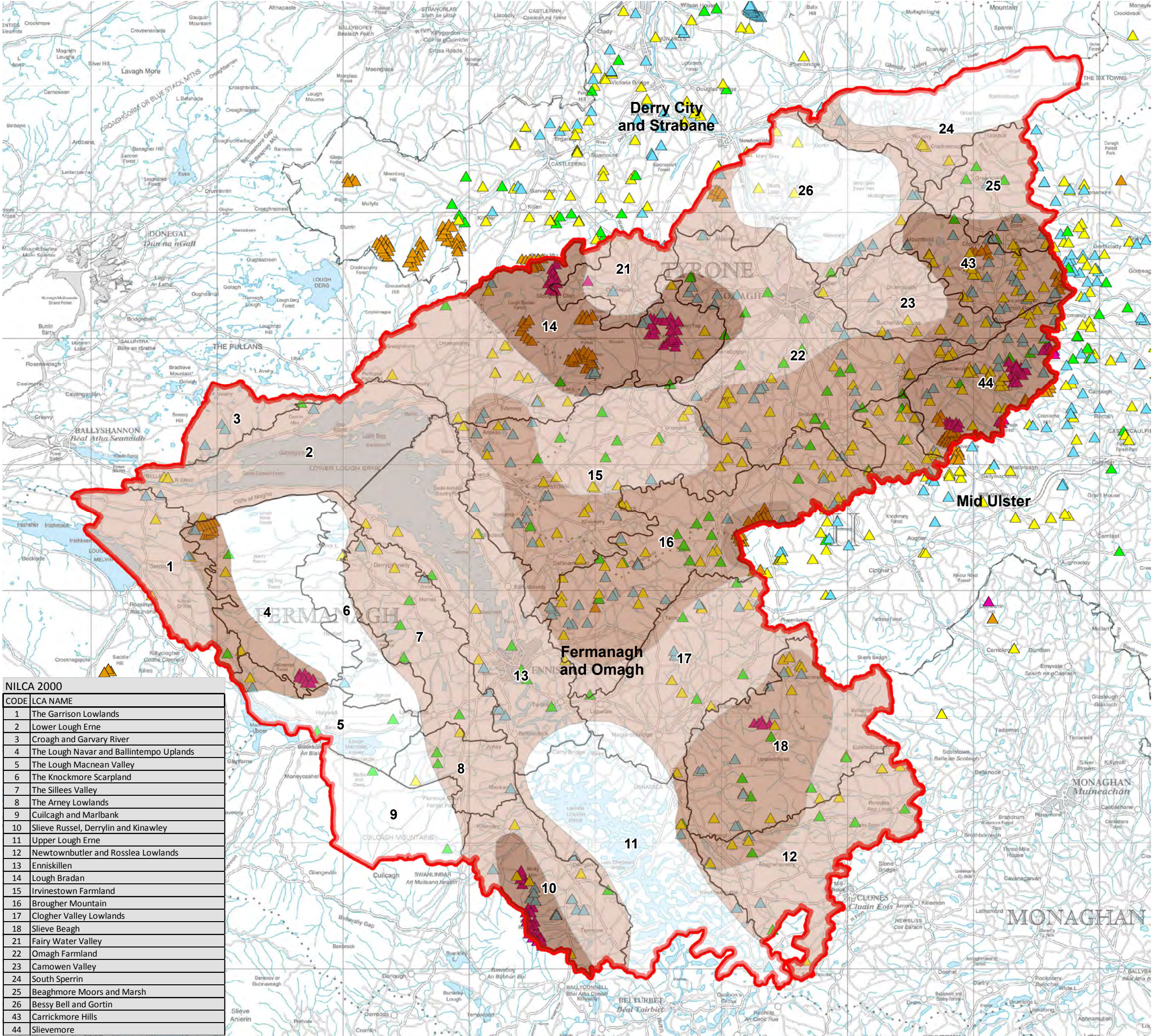
Fermanagh & Omagh Wind Energy Capacity Study

Dec 2017 50087 / GIS / Fig 6.1f

Figure 6.1f

Underlying Landscape Capacity (150-200m Turbines)

 0 2.5 5 10 Km



NILCA 2000	
CODE	LCA NAME
1	The Garrison Lowlands
2	Lower Lough Erne
3	Croagh and Garvary River
4	The Lough Navar and Ballintempo Uplands
5	The Lough Macnean Valley
6	The Knockmore Scarpland
7	The Sillees Valley
8	The Arney Lowlands
9	Culcagh and Marbank
10	Slieve Russel, Derrylin and Kinawley
11	Upper Lough Erne
12	Newtownbutler and Rosslea Lowlands
13	Enniskillen
14	Lough Bradan
15	Irvinestown Farmland
16	Brougher Mountain
17	Clogher Valley Lowlands
18	Slieve Beagh
21	Fairy Water Valley
22	Omagh Farmland
23	Camowen Valley
24	South Sperrin
25	Beaghmore Moors and Marsh
26	Bessy Bell and Gortin
43	Carrickmore Hills
44	Slievemore

Legend

Local Authority Boundary

Landscape Character Areas

Existing Turbine Categories

15-30m Height

30-50m Height

50-80m Height

80-120m Height

120m Height and over


Existing Typology

Landscape with No Wind Turbines

Landscape with Occasional Wind Turbines

Landscape with Wind Turbines

Wind Turbine Landscape



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50087 / GIS / Fig 6.2

Figure 6.2

Current Consented Development

Wind Energy Landscape Type

N

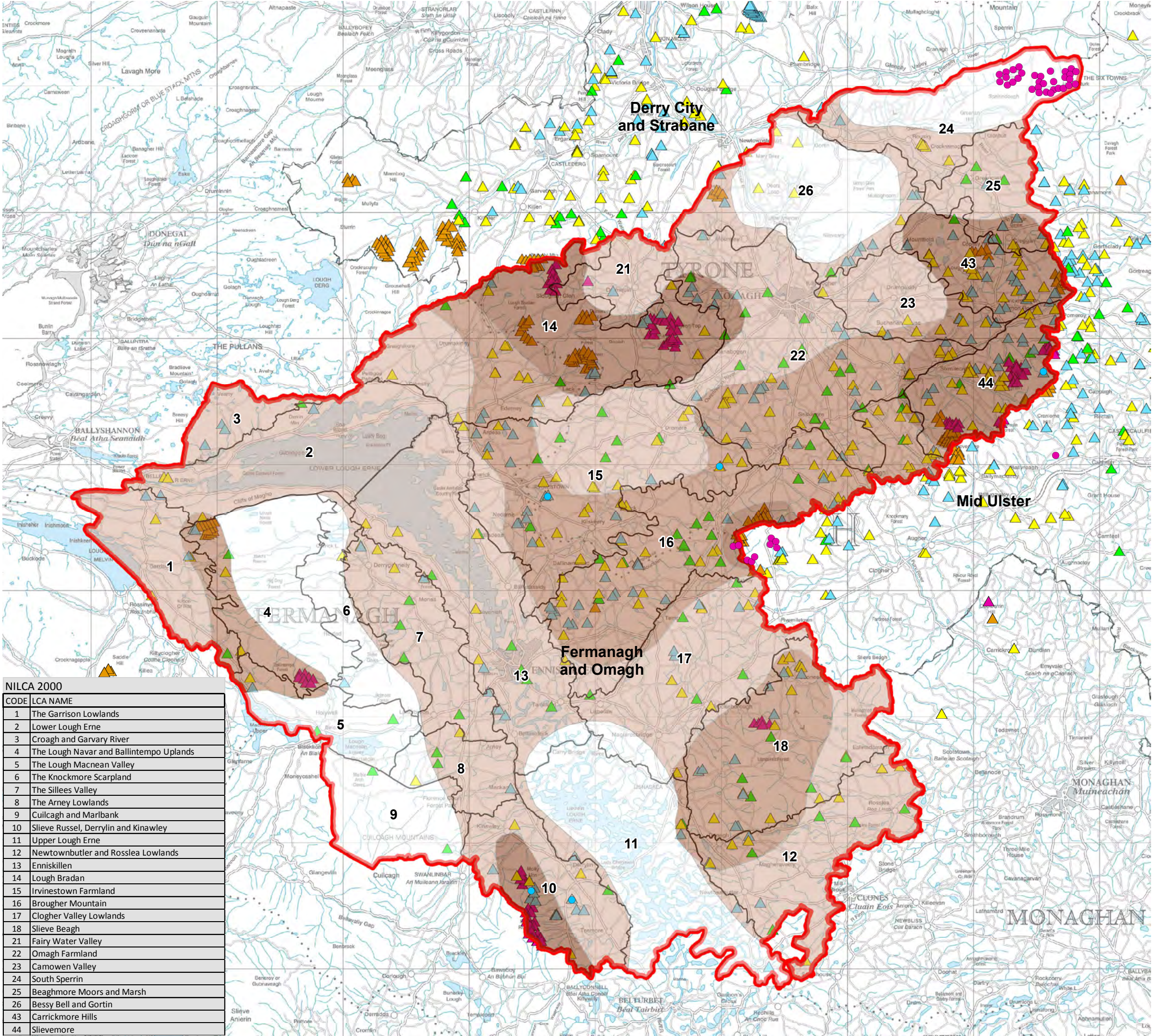
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Km



NILCA 2000	
CODE	LCA NAME
1	The Garrison Lowlands
2	Lower Lough Erne
3	Croagh and Garvary River
4	The Lough Navar and Ballintempo Uplands
5	The Lough Macnean Valley
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7	The Silles Valley
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12	Newtownbutler and Rosslea Lowlands
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14	Lough Bradan
15	Irvinestown Farmland
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21	Fairy Water Valley
22	Omagh Farmland
23	Camowen Valley
24	South Sperrin
25	Beaghmore Moors and Marsh
26	Bessy Bell and Gortin
43	Carrickmore Hills
44	Slievemore

Legend

Local Authority Boundary

Landscape Character Areas

Existing Turbine Categories

15-30m Height

30-50m Height

50-80m Height

80-120m Height

120m Height and over

Proposed Turbine Categories

15-30m Height

30-50m Height

50-80m Height

80-120m Height

120m Height and over


Proposed Typology

Landscape with No Wind Turbines

Landscape with Occasional Wind Turbines

Landscape with Wind Turbines

Wind Turbine Landscape



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Wind Energy Capacity Study

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50087 / GIS / Fig 6.3

Figure 6.3

Proposed Limits to

Wind Energy Landscape Type

N

0

2.5

5

10

Km

6.4 Overall Assessment of Capacity and Cumulative Development

6.4.1 Fermanagh and Omagh Summary: Landscape Character, Sensitivity and Capacity

The regional summaries above describe a landscape that has highly varied capacity to accommodate wind energy development; from medium to larger scale windfarms to single small turbines, as well as areas which have no capacity to accommodate wind turbines without affecting key characteristics, receptors and/or designations to an undue extent.

The LCTs with the greatest underlying capacity for development are the *Sandstone Ridges and Plateau* landscapes bounding the *Omagh Basin* to the north west and south east, specifically LCAs 44 *Slievemore* and 14 *Braden Forest*. When seen from neighbouring lowlands areas these uplands do include some more prominent hill summits and other landforms, however they usually appear as low but wide landforms, a desirable characteristic for accommodating larger scale development types.

The two landscape areas mentioned above form part of the enclosure to the lowland undulating farmland of the *Omagh Basin*, and therefore the effect of development on both of these landforms needs to be considered in relation to their cumulative effect on lowland areas. However, windfarms located on landforms either side of the *Omagh Basin*, to the west and east/ south east, would be separated by around 25km. Furthermore, as there is no capacity for major wind farm development in the Sperrins and around the Lower Lough Erne area, this would provide relief from views to windfarms from within the *Omagh Basin*, and cumulative effects may not be overwhelming.

Elsewhere in the more upland landscapes, capacity for larger scale development is limited and exists locally rather than throughout an area of landscape character. Throughout most of the lowland areas there is some capacity for smaller scale developments of 'medium' sized turbines (<80m), and in semi-upland landscapes there are possibilities to accommodate small groupings of 'medium/ large' (80<120m) typologies within the folds of undulating terrain. Other parts of the Fermanagh and Omagh landscape have little or no capacity for wind energy development because of their scenic qualities and status as valued landscapes.

The following sections summarise the underlying landscape capacity for wind energy development throughout Fermanagh and Omagh and cumulative issues associated with current (**November 2017**) levels of development. Four categories of area are discussed, with analysis of landscape resource and current capacity:

- 1) **Areas with Highest Underlying Landscape Capacity:** landscapes whose characteristics would most easily accommodate extensive, large scale wind energy development without unduly adverse effects.
- 2) **Areas with Limited Underlying Landscape Capacity:** landscapes whose characteristics would accommodate a more modest and less extensive scale of wind energy development without incurring unduly adverse effects.
- 3) **Areas with Little or No Underlying Landscape Capacity:** landscapes which, due to their sensitive characteristics and value, can accommodate only the smallest scale of wind energy development, or none at all.

- 4) **Areas of Significant Cumulative Development:** areas overlapping all of the above categories in which there is a significant level of operational or consented development relative to capacity, which limits future capacity for development

Reference should be made to the summary diagram in Figure 6.4 in which the four types of area are shown. Detailed analysis of LCAs within these areas and guidance for proposed developments is given in Table 6.1 above.

6.4.2 Areas with Highest Underlying Capacity.

Areas in Fermanagh and Omagh with the highest underlying capacity for wind energy development are potentially able to accommodate windfarms with larger turbine sizes. This may vary from relatively small windfarms with 5-10 turbines of 'medium/ large' typology (80<120m), to more extensive windfarms with 'large' turbines over 120m in height. Proposals in these strategic areas will need to respond to the landscape's pattern and scale, take account of screening and visibility, and areas of higher complexity and landscape pattern. Associated wind farm infrastructure in these areas should be subject to appropriate siting, design and other mitigations, however no significant constraints to accommodating ancillary elements are identified. The main strategic areas are:

- Areas of *LCA14 Lough Braden*, in particular centred around Lough Braden Forest where there is a relatively large-scale landscape, including forestry, where the landscape also benefits from a degree of screening from surrounding landforms. This landscape can accommodate 'large' and potentially 'very large' (150m+) turbines in some locations. Constraints to development may include the Ulster Way which passes through the landscape, the presence of some population, and proximity to more settled lowland areas, where developments may impact on landscape character and views.
- Upland parts of *LCA 44 Slievemore* particularly around Slieve Divena and Crockagarran, which have capacity for 'large' typology turbines, although areas with upland characteristics tend to be limited in their extent. Proximity to neighbouring settlement and the nature of the topography mean that 'very large' typology wind turbines would appear very prominently on this landform and there is considered to be no capacity for turbines of this size.
- The upland landscape of *LCA 10 Slieve Russel, Derrylin and Kinawley* is an outlying hill to the south east of Cuilcagh, separated by the Blackwater River. While in relatively close proximity to more scenic landscapes at Cuilcagh and Upper Lough Erne, it is a fairly peripheral feature in relation to these landscapes. The physical extent of the main upland area is the main constraint to wind energy development, which has the capacity to accommodate development with 'large' typology turbines, however 'very large' (150m+) turbines would potentially appear out of scale with the landform.
- The south-western fringe of *LCA 4 Lough Navar and the Ballintempo Uplands* which has a simpler landform than the limestone escarpments to the north and east, in particular the area between Lower Lough Macnean and Lough Melvin which is separated from the scenic landscape of *LCA 9 Cuilcagh and Marbank*. Capacity depends upon the degree to which it will be possible to site windfarms within a landscape with an area of complex landform and geology, features of which are local

landmarks and contribute to walks within the area. This landscape has capacity for well separated developments of 'medium/ large' or 'large' wind turbines (<150m), well separated so as not to dominate this extended land form.

- The sandstone uplands of *LCA 18 Slieve Beagh*, where the central area has the potential to accommodate a small wind farm utilising 'large' turbine typologies. However, the SPA designation is likely to be a significant constraint to wind farm development in parts of the LCA.
- Those limited parts of *LCA 16 Brougher Mountain* with upland character, but avoiding wind farm developments on Brougher Mountain itself, and also avoiding larger wind energy developments towards the south west of the LCA where close to Upper Lough Erne. This landscape has limited capacity for 'large' turbine sizes (<150m).

6.4.3 Areas with Limited Underlying Capacity

Areas with limited underlying capacity could accommodate small groupings of carefully located turbines under 80m or, in some cases, under 120m height. In some locations this may amount to a small-scale windfarm, but in others only single or lower height turbines could be accommodated. The larger developments would best be accommodated in the larger scale semi-upland landscapes such as those of the *Sandstone Ridges and Plateau* landscape types unsuited to larger scale wind farm development, while many lowland landscapes could accommodate 'medium' (<80m) sized turbines at relatively low densities. Areas with limited underlying capacity are as follows:

- Eastern parts of the *LCA 43 Carrickmore Hills*, which is a landscape of relatively small scale but does have capacity to accommodate small developments of turbines of 'medium/ large' size (<120m) if carefully sited. Western parts of the LCA are more sensitive as they are located within the Sperrins AONB. Wind turbines should be sited so as to minimise impacts to views of Sperrin hill summits.
- The parts of *Sandstone Ridges and Plateau* landscape types (LCAs *16 Brougher Mountain*, *18 Slieve Beagh*, *14 Lough Braden*) in areas of more semi-upland character, which may include more marginal pastures. In these locations collections of 'medium/ large' turbines (<120m) could be accommodated within the landscape as the topography would tend to restrict long internal views or views from adjacent lowland locations.
- The less sensitive lowland landscapes, including the LCAs *15 Irvinestown Farmland*, *22 Omagh Farmland*, *17 Clogher Valley Lowlands*, *12 Newtownbutler and Rosslea Lowlands* and *23 Camowen Valley*. While these lowland landscapes are of a relatively small scale, they tend to be quite extensive, and frequent drumlins and boundaries to small wooded pastures often restrict internal visibility. While the objective of these landscapes should be for them to appear as *landscapes with occasional wind turbines*, contrasting with the more developed uplands, there is capacity for single/ small turbine groupings of 'medium' sized turbines or smaller (<80m).

When assessing the acceptability of smaller scale wind energy development, proximity to larger scale wind farms and the potential for cumulative effects arising from intervisibility

between developments of different scales should be considered. No significant constraints to the accommodation of accompanying wind farm/ wind energy infrastructure are identified subject to careful siting, design and adoption of appropriate landscape and visual mitigations.

6.4.4 Areas with Very Limited or No Underlying Capacity

Significant areas of Fermanagh and Omagh have a high sensitivity and/or value and thus very limited or no capacity for wind turbine developments. These areas can only exceptionally accommodate well separated turbine developments below 80m. Some areas are not suitable for wind energy development. These areas are:

- The settings the Upper and Lower Lough Erne (LCAs *2 Lower Lough Erne*, *13 Enniskillen*, *11 Upper Lough Erne*, *3 Croagh and Garvary River*) because of their scenic qualities, recreational value and landscape value, including the Special Countryside Area designation of the islands of Lower Lough Erne and the ASQ of *LCA 3 Croagh and Garvary River*. Parts of *LCA 13 Enniskillen* would be able to accommodate more frequent wind energy where associated with settlement or industrial/ commercial land uses.
- *LCA 9 Cuilcagh and Marlbank*, because of its scenic and rugged landform, and strong integrity as an undeveloped upland including the landmark feature of Cuilcagh Mountain which is recognisable in the wider landscape, upon which wind energy would be a significant intrusion.
- A series of adjoining LCAs west of the Lough Erne valley, including the majority of *LCA 4 Lough Navar and Ballintempo Uplands*, *LCA 6 The Knockmore Scarpland*, eastern parts of *LCA 5 The Lough Macnean Valley*, *LCA 7 The Sillees Valley* and *LCA 8 The Arney Lowlands*. These landscapes form part of, or the setting to, the limestone karst landscape unique to Northern Ireland, which has high scenic qualities and recreational and tourism interest, as recognised through the UNESCO Global Geopark status.
- *LCA 1 The Garrison Lowlands*, particularly its western parts which form the setting to Lough Melvin and is identified as an ASQ.
- *LCA 26 Bessy Bell and Gortin*, and *LCA24 South Sperrin*. These are valued landscapes because of their AONB designation, and contrast with/ provide relief from areas which are more intensively developed wind energy landscapes. Any large-scale wind energy development in these LCAs would diminish their scenic qualities and risks compromising the integrity of the Sperrins AONB. It is of note that the equivalent national level landscape designation in Scotland, National Scenic Areas (NSA), are

identified in Scottish Planning Policy as locations where wind farms are not acceptable.¹⁷

It is recommended that these landscape areas remain sparsely developed or undeveloped to protect their character and to provide gaps between clusters of development.

6.4.5 Areas of Significant Cumulative Development

As described above, a number of landscape types and areas in Fermanagh and Omagh have an underlying capacity to accommodate wind energy development. However, existing and consented development in or nearby some of these areas means that further significant development may exceed the cumulative capacity of the landscape. The areas where cumulative impact limits capacity for further development are shown as hatched areas in Figure 6.4. A large part of this area is broadly contiguous, but is subdivided into the following areas to allow more localised guidance to be provided.

- a) Carrickmore Hills;
- b) The upland *Sandstone Ridges and Plateau* landscape around Slievemore;
- c) The upland landscape south of Brougher Mountain;
- d) The eastern parts of the *Omagh Basin (Irvinestown and Omagh Farmland LCAs)* which transition to the above landscape areas a - c;
- e) Slieve Rushen; and
- f) Lough Braden

These areas are defined by the following criteria:

- 1) The developed areas of windfarms and turbines (operational and consented) and the cumulative extent of their impacts on the surrounding landscape;
- 2) The underlying landscape capacity within the LCAs and for those surrounding them; and

- 3) The extent of area within which further significant development should be limited to avoid extending cumulative landscape and visual impacts between the groups of turbines within the cumulative area and other turbines outside the area.

