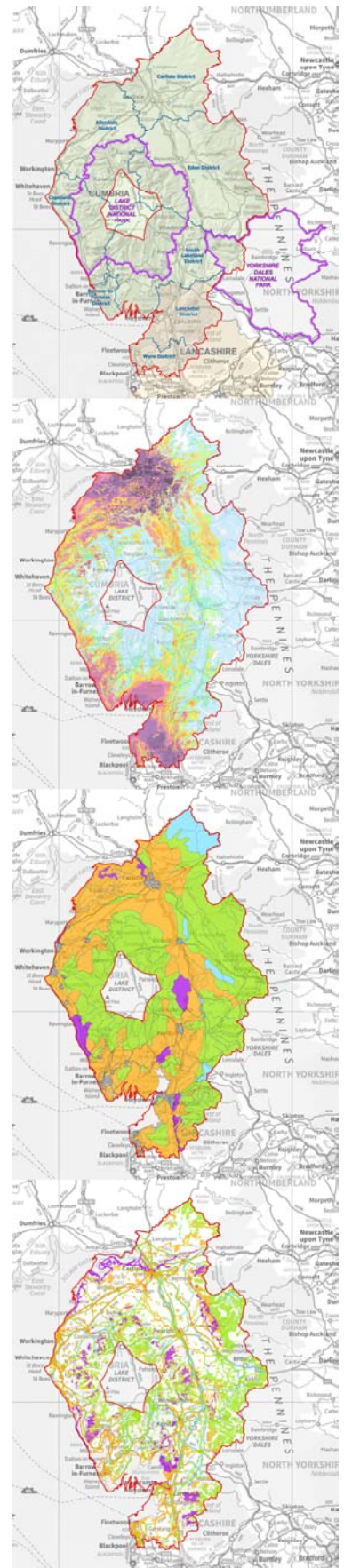


Cumbria County Council Cumulative Impacts of Vertical Infrastructure: Part 1 Key Findings & Guidance

WYG/A072895-1/October 2014





Document Control

Document:	Draft Introduction to Guidance	
Project:	Cumulative Impacts of Vertical Infrastructure	
Client:	Cumbria County Council	
Job Number:	A072895-1	
File Origin:	W:\A072000-A072999\A072895-1 - Cumbria CC Landscape\A072895-1 CIVI\A072895-1 CIVI Reports\A072895-1 CIVI Guidance FINAL with pics 2014_10_28.docx	
Revisions		
Revision:	V3	
Date:	28 October 2014	
Prepared by	Checked by	Approved By
M. O'Connor CMLI, Catherine Johns RTPI, Tim Phillips	Emily Jones CMLI	M. O'Connor CMLI
Description of Revision	General revision, response to comments on Draft Final, illustrations inserted	

Cumulative Impacts of Vertical Infrastructure

Part 1: Key Findings & Guidance

WYG

5th Floor Longcross Court
47 Newport Road
Cardiff CF24 0AD
E: planning.cardiff@wyg.com
www.wyg.com

This report has been prepared by WYG for **Cumbria County Council** and their partners.

All photographs copyright Cumbria County Council; all other images copyright WYG, except as indicated.

Ordnance Survey data reproduced by permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office. © Crown copyright and dataset right 2014. All rights reserved. WYG Environment Planning Transport Limited 2014. License no.: AR 1000 17603.

© WYG Environment Planning Transport Limited Registered in England No. 3050297. October 2014

Document navigation



Part 1 – Key Findings & Guidance

Part 2 – The Assessment

Appendix 1 - GIS Technical Report

Appendix 2 - Book of Maps

Appendix 3 - Ground Truthing

Appendix 4 - Landscape Character Assessment Tables

Contents

1.	Overview and Key Findings of the Assessment of the Cumulative Effects of Vertical Infrastructure (CIVI)	1
1.1	Introduction and Background	1
1.2	What is the purpose of the CIVI Study?	1
1.3	How the assessment was carried out	2
	The assessment process	5
1.4	Overview of the assessment	6
	Sensitivity of the landscape	6
	Sensitivity of visual receptors	8
1.5	The Developments Considered	10
1.6	Cumulative Landscape Effects	10
	Magnitude of Landscape Change	10
	Significance of Cumulative Landscape Effect	12
1.7	Cumulative Visual Effects	13
	Magnitude of Visual Change	13
	Significance of Cumulative Visual Effects	14
1.8	Schemes in the Planning process and the change through time	14
	Main findings	15
1.9	Guidance	16
2.	Introduction to the Guidance	17
2.1	What is the purpose of this Guidance?	17
2.2	Who should use this Guidance and the accompanying Study?	17
2.3	What is the status of this Guidance?	17
3.	Planning Policy Context	18
3.1	How does the Study and this Guidance relate to national and local planning policy documents and guidance?	18
	National Planning Policy Framework	18
	National Planning Practice Guidance	19
	Commentary	21
3.2	Local Planning Policy	21
	Other Relevant Guidance	24
4.	Application of the Study and Guidance	25
4.1	How can the Study be used?	25
	1. Establish the location of the proposed development and the scale of its vertical components.	25
	2. Initial appraisal; establish the significance of existing cumulative landscape effects and cumulative visual effects in the locality of the proposed development	25
	3. Identify the landscape and visual receptors relevant to the development proposal and their sensitivity	2
	4. Understand the magnitude of cumulative landscape change and cumulative visual change in the locality where the development is proposed	5
	5. Establish the significance of existing cumulative landscape effects and cumulative visual effects in the locality where the development is proposed	5

Cumulative Impacts of Vertical Infrastructure

Part 1: Key Findings & Guidance

6. Justify Judgements Utilising the Study Methodology	6
4.2 When can the Study and Guidance be used?	8
Pre-application discussions	9
During the determination of planning applications	9
At appeals and inquiries	9
Local Plan preparation.....	10
Nationally Significant Infrastructure Projects	10
4.3 Conclusion	10

Tables

Table 4.1 ZTV Distances for Various Heights of Vertical Elements	1
Table 4.2 Matrix for assessing Visual Sensitivity	4
Table 4-1 Matrix for assessing Significance of landscape effects	6
Table 4-2 Matrix for assessment of Significance of visual effects	6

