



# *The Full Picture: The Need to Assess the Cumulative Landscape Effects of Renewable Energy Projects*

As global demand for renewable energy continues to grow in response to the climate emergency and government commitments to renewable energy targets, pressure on landscapes to accommodate windfarm development has increased.

Like Aotearoa New Zealand, Scotland is renowned for its high-quality landscapes and scenery. Both countries host a variety of landscapes, from remote coastal seascapes, lowland plains, expansive hill country and wild mountainous and alpine regions through to settled valleys and urban environments. These landscapes have differing sensitivities to wind energy development and varied potential to accommodate multiple windfarms without adverse effects on their character.

In Scotland, the assessment of cumulative landscape and visual effects is an essential part of understanding the overall effect of developments on this critical national resource. In New Zealand, there is an increasingly urgent need for cumulative effects assessments to be prepared both at the strategic planning level, to guide the siting of wind energy development to appropriate areas, and at proposal level to understand the impact of such developments.

Cumulative effects assessments can be complex and require consideration across a wide range of environmental subjects. The following article focuses specifically on the application in landscape and visual effects assessment for onshore wind energy development, based on the author's experience in both Scotland and New Zealand. It reflects on the Scottish approach and considers how aspects or learnings could be applied to the Aotearoa New Zealand context.

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## THE SCOTTISH APPROACH

The renewable energy sector in Scotland is well-established and continues to mature. Onshore wind energy development has increased rapidly over the last 15 years, and windfarms are now a familiar sight across parts of the country. As of April 2024, there were 330 operational onshore windfarms in Scotland, comprising a total of 4066 turbines. A further 139 sites (1581 turbines) were consented or under construction, and the consent applications of 128 sites (1274 turbines) were being determined through the planning system (<[www.gov.uk/government/publications/renewable-energy-planning-database-monthly-extract](http://www.gov.uk/government/publications/renewable-energy-planning-database-monthly-extract)>). There is a current installed generation capacity of 9,593MW (<[www.scottishrenewables.com/our-industry/statistics](http://www.scottishrenewables.com/our-industry/statistics)>). Today, onshore wind turbines have heights in the realm of up to 230m to blade tip. By comparison, in 2011 there were 80 operational windfarms with turbines of up to 150m maximum tip (Scottish Government *Onshore Wind Turbines: Planning Advice* (14 February 2011, last updated 28 May 2014) <[www.gov.scot/publications/onshore-wind-](http://www.gov.scot/publications/onshore-wind-)

turbines-planning-advice/).

These numbers represent an industry which has grown exponentially to meet ambitious renewable energy targets. They also reflect a landscape which is, in some places, characterised by wind turbines; demonstrating why the assessment of cumulative landscape and visual effects is important to ensure the sustainable use of the landscape particularly as new sites are proposed, and older sites are repowered.

Scotland's National Planning Framework 4 (NPF4) (Scottish Government *National Planning Framework 4* (adopted February 2023) <[www.gov.scot/publications/national-planning-framework-4/](http://www.gov.scot/publications/national-planning-framework-4/)) sets out the Scottish Government's long term spatial principles, regional priorities, national developments, and national planning policy. The policy requires local authorities to encourage, promote and facilitate all forms of renewable energy development onshore and offshore, to "seek to realise their area's full potential for electricity and heat from renewable and low carbon and zero emission sources" (at 53). NPF4 also sets out what impacts should be addressed when determining an application for renewable energy. One of these is cumulative impacts, which are defined in the document (at 147) as:

*"... an impact in combination with other development. That includes existing developments of the kind proposed, those which have permission, and valid applications which have not been determined. The weight attached to undetermined applications should reflect their position in the application process"* .

Understanding what is reasonably foreseeable is a well-established aspect of the Scottish planning system which enables consideration of both the established and emerging pattern of development. This allows for consideration of how a proposed development fits into this context (albeit as a worst-case scenario, given the likelihood that some pending applications will not be progressed or consented). This degree of transparency is partially achieved by the publication of all planning applications on local authority and government websites. Additionally, developers operate with a certain degree of cooperation which contributes to this transparency. The net result is a more complete picture of the current and potential future environment, a more accurate assessment of cumulative

effects, and an understanding of the implications for the landscape and visual resource of the country and its regions.

There is an expectation amongst statutory agencies and landscape professionals that Cumulative Landscape and Visual Impact Assessments (CLVIA) are required where there are other operational, consented, or proposed developments of a same or similar nature within proximity to a proposed development. The assessment follows guidance published by NatureScot, the Scottish Government's adviser on natural heritage matters, on the preparation of CLVIA for onshore wind energy developments (NatureScot "Assessing the cumulative landscape and visual impact of onshore wind energy developments" (2021) <[www.nature.scot/](http://www.nature.scot/)>). A CLVIA "needs to identify the overall impacts which may arise from a group of projects and distinguish the contribution of each individual project to these" (at 2). All wind energy developments that are operational, consented and in planning within 60km of the proposed development are required to be identified and mapped for consideration in the CLVIA. A more refined study area is then defined, based on those developments which are likely to result in significant cumulative effects. Illustrative material such as visibility maps, viewpoint photography and simulations are produced to indicate how the proposed development relates to the other development. From here, the detailed CLVIA is prepared.