The boundaries shown in Figure 6.4 are indicative. They are described in more detail for each area in Table 6.2 below, together with the main objectives for limiting further development. In the case of specific development proposals there should be an assessment relating to the detailed criteria.

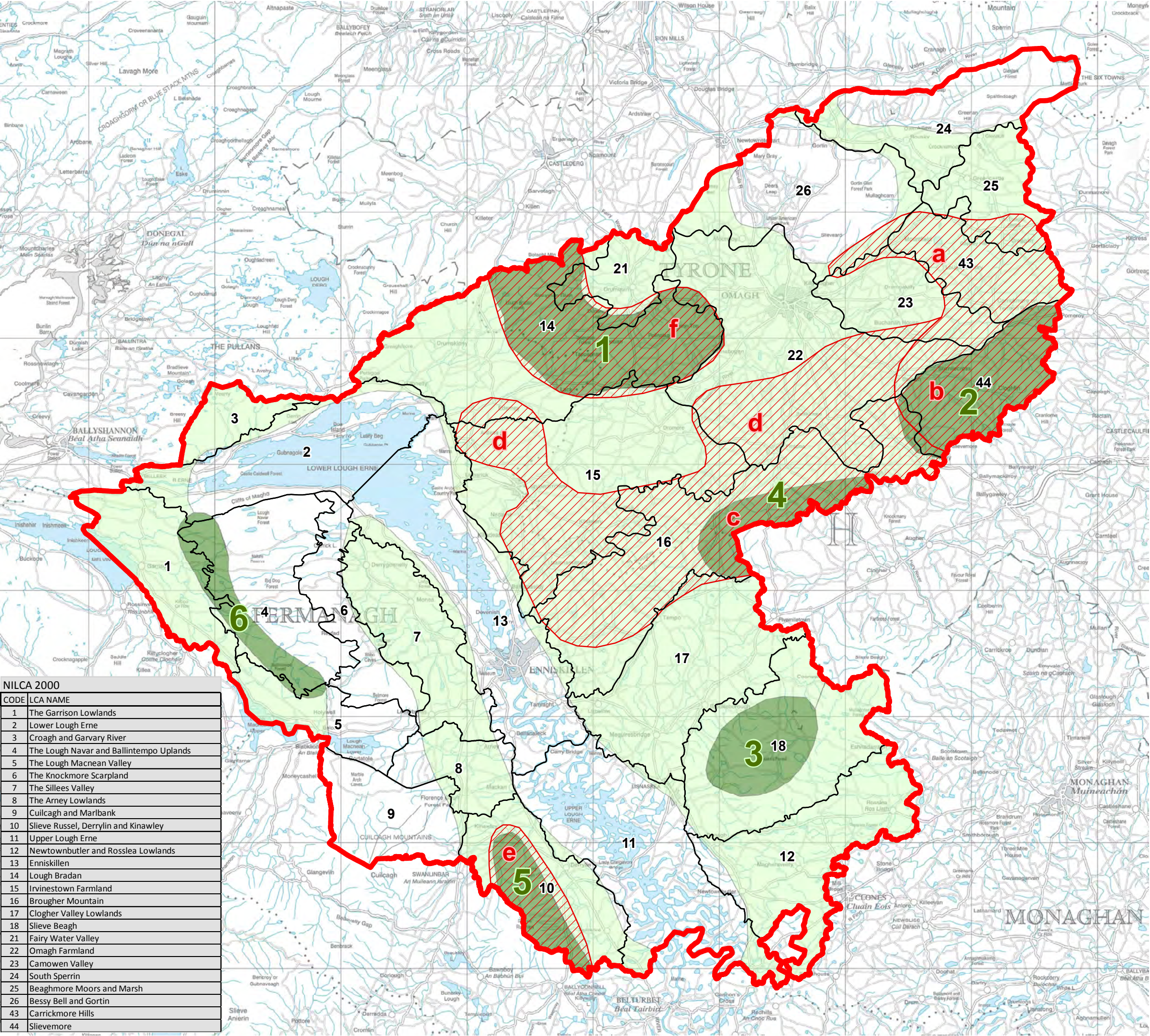
¹⁷ Scottish Government (2014) *Scottish Planning Policy*, Table 1

Table 6.2: Description and Guidance for Areas of Significant Cumulative Development: (see Figure 6.4 for locations)

a) Carrickmore Hills	
Description Area defined by <i>LCA 43 Carrickmore Hills</i> .	Development Situation and Key Objectives <p>As of November 2017, there are 49 consented wind turbines within the part of this LCA within Fermanagh and Omagh, including two small windfarms of 5 turbines each (100m/ 101m turbines). Many other single turbines are of the 'small/ medium' or 'medium' size, and typically around 50m in height. Consented turbines are mostly in relatively close proximity to each other, frequently separated by no more than 1km. Key objectives governing the area are:</p> <ul style="list-style-type: none"> • To prevent a proliferation of single wind turbines seen within this relatively open landscape; • To ensure that developments of small windfarms, currently of 5 turbines, are not expanded, so that their scale remains in keeping with that of the landscape. There appears to be no capacity for further small-scale wind farms in the area. • To ensure that smaller single turbine developments do not visually coalesce with small wind farm developments; • To ensure that wind farm developments are limited in the numbers and sizes of wind turbines used, so as not to overwhelm the limited scale of the landscape; and • To ensure that the more sensitive parts of the landscape of the Murrins to the west of the LCA and within the AONB remain largely free of wind turbine developments.
b) Slievemore	
Description Landscape area mostly encompassed by <i>LCA 44 Slievemore</i> south of the settlements of Pomeroy and Carrickmore.	Development Situation and Key Objectives <p>As of November 2017, the part of the landscape area within Fermanagh and Omagh is one of the most developed for wind energy, including 92 consented wind turbines with heights up to 125m, and two substantial wind farm clusters at Slieve Divena and Crockagarran. There are also relatively high numbers of consented 'small' to 'medium' sized turbines (<80m). Key objectives governing the area are:</p> <ul style="list-style-type: none"> • To limit smaller scale wind energy developments within the area, so that the wind energy landscape is defined more by concentrated larger scale windfarm developments, with other areas mostly free of wind energy, avoiding the adverse effects from views to small and large wind energy typologies together, and to ensure a coherent wind energy landscape. • To ensure that larger wind farm developments and their infrastructure are not seen to extend down outward facing slopes or valley sides, with turbines remaining clearly within areas of more upland landscape character. • To ensure turbine sizes account for the relatively limited extent of suitable upland landscape available, the proximity of smaller scale lowlands, and the presence of visual receptors in nearby properties and settlements.

c) Brougher Mountain	
<p>Description</p> <p>The upland area extending south from <i>Slievemore</i>, defined largely by <i>LCA 16 Brougher Mountain</i>.</p>	<p>Development Situation and Key Objectives</p> <p>This landscape currently includes a single wind farm development at Hunters Hill/ Ledrum's Bridge, extending into the neighbouring Local Authority area. Hunters Hill windfarm utilises 'medium/ large' wind turbines. There are significant numbers of single/ small wind turbine groups of 'medium' size turbines or smaller. Key objectives governing the area are:</p> <ul style="list-style-type: none"> • To ensure that the Hunters Hill windfarms remains as the significant cluster of wind farm development in the area, avoiding excessive spreading of wind turbines along the ridge; • To ensure that small to medium sized wind energy development do not encroach into the more upland landscapes and are not seen in combined views with larger turbines/ wind farms; • Preventing unacceptable visual impacts to Fintona and other small settlements through any extension/ repowering of Hunters Hill wind farm, through limiting turbine sizes and adopting good design principles; • Ensuring that more distinct hill summits e.g. Brougher Mountain, remain free of wind energy development; and • That 'medium' sized turbines towards the south of the area, towards the more sensitive Lower Lough Erne do not become overwhelmed by wind turbines seen on higher ground, by maintaining recommended separation distances.
d) Omagh and Irvinestown Farmland	
<p>Description</p> <p>Parts of the lowland farming landscape including southern parts of <i>LCA 15 Irvinestown Farmland</i> and <i>22 Omagh Farmland</i>.</p>	<p>Development Situation and Key Objectives</p> <p>Parts of the Omagh Basin have large numbers of consented single/ small turbine groups of 'medium' sized wind turbines. While this landscape does have capacity to accommodate smaller scale wind energy developments, consented schemes are often separated by less than 1km, and a proliferation of wind turbines has the potential to be a defining characteristic of the lowland landscape, rather than one of a <i>landscape with occasional wind turbines</i>. Key objectives governing the area are:</p> <ul style="list-style-type: none"> • To ensure that separation distances between wind turbines are maintained so that they appear as relatively infrequent/ occasional features in the landscape; • To ensure that wind turbines are sensitively sited, for example avoiding prominent positions on top of small land forms/ drumlins; • Where possible encouraging the clustering of turbines of the same type/ size into small groups rather than frequent scattering throughout the landscape; and • Ensuring that larger turbines are sited sensitively in relation to smaller scale features so as not to overwhelm or diminish their scale.

e) Slieve Rushen	
Description Upland areas of <i>LCA 10 Slieve Russel, Derrylin and Kinawley</i> .	Development Situation and Key Objectives <p>The upland parts of this landscape have significant levels of larger scale wind energy development, with turbines of 'large' size (125m) occupying ridge below the summit at Slieve Russel, and extending northwards to Molly Mountain. There are several smaller typology turbines of up to approximately 60m nearby. Key objectives governing the area are:</p> <ul style="list-style-type: none"> • To ensure that the larger typology turbines remain within the more upland landscape area and do not encroach into the smaller scale landscapes at lower elevations • To ensure that wind turbine development is not seen to dominate the recognisable landscape feature of Molly Mountain through careful wind turbine siting; and • That undesirable cumulative effects through the siting of smaller typology turbines close to larger ones is avoided, potentially through ensuring that only turbines of 'medium/ large' or 'large' typology (i.e. >80m) are used within the more upland areas. • To ensure that wind farm infrastructure, in particular power lines, remain relatively well concealed on the on the exposed upland slopes and are not seen to add to visual clutter on the ridge.
f) Lough Braden	
Description The landscape comprising the eastern parts of <i>LCA14 Lough Braden</i> .	Development Situation and Key Objectives <p>This landscape is well developed with wind energy, including 7 wind farms separated typically by no more than 2 – 3km. Castlecraig wind farm has the largest consented turbines in the area (127m). While this landscape has capacity for larger scale wind farm development, including some residual capacity when accounting for existing and consented development, the potential for unacceptable cumulative effects still arises. Key objectives governing the area are:</p> <ul style="list-style-type: none"> • To ensure that wind farms on the southern and eastern outward facing slopes are limited in their scale and size of turbines to minimise impact to adjacent lowland areas. This may mean that significantly increasing the size of some turbines e.g. at Tappaghan Mountain, may prove unacceptable, and any such proposals would require careful assessment. The siting of infrastructure visible on these outward slopes should be avoided as far as possible. • To ensure that large scale wind energy developments do not encroach into the more populated internal valleys, in particular that of the upper Drumquin River. • To ensure that the largest wind turbines, including potentially those >150m, are sited in the more internal parts of the landscape e.g. the Lough Braden Forest area.



CODE	LCA NAME
1	The Garrison Lowlands
2	Lower Lough Erne
3	Croagh and Garvary River
4	The Lough Navar and Ballintempo Uplands
5	The Lough Macnean Valley
6	The Knockmore Scarpland
7	The Silles Valley
8	The Arney Lowlands
9	Cuilcagh and Marbank
10	Slieve Russel, Derrylin and Kinawley
11	Upper Lough Erne
12	Newtownbutler and Rosslea Lowlands
13	Enniskillen
14	Lough Bradan
15	Irvinestown Farmland
16	Brougher Mountain
17	Clogher Valley Lowlands
18	Slieve Beagh
21	Fairy Water Valley
22	Omagh Farmland
23	Camowen Valley
24	South Sperrin
25	Beaghmore Moors and Marsh
26	Bessy Bell and Gortin
43	Carrickmore Hills
44	Slievemore

Legend

Local Authority Boundary

Landscape Character Areas

Area Capacity

Areas with Highest Underlying Capacity

Areas with Limited Underlying Capacity

Areas with No Underlying Capacity

Areas of Significant Cumulative Development

Areas with Highest Underlying Capacity

1)□Lough Braden

2)□Slievemore

3)□Slieve Beagh

4)□Hunter Hill

5)□Slieve Rushen

6)□Loch Navar & Ballintempo Uplands

Areas where Cumulative Impact Limits Development

a)□Carrickmore Hills


b)□Slievemore

c)□Brougher Mountain

d)□Omagh and Irvinestown Farmland

e)□Slieve Rushen

f)□Lough Braden



Fermanagh & Omagh

District Council

Comhairle Ceantair

Fhear Manach agus na hOmaí

Fermanagh & Omagh

Wind Energy Capacity Study

Dec 2017

50087 / GIS / Fig 6.4

Figure 6.4

Wind Turbine Development

Opportunities & Constraints

N

0

2.5

5

10

Km

6.5 Capacity for Further Development

This assessment has demonstrated that the landscape of Fermanagh has the underlying capacity to accommodate both small and larger scales of wind energy development of varying extents, according to the varied characteristics of the landscapes and the visual sensitivities across the region.

Figures 6.2 and 6.3 show how the proposed limits to development, in terms of *wind energy landscape type*, are almost the same as those that exist with current levels of operational and consented development, suggesting there is limited residual capacity. Nevertheless, at current levels of consented development there is some limited remaining capacity for further appropriate wind energy development in parts of the Local Authority area. The following section highlights the areas with remaining capacity. However, Tables 6.1 and 6.2 should be consulted for detailed guidance.

6.5.1 Areas with Most Remaining Capacity

The greatest scope for further development at the larger scale lies within *LCA 14 Lough Braden*. The forested landscape north of Lough Braden and east of Lough Lack has potential capacity for further wind farm development, thereby creating a wind farm cluster in this area. This also includes the potential repowering of existing wind farms with larger typology wind turbines, up to the 'large' wind turbine typology (120<150m). Some of the larger scale interior parts of this landscape may be suitable for 'very large' (150m+) wind turbines, however opportunities may be limited because of the relatively small extent of the area in question and proximity to sensitive residential receptors. Due to the features and character of the landscape, no significant difficulties are identified with integrating associated wind farm infrastructure into this landscape, assuming sensitive siting, design and the adoption of appropriate mitigation treatments.

6.5.2 Areas with Limited Remaining Capacity

Areas with limited remaining capacity include areas with underlying capacity for larger turbines that are limited by cumulative development and existing/ consented windfarms, and areas with underlying capacity for smaller windfarms and/or smaller types of turbine development that remain undeveloped:

- The Hunters Hill area which would potentially be suited to repowering with 'large' (120<150m) turbines, and potentially extended eastwards to a limited degree (*LCA 16 Brougher Mountain*);
- Repowering of the Slieve Divena wind farm to 'large' size turbines (120<150m), however opportunities for extending the windfarm with Fermanagh and Omagh appear limited (*LCA 44 Slievemore*);
- Extension of wind farm development south east from Crockagarran wind farm into Altmore Forest, and the limited extension of Crockbaravally Wind Farm (*LCA 44 Slievemore*);

- The semi-upland landscape of *LCA 18 Slieve Beagh* has some capacity for smaller scale developments of turbines group up to 'medium/ large' typologies (<120m) and limited capacity for expansion of the existing Teiges Mountain wind farm, subject to constraints presented by the SPA;
- A potential limited expansion of larger scale wind energy developments at the south-western fringe of *LCA 4 Lough Navar and Ballintempo Uplands*; and
- Some 'small' to 'medium' sized wind turbine developments (<80m) in the less developed lowland locations, such as *LCA 17 Clogher Valley Lowlands* or *LCA 12 Newtownbutler and Rosslea Lowlands*.

In all of these areas, undulating terrain and/ or the presence of forestry and woodland is likely to allow infrastructure associated with wind energy development to be accommodated within the landscape without unacceptable landscape or visual effects, subject to their careful siting and design.

6.5.3 Other Landscape Areas and Urban Areas

Within many of the remaining LCAs of Fermanagh and Omagh there is very limited remaining capacity for small scale wind energy development below 80m. Some parts of these areas have effectively no capacity, for reasons including landscape character, visual sensitivity and/or landscape value. These areas include:

- The nationally designated Sperrin AONB;
- The tranquil, open landscapes around Upper and Lower Lough Erne which are sensitive to intrusion from industrialising influences;
- A number of Registered Parks, Gardens and Demesnes;
- The complex landforms of the karst landscapes to the south west; and
- Locations critical to the setting of settlements.

Whilst it is recognised that some parts of urban areas may be able to accommodate wind turbines, this study does not assess the capacity of urban areas. Consequently, urban areas have not been included in the maps in 6.1 - 6.4 and the guidance in Table 6.1. Factors specific to townscape and urban planning are likely to guide location; however, the effects of larger turbines on adjacent rural LCTs and cumulative areas should be taken into account.

6.6 Existing Developments: Extensions and Repowering

As a well-developed wind energy landscape, much of the future residual capacity in Fermanagh and Omagh lies in the potential extending and/ or repowering of existing wind farms. Some specific considerations relating to the nature of wind farm extensions and/ or repowering apply:

- The design of extensions and repowering schemes should take into account the scale and context of existing wind energy development in the surrounding area that will be

added to, replaced and/or operational during the lifetime of the proposed extension/repowering scheme.

- In the case of extensions, the location and design of extensions relative to the original scheme is critical. This should take account of turbine size and layout, the remaining capacity for extension without unduly extending effects, and the remaining lifespan of the original scheme.
- Particularly in the case of repowering, opportunities for mitigating adverse effects of earlier, less well designed, schemes should be grasped. This may include more harmonious turbine arrangements or reducing the developed area as more energy can now be delivered by fewer, larger turbines.

The nature of future proposals will be affected by the wider changes to onshore wind energy driven by advances to technology and changing economic circumstances. Currently the main anticipated change is the greater size of, and spacing between, modern commercial turbines. In essence, applications for repowering should be considered *de novo*.

6.7 Guidance for Single/Small Turbine Developments and Ancillary Elements

Wind Turbines

This cumulative assessment and capacity study has detailed the current distribution of all sizes of wind turbines of 15m or above when determining capacity for further development. This is because the smallest turbines (less than 15m), being of a similar height to built structures and trees found commonly throughout the landscape, do not have the same eye-catching prominence and extensive visibility of larger turbines. They do not therefore have the same issues of wide scale cumulative effects across extensive landscape areas.

The issues relating to design and siting of small turbines concern mainly their localised effects on the area in which they are sited rather than wider cumulative effects on landscape character. Small wind turbines should be judged on their own merits, assessed against the criteria that apply to most other domestic or farm scale built structures. Landscape and visual considerations may include the following:

- Effects on designations including landscape quality designations, Scheduled Monuments, Listed Buildings, Conservation Areas;
- Location in relation to scenic viewpoints;
- Relationship to skylines;
- Relationship to other structures and buildings;

- Location in relation to approaches to and setting of settlements;
- Proximity to residential properties;
- Localised cumulative effects including potential for visual confusion or cluttering areas with significant numbers of small turbines and/or close proximity to other similar larger structures including taller wind turbines and electricity pylons.

Larger wind turbines are more often than not seen against the sky. The approach to colouring has been to adopt a neutral light grey colour relating to the sky colour most likely to be encountered as a backdrop. Small wind turbines are often fully or partially backclothed against landforms and/or trees, giving a closer relationship to the ground than the larger structures. It may therefore be appropriate to consider colouring small wind turbines a darker grey, green or brown to reduce their visibility when seen against backdrops, or close to buildings. Further guidance on the siting of smaller wind turbines is given by SNH¹⁸.

Ancillary Elements

Infrastructure associated with small scale wind turbine developments (<80m) may include access roads, transformer units, grid connections and in future energy storage systems. The siting of such infrastructure should be mindful of the considerations outlined above for the siting of wind turbines, but generally the landscape and visual effects of ancillary elements for smaller wind energy developments are highly localised, these features typically being ground based elements of limited size and extent.

Smaller scale wind energy developments can be sited in a variety of landscape situations, however they are often located in lowland locations where the landscape might typically include other built elements, roads, tracks, woodlands, and enclosed farmland, and the overriding objective should be to maintain existing landscape characteristics through the careful integration of infrastructure with existing landscape features.

Screening with existing or new woodland planting will typically be effective in mitigating many landscape and visual effects, however the following measures will also assist with the integration of wind energy infrastructure into the landscape:

- Utilising existing access tracks to maintain existing field patterns, and where new tracks are necessary ensuring they respect the existing landscape pattern, for example by following existing field boundaries as much as possible;
- The appropriate selection of materials and colours for buildings to minimise their prominence in the landscape and to respect existing building styles;

¹⁸ SNH (March 2012) *Siting and Design of Small Scale Wind Turbines of between 15 and 50 metres in height*

-
- Associating buildings with those already existing in the landscape where possible, to avoid any apparent proliferation of built elements;
 - Ensuring that local topography is respected, by ensuring that features are not sited prominently upon local landforms, that access tracks are aligned sensitively, and topographic screening is utilised where possible;
 - Where possible the sharing or clustering of elements associated with neighbouring developments; and
 - Minimising visual clutter from grid/ power connections, utilising underground connections where possible, or siting over ground connections to respect landscape patterns, utilising screening and backcloth provided by trees and landforms.

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APPENDICES

APPENDIX 1: CUMULATIVE IMPACT AND LANDSCAPE CAPACITY ASSESSMENT METHODOLOGIES

1.0 Background

Cumulative environmental impact is the impact that results from incremental changes caused by past, present or reasonably foreseeable actions. Cumulative impact is a critical consideration in the case of landscape and visual impacts of onshore wind turbines and windfarms in Scotland due to the current number of existing and consented developments in the landscape, proposed developments in the planning system and the long-term implications of national policy that encourages the development of onshore wind energy generation.