Illustrations

1-1 Wharrels Hill wind turbines seen from A595 near Bothel	2
1-2 Study area for the assessment and buffers around the study area	3
1-3 Relative heights and scales of vertical infrastructure.....	4
1-4 Examples of landscape types in the study area	6
1-6 Landscape sensitivity to different scales of vertical infrastructure.....	7
1-5 Landscape designations and Landscape Category.....	7
1-7 View from Hadrian's Wall footpath, north-east of Brampton	8
1-8 Locations where people enjoy views of the landscape –"visual receptors" – and visual sensitivity	9
1-9 Magnitude of cumulative landscape change	12
1-10 Examples of vertical infrastructure elements	14
1-11 Changing distribution of vertical infrastructure through time.....	15
4-1 Overall significance of cumulative landscape effects of vertical infrastructure.....	1
4-3 Comparative Significance of cumulative landscape effects.....	5

1. Overview and Key Findings of the Assessment of the Cumulative Effects of Vertical Infrastructure (CIVI)

1.1 Introduction and Background

- 1.1.1 Cumbria and North Lancashire is an area of diverse and, frequently, high quality landscape. The conservation of this landscape is key for its environmental and amenity value, and for the economic benefits it brings.
- 1.1.2 This area is subject to increasing pressure to accommodate energy and communications related infrastructure – most notably wind turbines and the National Grid North West Coast Connections (NWCC) project. This development can by its nature result in significant impacts upon landscape character and visual amenity, both individually and cumulatively.
- 1.1.3 The National Planning Policy Framework, and associated National Planning Policy Guidance, is generally supportive of sustainable development. The need to conserve and enhance the landscape and to address potential issues of cumulative impact, in order that appropriate sites for development can be identified, is also emphasised in the guidance. That requires a robust local evidence base and policies, which will allow for appropriate weight to be given to issues of landscape character and visual amenity and ensure the appropriate siting of such developments.

1.2 What is the purpose of the CIVI Study?

- 1.2.1 In 2013, WYG were commissioned by Cumbria County Council, with their partners Lancashire County Council, the Lake District National Park Authority, Carlisle City Council and Allerdale Borough Council, to undertake a piece of work which would build upon existing local landscape character guidance, following industry standard best practice approaches, specifically to consider the cumulative impact of vertical infrastructure upon the landscape character and visual amenity in Cumbria and North Lancashire.
- 1.2.2 The Cumbria Wind Energy Supplementary Planning Document¹ (CWESPD) helps to inform decisions on the ability of the Cumbria landscapes to accommodate wind energy development, based upon consideration of landscape character, sensitivity and value. This study addresses the cumulative effect of “vertical infrastructure” on the landscape character and visual amenity of Cumbria and adjacent areas of Lancashire arising from the growth in such structures to date and anticipated further growth into the future. The vertical infrastructure considered in this study is

¹ Cumbria County Council (2007) (addendum January and October 2008) Cumbria Wind Energy Supplementary Planning Document

Cumulative Impacts of Vertical Infrastructure

Part 1: Key Findings & Guidance

energy and communications development characterised by vertical elements: principally wind turbines, communications masts, and pylons carrying power lines.



1-1 Wharrels Hill wind turbines seen from A595 near Bothel

- 1.2.3 The study considers the sensitivity of the landscape within the study area and the sensitivity of the people who use that landscape to changes arising from vertical infrastructure developments, and how the existing and approved schemes affect the character of the landscape and the views experienced by people who use it.
- 1.2.4 The Part 2 of the Study, The Assessment, provides the technical information related to the assessment of the cumulative effects of the vertical infrastructure under consideration: the methodology used and the results of the analyses. Further information about the GIS and the analyses and techniques used may be found in Appendix 1 Technical Report. These reports are supplemented by Appendix 2 Book of Maps, Appendix 3 Ground Truthing, and Appendix 4 Landscape Character Assessment Tables.
- 1.2.5 This Key Findings and Guidance report provides an overview and summary of the assessment and its findings and guidance on using the assessment and applying it in practice, when proposals for developments with vertical elements are being considered.

1.3 How the assessment was carried out

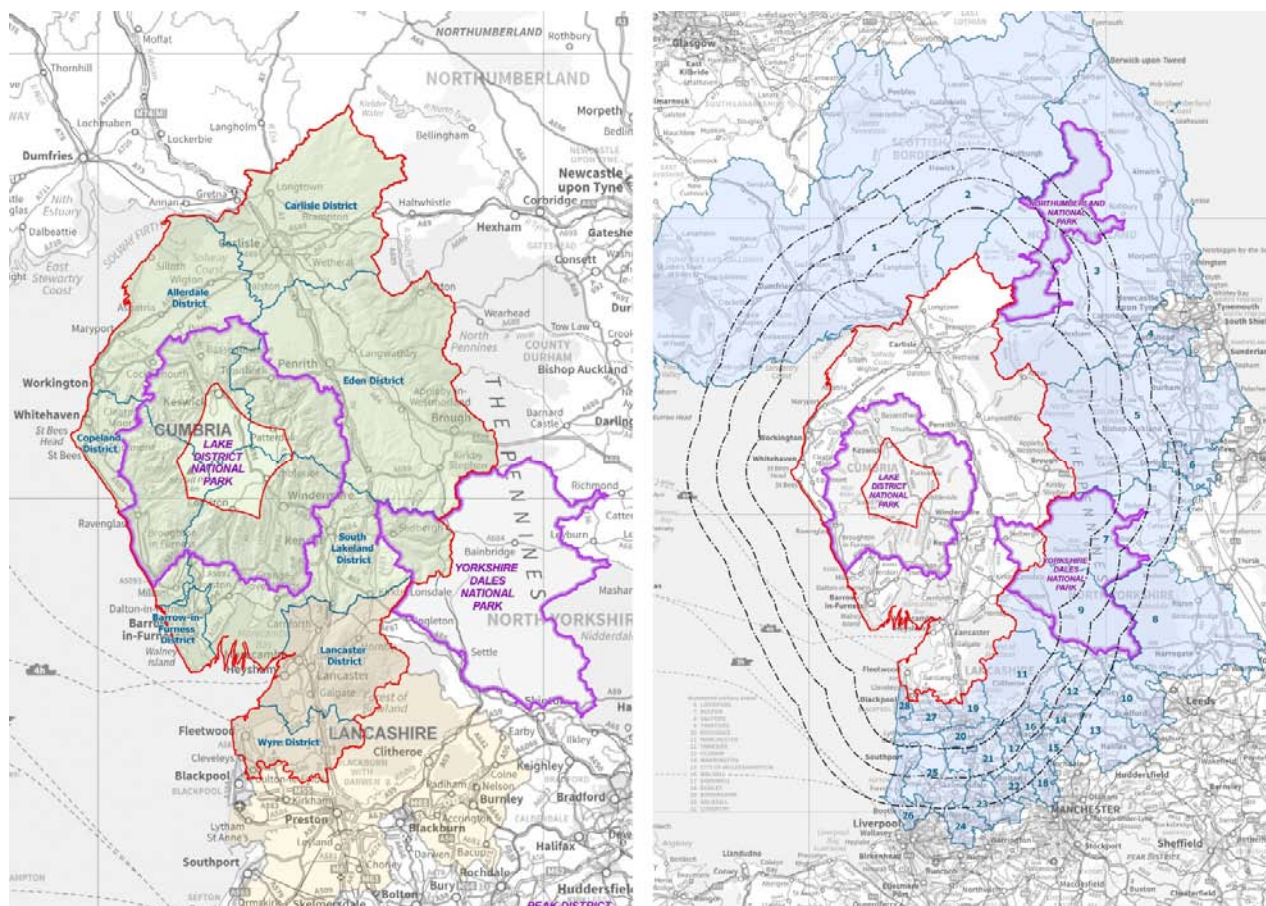
- 1.3.1 A **methodology** for the assessment was developed that was rooted in existing guidance, such as GLVIA3² and SNH guidance in relation to wind farms³ and, wherever possible, the criteria and terms used are those in accepted usage. Separate assessments were carried out for landscape