The CLVIA investigates two types of effects:

- In-combination effects: where a proposed development is considered in combination with other cumulative developments to establish the overall effect of such developments on the landscape and visual resource of an area; and
- In-addition effects: where the assessment is concerned with the additional effects of a proposed development (over and above those attributed to other developments), to establish the extent to which the proposed development would increase the influence of such development on the landscape resource.

The intended outcome is to provide a detailed understanding of how the cumulative impact of multiple wind energy developments could affect landscape character and/or visual amenity. So, while there is a clear national government directive to promote and encourage the development of renewable energy, windfarm applications

are being refused where cumulative landscape effects are cited as one of the main determining factors. This indicates that the CLVIA is a key consideration in the decision-making process, and in achieving long-term sustainability of landscape character.

Given the number of windfarm developments to be considered, CLVIA can be long and complex. However, there has been a move to simplify this process. The Scottish Onshore Wind Sector Deal sets out the government's commitment to work with developers and stakeholders in reducing consenting barriers for onshore windfarms (<[www.gov.scot/publications/onshore-wind-sector-deal-scotland/](http://www.gov.scot/publications/onshore-wind-sector-deal-scotland/)>). One intention is to reduce the scope of environmental effects assessments, focusing on the identification of potentially significant effects, rather than preparing volumes of material reporting on non-significant effects. The result for CLVIA will see a more focused study concentrating on those developments where significant effects are likely to occur. Where previously CLVIA focused on developments of a similar or same nature (assessing windfarms in combination with other windfarms), this is also evolving to also take account of other large-scale infrastructure that supports wind energy development, such as transmission infrastructure. This is a new initiative which will remain in flux but indicates that the preference is for proportionate, targeted assessments focusing on key issues.

### THE NEW ZEALAND APPROACH

Currently, New Zealand's wind energy development is less complex. The New Zealand Wind Energy Association states "New Zealand has 21 operational onshore wind farms with 653 turbines and a total installed generation capacity of 1,263MW" (<[www.windenergy.org.nz](http://www.windenergy.org.nz)>). But there is an accepted appetite to increase these figures and, given the growing climate crisis and focus by the current Government on enabling renewable energy generation, these numbers will and should increase. As this happens, there must be ongoing cognisance of how the totality of this potential development can cause wholesale change to our landscapes.

In New Zealand, there is no singular definition of what should be considered within a CLVIA. Section 3 of the Resource Management Act 1991 refers to cumulative effects as "(d) any cumulative effect which arises over time or in combination with other effects". The term is not

defined further in the Act.

Te Tangi a Te Manu: Aotearoa New Zealand Landscape Assessment Guidelines defines cumulative assessment as "the effects of a proposal in combination with those of previous developments" ("Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines" Tuia Pito Ora New Zealand Institute of Landscape Architects (July 2022) at 153 (<[nzila.co.nz/news/2022/08/te-tangi-a-te-manu-a-taonga-for-assessing-aotearoa](http://nzila.co.nz/news/2022/08/te-tangi-a-te-manu-a-taonga-for-assessing-aotearoa)>)). It notes that cumulative effects should be considered carefully as in one sense, all effects are cumulative. The guidance states that cumulative effects "come into play in circumstances where an additional effect takes a landscape beyond a 'tipping point', which would normally require a benchmark against which the effects are to be measured". Benchmarks are described as "the character as envisaged by the district plan or the 'capacity' of a landscape to accommodate development before compromising its landscape values" (at 154).

Currently, considerations made when determining cumulative effects (not limited to CLVIA) and which have been endorsed through case law, include: effects arising from consents that have been granted but not yet implemented, activities that are currently occurring in the surrounding area; the permitted baseline; actual and potential effects arising from the proposed development; and the reasonably foreseeable potential effects of other matters such as climate change. While there is a common thread between these, and other, definitions of cumulative effects which are intended to guide the preparation of assessments, there remains an ambiguity in the scope and meaning of cumulative effects and thus an inconsistency in approach.

### SO, WHAT NEXT?

Given the projected growth of the wind energy sector required to meet New Zealand's 2050 targets, it is recognised that landscape change will occur. This is not automatically negative and should not be avoided as a wholesale measure. Some landscapes will absorb change, and others will need more rigorous protection. Direction is needed to indicate where landscape change may be accepted, and where it will not. Effective CLVIA can influence this direction.

If CLVIA is to become fundamental in assessments of environmental effects, it is important that a clear definition, methodology and criteria are developed to promote a consistent approach. This will ensure all assessors have a common understanding of what is to be assessed, and how. The current scope changes to the Scottish approach show us that assessments must be focused and proportionate to the scale of the proposed development. Windfarm CLVIA will have a greater study area than a solar farm, but the approach to the assessment should follow the same principles, tailored to reflect the qualities of the landscape within which they are proposed.

The inclusion of undetermined applications within the planning system is an effective aspect of the Scottish approach to CLVIA and enables a holistic assessment.

It provides a clear picture of the emerging pattern of development within a landscape which promotes recognition of when the tipping point is approaching, rather than only identifying the limit once it's reached. The New Zealand planning system does not allow for this transparency, which prevents the preparation of comparable assessments. However, mechanisms such as national spatial plans can be prepared to guide development to appropriate locations, identifying areas that have capacity for multiple windfarms, and areas which need protection. Recognizing the relative sensitivity of landscapes to wind energy development, and their capacity for change, can inform these spatial plans, and thus assist in meeting our net zero targets while ensuring the sustainable use of our landscapes.