The characteristics of wind turbines that lead to cumulative impacts include:

- The large scale and striking visual appearance of wind turbines and windfarms in most landscapes;
- The great extent of their visibility and the potential for intervisibility between wind turbine developments and as seen by receptors;

The larger modern turbines are prominent, large scale, man-made features and there are few other precedents in terms of scale, height and appearance in most landscapes. Topography aside, they are much taller than any natural features such as trees or most buildings and other structures. Of similar built structures in rural landscapes, electricity pylons are significantly smaller than the largest turbines and although broadcasting masts are often taller they are usually singular and infrequent, whereas wind turbines are built in multiples, often in great numbers. Furthermore, most landscape features are static whereas wind turbines rotate. Smaller turbines may also present issues of scale and appearance in more localised contexts, as well as visual confusion when seen together with larger turbines.

This study on behalf of Fermanagh and Omagh District Council requires the assessment of cumulative development and landscape capacity. However, it is recognised in guidance that the determination of landscape capacity and cumulative impacts is not a straightforward exercise. The background and considerations involved in this process are detailed in this Appendix.

Definitions of the term ‘capacity’ applied to landscape generally refer to the ability to accept a development without a ‘significant’ or ‘unacceptable’ level of change to a landscape. This implies that criteria must be identified, and thresholds must be determined to give meaning to the words ‘significant’ and ‘unacceptable’.

Guidance on the assessment of cumulative impacts and landscape capacity is available from a number of sources, most particularly Scottish Natural Heritage *Assessing the cumulative impact of onshore wind energy developments (March 2012)* but also in UK guidance (eg. *Landscape Character Assessment Guidance for England and Scotland Topic paper 6: Techniques and Criteria for Judging Capacity and Sensitivity. SNH and The Countryside Agency, 2002*) and will be referred to in the following sections.

The determination of ‘cumulative impacts’ and ‘capacity’ is subject to debate. No clear guidance is given in the published information beyond the need for the individual impact assessor or Development Plans to determine what the assessment criteria and significance thresholds are. Reasoned argument applicable to the specific circumstances applies, rather than the establishment of an absolute or universal definition. Inevitably this approach is subject to differences of opinion, with thresholds of significance and views on acceptability often differing depending on the background or vested interests of those involved in the debate.

In the absence of any clearly stated or agreed criteria or thresholds and to progress this study some form of threshold or thresholds need to be defined. In order to do this a number of terms and concepts need to be clarified, defining exactly what is being assessed and how. The purpose of the following section is to focus the subsequent assessment and to provide guidance and a basis for decisions to be made by the appropriate authorities.

2.0 Defining Terms: Sensitivity, Significance, Capacity and Acceptability of Change

Topic Paper 6 of Landscape Character Assessment: Guidance for England and Scotland (2002) refers to the fact that the terms ‘sensitivity’ and ‘capacity’ have often been used in an interchangeable manner in landscape character assessment, essentially referring to the ability of a landscape to absorb change without a significant effect on its character. A landscape of high sensitivity is often considered to have a low capacity for change, and vice-versa. Furthermore, sensitivity is used as a key criterion in determining both significance of impact and landscape capacity. In fact, there are subtle but important differences between sensitivity and capacity. This section discusses the differences and interrelationships between sensitivity, capacity and significance in landscape character assessment and how the acceptability of change may be determined.

2.1 Landscape Sensitivity

The sensitivity of a landscape is a measure of its inherent vulnerability to potential changes and their effects on fabric and character. Vulnerability to change can be considered in two ways:

- 1) As an inherent part of the landscape’s characteristics, regardless of possible types or scales of change that may occur; or
- 2) In relation to a specific proposed type and scale of change.

In the former case the assessment of sensitivity would be applied in landscape character assessment where no particular change is being contemplated or assessed, and the landscape is being considered in a resource planning context. In the latter case the assessment of sensitivity would typically be applied in an environmental impact assessment where specific changes are envisaged. In the EIA case the sensitivity of the receiving landscape would be assessed against the magnitude of change in order to determine impact significance.

2.2 Landscape Capacity

Landscape capacity is variously described as the ability of a landscape to accommodate (or absorb) change without a significant (or unacceptable) change in fabric or character. This is usually taken to mean whether or not one or more of the key defining characteristics of the landscape is changed such that the overall fabric or character of the landscape is changed, i.e. a 'capacity threshold' is crossed. In the case of windfarms it is primarily landscape character that is being considered, particularly in cumulative assessments.

The determination of landscape capacity is closely related to landscape sensitivity and the determination of significance of impact. However, assessment of capacity is a not necessarily based around the assessment of known development proposals, but rather the hypothetical ability to accommodate particular types of development, such as windfarms before a threshold or series of increasing thresholds are crossed.

According to *Topic Paper 6*, in determining capacity not only the sensitivity of the landscape to the particular type of development is considered but also the *landscape value* of the area concerned. Value may be determined in a number of ways, including by landscape designations (national, regional or local); cultural and historic associations and in terms of how it is valued by those who live in it or use it in some way.

The determination of capacity is primarily a planning tool rather than a reactive or assessment tool. Nevertheless the determination of capacity thresholds can also be used to assess existing levels of development or potential development scenarios such as is the case with windfarm developments in Fermanagh and Omagh.

2.3 Determination of Impact Significance

The principles involved in determining impact significance are the same whether a single or multiple developments are being considered. This involves assessing:

- 1) The sensitivity of the receptor to the type of change proposed; and
- 2) The magnitude of change that would result from the proposals.

Sensitivity and magnitude are considered in combination, leading to an overall assessment of impact. This informs a determination of whether the impact is significant in terms of the EIA regulations. In doing this the considerations about what exactly is being assessed should be taken into account and clearly delineated including baseline, types of impacts and specific developments.

The threshold at which significance is determined in relation to the EIA regulations should also be defined prior to assessment. However, this threshold is particularly open to debate and often subject to the perceptions of different groups of stakeholders.

2.4 The Nature of Impacts

The issue of whether impacts are positive, beneficial or neutral is also an important consideration when making decisions on the acceptability of impacts, regardless of their significance. If an impact were considered positive or neutral in nature it is likely that its level

of significance would be considered less critical than were it considered negative. Most windfarm developers equivocate this issue by reference to public opinion polls indicating support for renewable energy and the division of public opinion that is apparent over most windfarm developments. This masks the underlying landscape issue that should be considered independently of a windfarm's primary function or other effects.

The purpose of a windfarm is to provide renewable energy involving low levels atmospheric carbon pollution. This accords with current policy and is considered positive and beneficial. Conversely, wind turbines are objects that are unprecedented in scale and appearance in most landscapes, especially the rural areas in which they are mainly located. Many published landscape character assessments of rural areas do not specifically mention wind turbines and windfarms, although increasingly there are guidelines relating to placing them within particular character types. Furthermore, whilst government policy and advice (eg. SPP, web based guidance, SNH guidance) and local authority policy (Development Plans) support their development, it is always with a precautionary note relating to balancing benefits and impacts.

The tone of most guidance is that of achieving a balance of impacts against the positive returns of renewable energy. For example SPP states in paragraph 187:

'Planning authorities should support the development of wind farms in locations where the technology can operate efficiently and environmental and cumulative impacts can be satisfactorily addressed.'

and;

'The design and location of any wind farm development should reflect the scale and character of the landscape. The location of turbines should be considered carefully to ensure that the landscape and visual impact is minimised.'

Web based guidance for onshore wind states:

'Wind turbines can impact upon the landscape by virtue of their number, size or layout, how they impact on the skyline, their design and colour, any land form change, access tracks and ancillary components anemometers, substations and power lines. The ability of the landscape to absorb development often depends largely on features of landscape character such as landform, ridges, hills, valleys, and vegetation'.

and:

'As more areas of search are taken up and as more sites are proposed within or near sensitive landscapes, landscape protection and designing appropriate mitigation through conditions and/or legal agreements, will become a more routine consideration alongside maximising the potential of wind energy. In relation to landscape impact, a cautious approach is necessary in relation to particular landscapes which are rare or valued, such as National Scenic Areas and National Parks'.

Wind turbines are placed in the landscape for a specific purpose other than landscape change. Given this fact and the nature of Government advice, a precautionary approach should be taken in the assessment of impacts by concluding that in most cases the impacts are to some degree negative. The degree of negative impact and level of significance will of course depend on the characteristics of the landscape in which the windfarm is located. It is conceivable that in some degraded or industrial landscapes the construction of a windfarm could be considered a neutral or positive change.

In terms of visual impacts the issue of public opinion is more relevant, but a precautionary note applies in this case as well. Particularly the issue of positive responses to the provision of clean energy needs to be separated from the consideration of visual impact of turbines in the landscape.

2.5 Acceptability of Change

As discussed above there is published guidance on methods of assessment of cumulative landscape and visual impacts of windfarms (eg. SNH, 2012) and separate guidance on the factors that determine impact significance (eg. LI & IEMA, 2002). However, there is currently no generic guidance that defines how to determine the *acceptability* of impacts. Indeed, generic guidance on acceptability may be inappropriate as any judgement on this is contextual and often a case of weighing perceived impacts against perceived benefits. The impacts and benefits will often be different in type and the balance of judgement is to an extent subjective. The acceptability of change in any particular landscape will depend on the nature of the landscape, the significance of the impacts and the purpose of the change. The final judgement is often informed by and weighed against specific development plan policies and material considerations.

The determination of significant change should theoretically be a clearly defined stage in this process, similar to an impact assessment. Nevertheless, as previously discussed, significance in landscape and visual impact assessment is not universally defined and is open to debate. If the significance of change is open to interpretation, then 'acceptability' of change is a still less definable term that is often based on opinion and is open to debate.

What is acceptable to one individual or organisation may not be acceptable to another. What may be seen as unacceptable change in a narrow context (eg. landscape and visual impacts) may be seen as acceptable when considering the overall balance of positive and negative impacts (eg. provision of carbon-neutral energy). In a study of windfarms in the Western Isles (SNH, 2004) the idea of a predetermined 'carrying capacity' is questioned and the concept of *Limits of Acceptable Change* (LAC) is discussed:

'LAC is first and foremost a process through which decisions are made on the conditions which are acceptable and then prescriptions are made for the actions needed to protect or achieve those conditions. So the objective of the LAC process is not to prevent change but rather to control it and to decide on the actions required to maintain or achieve the desired conditions. Other key features of LAC are the use of indicators and a monitoring programme. As a process, LAC is always participatory and multi-disciplinary, and may or may not involve a wide range of stakeholders. Whilst the term capacity may still be used in LAC, (recreational) carrying capacity is

not a simple, single, absolute value. It is the amount, kind and distribution of use that can occur without causing unacceptable impacts on either natural resources or the perceptions and experiences of the users'.

This concept requires qualitative judgements about what is important in a landscape or to people using that landscape and what level of change is acceptable (i.e. what types and levels of change can take place before the landscape is considered to be critically or significantly changed). In the context of this study, acceptability of change will be related to cumulative landscape and visual impacts judged against landscape capacity as determined by structured a process of judgement; and the provisions of criteria-based landscape policies. No account will be taken of the other potential impacts or benefits of windfarms. The resulting judgements of this study will need to be balanced against the other benefits or disadvantages of the proposals.

2.6 National and Local Policy

The acceptability of proposed windfarms and cumulative landscape and visual impacts of multiple windfarm development has to be considered in the light of national and development plan policy. National and local policies have been referenced in the main capacity study report.

2.7 Developing a Cumulative Impact Assessment Methodology

2.7.1 Cumulative Impacts

For the purposes of this study, cumulative impacts are taken to be those arising from more than one development of the same type, rather than the accumulation of changes making up one development. In the case of windfarms, cumulative studies concentrate on other windfarms. In practice, other features in the landscape or views (eg. communications masts or electricity pylons) should also be taken into account. Nevertheless, given the singular appearance of windfarms and their generally isolated rural locations, the potential for overlap of cumulative impacts with other developments is more limited.

2.7.2 Baseline

The baseline for a cumulative, or indeed any, assessment is usually taken to include the existing landscape and visual receptors in the study area at the time of assessment. The baseline should include all operating windfarms and, arguably, all consented windfarms as this is effectively the 'permitted landscape'. The assessment of change and significance of impact should be carried out relative to this baseline whether carrying out a standard or cumulative assessment.

Nevertheless, a landscape capacity study leading to the determination of an 'acceptable' level of windfarm development requires consideration of a full picture of all the windfarms in the landscape: operating, consented and proposed, in order to determine the extent and acceptability of change. The fact that there are operating or consented windfarms in an area is not necessarily an indication that the landscape is less sensitive to further development and that capacity is available. Indeed, depending on the landscape type, degree of development and objectives of policy in relation to landscape character, it may mean that

most or all of the capacity is already occupied. Therefore, despite the existing baseline, the development must also in effect be considered relative to the underlying landscape.

2.7.3 Types of Cumulative Impact

Landscape

The assessment of cumulative landscape impacts involves an assessment of change in the fabric and character of the landscape as a result of the combined changes of more than one development. The changes are assessed in relation to defined areas of landscape such as a project study area, landscape character area or designated landscape. As previously discussed, it is effects on landscape character that are the primary focus in relation to windfarms from which all other assessments are derived.

Visual

The assessment of cumulative visual impacts involves an assessment of the change in views and visual amenity as a result of combined changes of more than one development, as experienced by people at their homes and during recreation, travel or work. There are three types of cumulative impact in relation to visual receptors:

- 1) Combined: more than one development is seen from a single static viewpoint in one arc of view (ie. within the span of one view, without the receptor turning around). This would include particular directional viewpoints or the view from the principal aspect of a residential property.
- 2) Successive: more than one development is seen from a single static viewpoint by a receptor turning around to encompass more than one arc of view, up to 360°. This includes high and open viewpoints, or views from all aspects of a residential property.
- 3) Sequential: more than one development is seen by a receptor visiting a series of viewpoints. This may involve travelling along a linear route or through an area in which views of the developments may be continuous or intermittent and different developments may be seen at different locations. This includes roads, railways, paths and other defined routes or could involve an area such as a designated landscape.

In practice most assessment will include all of these types of impact in order to gain a full picture of how cumulative impacts will be experienced by receptors.

2.7.4 Effect of Pattern of Development on Perception of Impact

Cumulative studies tend to focus on the number of windfarms, turbines or output capacities within a particular area as an indication of level of cumulative impact. Nevertheless, there is not necessarily a simple relationship between numbers, areas and cumulative impact. The pattern of windfarm and wind turbine development, in terms of size, layout and proximity may also affect the perception of cumulative impacts.

The effect of proximity of different windfarms and turbines to one another has a bearing on impacts. Whilst close proximity of two or more windfarms may reduce the total area visually affected, the level of perceived cumulative impact may be increased by juxtaposition of

windfarms or turbines of significantly different appearance (due for example to differing turbine sizes or site layouts) leading to a jarring visual clash or an untidy, disorganised appearance.

Furthermore, studies and planning decisions have indicated that there is less resistance to expansion of existing windfarms than to creation of separate new windfarms. In particular, respondents to a survey on impacts of windfarms on tourism in Scotland (Glasgow Caledonian University and others, March 2008) showed little concern about views being affected by one windfarm compared with more than one windfarm being visible in the same view.

“A significant proportion of respondents (44%) agreed that they don’t like to see several Wind farms in the same view. These results suggest that those respondents who have indicated having a neutral or even positive perspective on individual wind farm sites are less likely to have a similar opinion on a landscape that has several developments in view.

This clear result compares with analysis in the previous section where there was a small increase in the negative response as the visual impact increased for an individual wind farm development. This suggests that people see one large scale development in an area as preferable to several smaller scale developments dotted on the landscape.

On the other hand, both sets of results also confirm that a definite tipping point exists where wind farm development becomes untenable for a significant number of visitors”.

Current guidance and recent planning decisions are tending towards the concept of concentration of wind turbines into large clusters in certain areas. This is on the basis that this reduces the potential for a widespread dispersal of effects over a larger area and allows areas more sensitive to windfarm development to remain free of windfarm development. SNH guidance now highlights this issue and supports this type of approach where appropriate (SNH, 2009).

The policy may also offer advantages in terms of economies of scale for site servicing and electricity transmission. The disadvantages are likely to be that areas chosen for concentration of the turbines are likely to be significantly and adversely affected by development – this being effectively a ‘sacrificial’ landscape policy. Furthermore, this concept does not necessarily sit well with recent encouragement for smaller scale wind energy development promoted by the Feed in Tariff where turbines are likely to relate to individual properties scattered across the landscape.

2.7.5 Setting Assessment Objectives

What exactly is being assessed depends on the purpose of the cumulative assessment. In the case of an EIA for a single development it is primarily the impacts of the proposal and its contribution to cumulative impacts that is being assessed. Such a study would therefore typically concentrate on areas in which the impact of the windfarm under consideration is

significant and give only slight consideration to areas in which it is not, even if there were significant cumulative impacts from other windfarms.

In the case of a more broad-based cumulative study such as this, it is the overall impact of windfarm developments on a defined study area that is being assessed. Nevertheless this study requires a consideration of the both the full cumulative impact *and* the contribution that specific developments (proposed or operating) make to that impact, in order to inform decisions.

2.7.6 Defining Thresholds of Cumulative Development

The discussion above has defined the terminology and our approach to cumulative assessment. It has isolated the central issues that inform the assessment of acceptability of levels of change. The key requirement is to develop a methodology for defining thresholds of significance and acceptability that are clear and robust enough to be accepted by all sides of the debate. This study as a stage in the debate about acceptable levels of change in the landscape of Fermanagh and Omagh. Whilst we can describe and define what those levels of change might be it is difficult to enforce a universal view as to what levels of change are significant or acceptable.

SNH guidance *Siting and Designing Windfarms in the Landscape* (SNH, 2017) lists the factors that affect the perception of cumulative impact of windfarm development:

‘The cumulative impact of windfarm development on landscape and visual amenity is a product of:

- *the distance between individual windfarms (or turbines),*
- *the distance over which they are visible,*
- *the overall character of the landscape and its sensitivity to windfarms,*
- *the siting and design of the windfarms themselves, and*
- *the way in which the landscape is experienced.*

The combination of single turbines and small clusters of turbines can raise the same issues’.

To this list might be added turbine height and windfarm size. In determining an acceptable level of development, it is necessary to clearly define what differing levels of development actually entail.

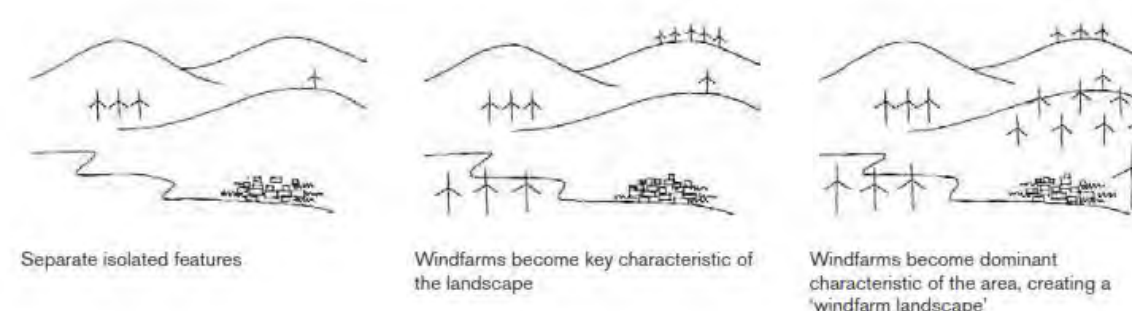
The SNH guidance identifies three broad levels of cumulative change in the landscape that may be set by local authorities depending on landscape sensitivity and value and local policy objectives:

- **Landscape Protection:** Maintain existing landscape character.
- **Landscape Accommodation:** Accept a degree of change providing this is not detrimental to key landscape characteristics and key visual resources.

- **Landscape Change:** Accept large amounts of change that may have detrimental effects on key landscape characteristics and visual resources.

In determining an acceptable level of development, it is necessary to clearly define what differing levels of development actually entail. The methodology therefore sets out defined levels of change to the landscape and visual environment that might occur or be experienced depending on the size, number and location of turbines to be built within an area.

The descriptions in Table 2.1 below set out a graduated landscape typology that defines the terms of reference for increasing levels of cumulative landscape and visual impact of turbines. It does this by describing their effect on landscape character and the experience of those living in or travelling through the landscape. Further generic illustration of this concept is provided in Part 1 section 5 of the SNH guidance:



The purpose of this approach is to address the gap between results of cumulative impact assessment and judgements on acceptability of change. It does not set thresholds of significance or acceptability but it does present a framework that describes levels of change in landscape character and the experience of visual receptors in the landscape. This can then be used to inform and shape the debate concerning the degree of change in a landscape and the acceptability of cumulative impacts and the *Limits of Acceptable Change*.

Table 1: Description of Levels of Cumulative Wind Turbine Development

Landscape Type	Landscape Character	Visual Experience
Landscape with no Wind Turbines	A landscape type or area in which no or very few wind turbines are present, and none are clearly visible from neighbouring areas.	There would be no discernible effects on visual receptors.
Landscape with Occasional Wind Turbines	A landscape type or area in which windfarms or wind turbines are located and/or are close to and visible. However they are not of such a size, number, extent or contrast in character that they become one of the defining characteristics of the landscape's character.	Visual receptors would experience occasional close-quarters views of a windfarm or turbine and more frequent background views of windfarms or turbines. Some of the turbines would not be perceived as being located in the landscape character type or area. No overall perception of wind turbines being a defining feature of the landscape.
Landscape with Wind Turbines	A landscape type or area in which a windfarm, windfarms or wind turbines are located and/or visible to such an extent that they become <i>one</i> of the defining characteristics of the landscape character. However, they are clearly separated and not the single most dominant characteristic of the landscape.	Visual receptors would experience frequent views of windfarms or wind turbines as foreground, mid-ground or background features, affecting their perception of the landscape character. However there would be sufficient separation between windfarms and turbines and sufficient areas from which wind turbines are not visible such that they would not be seen as dominating the landscape over all other landscape features.
Wind Turbine Landscape	A landscape type or area in which windfarms or wind turbines are extensive, frequent and nearly always visible. They become the dominant, defining characteristic of the landscape. Nevertheless there is a clearly defined separation between developed areas.	Visual receptors would experience views of windfarms as foreground, mid-ground and background features, to the extent that they are seen to dominate landscape character. Few areas would be free of views of wind turbines.
Windfarm	Landscape fully developed as a windfarm with no clear separation between groups of turbines. Few if any areas where turbines not visible.	Visual receptors would always be close to and nearly always in full view of wind turbines.