² Landscape Institute and Institute of Environmental Management & Assessment, Guidelines for Landscape & Visual Impact Assessment 3rd Edition, Routledge, 2013

³ Scottish Natural Heritage (SNH), Visual Representation of Windfarms Good Practice Guidance, 2006

effects and effects on visual amenity and the views available to people in settlements or using the landscape for recreation and enjoyment.

- 1.3.2 The **study area** for the assessment includes the county of Cumbria and the adjacent districts of Wyre and Lancaster. A buffer extending into the Lake District National Park (LDNP) and Yorkshire Dales National Park (YDNP) has been included to allow the outlying fells to be covered within the study. Buffers have been extended beyond the study area to allow for consideration of structures present outside the study area which may influence areas within it or be visible from within it.



1-2 Study area for the assessment and buffers around the study area

- 1.3.3 The assessment deals with landscape and visual “**receptors**”:

- The landscape receptors within this study are based on landscape types and sub-types and character areas identified within various character assessments currently available for the study area. Because of the varying definitions in these documents, they have been termed “landscape areas” in this study.

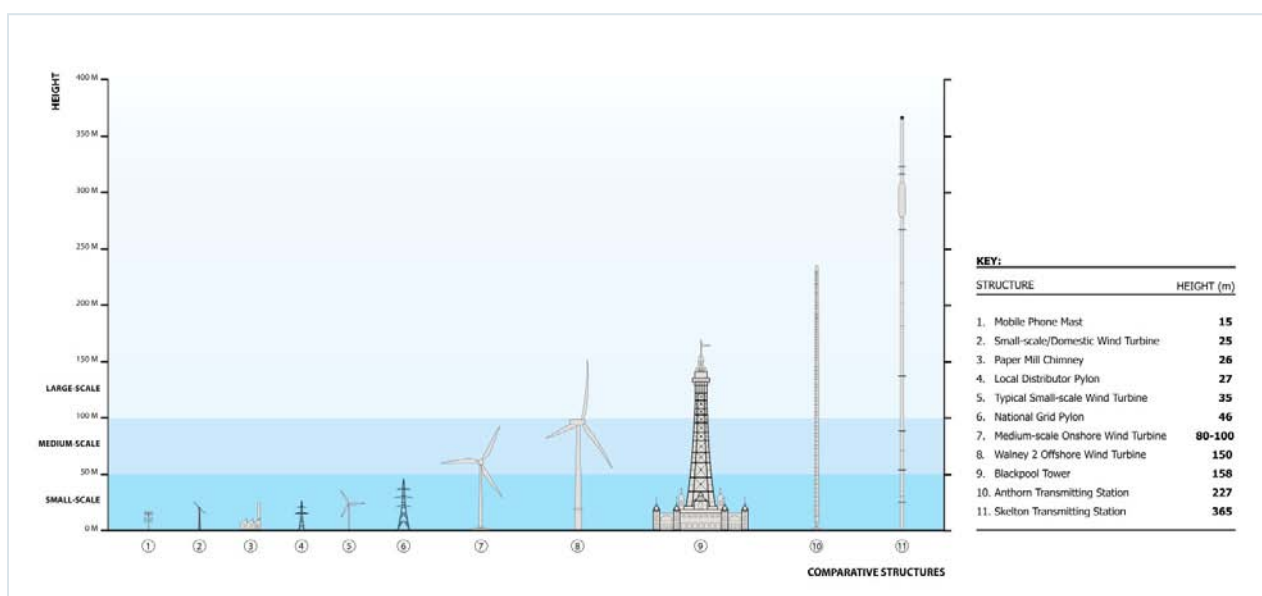
Cumulative Impacts of Vertical Infrastructure

Part 1: Key Findings & Guidance

- The visual receptors considered are people in settlements and homes; people using publicly accessible land; and people using the road, rail, cycle and strategic footpath network⁴.

1.3.4 The assessment focuses on existing vertical infrastructure and proposed schemes with planning permission or development consent. Proposals coming forward within the planning system are not assessed because of uncertainty about whether they may be implemented, but they have been described and mapped. Only **vertical structures** of the following types over 15m in height⁵, have been considered:

- Single and multiple land and sea based Wind turbines;
- Transmission Towers – National and Local Distributors pylons; and
- Mobile phone, radio and television transmitters, or other communications masts
- On shore and off shore wind turbines;



1-3 Relative heights and scales of vertical infrastructure

1.3.5 The vertical infrastructure was classified by relative height as follows:

- Small-scale – up to 50m high
- Medium-scale – 51-100m high
- Large-scale – over 100m high.

⁴ CROW Access Land is included but not land accessible to the public under local agreements; the general public rights of way network has not been included, due to the strategic scale of the study.

⁵ Buildings such as generator halls, substations contained within buildings, etc., are not included.