The above descriptions of levels of turbine development within a landscape are necessarily simple, factual and generic. They can be applied to any chosen scale of study area, from a region to a landscape type or a single landscape character area. They do not apply to any specific baseline landscape type or types: indeed the character of the landscape is likely to affect judgements on the assignment to a particular level of development. For instance, a large scale landscape may be less dominated and affected than a smaller scale landscape; or a more complex topography, or a densely wooded landscape may reduce the visibility of wind turbines within an area and hence affect the perception by visual receptors. A large

landscape character area will require a greater extent and frequency of development than a smaller area to become affected by wind turbines. Furthermore, as discussed in Chapter 5 of this report, there are a number of design and siting factors that affect the perception of cumulative impacts. This includes not only size and number of turbines and windfarms in an area but also the juxtaposition of different layouts including turbine size, positioning and distribution.

The descriptions assume conditions of good visibility covering the 30-35km range that visibility studies and visual impact assessments of larger windfarms adopt as best practice. Clearly this exceeds the requirements for assessments of smaller turbines.

The descriptions are intended to be neutral in that they are purely descriptions of levels of development and the frequency or proximity at which wind turbines and windfarms may be seen. They do not attempt to define the levels of development as being good, bad, acceptable or unacceptable. This is a judgement that would be made when considering specific cases against the landscape type, its capacity for windfarm development, the development policy framework and other material considerations. In this case it is the determination of areas in which cumulative impact has reached the capacity of the landscape.

2.8 Capacity Assessment Method

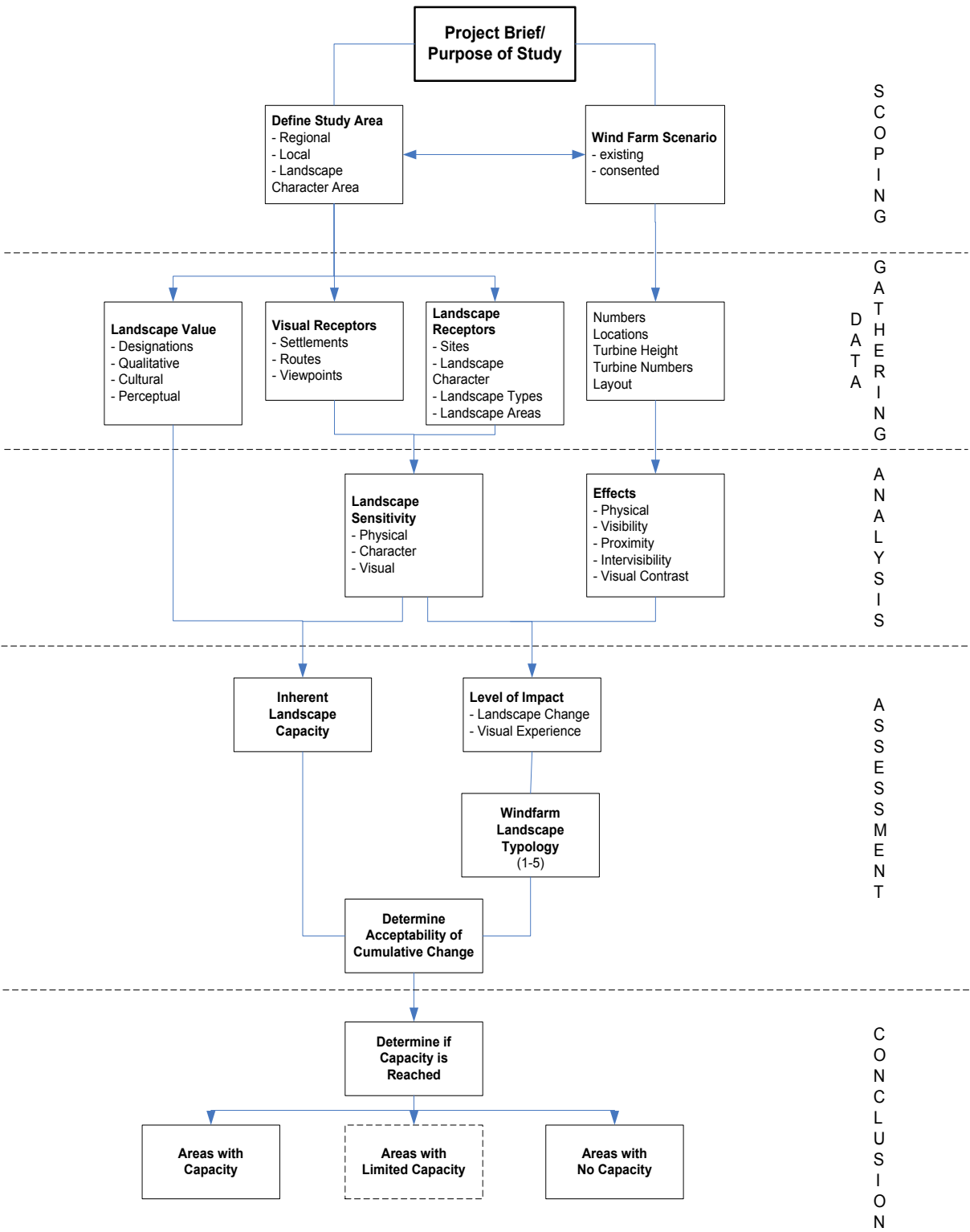
2.8.1 Assessment Process

The considerations discussed above have been taken into account in the staged methodology. This is illustrated by the flow diagram in Figure 1 overleaf. There are 5 stages in the process as shown in Table 2 below:

Table 2: Stages in Landscape Capacity Assessment

Scoping:	Define the purpose of the study, the study area and the wind energy development scenario that is to be assessed.
Data Gathering:	Gather information on receptors (visual and/or landscape); landscape designations and potential constraints; windfarms/ turbines (existing, proposed etc).
Analysis:	Determine landscape character sensitivity, visual sensitivity and landscape value. Determine visibility, direct and indirect landscape effects of the consented windfarms and turbines.
Assessment:	Determine landscape capacity from landscape sensitivity and value. Determine level of cumulative change caused by consented wind turbines, leading to a wind turbine landscape/ visual typology.
Conclusions:	Determine significance and/ or acceptability of existing and future potential cumulative change to the landscape and visual environment.

Figure 1: Cumulative Impact and Landscape Capacity Methodology Flowchart



This is a flexible framework which can be adapted to include the whole study area or focus on subdivisions of landscape, windfarm groupings or development scenarios as required. In this case local landscape character types have been considered, then building up to a picture of the whole of Fermanagh and Omagh.

The assessment includes:

- 1) Assessment of landscape capacity, cumulative change and acceptable limits of cumulative development in:
 - landscape character types and areas in Fermanagh and Omagh;
 - broad regional landscape character areas;
 - The Local Authority area as a whole.

The cumulative development in each case is expressed via the wind turbine landscape/visual typologies described in Table 2.1.

The cumulative and capacity assessment for onshore wind energy considers:

- 1) Current wind turbine landscape typology resulting from operating and consented wind turbines, where there is a high degree of certainty in the cumulative assessment scenario.
- 2) The limits of acceptable cumulative change expressed in terms of the wind turbine landscape typologies (eg. acceptable level of development in an area might be judged as no more than a *Landscape with Occasional Windfarms*). This is based on a judgement considering landscape capacity but also including policy considerations, emerging guidance on wind turbine development and strategic landscape considerations.
- 3) The effects of consented wind turbines together with wind turbines currently under planning application – where there is a level of uncertainty regarding the potential cumulative scenario.

Further comment is made on the extent to which the current and proposed type and pattern of development (eg. turbine size, windfarm size and separation between developments) affects the cumulative impacts and, if appropriate, how the area should be developed in order to keep within an acceptable cumulative change.

This information is used to determine where existing development has reached or come close to reaching landscape capacity and further development should be limited. On a more strategic level it identifies areas where development should be limited to provide separation between concentrations of wind turbine development. It also allows the identification of areas where further development may be possible and, in these cases, what level of development would be acceptable.

The assessment is carried out on the basis of the structured methodology in line published guidance in combination with professional judgement, on the basis of a desk analysis of available information on the landscape, on wind turbine developments and through site visits.

The following sections detail the stages in determining landscape capacity.

2.8.2 Determining Landscape Character Sensitivity

The determination of landscape character sensitivity for a landscape character type involves a breakdown of the physical and perceptual characteristics that contribute to landscape character. Each criterion described below is evaluated in terms of **high**, **medium** or **low** for sensitivity to wind energy development. An overall assessment is derived from a composite of all the criteria. Whilst scale is often important, there is no consistent relative weighting for each criterion, as in each landscape type different criteria may be critical to the ability to accommodate wind energy development.

Table 3. Determination of Landscape Character Sensitivity

Landscape Character Criteria	Factors affecting level of sensitivity
Scale (primarily in character but also in geographical size of area)	Consideration of horizontal and vertical scale. Larger scale landscapes are generally considered more able to accommodate commercial wind turbines, although a smaller size of turbine may reduce impacts. A larger physical area would be able to accommodate more development depending on other aspects determining capacity.
Landform	The relationship between wind turbines and landform is complex and also dependent on scale. Generally simple landforms: flat, undulating or gently rolling, are considered less sensitive and complex landforms more sensitive, especially if smaller scale. Landforms of sufficient scale may provide opportunities for screening or backgrounding turbines, reducing their visual sensitivity.
Pattern	The pattern of landcover (woodland, field boundaries, crops, roads, settlements etc). Degree of strength, regularity, fragmentation. Minimal or simple landscape patterns are considered less sensitive to wind turbine development. Again the relationship to scale is important.
Development	The degree of built or infrastructure development will affect suitability. In general a greater level of development is more suitable, particularly large scale industrial and extractive industries, or potentially large scale agriculture. Areas with small scale residential development would potentially be more sensitive. Undeveloped areas with remote or wilderness characteristics would also be more sensitive.
Quality	This is a measure of the condition and integrity of the landscape fabric and character. A landscape in good condition with a high degree of integrity is more likely to be sensitive to development. A landscape of poor quality may represent an opportunity to compensate for impacts.
Elements and Features	The elements that make up a landscape, such as woodlands, fields, hedges, buildings and landforms create its pattern but add to its distinctive composition and character. Prominent or distinctive focal features such as steep hills, towers, Loughs add further distinctiveness. The relationship of wind turbines to these affects overall sensitivity.
Context	The characteristics of surrounding landscape areas provide a context that affects perception of a landscape and may affect how wind turbine developments are perceived. Landscapes acting as a backdrop or foreground to other areas are particularly sensitive.

OVERALL RATING	High/ Medium/ Low
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The following definitions apply to the thresholds of low, medium and high landscape character sensitivity:

Low Sensitivity: A landscape type or area with key characteristics that would be capable of successfully accommodating or co-existing with wind energy development of all or most scales.

Medium Sensitivity: A landscape type or area with some key characteristics that would be capable of successfully accommodating or co-existing with wind energy development but also some characteristics that would be adversely affected and where scale of development may be a limiting factor.

High Sensitivity: A landscape type or area in which most or all key characteristics would be adversely affected by wind energy development and is not capable of successfully accommodating this type of change.

2.8.3 Determining Visual Sensitivity

The visual sensitivity of a landscape area is determined by who is likely to see it, (types and numbers of receptors) and how visible in general the area is. The assessment is made in relation to the visibility of tall structures.

2.8.4 Visibility Analysis

An assessment of the relative visibility of areas of Fermanagh and Omagh has been undertaken. Three sets of visual receptors were determined as follows, and these are identified in Section 4:

- Settlements;
- Routes;
- Viewpoints

Each of the receptor types and locations is representative of locations frequented by people in Fermanagh and Omagh. The assessment was based on an evaluation of the areas least and most visible to receptor groups based on site observations and study of maps and 3D resources.

The three key criteria which determine visual sensitivity are listed in Table 4 below. Each is rated in terms of high, medium or low and a composite rating derived based on professional judgement. The following definitions apply to the thresholds of low, medium and high visual sensitivity:

- Low Visual Sensitivity:** A landscape type or area which due to its location and characteristics has limited internal and/or external visibility and where wind energy developments would not be visible to many sensitive receptors.
- Medium Visual Sensitivity:** A landscape type or area which due to its location and characteristics has a moderate degree of internal and/or external visibility and where wind energy developments would be potentially visible to a wide range of receptors, some of which are sensitive.
- High Visual Sensitivity:** A landscape type or area which due to its location and characteristics has extensive internal and external visibility and where wind energy developments would be potentially visible to a wide range and number of sensitive receptors.

Table 4. Determination of Visual Sensitivity

Visual Sensitivity Criteria	Factors affecting level of sensitivity
Receptors	A greater number of potential receptors including higher population densities, visitor attractions or the presence of busy transport routes will lead to a higher visual sensitivity. The sensitivity and expectations of the receptors is also a contributory factor.
Internal Visibility	Views within a landscape area may be open or restricted by landform, vegetation or buildings. The greater the degree of openness and intervisibility the greater the sensitivity.
External Visibility	A landscape area that is visible from surrounding areas by virtue of its prominence or being overlooked is more visually sensitive than an area that is seldom seen.
OVERALL RATING	High/ Medium/ Low

The combination of landscape character and visual sensitivities leads to an overall assessment of landscape sensitivity for an area. Whilst landscape character is likely carry more weight in determining sensitivity, no consistent weighting is given to either factor as it is likely that different landscapes will express them to varying extents depending on their unique characteristics. Professional judgement is used in the case of each landscape type.

2.8.5 Determining Landscape Value

Landscape value reflects the value that society and individuals put on a landscape. This can be officially recognised by some form of local or national designation, or simply by its value

to a 'community of interest' (this could be for example a local population, recreational users or conservation interest).

Other characteristics affecting value of a landscape include its historic and cultural associations, particularly if expressed by surviving features and patterns in the landscape. Finally there are more intangible characteristics generally valued by society, such as tranquillity remoteness and wilderness.

The key criteria which determine value are listed in Table 5 below. Each is rated in terms of high, medium or low and a composite rating derived based on professional judgement. The following definitions apply to the thresholds of low, medium and high landscape value:

- Low Landscape Value:** A landscape type or area which has no landscape designation; little apparent value to communities; no or few cultural heritage designations or associations and has no distinctive or unusual perceptual values.
- Medium Landscape Value:** A landscape type or area which has at least in part local landscape or landscape related designations; value to local communities; some cultural heritage designations or associations and has some distinctive perceptual values.
- High Landscape Value:** A landscape type or area, all or much of which is covered by national landscape or landscape related designations; has value to local and wider communities; widely recognised cultural heritage designations or associations and has clearly distinctive and/or unusual perceptual values.

Table 5. Determination of Landscape Value

Landscape Value Criteria	Factors contributing to value
Designations	International, national, regional or local designations relating to landscape in particular, although ecological designations also contribute to the landscape value of an area.
Community value	An undesignated area may be particularly valued by a community of interest: local, or activity-based.
Cultural value	Valued landscapes will have historic associations, be rich in historic features and buildings and/or have literary or artistic associations.
Perceptual	Tranquillity, remoteness or wilderness are valued characteristics, whereas landscapes that are highly modified, developed and populated would have low value in this respect. Landscapes regarded as particularly scenic would also be more sensitive.
OVERALL RATING	High/ Medium/ Low

2.8.6 Determining Landscape Capacity

The final assessment of capacity combines sensitivity and value. The following definitions broadly define the relationship between landscape sensitivity/ value and capacity, as the main thresholds on a continuum between no capacity and high capacity:

Low Capacity: A landscape that is both sensitive to wind turbine development and has a high value, and where only a slight level of change can be accommodated without significantly affecting any of the key defining criteria.

Medium Capacity: A landscape that has some sensitivity to wind turbine development and has some aspects of value, and where a moderate level of change can be accommodated which may significantly affect some of the defining criteria

High Capacity: A landscape that has low sensitivity to wind turbine development and has low value, and can accommodate substantial change that significantly affects many of the key defining criteria

Broadly speaking there is an inverse relationship between capacity and landscape sensitivity and value. Nevertheless, it is not a simple relationship and we have not employed the use of a matrix in this study: a balance of judgement is made in each case as landscape value may be a more important factor than sensitivity in some cases; and vice versa in others.

It should be noted that in landscapes where there is existing wind turbine development the capacity for turbines may be reduced. This is because the landscape would be approaching the maximum level of change that it can acceptably accommodate.

2.9 Determining Acceptability of Change

The final stage involves bringing together the cumulative impact assessment and the landscape capacity assessment in a reasoned judgement of the effects of windfarm development on the Fermanagh and Omagh landscape. As explained above, the likely acceptability of a proposed level of development may be determined by considering against the inherent capacity of the landscape. This should also be considered against policy criteria and objectives.

2.10 Scope of Assessment

The scope of the assessment can be varied according to the extent of the study area and the purpose of the study. It can also vary according to the depth and detail required to assess impacts within the defined study area. In the case of a detailed study the method should build up to the wider study area from smaller units.

The current study focuses primarily on the Local Authority area, although areas beyond the boundary are being considered in terms of the visual influence of nearby windfarms and neighbouring contiguous landscape types.

2.11 Wind Energy Development Types

The study considers all sizes of turbines and developments operating, consented or proposed, as well as potential future scenarios where appropriate. However, the capacity assessment and guidance for smaller turbines (under 15m to blade tip) is limited to localised generic siting and design considerations. The smallest turbines are not considered to have the same qualities of scale, prominence and widespread visibility that lead to the wider cumulative impacts that characterise larger turbines.

APPENDIX 2: FACTORS AFFECTING LANDSCAPE AND VISUAL EFFECTS OF WIND TURBINES

2.1 Introduction

There are a number of overlapping and interacting factors which affect the potential landscape and visual effects of wind turbines. The three main turbine factors are:

- Size of turbine (also type/ design/ colour)
- Numbers of turbines (within groups and/ or single turbines spread across an area)
- Distribution of turbine groupings (spacing between groups and/or single turbines)

The effects of these factors will in turn differ depending on the character of the landscape in which the turbines are located.

2.2 Turbine Size

Turbine size is the first factor to consider in assessing the impacts of wind turbines. In particular, smaller turbines are considered to be more appropriate in lowland landscapes, which are usually smaller scale, more complex and varied than uplands, and where there are generally smaller scale features such as trees and buildings that provide a ‘scale reference’ against a turbine. Conversely, upland landscapes are generally simpler in character, larger in scale and there are fewer human scale reference features, meaning that larger turbines are more easily accommodated (refer to SNH guidance, *Siting and Designing Windfarms in the Landscape*, 2017 v3).

Turbine size for installed or consented commercial onshore windfarms in the United Kingdom varies from ca. 60m to blade tip for windfarms built in the late 1990s/ early 2000s to current maximums of typically just below 150m, although at the time of writing there are a number of applications in Scotland for schemes including turbines in excess of 150m. Considerably smaller turbines are commonly installed for the non-commercial scale proposals typical of previous Northern Ireland Renewables Obligations (NIRO) schemes. In this study we have mapped five size categories which would have differing relationships with the scale and character of the landscape and with one another. These are listed in Table 4.2 below.

There is a significant range of available commercial turbines sizes. However even the smaller commercial turbines are very much larger than any other common vertical object in the landscape, such as a house or trees, with only electricity pylons (typically 25-50m tall) coming close in size. Even the mid-size of turbine falls within this height bracket and is therefore much larger than most trees and buildings. Furthermore, by being kinetic structures, the visual prominence of turbines is increased relative to existing static features

The small domestic scale turbines (<15m) are however closer to the heights of common visual references such as houses and trees and their landscape and visual impacts tend to be much more localised due to localised screening and backclothing by landforms and trees.

Table 2.1. Turbine Size Categories

Blade Tip Height	Typical Use
15m to <30m	Small - Typically used for domestic and farm schemes
30m to <50m	Small/ Medium - Typically used for farm and small industrial schemes
50m to <80m	Medium - Single turbine schemes e.g. farms, industrial and smaller turbines used in commercial schemes
80m to <120m	Medium/ Large - Many current commercial windfarms and some single turbines
120m to <150m	Large - Many current and most proposed commercial windfarms
150m ~ 200m	Very Large - Windfarms with turbines > 150m are increasingly being proposed in the UK

SNH considers that smaller turbines can be used to mitigate landscape impacts in a lowland situation with a smaller scale landscape pattern and scale indicators. As it has to be balanced against losses in output, size reduction should be used in specific cases where a clearly identified benefit can be achieved. The following are criteria by which this may be judged:

- mitigating significant landscape or visual impacts on a valued or sensitive receptor;
- avoiding an adverse scale relationship with a landform or other key landscape element or feature;
- allowing an intervening landform and/or forest to screen views of turbines from certain receptors; or
- achieving a significant reduction in overall visibility by virtue of relationship to surrounding landform and trees.

Where reduction in impact would be a matter of degree rather than a clear quantitative change the benefits are less clear cut.

SNH guidance (*Siting and Designing windfarms in the Landscape*, 2017) also recommends that where two or more developments are in close proximity to one another, turbines of a

similar size and type should be used. The use of significantly different turbine sizes within a single windfarm or between two windfarms in close proximity can otherwise lead to adverse visual and scale effects which increase the appearance of clutter, or create odd perspectives when seen from certain viewpoints.

2.3 Turbine Design

Variations in size aside, the design of wind turbines can vary considerably. This is particularly the case with smaller turbines under ca. 50m in height. The main variations affecting appearance of wind turbines are:

- two or three bladed
- solid or lattice tower
- shape/ size of nacelle
- proportion of blade length to tower height
- hub faces into or away from the wind direction
- colour

Other factors such as tower and blade shape tend to be more subtle but in combination can lead to a significant difference in appearance, as the difference between the two turbines below demonstrates:



Enercon and Siemens turbines have different nacelles, blades and towers leading to significant differences in appearance

Colour is an issue that is a more important variable in smaller turbines. Colour choice for larger commercial turbines has settled on a neutral light grey with slight variations in lighter or darker shade between developments. It is generally agreed that this colour range is most likely to reduce the prominence of turbines when seen under the most prevalent atmospheric conditions.

In the case of smaller turbines there is more variation in colour and more likelihood of being seen against land rather than sky. In particular many small turbines are white, which increases their prominence when seen from a distance, particularly seen against land.

Choices of turbine design, including colour, are of potential significance when considering the effects of individual turbines or wider cumulative effects on the landscape.



A 47m high turbine seen from several kilometres distance reflects the evening light, contrasting with the dark backdrop of trees and grassland

2.4 Windfarm Size

There is no current ‘accepted’ classification of commercial windfarm sizes in Northern Ireland or the wider UK. Existing and proposed onshore wind energy developments vary in turbine numbers and turbine sizes; from single small turbines to over 200 large turbines. Individual turbines vary in size from below 15m to more than 150m, with maximum outputs from a few kW to greater than 3MW.

Wind energy development in Fermanagh and Omagh covers the whole range of common turbines sizes seen in domestic and commercial schemes, although development sizes are smaller than the larger commercial schemes found, for example, in Scotland. The largest consented schemes within the Local Authority area consist of approximately 20 turbines within the 120 – 150m height category, and there are various small windfarms with turbines of the 80 – 120m range. Consents for single and small turbine groups up to this ‘large’ size category are found throughout the Local Authority area.

2.5 Turbine Numbers and Landscape Impacts

Wind turbines considered out of their landscape context are usually simple, aerodynamic and functional structures that many consider to have a clear aesthetic of ‘form following

function' in their design. Landscape and visual impact issues relate primarily to their scale and potential incongruity in a landscape rather than to the aesthetics of the turbine design. In this case, the number of turbines in a wind energy development has a bearing on the visual image of the development that extends well beyond the proportion of a landscape area that is covered:

- Small clusters of turbines still express the aesthetics of the individual turbines and the blade movement of each turbine is discernible. The cluster is seen as a discrete item within a landscape, becoming a significant feature but generally not dominating or changing the character of a large area.
- In large groupings of turbines there is area coverage of the landscape, rather than a discrete grouping. The individual turbines usually become lost in a mass, blade movements are perceived across the whole area and there is a more 'cluttered' appearance.
- As turbine numbers increase it is increasingly difficult to design a wind energy development such that overlap and clustered alignments are avoided when seen from surrounding viewpoints. Design mitigation can become a matter of avoiding excessive clutter, skylining and proximity to sensitive receptors rather than creating aesthetically balanced groupings of individual turbines. However the windfarm can be broken up into groups, each relating to their surroundings and appearing overall as more than one windfarm, as is the case with Clyde windfarm.

It is recognised that these qualities grade into one another depending on the exact size of development (e.g. 3, 6, 12, 20, 50, 100+ turbines) and on how the turbines are grouped (e.g. in mass groupings or in lines along ridges). Nevertheless, to the extent that they are more easily contained and definable, smaller windfarms would have a disproportionately lesser influence on the landscape than large windfarms and are less likely to dominate areas and blur boundaries between landscape types.

In small groupings, odd numbers of turbines (i.e. 1, 3 or 5) usually present a more balanced composition than even numbers, unless there is a strong regular pattern or line in the landscape to which the turbines can be related.

The landscape area of Fermanagh and Omagh can be described as a lowland landscape interspersed by elevated plateaus and fringed by uplands. Windfarm development to date has occurred in many of these more elevated plateaus, being generally of lower sensitivity than the more truly upland landscapes. However, the capacity of these areas is limited by their relatively small extent, and further development pressure could result in the coalescence of various small to medium schemes into extensive 'windfarm landscapes', apparently overwhelming these areas.

2.6 Turbine Layout

Another factor to be considered is the layout of turbines within a windfarm. Whilst the optimum layout, including turbine separation distances and position in relation to the prevailing wind will relate to maximising output, there will be other practicalities. Thus turbine

layout may vary according to turbine numbers, the availability of land, topography, access and numerous environmental constraints. Once these factors have been taken into consideration the overall aesthetic of the windfarm can be considered.

Layouts will relate to landforms and patterns in the landscape as well as the need to present a coherent image from the surrounding viewpoints. Thus in lowland landscapes with a strong geometric pattern the turbines may be organised in lines of a grid, whereas in the case of a distinct landform such as a ridge or coastline they may be arranged in a curved line following the landform. In upland landscapes turbines may be arranged in a more organic pattern, following ridgelines or clustered around rounded hilltops. Attention should be paid to the relationship of outer turbines in large groups ensuring that there are no 'outliers' creating an untidy or disorganised appearance.

When two or more developments are in close proximity or a windfarm is being expanded there can be cumulative issues relating to site layout if these are clearly contrasting (e.g. a geometric layout adjacent to an organic layout). Such developments should be designed to achieve a harmonious layout and relationship.

2.7 Windfarm and Turbine Distribution

2.7.1 Pattern of Development

When considering cumulative impacts of turbines and windfarms it is not just the number of turbines in the landscape that affects impacts but also the pattern of development. This has an effect on the ability of the landscape to absorb change and on visual receptors. The dispersal of the turbines in small groups or defined areas has some advantages in that each grouping is less dominant within the landscape and presents a less cluttered visual image. There is also less likelihood of 'swamping' landscapes and blurring the boundaries between different landscape types and features if there are distinct gaps between clusters of wind turbines. However, the increased number of windfarms or turbine clusters also means that there is an increased likelihood of seeing a windfarm or turbine, and at closer proximity than if the turbines were concentrated into fewer locations.

The trend seen in the UK, and in particular Scotland, has been for the concentration of wind turbines into fewer, larger, windfarms. This arises initially via large windfarm proposals and then through the later extension of many existing windfarms or new proposals following precedent. The pattern may also play out on a wider regional scale or 'clusters and spaces' where groups of windfarms lie within large areas separated by significant areas without turbines.

However, the cluster and space pattern described above has become diluted by the recent proliferation of smaller Renewables Obligation/ Feed in Tariff (FiT) schemes including single turbines which relate more to the location of small scale consumers than to regional landscape patterns.

The consented pattern of development in Fermanagh and Omagh reflects both trends, with larger windfarms and windfarm clusters developing in uplands from earlier windfarm

developments and frequent smaller wind turbine developments in the lowlands and lowland fringes, with both broad wind energy typologies in view together.

2.7.2 Separation Distances between Turbines and Windfarms

Separation distance between turbines and windfarms has a bearing on how they are perceived together and within the landscape, particularly in relation to defining the limits of cumulative development. Whilst a clear visual separation between two or more windfarms may be achieved by a certain physical distance, this distance would depend on the size and number of the turbines or windfarms, the type of landscape(s) in which they are located and the degree to which they affect the character of the landscape.

Considering this in simple terms, turbines have both a direct effect on the landscape in which they lie and an indirect effect on the surrounding area. Therefore, although two turbines or windfarms may be separated by some distance and seen as clearly separate, the landscape in which they lie may be considered to be characterised by turbines. Only when separated beyond a certain distance would the intervening landscape be considered to retain its original character, separating the two landscapes areas affected by turbines.

Table 2.1 in Chapter 2 of this report develops this concept further by considering the effects of multiple wind energy developments and describes cumulative development thresholds. Further to a capacity assessment, an acceptable level of development within a landscape area may be agreed (e.g. *Landscape with Occasional Wind Turbines* or *Wind Turbine Landscape*). The capacity for development would then be utilised by a developing the accepted landscape type through a combination of turbine sizes, windfarm sizes and separation distances between groupings, relating to the scale and character of the landscape and of course the physical area which it occupies. As examples:

- A large scale upland plateau landscape accommodating a number of windfarms would be considered a *Wind Turbine Landscape* if the windfarms are large, the topography is subordinate in scale to the turbines and the windfarms are separated by distances less than their typical extents.
- If the topography has a relief that is clearly greater than the turbine heights, and/or the windfarms are smaller and the separation between the windfarms is clearly greater than their extents, the landscape may be considered a *Landscape with Wind Turbines*.
- A lowland landscape, smaller in scale with many small scale reference features, may easily be dominated by wind turbines. In this case the objective may be to limit development to a *Landscape with Occasional Wind Turbines* by allowing only small clusters of smaller turbines separated by substantial distances and with cumulative visibility reduced by localised tree or landform screening.

In each case different scales and patterns of landscape and development would require different turbine sizes, groupings and separation distances to lead to a particular windfarm landscape type. Such an approach has been adopted in this study and sizes and separation distances are recommended and explained in chapter 6.

2.7.3 Distribution in Relation to Landscape Type

As discussed above, some landscape types have less capacity for wind energy development than others. In this case it would be appropriate to consider the relative merits of guiding development to those areas most capable of accommodating development, or to directing different types and scales of development to the areas most suited to each. Subject to the specific impacts of any particular proposal, this would reduce the potential for the most significant and adverse landscape impacts. It would also restrict the wind turbine landscape typologies to a more narrowly defined range of landscapes, thereby reducing the perception of unplanned proliferation of wind farms throughout a local authority area.

In Fermanagh and Omagh, operational and consented developments consisting of medium to large and large turbines have largely been located in the moderately elevated upland plateaus, but also on some higher upland hills such as Bessy Bell and Slieve Rushen, with medium sized wind farms. So far, the true upland landscapes of South Sperrin and Cuilcagh have been unaffected by wind energy developments, although at the time of writing there is a significant wind farm proposal within the AONB of South Sperrin within the Local Authority area.

Generally speaking wind energy development is more intense towards the north east of the Local Authority Area in comparison to the south for all types of wind energy development, reflecting the sensitivities of the Fermanagh lakelands and karst landscapes. Most lowland pastoral landscapes have a degree of wind energy development, typically up to the medium typology of wind turbine (50 <80m), and these smaller scale turbines, often in small groups, are found in the upland plateau landscapes and in close proximity to the larger scale windfarm developments. This merging of wind energy typologies has the potential to result in significant cumulative issues if the pattern of development appears incoherent and overly complex.

In strategic terms the established and evolving pattern of development should be taken into consideration as it reflects a clear rationale driven partly by landscape, visual and amenity issues (sensitive or valuable landscapes, proximity to settlements and recreational areas) and partly by technical issues (available land, available grid capacity, wind speed, etc). The number, size and distribution of further development should be considered very carefully in order to maintain differences in character between the uplands, the lowland hills, the lough and lowland farming landscapes.

Also, in accordance with SNH guidance *Spatial Planning for Wind Turbines – Natural Heritage Considerations* (SNH, 2015), consideration should be given to identifying areas between development clusters in which no development is yet located or consented. These can provide significant gaps between clusters of wind turbines in which their visual influence is minimal. This again will reinforce distinctiveness between landscapes.

2.8 Very Large Wind Turbines

2.8.1 Introduction

The landscape capacity considers the potential for the landscape of Fermanagh and Omagh to accommodate wind turbines of 'very large' size, meaning turbines in excess of 150m tall, based on the growing trend for ever larger wind turbine developments seen in other parts of the UK and particularly Scotland. No specific published guidance exists for 'very large' onshore wind turbines exists, the principles which apply to smaller commercial wind turbines also relevant to large machines sizes. However, the following outlines some of the key considerations relevant to the introduction 'very large' turbines into the landscape as new wind farm developments or as extensions to or repowering of existing wind farms.

2.8.2 Matters Associated with Size and Scale

There are several key criteria associated with the perception and siting of wind turbines in the landscape, of which the relationship between the size of turbines and the scale of the landscape is a primary consideration. Scale is expressed in both horizontal and vertical dimensions of the landscape itself, but also secondarily in the form of other landscape elements such as trees and houses, often referred to as scale indicators.

Scale in this sense does not refer to a definitive measurement but more to a perception of size, particularly the comparative size between elements. While size can be objectively measured, perceptions of scale are subject to the distance over which objects are seen, and to comparison with other known objects. Two concepts relevant to the perception of scale are:

Relative size, in which the size of an object can be determined by comparison with the size of familiar objects within its visual context.

Size constancy, in which the scale of a familiar object is understood when seen within a certain range of distances from the viewer, because of prior knowledge of its size. Size constancy can also allow distances to be determined.

Horner and McLennan¹⁹ emphasise the importance of visual scale and comparison of objects.

"Visual scale refers not to the actual dimensions of things, but rather to how small or large something appears to be in relation to its normal size or to the size of other things in its context"

They also highlight *proportion*, the proper or harmonious relation of one part to another or to the whole. A proportioning system establishes a consistent set of visual relationships between the parts of a feature, as well as between the parts and the whole:

"Although these relationships may not be immediately perceived by the casual observer, the visual order they create can be sensed, accepted, or even recognised through a series of repetitive experiences".

However, perception can also be confused when visual clues do not conform with expectations. It is much more difficult to determine the distance or size of an object when there are no familiar scale references and landforms are simple, giving few clues for assessing distance. At the extreme, there are several simple optical illusions such as the Ebbinghaus Illusion and the Ponzo Illusion (see Fig. 2.1) which use visual clues to confuse assumptions about scale and distance.

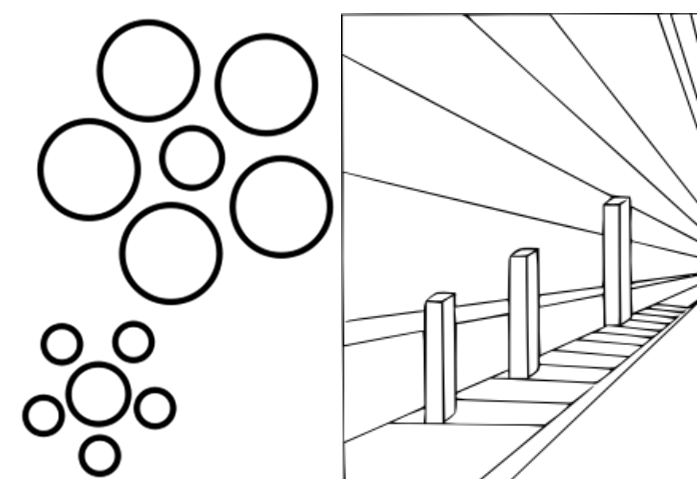


Figure 2.1: In the two images above, the middle circles and the posts are the same size, but the use of visual clues (smaller and larger surrounding circles and perspective lines) makes them look a different size

Taking the above considerations into account; the generally accepted rule is that large wind turbines are more suited to larger scale landscapes with simple, undulating or rounded landforms and patterns. This is because they will be less dominant in these surroundings and there are few or no scale reference objects allowing a perception of their true scale.

However, the matter of proportion and expectation is also increasingly important in this respect, as the height of turbines and the lateral extent of windfarms increasingly approaches the scale of the landforms and areas in or near which they could be located and has the potential to dominate their character or diminish their stature.

¹⁹ *Designing Windfarms in the Landscape* SNH Post Consultation Workshop Presentation, 2009

2.8.3 Existing Guidance

Existing generic guidance on strategic location, siting and design of wind turbines and wind energy schemes of all scales is provided by SNH. Further specific guidance is provided by local authorities in wind energy and landscape capacity studies.

The relationship between turbine size and landscape scale is consistently a key subject in guidance. This is a matter applicable to all sizes of wind turbine, including those greater than 150m in height.

SNH's guidance covers the issues determining siting and design²⁰ and more strategic matters²¹. Paragraph 2.15 of the siting and design guidance refers to turbine size and scale:

'Choice of turbine size is an integral part of the design process. Identification of the key landscape characteristics, their sensitivity and capacity to accommodate change will inform this. Generally speaking, large wind turbines will appear out of scale and visually dominant in lowland, settled, or smaller-scale landscapes, which are often characterised by the relatively 'human scale' of buildings and features. They are best suited to more extensive, upland areas, and set back from more sensitive upland fringes'.

And in paragraph 3.31:

'Landscape scale and openness are particularly important characteristics in relation to wind turbines because large wind turbines can easily seem to dominate some landscapes. For this reason, landscape scale can dictate the ability of an area to accommodate wind farm development, both horizontally and vertically'

The guidance also covers aviation lighting, describing the requirement for turbines of 150m or greater, stating:

'...effects are likely to be more significant in areas with less artificial lighting, including remoter rural locations, Wild Land Areas and dark sky sites where the absence of artificial lighting contributes to the feeling of remoteness or the direct appreciation of the night sky. Lit turbines may lessen the contrast between developed and undeveloped areas, e.g. when viewed from nearby settlements'

The FODC capacity study and guidance is based on the 26 landscape character areas of the local authority. A detailed analysis of each area is carried out based on landscape character, visual sensitivity and landscape value; in which several criteria such as scale, landform, visibility, designations and perceptual aspects are assessed to determine overall sensitivity.

Broadly speaking, capacity for wind energy developments of different scales is related to sensitivity, with areas of lower sensitivity usually considered to have a higher capacity. The

analysis considers capacity in terms of the size of wind turbines. This is strongly related to scale, landform and landscape pattern.

The capacity study indicates the underlying capacity in each LCA for different wind turbine size categories, shown in the form of analysis tables (Table 6.1(i - vii)) and capacity maps (Figures 6.1 (a – f)). Guidelines on siting and design of wind energy schemes are provided in the tables and text.

The assessment also considers the local authority area as a whole. Sections 6.4 and 6.5 identify strategic areas in which cumulative development is considered to have reached capacity; areas which are not suitable for wind energy development of any significant scale and areas in which capacity for wind energy development remains.

2.8.4 Landscape and Visual Considerations

It is unlikely that the largest modern turbines can be accommodated in most locations without contemplating some level of change in character of the landscape. This guidance is therefore considered in terms of (a) the effects on the landscape; and (b) the appropriate levels of landscape change to be accommodated. The basic choices are expressed as in the landscape capacity assessment as follows:

- **Landscape Protection:** Maintain existing landscape character.
- **Landscape Accommodation:** Accept a degree of change providing this does not fundamentally alter key landscape characteristics and visual resources.
- **Landscape Change:** Accept large amounts of change that may fundamentally alter key landscape characteristics and visual resources.

This guidance seeks to highlight the key issues associated with larger turbines. The following matters are considered to be the most critical:

- Horizontal and Vertical scale
- Aviation Lighting
- Extensions and siting near smaller turbines
- Replacing smaller turbines with larger turbines, i.e. Repowering

2.8.5 Horizontal and Vertical Scale

As discussed in above, the concept of *relative size* argues that the scale of an object is not a matter of absolute size, but how objects are perceived relative to other objects or features in their context. Furthermore, the proportional relationship between the scale of a turbine/

²⁰ *Siting and Designing Windfarms in the Landscape*, v3 Feb 2017, SNH

²¹ *Spatial Planning for Onshore Wind Turbines – natural heritage considerations: Guidance*, 2015 SNH

windfarm and its landscape setting is an important consideration in how the landscape or view may be perceived.

Large turbines will be best suited to landscape types of the largest scale, with gradual slopes, indistinct landforms, simple patterns and few or no smaller scale elements or features.

An extensive horizontal scale is perhaps the most important consideration: both in terms of absolute area and in the sense of scale engendered by the delineation of landforms or land use patterns such as field boundaries and blocks of trees. An extensive area of land will be more able to accommodate a large wind energy scheme without being dominated and can have 'strategic depth' in which larger turbines can be set back from the edge of an area or from a sensitive visual receptor. Large horizontal scale landforms and patterns will help accommodate large turbines by diminishing their apparent scale.



Estinnes Windpark, Belgium. The turbines are 198m tall but difficult to scale accurately due to the large horizontal scale and indistinct landform

A large vertical scale may help to accommodate large turbines by diminishing their apparent scale. Higher landforms in combination with topographic hollows or screening 'dead ground' may also be able to fully or partly screen the turbines. However, the landform will need to be considerably greater than the turbine size in order that the turbines do not diminish the perceived stature of the landform²².

Flat or gently undulating landscapes without distinctive landforms provide a less ready scale indicator to a turbine than would a distinctive hill or escarpment. Furthermore, it is more difficult to judge distance in such landscapes.

Scale indicators within a landscape, such as houses, trees, roads and electricity lines, can provide a means by which the scale of wind turbines and/or their distance from the viewer can be assessed. Open or uniformly covered landscapes with few such references would be more able to accommodate larger turbines. It is however the case that, once a turbine is

more than a certain number of times larger than a familiar scale indicator in the landscape, it becomes difficult to compare the two objects meaningfully. Thus, where there are relatively few houses or trees seen at distance over a relatively flat landscape, they may not prove to be a clear scale indicator.



Hoprigshiels (3x115m) and Ferneylea (2x76m) turbines in Scottish Borders: Scale indicators in the landscape including tree belts and fields allow the relative scales and positions of the turbines to be understood

Overhead electricity transmission lines with lattice towers, typically ca. 25-55m tall, are intermediate in size between houses/trees and commercial wind turbines, and can provide a ready scale reference for turbines. This is especially so if the line passes from a receptor location into the windfarm, providing visual clues through perspective. Consideration should be given to avoiding siting large turbines near electricity lines and vice-versa. Undergrounding of transmission lines associated with schemes should be considered, preferably to a location well beyond the turbines.

2.8.6 Aviation Lighting

The effects of aviation warning lighting for wind turbines is becoming an increasingly frequent consideration as wind turbines increase in size. The assessment of effects, including visual representation²³, is a developing area.

Aviation lighting extends the landscape and visual effects of a proposed development into low light periods (i.e. night time and the periods of dawn and dusk and more exceptionally

²² Para 3.32 of SNH's current siting and design guidance suggests that turbines should be 'of minor scale in relation to the other key features of the landscape'.

²³ See paras 174-177 of *Visual Representation of Windfarms – Guidance v2.2*, Feb 2017, SNH

very dull daylight conditions), creating effects overlapping with and additional to those experienced in daylight.