- 1.3.6 The **data** for the study have been collated in **GIS**⁶. For each element of vertical infrastructure and a **zone of theoretical visibility (ZTV)** was produced to illustrate the theoretical visibility of that vertical element over the surrounding area. The extents of the ZTVs have been produced as appropriate to the various heights of structure, to take into account the likely distances over which the infrastructure of different scales may be visible.

The assessment process

- 1.3.7 The data have been analysed to judge the degree of significance of the combined effects of those developments on the landscape and visual receptors. This has been done by looking at the **sensitivity** of the landscape and visual receptors against the **magnitude of change** caused by the developments, to judge the **significance** of effect.
- 1.3.8 In order to judge the **sensitivity of the landscape areas**, two factors have been taken into consideration:
- **Susceptibility** to large-scale, medium-scale and small-scale vertical infrastructure developments, determined from an analysis of available landscape character assessment (LCA) studies;
 - **Categorisation** of the landscape areas by taking into consideration various designations and other values associate with the landscape area.
- 1.3.9 The **magnitude of change on the landscape** has been determined by assessing both direct and indirect changes. Direct change occurs where the vertical infrastructure is present in the landscape area and indirect change where the structure may not be present, but is visible from or may influence the landscape character beyond the area where it is located. These are combined to produce an overall magnitude of change on the landscape area due to the vertical infrastructure.
- 1.3.10 Final conclusions about the **significance of effect on the landscape** have then been determined by relating the sensitivity of the landscape area and the magnitude of change due to the various scales of vertical infrastructure.
- 1.3.11 Judging the **sensitivity of the visual receptors** has been addressed in a similar manner to landscape sensitivity, by considering:
- The **susceptibility** of the visual receptors has been determined based on how people use specific spaces and the degree to which the view of the landscape is important to them.
 - **Visual category**, based on the landscape category assigned to the landscape area.
- 1.3.12 The **magnitude of change** has been judged based on the visibility of vertical structures to the receptor and graded as few, some and many. By relating the sensitivity of the visual receptor and

⁶ “Geographic Information System”, a computer-based system that brings together hardware, software and data; for capturing, managing, analysing, and displaying all forms of information which have a spatial location. It is especially suited to large-scale analyses.

Cumulative Impacts of Vertical Infrastructure

Part 1: Key Findings & Guidance

the magnitude of change due to the various scales of vertical infrastructure, **the significance of visual effect** has been determined.



1-4 Examples of landscape types in the study area

1.4 Overview of the assessment

Sensitivity of the landscape

- 1.4.1 The first stage of the assessment determines the sensitivity of the landscape. As described above, this is a combination of the susceptibility of the landscape to change due to vertical infrastructure and the landscape category.

Landscape Susceptibility

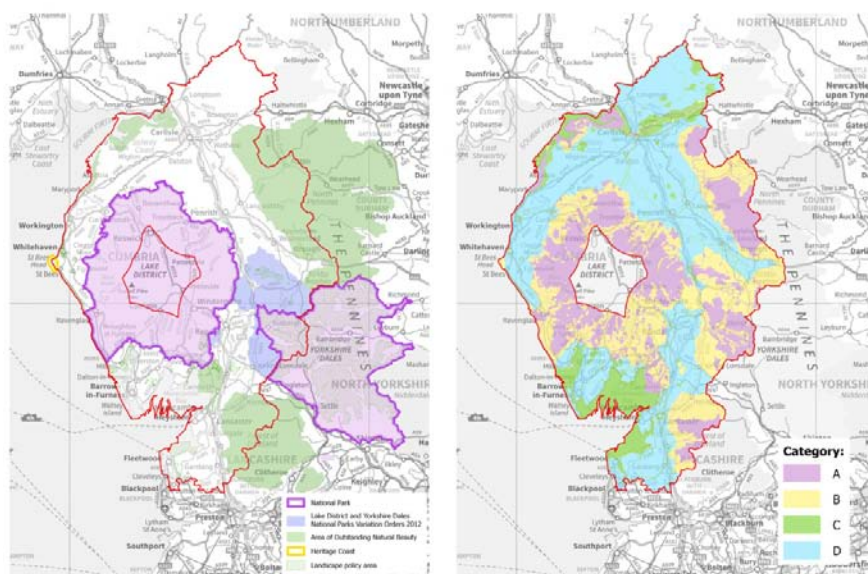
- 1.4.2 Analysis of the LCAs indicates that the susceptibility of the landscape areas varies in relation to small-scale, medium-scale and large-scale vertical development, in summary:

- No areas of Slight susceptibility to large-scale developments were identified;
- Landscape areas are identified throughout the study area with a Slight susceptibility to small and medium-scale developments;
- Areas around the National Parks and AONBs are generally assessed as Highly susceptible to medium-scale developments
- Most landscape areas are assessed as Highly susceptible to large-scale developments.

Landscape Category

- 1.4.3 Much of the study area is designated national park or AONB, but other designations have been applied to parts of the area. In order to allow differentiation between landscape areas, a weighted scoring system has been used, applied to all the landscape designations in each landscape area. This allowed the landscape areas to be categorised as A, B, C or D, depending on the combinations of designations occurring in an area. National park designation receives the highest score of 5 while areas covered by local landscape-related policy or designation, such as, locally designated recreation interests, receive a score of 1. Areas categorised A would have an aggregated score of 6 or more and those categorised D, a score of 1 or none. In summary:

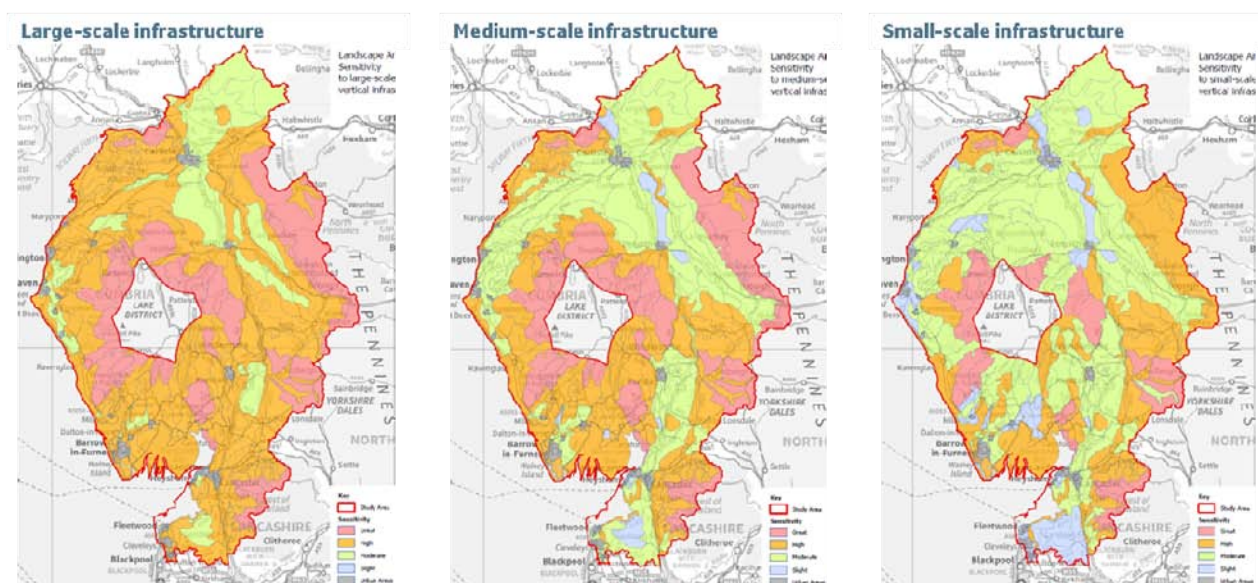
- The areas categorised as A and B are concentrated in and around the National Parks and AONBs;
- The corridors between these designations generally fall within category C and D.



1-5 Landscape designations and Landscape Category

Landscape Sensitivity

- 1.4.4 The combination of the landscape susceptibility and the landscape category has been used to determine the landscape sensitivity, in summary:



1-6 Landscape sensitivity to different scales of vertical infrastructure

- The areas of Great and High sensitivity to vertical infrastructure development are generally focused around the National Parks and AONBs;
- Corridors of land between these areas are assessed as of Slight and Moderate sensitivity to small-scale and medium-scale vertical infrastructure;
- These corridors decrease in size with respect to sensitivity to large-scale vertical infrastructure with the majority of the study area assessed as of High or Great sensitivity;

Cumulative Impacts of Vertical Infrastructure

Part 1: Key Findings & Guidance

- Only isolated landscape areas and a band around Longtown are assessed as of Moderate sensitivity to large scale infrastructure.

Sensitivity of visual receptors

- 1.4.5 As described above, the sensitivity of the visual receptors is a combination of the susceptibility of the visual receptor to change due to vertical infrastructure within the view and the category of the category of landscape where the receptor is viewing from, for example, from a public footpath in a national park (Category A) or from a conservation area in a settlement (Category C).

Visual Susceptibility

- 1.4.6 The susceptibility of visual receptors is related to the occupation or activity of people experiencing the view and the extent to which their attention or interest is focused on the view and does not alter in relation to the scale of the vertical infrastructure developments. The susceptibility of the visual receptors considered was assessed as follows:

High susceptibility:

- People in settlements;
- Users of CROW access land;
- Users of long distance footpaths;
- Users of cycle routes;
- Railways travellers, promoted scenic routes;
- Users of tourist attractions;

Moderate susceptibility:

- Travellers along roads, scenic routes;
- Railway travellers, commuter routes partly used as scenic routes;

Slight susceptibility:

- Travellers along roads generally;
- Railway travellers, commuter routes.

- 1.4.7 The varied susceptibility for road and railway users is based on the assumption that the scenic routes are used mainly for their appreciation of the view, while the commuter routes which are mainly used for transportation purposes only and the view is not the focus of attention.

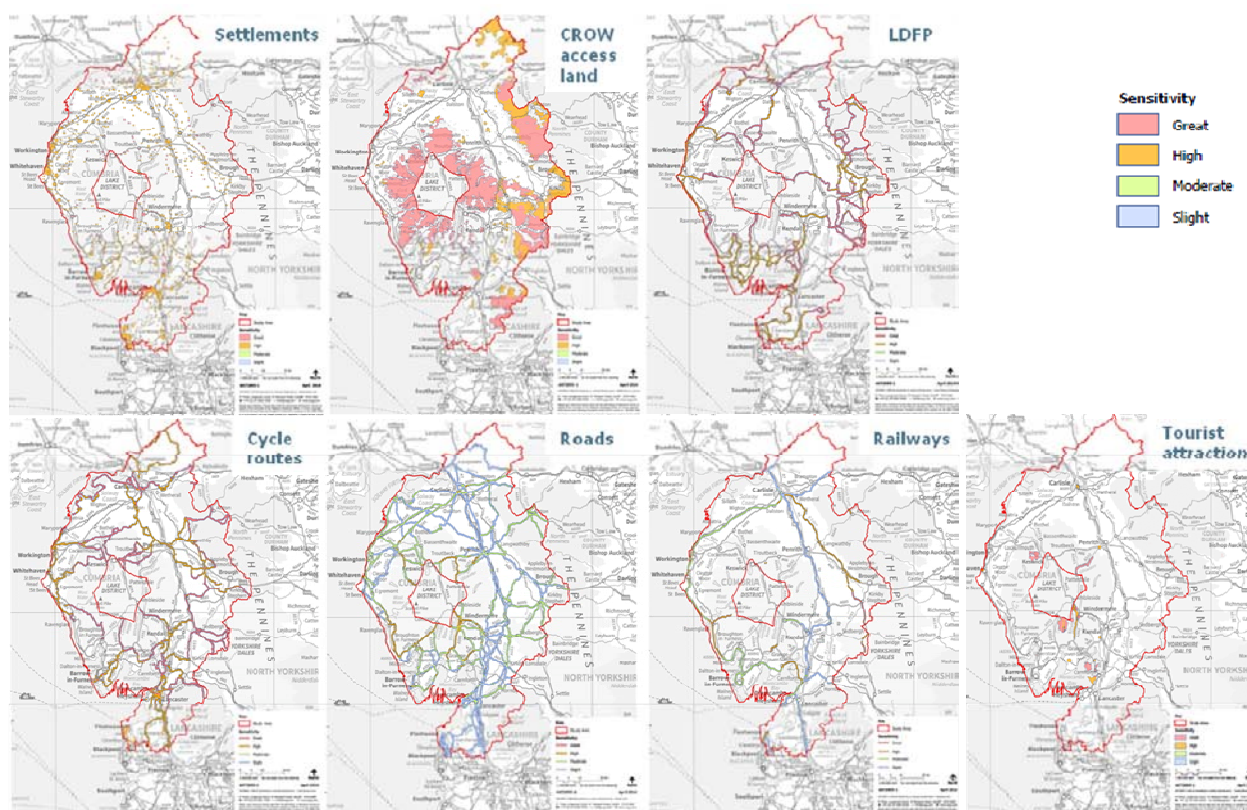


1-7 View from Hadrian's Wall footpath, north-east of Brampton

Visual Category

1.4.8 The visual category of the receptors depends on the locations from which people are experiencing the view, in summary:

- The majority of the larger settlements lie within landscape category D;
- Settlements within the National Parks and AONBs categories are within areas categorised A and B;
- The majority of the access land lies within the National Parks and AONBs and as a result is categorised as A and B;
- Long distance footpaths are generally within areas categorised A, where they traverse through designated landscapes;
- Cycle routes traverse areas in categories ranging from A to D;
- Most road and rail routes traverse areas in categories ranging from B to D with only short lengths in areas categorised as A;
- Tourist attractions lie in areas ranging from A to D.



1-8 Locations where people enjoy views of the landscape –“visual receptors” – and visual sensitivity

Visual Sensitivity

1.4.9 The combination of the visual susceptibility and visual category determines the overall visual sensitivity of each group of receptors. As a brief outline:

- Viewers in the majority of the settlements have been assessed as of High sensitivity with those within the National Parks and AONBs assessed as of Great sensitivity;

Cumulative Impacts of Vertical Infrastructure

Part 1: Key Findings & Guidance

- Users of most access land have been assessed as of Great sensitivity along with users of most long distant footpaths and cycle routes within the National Parks and AONBs;
- Road users have predominately been assessed as of Moderate and Slight sensitivity with users of some scenic routes assessed as High sensitivity;
- Similarly, railway users have been assessed as of Great to Slight sensitivity with users of the more scenic routes in the higher sensitivity category;
- Users of tourist attractions have been assessed as Great or High sensitivity, depending on the category of the landscape in which the tourist attraction lies.

1.5 The Developments Considered

- 1.5.1 As set out in set out in paragraph 1.3.5, the assessment takes into account schemes that are currently operational, under construction or approved which include the following types of vertical infrastructure, over 15m in height, classified as large-scale, medium-scale, and small-scale, based upon their height and the proportionate distance over which their visibility is considered.
- 1.5.2 The visibility of these developments was mapped as zones of theoretical visibility (ZTV) for the vertical structure elements of various scales and combined to produce a series of theoretical visibility maps. This includes ZTVs for off shore wind turbines, on shore wind turbines, telecommunication masts, and electricity transmission infrastructure. An overall ZTV has also been produced to combine all the theoretical visibilities in one map.
- 1.5.3 The overall ZTV shows that there are distinct areas where a high degree of visibility of vertical infrastructure may be experienced. The main findings are:
- The western periphery of the study area, running along the coast and inland to Carlisle in the north and south beyond Fleetwood and Blackpool, are shown to have a high visibility of vertical infrastructure;
 - A band of high levels of visibility of vertical infrastructure is also emerging along the route of the M6, between the National Parks;
 - Only a few isolated locations within the National Parks and AONBs are shown to have no visibility of vertical infrastructure.

1.6 Cumulative Landscape Effects

Magnitude of Landscape Change

- 1.6.1 The direct and indirect magnitude of change on each landscape area was considered and the results combined to calculate the overall magnitude of change in each area. This has been assessed separately in respect of small-scale, medium-scale, and large-scale vertical infrastructure.

Main findings

- 1.6.2 Due to small-scale vertical infrastructure:

- a Very Large change has been identified in the southern extent of the study area, with Large changes identified nearby;
- Large changes have also been identified in the north of the study area between Workington, Carlisle and Longtown;
- For the majority of the study area, a Small magnitude of change to small-scale vertical infrastructure has been assessed.

1.6.3 Due to medium-scale vertical infrastructure:

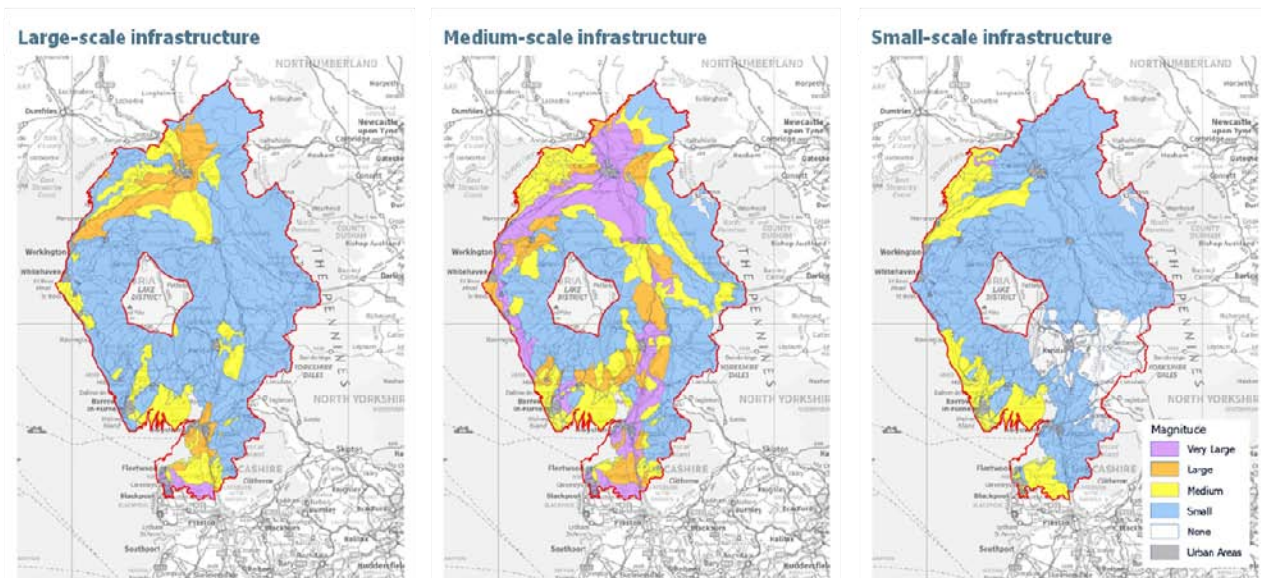
- A number of areas have been identified with a Very Large magnitude of change. These are located primarily towards the coast; in a corridor from Maryport to Carlisle, and a corridor along the route of the M6;
- A Large and Medium magnitude of change is assessed adjacent to these areas in a similar pattern;
- Small magnitude of change is noted within the majority of the National Parks and AONBs. The exception to this is the Solway Coast AONB where a Medium magnitude of change has been assessed.