Despite the different landscape baseline and nature of effects in low light, it is possible to define and assess both landscape and visual effects based on the characteristics of the receiving landscape or views in low light (position and character of skylines; amount, type and location of existing artificial lighting etc.), and the details of the aviation lighting (intensity, colour and number of lights, position relative to landform and other lighting etc.).

The nature of any specific baseline landscape or view will of course vary, much as in different periods of the day depending on weather conditions and time of day. Low light period variations relate to the time period and weather, e.g. dawn, dusk or full night; clear or cloudy skies; the presence or absence of moonlight and starlight; weather and visibility conditions. However, the key factor defining many low light landscapes and views is the degree to which they are affected by artificial lighting, and the characteristics and distribution of that lighting.

The potentially negative environmental effects of artificial lighting is a factor widely recognised in a number of ways. This includes the design and positioning of lighting in developments to minimise light spillage and in a wider sense the recognition of the importance of natural light at night time, particularly through the designation of Dark Sky Areas and Parks:

‘An IDA International Dark Sky Park (IDSP) is a land possessing an exceptional or distinguished quality of starry nights and a nocturnal environment that is specifically protected for its scientific, natural, educational, cultural heritage, and/or public enjoyment’.²⁴

Experience of existing aviation lighting on windfarms and transmission towers demonstrates that in clear conditions the lights are highly visible on clear nights at distances of 10km or more²⁵. In areas with little or no background lighting the effects may therefore be significant over some distance. Furthermore, in the case of wind turbines, the rotation of blades can cause a notable blinking effect when the blades pass in front of the light and a flickering reflection effect when the light is seen in front of the blades.

It is therefore likely that in rural areas, including the settings for settlements, the type of medium intensity aviation lights required for 150m+ wind turbines would lead to significant landscape and visual effects in low light periods. These effects would be different in nature and additional to those in daylight hours. The effects should be taken into account in considering a wind energy proposal, recognising that some of the affected locations are specifically designated for their night time skies, are more generally valued for their remoteness from developed locations and artificial light or may provide a dark night-time setting for a settlement.



Craigkelly Transmitter lights seen at ca. 15km above rooftops in central Edinburgh

Potential for mitigation of aviation lighting is relatively limited. The following siting and design measures are possible but would apply in very specific circumstances:

- Use of siting, topography and trees to screen turbines to higher than hub height when seen from sensitive viewpoints.
- If the screening is not possible at the specified turbine height, consider selectively reducing the heights of the turbines that are visible at near hub height – either to below 150m or to a height where the lights would be screened.
- It is understood that light intensity can be reduced where the scheme has horizontal meteorological visibility for more than 5km in all directions²⁶ although it is not clear how variable lighting could be operated to reliably respond to these circumstances. While this may reduce more distant effects it is unlikely to make a great deal of difference close to a scheme located in a naturally dark location.
- Radar-activated warning lights will switch on for brief periods, when approaching aircraft are within proximity, and will not be visible for the rest of the time. However,

²⁴ International Dark Sky Association website <http://darksky.org/idsp/parks/>

²⁵ The lights on Craigkelly Transmitter in Fife are clearly visible from central Edinburgh at 15km and Mount Eagle Transmitter on the Black Isle from the A9 at Bogbain south of Inverness at 17km.

²⁶ *Lighting of Onshore Wind Turbine Generators in the UK with a maximum blade tip height at or in excess of 150m Above Ground Level* SARG Policy Statement June 2017 (item 4g)

this approach is still under discussion and will require some financial investment in systems. It may also be of more limited value on busy flight paths.

2.8.7 Extensions and Siting Near Smaller Turbines

It is almost inevitable that, as turbine size increases, turbines of 150m+ will be located close to existing turbines that are considerably smaller; either as an extension windfarm or within a more crowded landscape. Erection of large turbines close to smaller turbines can make a development appear uncoordinated or unbalanced, as well as influencing the perception of distances or perspectives. The extent to which this occurs depends on the degree of size difference; the appearance of the turbines; the proximity and position of the turbines to one another; the nature of the landscape context or view and the position of the turbines relative to the viewer.

The size difference between the proposed turbines and other operational turbines in the area is the most obvious consideration. Gross size differences between turbines, such as turbines being twice the height of their neighbour are easily perceived. However, such occurrences are not common. In cases of lesser contrast, the concept of *size constancy* and many of the other controlling factors cited in 2.3 above can moderate the apparent differences between turbines.



Muirhall Windfarm, South Lanarkshire: The 6 turbines to the right are 126.5m tall. The 5 turbines to the left are 145/147m tall. The size difference is perceptible but not overt in a wide undulating landscape where it is difficult to tell distances.

In respect of appearance, there is relatively little variation between most commercial scale wind turbines. Experience also indicates that when moving around an area, the potential for differences between different scale turbines to be readily apparent is often reduced by variations in topography and landscape features within and around a windfarm site and changes in the relative position of the viewer to the turbines. However, the following specific considerations may help reduce visual disparity and contrast where proposed large turbines are to be located near existing smaller turbines:

Consistency in appearance is important in reducing the apparent contrast between two sets of turbines of any size. This includes avoiding mixing two and three bladed turbines or turbine models with very obviously different hub, blade or tower designs.

Consistency in turbine proportions is important. This may include a consistent proportion of rotor diameter to hub height when the two developments are seen together; or using similar rotor diameters on different height towers where only upper parts are likely to be seen.

Using a lower landform elevation for siting taller turbines will even out blade tip height differences, such that the combined sets of turbines will appear as a more evenly balanced composition when seen from a distance.

Placing larger turbines further away from key viewpoints than existing turbines may still lead to apparent flattening of perspective and condensing of distance, but these effects together with contrast in scale is much more exaggerated when the larger turbines are placed to the fore.



Windy Standard I and III Windfarms, Dumfries and Galloway (Photomontage): three sizes of turbine (55m, 125m and 177.5m. Seen from Blackcraig Hill the differences in size are clear



Windy Standard III Windfarm (Photomontage): the closer turbines are 125m and those further away 177.5m. Seen from Cairnsmore of Carsphairn the difference in size is not apparent due to the similar proportions of the turbines and the lower ground elevation of the taller turbines

Larger windfarms are more able to 'absorb' different size turbines due to the differences in vertical scale becoming a secondary consideration to the broad horizontal scale occupied and the greater visual confusion engendered by large numbers of turbines.



Calder Water and Whitelee Windfarms, South Lanarkshire: The more distant turbines are 110m tall. The closer turbines are 145m tall. The size difference is perceptible but not overt due to the sheer number of turbines.

2.8.8 Repowering

Repowering of existing windfarms that currently have relatively small turbines is becoming a more relevant consideration as the oldest windfarms approach their consented operational lifetime. It is likely that some of these sites will propose to be repowered with turbines of 150m or greater height. In this case, all the generic considerations of scale, lighting and size contrast covered by existing published guidance, the LCS 2016 guidance and this guidance would apply.

However, it is worth considering specific situations which may arise where the effects, adverse or beneficial, of repowering with significantly larger turbines can be notable:

- Replacing many small turbines with fewer, larger turbines can present a simpler, less cluttered appearance
- Large turbine blades rotate more slowly than smaller turbine blades, presenting a less busy, less cluttered appearance

- Spacing between larger turbines is greater than between smaller turbines, which also reduces clutter but may mean more area is required to accommodate a windfarm
- Larger turbines will have a wider visibility and will, for most visibility conditions, be more prominent when seen at distance
- Aviation lighting will be required, leading to effects in low light

Larger turbines require larger scale infrastructure, including access/ delivery roads and crane platforms, leading to direct and permanent effects of a greater magnitude. This is particularly the case where steeper ground which would require larger cuttings and embankments to maintain appropriate road gradients and geometry.

APPENDIX 3: WIND FARMS AND TURBINES IN FERMANAGH AND OMAGH

All turbines > 80m in height and groups of 3 or more turbines >50m turbines, ordered by turbine size.

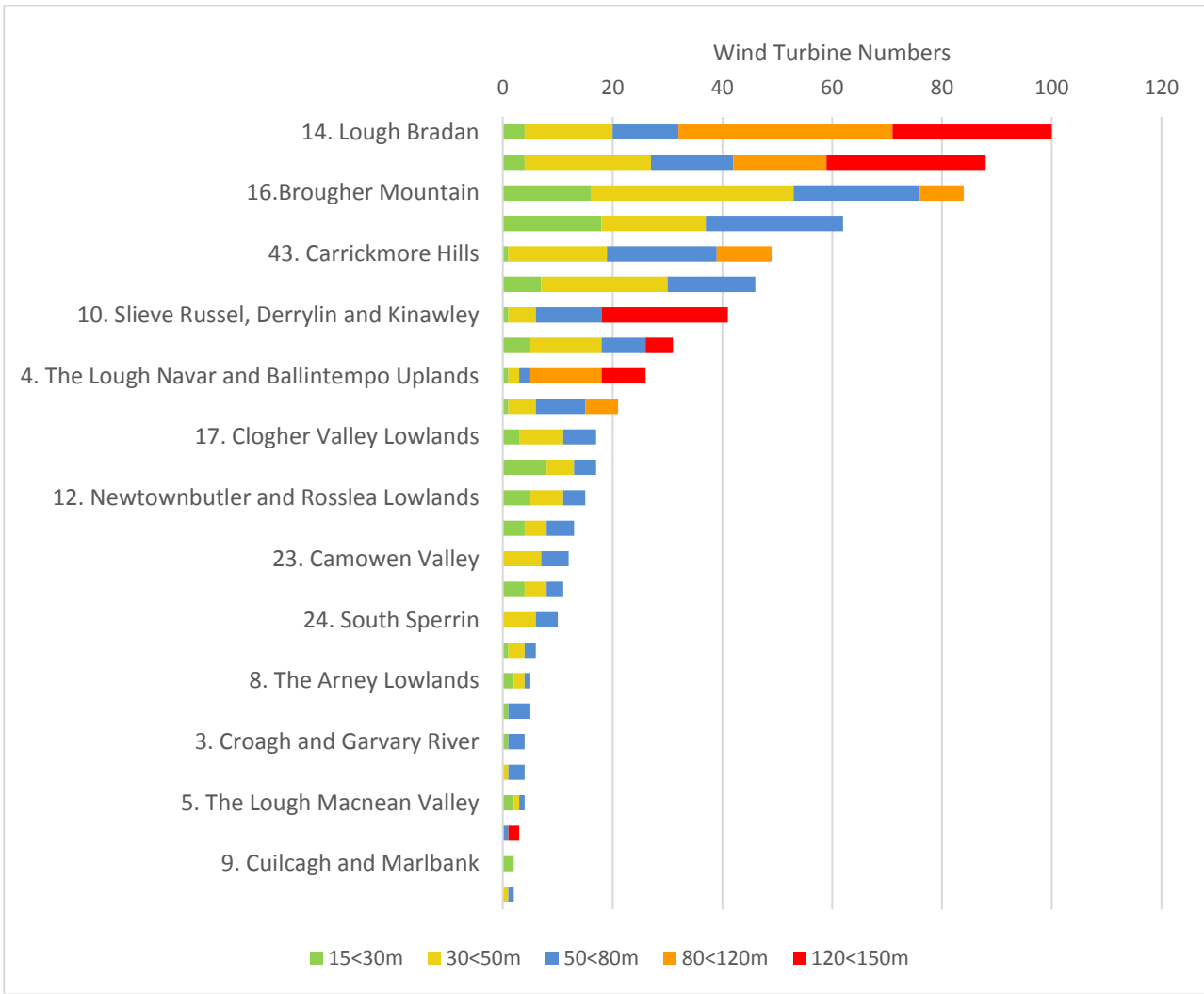
Consented and Operational Turbine Developments in Fermanagh and Omagh

Turbine Name	Number of Turbines	Tip Height (m)	Landscape Character Type
Castlecraig Windfarm, Drumquin	10	127	14 Lough Bradan
Crockbaravally Wind farm, Sixmilecross	3	127	44 Slievemore
Cornavarrow	9	126	14 Lough Bradan
Molly Mountain, Derrylin	5	125	10 Slieve Russel, Derrylin and Kinawley
Slieve Rushen, Derrylin	18	125	10 Slieve Russel, Derrylin and Kinawley
Pollnalaght	12	125	14 Lough Bradan
Killycreen East and Killycreen West near Belcoo	2	125	4 The Lough Navar and Ballintempo Uplands
Ora More Hill, Boho and Belcoo	6	125	4 The Lough Navar and Ballintempo Uplands
Crockagarron, Ballygawley	7	125	44 Slievemore
Gortfinbar	5	125	44 Slievemore
Slieve Divena & k/05/1691/F	12	125	44 Slievemore
Inishative Road, Sixmilecross	6	120.5	44 Slievemore
Teiges Mountain, Brookeborough	5	120	18 Slieve Beagh
Thornog, Drumquin	4	110.5	14 Lough Bradan
Altamuskan, Sixmilecross	3	110.5	44 Slievemore
Hunter Hill, Fintona	8	101	16 Brougher Mountain
Loughmallon Road, Cregganconroe	5	101	43 Carrickmore Hills
Clunahill, Drumquin	6	100	14 Lough Bradan
Tappaghan Mountain, Lack	19	100	14 Lough Bradan
Bessy Bell 2	6	100	26 Bessy Bell and Gortin
Crockdun	5	100	43 Carrickmore Hills
Callagheen, Belleek	13	93	4 The Lough Navar and Ballintempo Uplands
"Lands 411m North East of 180 Cloghfin Road	1	88.5	44 Slievemore
"Lands 540m south east of 180 Cloghfin Road	1	88.5	44 Slievemore
Lough Hill, Drumquin	6	83	14 Lough Bradan
Crockanboy Road, Greencastle	3	72	15 Lough Bradan

Proposed Turbine Developments Fermanagh and Omagh (All turbines sizes)

Turbine Name	Number of Turbines	Tip Height (m)	Landscape Character Area
Dorvilee Wind Farm	33	149	24 South Sperrin
Lands 538m West of 3 College Road East Doon, Derrylin, BT92 9DE	1	70	10 Slieve Russel, Derrylin and Kinawley
Lands 290m North West of 103 Scallen Road Coolback Irvinestown	1	56	15 Irvinestown Farmland
Approx 300mSW of 102 Killyliss Road Tonnagh-more Fintona	1	60	15 Irvinestown Farmland
Approx 420m South of 27 Barnaghs Road Inishative Omagh	1	70	44 Slievemore
50m south of 72 Ballyconnell Road Derrylea Derrylin	1	74	10 Slieve Russel, Derrylin and Kinawley

Distribution of Consented Wind Turbines by Landscape Character Area (All Sizes)



APPENDIX 4: ASSESSMENT OF LANDSCAPE SENSITIVITY FOR LANDSCAPE CHARACTER AREAS

1. The Garrison Lowlands

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Medium. Small scale features such as small enclosed pastures, properties and farms, but with some larger elements of commercial forestry. Wider landscape context is quite expansive. Medium
Landform	Landform is undramatic, rising from Lough Melvin in the west to elongated rounded ridges towards the centre of the LCA. Low/ Medium
Pattern	Landscape is dominated by small scale irregular enclosed fields of pasture, with occasional mosses and areas of coniferous forestry. Medium/ High
Development	Numerous single properties or small property groups. Garrison is the only settlement of any size. Consented wind energy is limited, typically of occasional single turbines around 50m height. The larger scale windfarm at Callagheen lies just to the east of the LCA. Medium/ High
Quality	Landscape has a defined rural character, unaffected by larger scale uncharacteristic development types. Farmland is of relatively low-quality pasture, but is managed and in productive use. Medium
Elements and Features	Principle features are small irregular enclosed fields, hedgerows, small woodland blocks, scattered properties and small hamlets, traversed by a network of minor roads and tracks. Medium/ High
Context	Landscape provides part of the setting to Lough Melvin immediately south of the LCA and transition to the Lough Navar Forest uplands. Medium/ High
OVERALL RATING	Medium/ High

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	Various residential receptors throughout the LCA, Ulster Way which passes through the northern part of the LCA. NCN 91 passes through the LCA. Medium/ High
Internal Visibility	Internal visibility in places restricted by woodland and trees, but from more elevated locations the sloping topography allows views expansive view to the west across Lough Melvin to the uplands of County Leitrim. Medium
External Visibility	Inward views are available from the west of Lough Melvin and from Lough Melvin itself, which has notable tourism and recreation interest, for example fishing and boating. Medium/ High
OVERALL RATING	Medium/ High

Landscape Value	Criteria/ Sensitivity Levels
Designations	Encompassed entirely by the ASQ identified in NILCA2000. The scenic qualities of Lough Melvin are recognised through Irish Republic landscape designation. Lough Melvin shores are ASSI/ SAC. Medium/ High
Community value	Various recreational opportunities (cycling, water based), some tourism and recreation interest at Garrison including caravan park, holiday centre. Medium
Cultural value	Small number of Scheduled Monuments. Medium
Perceptual	Quite open landscape with sweeping views across to rugged uplands to the west, forming the immediate hinterland to the scenic Lough Melvin. Medium/ High
Rarity	As a relatively small-scale pastoral landscape the LCA is not rare. Low/ Medium
OVERALL RATING	Medium/ High

2. Lower Lough Erne

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Medium - Large. The extensive water body of Lower Lough Erne dominates this LCA, but with an intricate fringe of small islands, bays and small-scale farmland. Low/ Medium
Landform	Low, elongated islands and promontories around the northern fringes of the lough, however the Magho cliffs rise dramatically from the lough forming part of the southern boundary to the character area. Medium
Pattern	Pattern of small scale enclosed farmland, small woods and wooded islands as features of the larger lough basin. Medium
Development	Small scale farms, single properties, with the small town of Belleek at the far western end of the LCA the only sizable settlement. Medium/ High
Quality	Appearance of a well maintained and managed landscape with a strong character. Medium/ High
Elements and Features	Lower Lough Erne and Cliffs of Magho are the principle large scale features, with smaller scale wooded islands, promontories and small-scale fields and farmland. Medium/ High
Context	The landscape is a medium - large scale lough basin lying between the uplands landscape of Lough Navar Forest to the south and Pettigoe Plateau to the north (identified as ASQ). Medium/ High
OVERALL RATING	Medium/ High

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	Various receptors in residential properties, road users, recreational receptors (boating, fishing, walkers). Medium/ High
Internal Visibility	Expansive views across Lower Lough Erne, but enclosed by vegetation inland. High
External Visibility	Inward views available from recognised viewpoints at the Cliffs of Magho. Medium/ High
OVERALL RATING	High

Landscape Value	Criteria/ Sensitivity Levels
Designations	Islands of Lower Lough Erne are within CPA, some islands ASSI. Castlecaldwell is LNR and designated Historic Park and Garden. Cliffs of Magho, Castlecaldwell and other areas are within the Geopark. Medium/ High
Community value	Important to the setting of various homes and small communities. Landscape provides various opportunities for recreation, tourism, boating, fishing etc. Medium/ High
Cultural value	Castlecaldwell is a Historic Park and Garden, and various cultural heritage sites are located on Boa Island. Medium/ High
Perceptual	Open landscape with high scenic qualities, defined character, expansive waterbody with large skies reflecting from water body. Medium/ High
Rarity	Recognised as distinctive part of the wider Northern Ireland landscape. Medium/ High
OVERALL RATING	Medium/ High

3. Croagh and Garvary River

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Medium - Large. Slightly elevated, expansive plateau. Low/ Medium
Landform	Low plateau but with rounded hills, rocky knolls and small loughs. Croagh hill (180m AOD) is a notable feature, seen with the higher Bressy Hill behind in Donegal. Medium/ High
Pattern	Much of the area is of uniform blanket bog, however the lower slopes near Lower Lough Erne and the Croagh Valley are of enclosed pastures. Some large areas of coniferous planting. Medium
Development	Development limited to small farms and houses on the lower slopes and Groagh valley. A small network of minor roads and tracks cross the LCA. A small number of consented 50m turbines are within the LCA. Low/ Medium
Quality	Farmed land is principally of rough pasture, blanket bog areas area of simple, uniform character, unaffected by development. Medium/ High
Elements and Features	Small houses and farm buildings, some areas of large coniferous planting. At the larger scale Croagh is the main landscape feature. Low/ Medium
Context	The LCA forms part of the setting to Lower Lough Erne. Medium/ High
OVERALL RATING	Medium

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	Residents scattered through parts of the LCA. NCN 91 and the Ulster Way pass through the LCA. Large parts have few or no visual receptors. Low/ Medium
Internal Visibility	Variable landform and vegetation tends to restrict outward views, but some available across Lower Lough Erne and to Cliffs of Magho. Low/ Medium
External Visibility	The landscape is important in views north across Lower Lough Erne where it forms part of the setting to the lough. Medium/ High
OVERALL RATING	Medium

Landscape Value	Criteria/ Sensitivity Levels
Designations	Area is identified as an ASQ. Much of the area is SAC/ SPA/ RAMSAR/ ASSI. Part designated as Geopark. Medium/ High
Community value	Some usage for walking and cycling. Low/ Medium
Cultural value	Sites of designated cultural heritage value within the LCA. Medium
Perceptual	The LCA is perceived largely as a simple upland landscape, contrasting with the more pastoral lowland, extending across to Donegal. Medium/ High
Rarity	Landscape is not unusual or unique. Medium Sensitivity
OVERALL RATING	Medium/ High

4. Lough Navar and Ballintempo Uplands

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Medium – Large. A relatively large-scale forested upland plateau. Low/ Medium
Landform	Landform varies between 150 and 300m AOD on an undulating plateau with a varied landform included rounded hills, rock pinnacles and ridges. To the north is the steep escarpment of the Cliffs of Magho. Medium/ High
Pattern	Coniferous forestry is the dominant land cover but areas of un-forested blanket bog and enclosed pastures in more sheltered and lower lying areas add some diversity to the landscape pattern. Low/ Medium
Development	Very sparsely developed with small houses and farm buildings linked by minor roads and tracks. The area includes 2 windfarms; at Callagheen to the north west and Ora Moor to the south. Low/ Medium
Quality	Varied landform and undeveloped upland character, but landform features can be masked in areas of uniform forestry. Neglect in marginal farmland areas. Medium
Elements and Features	Landform features of pinnacles, rocky escarpments, small loughs. Forestry cover is dominant. Medium
Context	Landscape forms the backdrop to views from the sensitive landscapes of Lower Lough Erne and Lough Melvin. Medium/ High
OVERALL RATING	Medium

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	Few residents, but area is promoted for its landscape outdoor recreation, walking etc. Ulster Way. Medium/ High
Internal Visibility	The variable landform and screening effects of forestry tends to limit internal visibility. Low/ Medium
External Visibility	Landscape is important in views from around Lough Melvin and Lower Lough Erne, Upper and Lower Lough Macnean. Medium/ High .
OVERALL RATING	Medium

Landscape Value	Criteria/ Sensitivity Levels
Designations	Landscape forms the core of the Global Geopark, to which landscape contributes. Includes SAC/ SPA/ ASSI and Nature Reserve designations. High
Community value	Significant recreation and natural heritage interest. High
Cultural value	A number of designated cultural heritage sites, tombs, some folklore associations. Medium
Perceptual	Exposed upland landscape contrasting with the landscapes of the surrounding loughs, but a landscape modified by commercial forestry. More rugged landscape to the east has high scenic qualities. Medium
Rarity	Geopark designation indicates a landscape with unique qualities. Medium/ High
OVERALL RATING	Medium/ High

5. Lough Macnean Valley

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Medium. Upper and Lower Lough Macnean are large scale elements but landscape is characterised by smaller scale features and a varied landform. Medium/ High
Landform	Lough basins to Upper and Lower Lough Macnean, in places steep sided with rock scarps e.g. Hanging Rock. Becoming flatter to the east towards the Arney Lowlands. Medium/ High
Pattern	Interplay between varied landform with small scale landscape features, agriculture and various scales, woodland and islands creates a relatively complex landscape pattern. Medium/ High
Development	The small settlement of Belcoo lies between Upper and Lower Lough Macnean, elsewhere. Farms and single/ small property ground are frequent in lowlands areas, less so in more elevated areas. No major wind energy, but Ora More Hill windfarm is close to the northern boundary. Some quarrying. Medium/ High
Quality	Landscape integrity of the farmed landscape is varying in quality and management, with more intensely managed farms to the east. Character of the Upper Lough Macnean basin is well defined. Medium/ High
Elements and Features	Loughs are the dominant landscape features with enclosing escarpments and other geological features. Enclosed pastures of lowland farmland. Medium/ High
Context	Landscape is the setting to the scenic Upper and Lower Lough Macnean. Medium/ High
OVERALL RATING	Medium/ High

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	Residential receptors are frequent, also various recreational receptors. Ulster Way and NCN91 pass through the area. Medium/ High
Internal Visibility	Open lough basins provide visibility across the landscape from their shoreline or high points. Otherwise woodland/ vegetation tends to restrict views. Medium
External Visibility	Views across Lower Lough Macnean possible from parts of the Cuilcagh and Marbank Uplands. Medium
OVERALL RATING	Medium/ High

Landscape Value	Criteria/ Sensitivity Levels
Designations	Largely undesignated other than small areas of ASSI. Low/ Medium
Community value	Some local interest for recreation, fishing etc. Medium
Cultural value	Various scheduled sites: crannogs, cairns, tombs and ecclesiastical sites. Medium
Perceptual	Upper Lough Macnean has high scenic qualities, enclosed by the rugged landscape at Cuilcagh and Marbank. Lower Lough Macnean is less scenic.. Medium/ High
Rarity	Recognised element of the Fermanagh Lakeland: Medium/ High
OVERALL RATING	Medium

6. The Knockmore Scarpland

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Medium. Complex topography serves to lessen the landscape scale across much of the character area, locally of a larger scale around Belmore Mountain. Medium
Landform	Rugged limestone escarpment with various geological features including cliffs, limestone pavement, gorges and narrow glens. Medium/ High
Pattern	Enclosed pastures at lower elevations typically give way to the steep wooded escarpment and the unenclosed Ballintempo Uplands. Land uses reflecting the underlying variable landform adds complexity. Medium/ High
Development	Numerous single properties and small property groups, minimal consented wind energy development. Medium/ High
Quality	Attractive and diverse rural/ semi-natural landscape with a well-defined character. Medium/ High
Elements and Features	Principle features are the steep escarpments, cliffs and rugged hills. Also includes small scale fields, settlement and woodland. There are several small loughs to the north. Medium/ High
Context	Landscape is the transition between the Silles Valley/ Upper Lough Erne and the Ballintempo Uplands. Medium
OVERALL RATING	Medium/ High

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	Receptors are mostly residents in scattered properties throughout the LCA. Medium
Internal Visibility	Internal visibility is often restricted by topographic features, hedgerows or woodland, but some more extensive visibility from elevated locations. Medium
External Visibility	The landscape is a feature of views from lowlands immediately to the east, but generally does not have a widespread importance. Medium
OVERALL RATING	Medium

Landscape Value	Criteria/ Sensitivity Levels
Designations	Belmore Forest to the south is part of the Global Geopark, otherwise no other designations. Medium
Community value	Belmore Forest offers some recreational interest, Geopark, Pollnagollum Caves. Medium
Cultural value	Various scheduled sites including raths, crannogs, religious sites. Medium
Perceptual	Perceived as an in-tact rural landscape with natural features which enhance its scenic qualities. Medium/ High
Rarity	Other limestone escarpments south of Lower Lough Macnean, but not a common feature of the Fermanagh and Omagh landscape. Medium/ High
OVERALL RATING	Medium

7. The Silles Valley

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Small - Medium. Enclosed to the east and west by the Knockmore Scarpland and a limestone ridge south of Lower Lough Erne. Small fields set within an undulating landscape of drumlines, further enclosure provided by hedgerows and small woods. Medium/ High
Landform	Complex landform of closely packed drumlins, larger scale escarpment and limestone ridge bound the area to the east and west. Medium/ High
Pattern	Landscape is almost entirely of a single pattern of irregular small-scale pastures set within the undulating landscape. Some occasional larger woodland/ forestry areas. Medium/ High.
Development	Numerous scattered farms and other properties throughout the LCA and several small settlements, a network of minor roads and tracks. Very little wind energy development. Some quarrying. Medium/ High
Quality	Mostly in productive agricultural use. Medium
Elements and Features	The landscape is strongly characterised by the undulating landform of drumlins, with small loughs and complex pattern of drainage. Other elements are hedgerows, small field, woodlands. Medium
Context	Area of distinct lowland character lying between Lower Lough Erne and Ballintempo Uplands. Low/ Medium
OVERALL RATING	Medium/ High

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	Various residents in properties and small settlements throughout LCA. Medium
Internal Visibility	Undulating landform and the screening effects of trees and woodland tend to restrict internal visibility. Low/ Medium
External Visibility	Some recognised views across the landscape from the upland of Lough Navar, generally,. Medium
OVERALL RATING	Medium

Landscape Value	Criteria/ Sensitivity Levels
Designations	The landscape is largely undesignated with the exception of a small nature reserve and small area of Geopark both as Ross Wood. Low/ Medium
Community value	Limited important visitor interest associated with the landscape. Monea Castle of some visitor interest. Medium
Cultural value	Monea Castle is a cultural site with some visitor interest. Various scheduled sites throughout the LCA. Medium
Perceptual	Intact agricultural landscape of defined character. Medium
Rarity	No unusual or rare within the Local Authority area. Low/ Medium
OVERALL RATING	Medium

8 The Arney Lowlands

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Medium. Broad river valleys with wide spaces. Medium
Landform	wide and generally flat local undulations drumlins. Medium
Pattern	Majority of the landscape is farmed and therefore is of a relatively uniform pattern of small scale enclosed pastures. Medium
Development	Developments of single properties/ small property groups and farms connected by a network of minor road and tracks. The main A32 runs through the LCA. Medium
Quality	Farmed landscape is in good condition in comparison to some other similar lowland landscape areas. Medium/ High
Elements and Features	Woodland, hedgerows, roads and tracks, minor topographic features. Features are generally of a small scale. Medium/ High
Context	Area of lowland farm set within more elevated and scenic areas. Medium
OVERALL RATING	Medium/ High

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	Receptors are mostly residents in scattered properties throughout the LCA, or users of A32. Promoted local cycle route passes through the LCA. Medium
Internal Visibility	Area is generally flat which allows some long views, but with Internal visibility is in places restricted by topographic features, hedgerows or woodland. Medium
External Visibility	This area is visible from scenic landscapes to the south. Medium/ High
OVERALL RATING	Medium

Landscape Value	Criteria/ Sensitivity Levels
Designations	No landscape designations, but includes designated raised bog. Low/ Medium
Community value	Landscape as community value to resident, but no particular tourism or recreational interest. Medium
Cultural value	Small number of scheduled sites within the LCA. Low/ Medium
Perceptual	No particular scenic qualities, but appears as an intact rural landscape. Views to neighbouring scenic LCAs enhance perceptual qualities. Medium
Rarity	Relatively commonplace rural landscape. Low/ Medium
OVERALL RATING	Medium

9 Cuilcagh and Marlbank

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Large: Large scale landscape large hills including Cuilcagh Mountain and open karst landscape. Low/ Medium
Landform	Highly distinctive and dramatic landscape which rises to 655m AOD. Medium/ High
Pattern	Variety of natural/ semi natural habitats and landcovers including blanket bog, species rich dry grassland on grassland limestone, but mostly of uniform upland appearance. Wooded areas near Florence Court. Medium
Development	Development is very limited apart from that associated with lowland agriculture Medium/ High
Quality	High quality natural/ semi natural landscape a strong landscape character derived from its combination of features. High
Elements and Features	Natural features predominate, hill tops, geological features etc. Outline of Cuilcagh ridge is very distinctive. High
Context	Fermanagh karst landscape including Cuilcagh is one of the outstanding landscape features of Fermanagh and Omagh. High
OVERALL RATING	Medium/ High

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	Area is popular with walkers and visitors to Florencecourt (NT estate). Ulster Way crosses the area. High
Internal Visibility	Extensive visibility across the LCA from within. High
External Visibility	Landscape is highly visible from neighbouring LCAs to the north and east. High
OVERALL RATING	High

Landscape Value	Criteria/ Sensitivity Levels
Designations	Much of the LCA is within the Geopark designation, includes National Nature Reserve at Crossmurrin. Florencecourt is a Registered Park and Garden. Medium/ High
Community value	Wide community value as recreational resource and area of natural and cultural heritage interest, Geopark visitor centre. High
Cultural value	Registered park and garden, various scheduled sites in the more lowland locations. Medium/ High
Perceptual	Perceived as a high quality scenic upland landscape unaffected by manmade development of any scale. High
Rarity	Unique as a landscape within Fermanagh and Omagh. Medium/ High
OVERALL RATING	Medium/ High

10 Slieve Russel, Derrylin and Kinawley

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Medium to High. Contrasting character between the larger scale upland landscapes of Eden More and the smaller scale lowlands. Low/ Medium
Landform	Relatively simple upland landscape of rounded upland and lowland hills. Slieve Russel in adjacent County Cavan rises to 403m AOD. Uplands transition to lowlands to the east. Low/ Medium
Pattern	Simple upland landscape which transitions to often more complex landscape responding to the underlying topography with of small pastures with fields of varying size, winding minor roads and tracks extending towards the uplands. Medium
Development	Small farms at lower elevations, but larger scale quarrying, communication masts and quite extensive wind energy development of medium to large scale. Slieve Rushen wind farm is a major feature of the landscape. Low/ Medium
Quality	Windfarm development and quarrying detract from the landscape quality in some locations. Poor quality or derelict farmland. Low/ Medium
Elements and Features	Manmade elements of quarrying and wind farms, communication mast at Molly Hill. Enclosed pastures on the lower slopes with hedgerows and small fields. Rounded hill tops. Medium
Context	LCA is at the border of the Fermanagh and Omagh area of local importance rather than important to the wider Local Authority landscape. Medium
OVERALL RATING	Low/ Medium

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	Residential receptors on lowlands slopes, recreational receptors from recognised viewpoints. Ulster Way and NCN 91 pass through the area. Medium
Internal Visibility	Variable, with long views possible from upland locations, less so from more enclosed and vegetated lowlands. Medium
External Visibility	Hills are distant features in views from Upper Lough Erne. Medium
OVERALL RATING	Medium

Landscape Value	Criteria/ Sensitivity Levels
Designations	No landscape designations but small area of Geopark at Molly Mountain, small areas of SAC/ ASSI. Low/ Medium
Community value	Landscape of value to residents, some wider interest through cycle route and Ulster Way. Medium
Cultural value	Some designated archaeological sites. Low/ Medium
Perceptual	Otherwise relatively scenic landscape has been degraded by a variety of land uses including wind energy and quarrying. Low/ Medium
Rarity	One of the higher landscapes of Fermanagh and Omagh but not unusual or rare. Low/ Medium
OVERALL RATING	Low/ Medium

11 Upper Lough Erne/ 13 Enniskillen

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Small - Medium. Intricate landscape of small water features and low-lying drumlins with pastures. Scale increases as waterbody become more expansive north of Enniskillen. High
Landform	Sunken landscape of small interconnected waterbodies around rolling drumlins. Knockinny Hill to the west is a localised high point. High
Pattern	Complex pattern of water, small scale landforms, woodlands and pastures or varying shape and size enclosed by hedgerows. High
Development	Mostly small to medium scale farming and single/ small collections of residential properties, connected by minor roads/ tracks. There is a quarry at Knockinny Hill. Enniskillen lies between Upper and Lower Lough Erne and is a significant urban development, including an airport. Medium/ High
Quality	Landscape is of a generally good condition, managed for productive agricultural use and with a well-defined character. Medium/ High
Elements and Features	Low rolling drumlins, waterbodies of varying scale and shape, pastures surrounded by hedgerows. Knockinny Hill is significant topographic feature. Estates at Crom, Archdale. Medium/ High
Context	Context is generally of flat lowland farmland, with higher landforms at Slieve Rushden seen in the distance. Lough is often not visible, particularly when further north. Medium
OVERALL RATING	Medium/ High

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	Aside from residents the area is promoted for its scenic qualities and therefore has considerable tourism/ recreation interest. Ulster Way and NCN91 cross the area. Various points of visitor interest e.g. National Trust estate at Crom, Castle Archdale Country Park. Medium/ High
Internal Visibility	Variable, with more extensive views close to the water, while inland vegetation is restrictive. Medium
External Visibility	Inward views to the LCA are limited. Low/ Medium
OVERALL RATING	Medium

Landscape Value	Criteria/ Sensitivity Levels
Designations	Various natural heritage designations (ASSI/ SPA/ RAMSAR). Several Registered Park and Gardens including Crom, Castle Archdale, Castle Coole and Belle Isle. Medium/ High
Community value	Wide community value due to recreation and leisure opportunities, recognised as a landscape of importance as part of the Fermanagh Lakelands. Medium/ High
Cultural value	Various scheduled sites, Registers Parks and Gardens, Area of Significant Archaeological Interest around Devenish Island. Medium/ High
Perceptual	Natural scenic qualities of the landscape, sense of tranquillity and naturalness from the presence of the Lough. High
Rarity	No landscape of similar character within the Fermanagh and Omagh area. Medium/ High
OVERALL RATING	Medium/ High

12 Newtownbutler and Roslea Lowlands

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Medium. Relatively broad lowland landscape, but frequent drumlins and enclosed fields tends to reduce the scale. Medium
Landform	A generally low-lying undulating landform but rising to greater elevations to the north when transitioning to the more elevated Slieve Beagh LCA. Medium/ High
Pattern	Frequent drumlins influence the pattern of farming development, principally of small enclosed fields. Medium/ High
Development	Limited with the exception of frequent single properties and farms. Newtownbutler and Roslea are the smallest settlements. Some commercial forestry and quarries. Some main roads. Medium
Quality	Generally of good condition as an agricultural landscape, some scenic qualities. Medium
Elements and Features	Drumlins, small loughs, woodlands and pastures bounded by hedgerows. Medium
Context	Lowland landscape lies to the south of the hillier landscape at Slieve Beagh, but part of the wider lowland landscape extending across the border. Low/ Medium
OVERALL RATING	Medium/ High

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	Some visitor interest including Ulster Way, cycle routes and publicly accessible Rosslea Manor. Medium
Internal Visibility	Varying from open to restricted due to hedgerows and undulating landform. Low/ Medium
External Visibility	Not widely visible from the surrounding landscape, but features in some views from the uplands of Slieve Beagh. Low/ Medium
OVERALL RATING	Low/ Medium

Landscape Value	Criteria/ Sensitivity Levels
Designations	No landscape designations, but some loughs are designated as ASSI/ RAMSAR. Low/ Medium
Community value	Some recreational interest and the setting to several small communities. Medium
Cultural value	Small number of scheduled sites, with various raths and crannogs. Rosslea is a Registered Park and Garden. Medium
Perceptual	Small scale intact landscape with strong rural character. Medium
Rarity	Of a relatively common lowland landscape type. Low/ Medium
OVERALL RATING	Medium

14 Lough Braden

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Medium to Large. Scale varies from smaller scale lowlands to larger scale upland landscapes of the sandstone plateau. Low/ Medium
Landform	Lowlands of drumlins, while the upland landscape is of undulating rounded hills. Pollnalaght rises to 292m AOD. Medium
Pattern	Lowlands are of enclosed pastures while uplands are of a simpler pattern of forestry and moorland. Medium
Development	The area is in general sparsely development, although some small settlement is found in lowland areas (Ederney and Lack). Some windfarms are present in the more upland areas.
Quality	Farmland is typically of poor quality, scrappy rush infested pasture. The more upland landscapes have some scenic quality. Medium
Elements and Features	Landform features of hills and drumlins, forestry, smaller enclosed pastures with hedgerows. Medium
Context	Provides the backdrop to views from more settled lowland landscapes to the south. Medium
OVERALL RATING	Medium

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	Some residential receptors, NCN91 and Ulster Way pass through the area. Recognised viewpoint at Pollnalaght. Medium
Internal Visibility	Some extensive views from more upland areas to the east and towards the Sperrins, less within the enclosed drumlin landscape to the west. Medium
External Visibility	Views to the upland area from the lowlands to the east, also from higher ground at Bessy Bell and the Sperrins. Medium
OVERALL RATING	Medium

Landscape Value	Criteria/ Sensitivity Levels
Designations	Meenadoan NNR, ASSI, however no landscape designations. Low/ Medium
Community value	Limited areas of recreational interest with sections of Ulster Way and NCN91, value to residents. Low/ Medium
Cultural value	Some scheduled sites, Drumskinny stone circle. Low/ Medium
Perceptual	While lowland and upland transitional landscape if of not high quality, parts of the larger scale upland landscape have a wild and remote character. Medium/ High
Rarity	Of a landscape type not unusual in the Local Authority Area. Low/ Medium
OVERALL RATING	Low/ Medium

15 Irvinestown Farmland/ 22 Omagh Farmland

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Small – Medium. While the landscape types are broad and quite extensive, they comprise relatively small scale manmade and natural features. Medium/ High
Landform	Landscape is overall relatively flat but with drumlins of varying size and frequency. Medium/ High
Pattern	Small scale pattern of enclosed pastures, in places regular and geometric, elsewhere more irregular, in response the underlying landform. Medium/ High
Development	A number of significant settlements, in particular Irvinestown, Omagh and Drome. Some transmission lines and quarrying. Medium
Quality	The farming landscape is generally of good quality and managed for productive agriculture, improving to the north, some area of poorer quality in more marginal areas. Medium/ High
Elements and Features	Drumlins the principle natural feature. Small fields divided by well wooded hedgerows. Medium
Context	Lowland farming agricultural landscapes lying between more elevated sandstone plateau, setting to main settlements. Medium
OVERALL RATING	Medium/ High

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	The landscapes are frequently populated with single properties, farms and a number of settlements. Significant road corridors pass through the area. NCN 91 passes through. Medium
Internal Visibility	Variable, in places quite extensive views across the broad landscapes, but often curtailed by drumlins and trees/ hedgerows. Low/ Medium
External Visibility	Lowland farmed landscape is attractive when seen from various viewpoints located in adjacent more upland areas, but does not contribute greatly to views. Low/ Medium
OVERALL RATING	Low/ Medium

Landscape Value	Criteria/ Sensitivity Levels
Designations	Some natural heritage designations (SAC and ASSI), but no landscape designations with the exception of the Registered Park at Necarne. Low/ Medium
Community value	Productive working landscape with value to residents and but limited wider community value. Medium
Cultural value	Registered Park at Necarne, various scheduled sites of throughout the landscape. Medium
Perceptual	Robust farming landscape of good integrity and quality. Medium
Rarity	A common landscape character type within the Local Authority area. Low/ Medium
OVERALL RATING	Medium

16 Brougher Mountain/ 44 Slievemore

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Medium to Large. Varying scale from larger scale simple uplands to smaller scale enclosed landscapes of lowland character. Low/ Medium
Landform	Elongated sandstone ridge with numerous rounded hills and some steep valleys, lower slopes of quite complex topography with drumlins. Medium
Pattern	Varies from simple upland of peat moorland to more enclosed pastures in lowland areas, small loughs and forestry blocks. Medium
Development	Sparsely developed with the exception of some medium scale wind energy development and a small wind farm at Ledrum's Bridge. Low/ Medium
Quality	In many locations farmland appears to be of marginal viability and the condition of the farmed landscape is relatively low. New housing developments are of various styles with no strong vernacular. Some scenic value. Low/ Medium
Elements and Features	Topographic features, in particular Topped Mountain and Brougher Mountain, are notable features from lowland locations. Medium
Context	Provides the backdrop to views from more settled lowland landscapes to the south and the north, and also part of the wider setting to the more scenic landscape of Lough Erne. Medium
OVERALL RATING	Medium