1.6.4 Due to large-scale vertical infrastructure:

- A small area within the Solway Coast AONB has been identified where a Very Large magnitude of change has been assessed;
- A Medium magnitude of change is assessed in an area on the western coast, for areas around the Solway Coast and Maryport, reaching inland to Carlisle, and for areas on the coast from Ravenglass to Barrow-in-Furness, across to Morecambe Bay and around Fleetwood and Cleveleys.
- Some areas around Kendal to the east and west have been identified where no change to large-scale vertical infrastructure has occurred;
- A Small magnitude of change has been assessed in the majority of the remainder of the study area.

Cumulative Impacts of Vertical Infrastructure

Part 1: Key Findings & Guidance



1-9 Magnitude of cumulative landscape change

Significance of Cumulative Landscape Effect

- 1.6.5 The **significance of effect** for vertical infrastructure has been assessed over the study area by **combining the sensitivity of the landscape area with the magnitude of change** experienced. This has been assessed separately for small-scale, medium-scale and large-scale vertical infrastructure and then combined to calculate the overall effects from all scales of vertical infrastructure.

Main findings

- 1.6.6 In summary, the effect of vertical infrastructure on the landscape varies across the study area with patterns emerging illustrating that hot spots are located throughout the study area where a **Great Significance of effect** is experienced. These are:
- An area within the Solway Coast AONB;
 - Three areas within the periphery of the LDNP at Ravenglass, east of Grange-over-Sands and north of Kendal;
 - Sections along the length of the M6 west of the Forest of Bowland AONB.
- 1.6.7 **Significant effects** are assessed throughout the study area with a clear pattern emerging that shows Significant effects are experienced:
- In the corridor of the M6, between the National Parks and AONBs;
 - Along the western coastline;
 - In the southern and northern reaches of the study area;
 - Areas within the Solway Coast AONB;
 - An inland corridor between Wokington and Carlisle, joining with the M6 route corridor.

- 1.6.8 The remainder of the study area is assessed as experiencing **Intermediate effects** from vertical infrastructure development with very few area identified experiencing effects assessed as Not Significant.

1.7 Cumulative Visual Effects

Magnitude of Visual Change

- 1.7.1 The assessment of magnitude of visual change was based on the “amount” of vertical infrastructure visible from the receptor location. Maps ZTV.06 to ZTV.08 illustrate the theoretical visibility over the whole study area of large-, medium- and small-scale vertical infrastructure and this has been used to inform the calculation of the visibility of vertical infrastructure for each of the visual receptor groups.

Main findings

- 1.7.2 The visibility Maps ZTV.05 to ZTV.08 show that a large portion of the study area has visibility of vertical infrastructure. ZTV.05 illustrates the visibility of all vertical infrastructure and highlights that a greater concentrations of visible vertical infrastructure is located:
- In an area concentrated to the north of the study area from Workington, along the A595/A596 corridor
 - In an area concentrated to the south of the study area concentrated around Garstang, Morecambe, Barrow-in-Furness and the southern coastal portions of the study area
 - Along coastal areas
 - Along the M6 corridor
- 1.7.3 Map ZTV.06 illustrates that a large portion of the vertical infrastructure visible to the north and south of the study area comprises small-scale vertical infrastructure. Medium-scale vertical infrastructure is visible over the whole study area but in greater numbers in the northern section of the study area. Large-scale vertical infrastructure is visible to the north and south of the study area, but in greater numbers towards the western coast.
- 1.7.4 The locations of the various receptors considered within the study area were mapped on the ZTVs (Maps MAG.10 to MAG.31) to identify the degree of visibility of the different scales of vertical infrastructure in:
- Views afforded from settlements and homes;
 - Views available from publicly accessible land;
 - Views available from locations along the road, rail, cycle and footpath network, and
 - Views available from tourist attractions.
- 1.7.5 This enabled the magnitude of change to be determined, whether Large, Medium and Small, for each receptor group location.

Significance of Cumulative Visual Effects

- 1.7.6 The magnitude of change and sensitivity of the receptors was combined to assess the significance of visual effect experienced by each receptor. This was calculated, first for existing and consented, small-scale, medium-scale and large-scale vertical infrastructure, and then combined to produce Map SIG.33, illustrating the degrees of significance of visual effects from all scales of vertical infrastructure for all visual receptors.

Main findings

- 1.7.7 The pattern emerging from Map SIG.33 is that a **Great Significance of effect** from existing and consented infrastructure is experienced in areas on the periphery of the National Parks and AONBs. A Great Significance of effect has been recorded for the following:
- A large proportion of the visual receptors within the Solway Coast AONB;
 - Visual receptors particularly users of access land on the periphery of the LDNP;
 - Visual receptors particularly users of access land on the periphery of the Forest of Bowland AONB;
 - Visual receptors on the periphery of the North Pennines AONB;
 - Some visual receptors on the periphery of the YDNP;
 - Visual receptors within the Arnsdale and Silverdale AONB, and
 - Visual receptors at isolated locations throughout the study area.
- 1.7.8 **Significant effects** have been assessed throughout the study area, with a high concentration of Significant effects assessed along the western coast and in the corridor between Wokington and Carlisle.
- 1.7.9 **Intermediate and Not Significant effects** are distributed throughout the study area, with very few receptor locations identified where no significant effects (“None”) has been recorded.