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	Visual receptors are typically residents. Cycle route traverses the northern boundary of the LCA. Low/ Medium
Internal Visibility	Some extensive views are available across the farmed lowlands from high points such as Topped Mountain and other elevated locations, elsewhere topography can limit outward views. Medium
External Visibility	Seen as a low ridge of hills from many areas of neighbouring lowlands. Medium
OVERALL RATING	Medium

Landscape Value	Criteria/ Sensitivity Levels
Designations	No landscape designations or other natural heritage designations. Low/ Medium
Community value	No particular community value or interest is noted. Low/ Medium
Cultural value	Some cultural value, including Area of Significant Archaeological Interest (ASAI) at Topped Mountain and various scheduled sites throughout the LCA. Medium
Perceptual	Ridge of low hills of varying quality but with some scenic qualities in areas of more defined upland character. Provides the backdrop to views from more settled lowland landscapes to the south. Medium
Rarity	One of a number of similar upland landscapes within the Local Authority area. Low/ Medium
OVERALL RATING	Low/ Medium

17 Clogher Valley Lowlands

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Small – Medium. General a small-scale landscape of lowland farming, characterised by numerous small rounded drumlins. Medium/ High
Landform	Small rounded drumlins throughout the area. The LCA is low lying, typically not extending above 100m AOD. Medium/ High
Pattern	Complex pattern of enclosed pastures, small woodlands and scrub, loughs with areas of parkland at Colebrooke. Medium/ High
Development	Mostly typical of that associated with small scale lowland agricultural landscapes; small properties and farms, some small settlement. Network of A class and local roads. Relatively little wind energy development consented. Some quarrying. Medium/ High
Quality	Agricultural landscape is generally of good quality and in productive use. Medium/ High
Elements and Features	Small scale features including drumlin landforms, fields enclosed by hedgerows, some estate woodlands. Medium/ High
Context	Lowland farming corridor set between more upland landscapes of Brougher Mountain and Slievemore. Medium
OVERALL RATING	Medium/ High

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	Receptors are mostly residents and users of transport corridors. Medium
Internal Visibility	Variable visibility, some quite wide views from tops of drumlins and topographic features, less so in many areas where views are obscured by landform and trees. Medium
External Visibility	Landscape is visible in panoramic views from Topped Mountain in the neighbouring Brougher Mountain LCA, but generally of low significance to external views in. Low/ Medium
OVERALL RATING	Low/ Medium

Landscape Value	Criteria/ Sensitivity Levels
Designations	No landscape designations, however Registered Parks at Tempo and Colebrooke, some ASSI designations. Medium
Community value	Landscape the setting to various settlements and local communities. Medium
Cultural value	Registered Parks at Tempo and Colebrooke, various sites of cultural heritage interest. Medium
Perceptual	Perceived as a small-scale lowland agricultural landscape with strong unity of character and integrity. Medium/ High
Rarity	One of a number of lowland farming landscapes within the Local Authority area. Low/ Medium
OVERALL RATING	Medium

18 Slieve Beagh

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Medium – Large. Rugged upland character of medium sized hills, but including some smaller scale features. Low/ Medium
Landform	Extensive area of rolling sandstone hills but with quite a complex landform. Medium
Pattern	Landscape is almost entirely coniferous forestry, areas of blanket bog and poor-quality rush infested pasture, some small loughs. Low/ Medium
Development	Mostly forestry, peat cutting plus some telecommunications masts. Network of minor roads and tracks crosses the area. Little wind energy in view. Low/ Medium
Quality	In upland areas farmland is often only marginally viable or derelict. Scenic qualities are generally not high, and afforestation detracts further from scenic value, however parts of the LCAs extend towards the more scenic Upper Lough Erne. Low/ Medium
Elements and Features	Complex topography with landcover of forestry and poor-quality pasture. Medium
Context	Landscape has importance to the backdrop to the more lowland landscape. Medium
OVERALL RATING	Medium

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	With these landscape types there are generally few residents, however some recreational interest e.g. Carnmore Viewpoint, Ulster Way. Views tend to be outward to other landscape types. Medium
Internal Visibility	From elevated locations often extensive, however the varying landform and screening effects of forestry often limits the extent of available views. Low/ Medium
External Visibility	The hills for the backdrop to views from more settled lowland landscapes and important transport routes e.g. A4. Medium/ High
OVERALL RATING	Medium

Landscape Value	Criteria/ Sensitivity Levels
Designations	Largely undesignated, but a large part of the LCA is covered by SPA designation. Low/ Medium
Community value	Other than scattered residents, some value as a recreational resource, setting to Ulster Way, viewpoints. Low/ Medium
Cultural value	Very few culturally designated sites noted within the LCA. Low
Perceptual	Fragmentary land uses mean that the area does not have a strong unified identity. Low/ Medium
Rarity	Sandstone upland landscape not uncommon within the Local Authority area. Low/ Medium
OVERALL RATING	Low/ Medium

21 Fairy Water Valley

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Small. Small scale low lying landscapes enclosed by higher ground towards the south, becoming more open to the north. Medium/ High
Landform	Broad and shallow valley but with undulations and outcrops, creating an irregular landform. Medium/ High
Pattern	Mosaic of enclosed pastures with bogs and marsh, some coniferous plantations. Medium
Development	Mostly small-scale farming and some conifer plantations. The small settlement of Drumquin is located within the LCA. Medium
Quality	Marsh and bog mean that farmland tends to be of marginal viability and poor quality, however there are locally areas of greater quality. Low/ Medium
Elements and Features	Enclosed pastures, marshes, bogs and some coniferous plantations. Some minor topographic features. Low/ Medium
Context	Valley landscape are situated closed to more upland landscapes. Medium
OVERALL RATING	Medium/ High

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	Limited numbers of residential receptors, but includes the settlement of Drumquin. Low/ Medium
Internal Visibility	Some longer views across the valley landscape, but frequent enclosure by low landforms and vegetation. Medium
External Visibility	There are views into the landscape from adjacent higher ground but there are not of particular scenic value/ significance. Low/ Medium
OVERALL RATING	Low/ Medium

Landscape Value	Criteria/ Sensitivity Levels
Designations	No landscape designations, but several natural heritage designations (ASSI/ SAC). Low/ Medium
Community value	Some local value to local community/ residents but wider interest limited. Low/ Medium
Cultural value	Some scheduled heritage sites within the character type, various raths etc. Low/ Medium
Perceptual	Landscape has an enclosed rural character and a sense of remoteness from the wider landscape because of physical enclosure by higher landforms. Medium
Rarity	Landscape is similar to other lowland farming landscape types within the Local Authority area. Low/ Medium
OVERALL RATING	Low/ Medium

23 Camowen Valley

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Small - Medium. Lowland landscape enclosed by larger scale hills of South Sperrin, Carrickmore Hills and Slievemore. Medium
Landform	Valley is broad and shallow but with rounded undulations and outcrops forming a complex landform. Medium/ High
Pattern	Enclosed pastures, bogs and marsh, some coniferous plantations. Complex pattern of drainage. Medium
Development	Mostly small-scale farming and some conifer plantations. Some small settlements. Main A505 passes through the area. Low/ Medium
Quality	Farmland is mostly of poorly drained marginal pasture, including man-made influences, but has some wildness of character. Low/ Medium
Elements and Features	Enclosed pastures, marshes, bogs and some coniferous plantations. Some minor topographic features. Camowen River is the main river, but with various others passing through the landscape Low/ Medium
Context	Shallow valley landscape at the foot of more upland landscapes, part of setting to AONB. Medium
OVERALL RATING	Medium

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	Limited numbers of residential receptors, but includes several small settlements including Drumnakilly. Low/ Medium
Internal Visibility	Views mostly curtailed by topography, but more elevated fringes provide longer views. Medium
External Visibility	Landscape is not of particular importance to inward views. Low/ Medium
OVERALL RATING	Low/ Medium

Landscape Value	Criteria/ Sensitivity Levels
Designations	No landscape designations, but some natural heritage interest with ASSI/ SAC associated at Deroran bog. Low/ Medium
Community value	Little known interest beyond resident population. Low/ Medium
Cultural value	Some scheduled heritage sites within the character type, various raths etc. Low/ Medium
Perceptual	Landscape has a wildness of character, but also man-made influences and areas of poor quality. Low/ Medium
Rarity	Landscape is similar to other lowland farming landscape types within the Local Authority area. Low/ Medium
OVERALL RATING	Low/ Medium

24 South Sperrin

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Medium – Large. Upland landscape of east – west ridges and rounded hills separating steep sided settled valleys, valleys of smaller scale. Low/ Medium
Landform	Simple upland landform of ridges and hills up to approximately 500m AOD, small glens leading to narrow lowland valleys. Medium
Pattern	Simple upland moorland landscape with areas of coniferous forestry to the west, with a more complex lowland pastoral landscape towards the west. Medium
Development	The areas is largely free from development with the exception of small properties and farms in the lowland valleys to the west, including the settlement of Gorton. Low/ Medium
Quality	Generally, an open intact upland landscape, albeit the wildness of the more remote areas has been affected by forestry. Medium
Elements and Features	Major topographic features of ridges, hill tops and valleys dominate. Lesser features of gullies, enclosed pastures, narrow lanes and small farm properties. Low/ Medium
Context	Part of the Sperrins AONB, but less wild than the core of the Sperrins mountains to the north of the Glenelly Valley. Medium
OVERALL RATING	Medium

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	Various recreational receptors, traversed by national and local cycle routes, the Ulster Way. Residents in various scattered farms and small settlements. Medium/ High
Internal Visibility	Varies from quite enclosed views along valleys to extensive views from upland areas. Medium
External Visibility	Ridge tops are visible from the south of the LCA, but valleys are enclosed. The area is important in views from the upland core of the Sperrins to the north. Medium/ High
OVERALL RATING	Medium/ High

Landscape Value	Criteria/ Sensitivity Levels
Designations	AONB, a national level landscape designation, Owenkillew River SAC. High
Community value	Wider community value due to landscape designation, recreational interest. Medium/ High
Cultural value	Beltrim Castle is a Registered Park and Garden. A number of other scheduled cultural heritage sites, standing stones, raths. Medium
Perceptual	Mostly unspoilt landscape of upland ridges and hills, contrasting with more intimate lowland valleys. High scenic qualities. Medium/ High
Rarity	Only landscape of its type within the Local Authority area. One of only 9 AONBs within Northern Ireland. High
OVERALL RATING	High

25 Beaghmore Moors and March

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Medium. Varied landform of rolling ridges, shallow valleys and low hills but also with smaller scale lowland features. Medium
Landform	Landscape is varied and irregular, but features generally have smooth profiles. Medium
Pattern	The landscape is predominantly a lowland landscape of enclosed pastures, hedgerows and peat bog. The area includes blocks of woodland and forestry. Medium
Development	Sparsely settles but with some small settlements, quarries, various road and forestry. Medium
Quality	Farmland is not of high quality and appears at the margins of viability in places. Forestry and quarry also detract from landscape quality. Low/ Medium
Elements and Features	Bog one of the main landscape features. Few other features of note, main element are topographic features and those of the lowland pastoral landscape. Low/ Medium
Context	Landscape forms the setting to the more upland Sperrins immediately to the north. Medium
OVERALL RATING	Medium

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	Few residential receptors, however there is visitor interest at the An Creggan centre and some cycle paths pass through the area. Medium
Internal Visibility	Generally wide visibility across the landscape. Medium/ High
External Visibility	The LCA is visible from neighbouring upland LCAs, although is not of particular scenic importance in views. Medium
OVERALL RATING	Medium

Landscape Value	Criteria/ Sensitivity Levels
Designations	Most of the LCA is within the AONB. SACs at Black Bog and Owenkillew River. High
Community value	Value found at An Creggan and through wider interest as part of AONB, includes recreational routes. Medium/ High
Cultural value	A small number of cultural heritage sites, An Creggan centre highlights cultural heritage interest. Medium/ High
Perceptual	Some wildness of character and scenic value, reflected by the AONB designation. Medium/ High
Rarity	Landscape type is not common within the Local Authority area, and is within AONB. Medium/ High
OVERALL RATING	Medium/ High

26 Bessy Bell and Gortin

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Medium – Large. Landscape is open and generally of large scale, but has small lowland features to its centre. Low/ Medium
Landform	To the east there are mountainous landforms with Mullaghcarn forming the high point at 542m, to the west there is the more rounded and smaller Bessy Bell, with lowland landscapes in the Strule river valley running between. Medium
Pattern	Simple uplands of the hills and mountains, with extensive forestry at Gortin Glen Forest Park, contrasting with the more complex lowland landscape of the river valley. Medium
Development	Small settlement in the lowlands, large scale forestry. Bessy Bell wind farm is a prominent feature. Medium
Quality	Simple upland landscapes, albeit in parts affected by wind energy and forestry. Lowland farming landscape appear of good quality. Medium/ High
Elements and Features	Forested uplands, moorland hills and the pastoral river valley lowlands are the main features of this landscape. Medium
Context	Landscape forms the immediate setting to the Sperrins AONB. Medium/ High
OVERALL RATING	Medium

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	The area is popular for recreation, with cycle paths, the Ulster Way and Gortin Glen Forest Park. Medium/ High
Internal Visibility	Extensive views across the character area from upland locations from a number of recognised viewpoints, hill tops visible from the lowlands. Medium/ High
External Visibility	Bessy Bell and other hills are landmark features as Sperrins foothills. Medium/ High
OVERALL RATING	Medium/ High

Landscape Value	Criteria/ Sensitivity Levels
Designations	Mostly within the Sperrins AONB. High
Community value	Various communities with interest in the landscape – walkers, visitors, cyclists – as well as resident population. Medium/ High
Cultural value	Various scheduled sites are located throughout the character area. Medium
Perceptual	Landscape is perceived as part of the wider Sperrins upland landscape and an important 'gateway' to the Sperrins from the south, and has high scenic qualities with attractive views across the Strule Valley. Medium/ High
Rarity	Upland landscape is important in the context of the wider Local Authority landscape, designated as AONB. Medium/ High
OVERALL RATING	High

43 Carrickmore Hills

Landscape Character Sensitivity	Criteria /Sensitivity Levels
Scale	Medium. Landscape is at the upland fringes, but includes various smaller scale features of enclosed pastures, small loughs. Medium
Landform	Variable landform of low hills and more rolling lowland landscapes, but craggy crops and other landform features. Medium/ High
Pattern	Varies from the simple upland slopes to a more complex lowland landscape of enclosed pastures, peatland loughs and small-scale forestry. Medium
Development	Some quarrying, a relatively high level of wind energy development consented up to 120m, otherwise mostly development typical of lowland farming landscapes. Medium
Quality	Open landscape with an upland character that is largely intact. Medium
Elements and Features	Few distinctive features other than some complex landform features. Low/ Medium
Context	Forms the immediate setting to and the foothills of the Sperrins AONB. Medium/ High
OVERALL RATING	Medium/ High

Visual Sensitivity	Criteria/ Sensitivity Levels
Receptors	Some residential receptors, a local cycle route passes through the area. Low/ Medium
Internal Visibility	Some long views available across the relatively open landscape. Medium
External Visibility	Inward views not of particular significance, some available from within the AONB. Medium
OVERALL RATING	Medium

Landscape Value	Criteria/ Sensitivity Levels
Designations	Western part designated as AONB, includes Murrins Nature Reserve and ASSI. Medium/ High
Community value	No signs of particular community value other than as setting to resident's homes and communities. Low/ Medium
Cultural value	Various cultural heritage sites are located within the area such as tombs and stone circles at Cregganconroe. Medium
Perceptual	Some areas of higher scenic quality around the Murrins, within the AONB, other areas of less scenic value. Medium
Rarity	One of a number of smaller scale upland landscapes within the Local Authority area, but partly within the AONB. Medium
OVERALL RATING	Medium

APPENDIX 5: VIEWPOINT LIST

Viewpoints used for the capacity assessment are listed below, and have been selected because they are 1) recognised viewpoints for example as identified on OSNI 1: 50,000 mapping; 2) other locations where views to the landscape are likely to be of importance e.g. picnic sites, sites of visitor interest, settlement; and 3) other locations where landscape character can be observed. Viewpoint locations are shown on Figure 4.1a.

LCA	LCA	VP	Name	Reason for Inclusion	VP Coordinates (Irish National Grid)	
					Easting	Northing
Garison Lowlands	1	1	Mullanacross	General views across LCA from more elevated location	197662	352175
Garison Lowlands	1	2	Ross Point	View across Lough Melvin into LCA	192993	350065
Garison Lowlands	1	3	Sheenun	View across Lough Melvin into LCA	190640	350975
Lower Lough Erne	2	1	Lough Navar Forest VP/ Magho Cliffs	Views north across Lower Lough Erne, across to LCA3.	206222	357669
Lower Lough Erne	2	2	Boa Island	Views south across Lower Lough Erne	211639	363331
Lower Lough Erne	2	3	Kesh Marina	Views west across Lower Lough Erne	216345	364172
Lower Lough Erne	2	4	Rossharbour Bay	Views south across Lough Erne, towards Lough Navar Forest	203724	361977
Lough Navar and Ballintempo Uplands	4	1	Lough Navar Forest	Viewpoint within Forest/ Geopark	206905	356387
Lough Navar and Ballintempo Uplands	4	2	Lough Formal	View across forest/ geopark from high point	204423	347464
Lough Navar and Ballintempo Uplands	4	3	Correl Glen	View within LCA from recognised VP	207541	354702
The Lough Macnean Valley	5	1	E of Belcoo	View across Lough Macnean Lower	209474	338597
The Lough Macnean Valley	5	2	NCN91 W of Belcoo	Views north from within landscape area along recreational route	203736	342611
The Lough Macnean Valley	5	3	NCN91 W of Belcoo	View SE across Belcoo	206747	340385
The Lough Macnean Valley	5	4	Belcoo	View from the settlement east across Lower Lough Macnean	208559	338460
The Knockmore Scarpland	6	1	Belmore Mountain	View from high point to south of the LCA, within geopark, final location depending on access	213168	342177
The Knockmore Scarpland	6	2	Aghameelan Viewpoint	VP south east into the LCA	207969	355629
The Sillees Valley	7	1	Monea Castle	Views south west from the castle across the LCA.	216450	349346
Cuircagh and Marlbank	9	1	Goralughany Viewpoint	General views across the LCA from VP OSNI VP	216785	330008
Cuircagh and Marlbank	9	2	Marlbank Picnic Site	View north across Lough Macnean.	209267	336285
Cuircagh and Marlbank	9	3	Cuircagh Mountain Park Car Park	View from lower slopes of Cuircagh summit path	212035	333480
Slieve Russel, Derrylin and Kinawley	10	1	Edenmore VP Car Park	Views north across LCA from recognised VP.	224813	325683
Upper Lough Erne	11	1	Knockinny Hill	View from high point within LCA across Upper Lough Erne.	227303	330190
Upper Lough Erne	11	2	Lady Craigavon Bridge	General views from within Upper Lough Erne, near car park, picnic spot.	233088	327963
Upper Lough Erne	11	3	Castle Balfour, Lisnaskea	View from settlement, historic site, across Upper Lough Erne	235994	333757
Enniskillen	13	1	Devenish Island Ferry Car Park	View close to Devenish Island across Lower Lough Erne	222579	348001
Enniskillen	13	2	Blaney Viewpoint	View across Lower Lough Erne from a recognised viewpoint.	217386	352005
Enniskillen	13	3	Nr Castle Archdale Country Park	Views to Castle Archdale CP, White Island and across Lower Lough Erne	217506	360796
Lough Braden	14	1	Pigeon Top Viewpoint	Views north/ east to neighbouring Omagh Farmland (LCA 22)	237088	371099

LCA	LCA	VP	Name	Reason for Inclusion	VP Coordinates (Irish National Grid)	
					Easting	Northing
Lough Braden	14	2	Giant's Ring	VP from site of tourism/ heritage interest within LCA	220150	370811
Irvinestown Farmland	15	1	Necane Castle	Possible general views from a designated Garden	223404	357081
Brougher Mountain	16	1	Nr Brougher Mountain	Views north from high point across the LCA	236893	353721
Brougher Mountain	16	2	Topped Mountain	Recognised hill top viewpoint, views across southern parts of LCA	231081	345744
Brougher Mountain	16	3	Gargrim Rd	View west across the Omagh Farmland	246634	360778
Clogher Valley Lowlands	17	1	S of Fivemiletown	Point on minor road views north across the LCA.	245285	345605
Slieve Beagh	18	1	Cairnmore Viewpoint (Doocarn)	Recognised viewpoint, views east across LCA and to LCA12	248072	336233
Slieve Beagh	18	2	S of Fivemiletown	Point on minor road views south across the LCA.	245677	345093
Fairy Water Valley	21	1	N of Drumquin	General views from point on 'South Sperrins' Scenic Route	232841	374976
Fairy Water Valley	21	2	Sloughan Glen	Views close to scenic location, views east across the LCA	227820	374335
South Sperrin	24	1	Nr Barnes Gap	Views into LCA from local cycle route/ road	254879	388837
Beaghmore Moors and Marsh	25	1	Formil	General view across LCA from elevated part of road.	262318	382130
Bessy Bell and Gortin	26	1	Gortin Glen Forest Park	Recognised VP, within AONB	248977	380613
Bessy Bell and Gortin	26	2	New Lough VP	Recognised VP, within AONB, towards LCA24	250710	384085
Bessy Bell and Gortin	26	3	Bessy Bell ASQ	View towards the Omagh Farmland/ lowlands from high point on road.	238449	380061
Bessy Bell and Gortin	26	4	N of Omagh	Views south across Omagh Farmland and Camowen Valley	247732	376169
Carrickmore Hills	43	1	Coolaharan Road	General view from road network in elevated part	258531	377551
Slievemore	44	1	Slievedivena	General view from elevated part of LCA	258995	362393
Slievemore	44	2	Attymanus	General view from elevated part of LCA	263908	369315