1-10 Examples of vertical infrastructure elements

1.8 Schemes in the Planning process and the change through time

- 1.8.1 Schemes in the planning process that have not been consented could not be included in this assessment due to the level of uncertainty regarding them either the details of their components or their obtaining consent. However, a short discussion is included here on the main schemes that are likely to contribute to cumulative effects of vertical infrastructure:
- Walney off-shore wind farm: a scheme of up to 207 turbines of 142-222m height, which would result in an intensification of visible off shore wind farms at coastal locations;

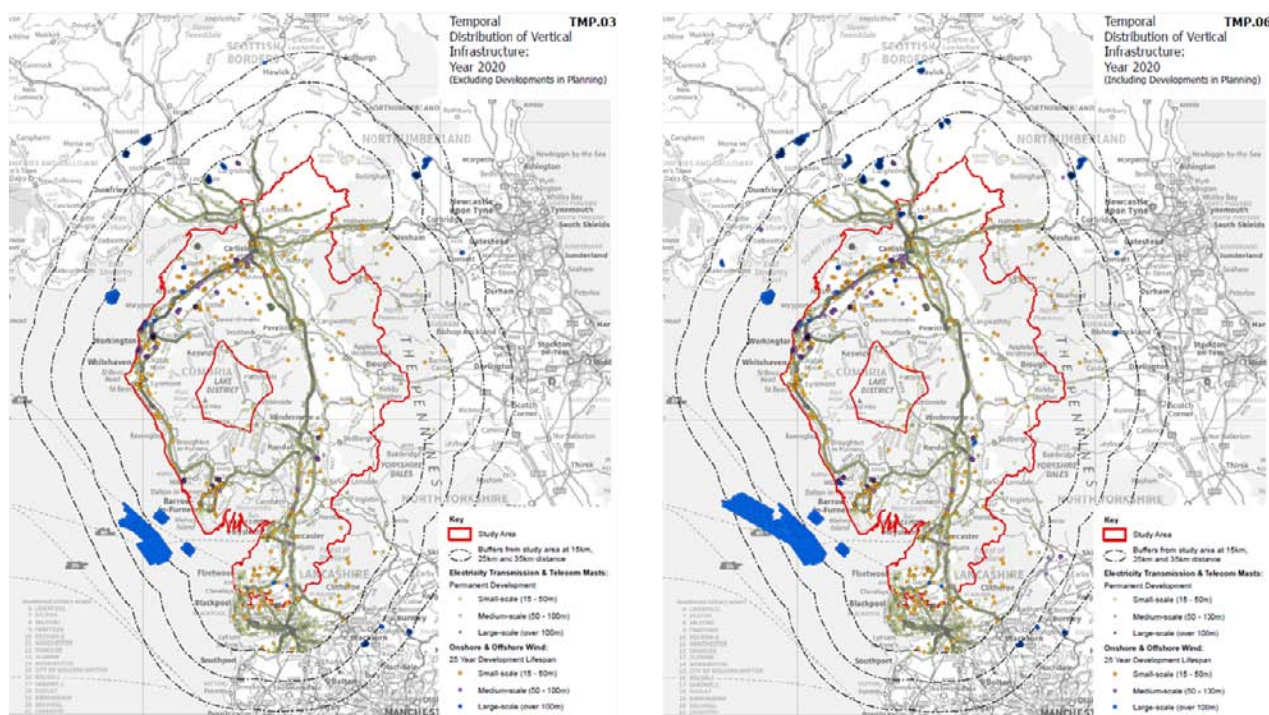
- the Moorside Nuclear Power Station: the tall chimney stack and gantries or pylons within the development might be visible from a number of hill top summits within the LDNP that would result in an intensification of vertical infrastructure already experienced in views from the surrounding area; and
- The North West Connections reinforcement works and route corridors: at the time of this assessment, the route had not been confirmed but the likely route corridor is illustrated on [Map NSI.01](#) and it is likely that the NWCC will result in an intensification of theoretical views of vertical infrastructure along the coast.

1.8.2 In order to provide indications of future pressures for further vertical infrastructure development in the study area, [Maps VI.13 and VI.14](#) have also been produced which include a number of other known wind farm schemes in the planning process.

Main findings

1.8.3 There is apparent demand for:

- An increase in large-scale wind turbine developments just outside the northern boundary of the study area;
- An increase of turbines of various sizes in the corridor of land stretching north east of Carlisle and west through to Workington;
- An increase of turbines of various sizes around Barrow-in-Furness;
- An increase of turbines of various sizes following the line of the M6, and
- An increase of small-scale turbines outside the study area to the south.



1-11 Changing distribution of vertical infrastructure through time

Cumulative Impacts of Vertical Infrastructure

Part 1: Key Findings & Guidance

- 1.8.4 **Temporal effects**, that is, the effects of change through time of the introduction of vertical infrastructure, have also been considered briefly. Because many vertical infrastructure developments are temporary, with typical life span of 25 years, the change over time was restricted to the elements of vertical infrastructure present at five year intervals from 2010 – 2020, shown on Maps TMP.01 to TMP.06. The maps show the removal of temporary developments after the permitted period, usually 25 years for wind farm developments, but current experience is that it is likely that once they reach their end of life (especially wind turbines), they would be replaced or the development repowered.
- 1.8.5 The maps show a clear increase in both off shore and on land wind farm development from 2010 to 2020 with notable increases including Walney Extension Wind Farm within
- the corridor between Workington and Carlisle;
 - the corridor between Penrith and Carlisle;
 - the corridor between Kendal and Lancaster; around the coast near Fleetwood; around the coast and inland around Barrow-in-Furness; and along the coast.
- 1.8.6 The plans including developments in planning (Maps TMP.03 to TMP.06), illustrate the schemes that would be in existence together with those in planning.

1.9 Guidance

- 1.9.1 The Guidance provided on using the assessment is intended to provide planning officers with a tool to ensure that consistent and robust decisions are made when proposals for developments with vertical elements are being considered. Officers can use the assessment as baseline evidence to inform their assessments of further vertical infrastructure development. This can be an initial appraisal by referring to Maps SIG.04 and SIG.33 or, where a more detailed appraisal is needed, the Guidance sets out a step-wise methodology to assist the assessment of planning applications for vertical infrastructure development:
- Identify the location and scale of infrastructure proposed;
 - Identify the specific characteristics and sensitivities of the landscape relevant to the development proposal;
 - Identify the visual receptors relevant to the development proposal and their sensitivity;
 - Understand the magnitude of cumulative landscape change and cumulative visual change in the locality where the development proposal is located;
 - Establish whether the cumulative landscape effects and cumulative visual effects are significant in the locality;
 - Using the methodology, judgements and assessment conclusions of the study to justify and support conclusions about the development proposal.
- 1.9.2 The findings of the study and the Guidance to officers will also be available to the public and to developers considering making proposals for vertical infrastructure development, so they will be fully aware of the context in which decisions about such development proposals are made.
- 1.9.3 It is intended that the GIS database will be updated at regular intervals, allowing up-to-date assessments to inform decision making.

2. Introduction to the Guidance

2.1 What is the purpose of this Guidance?

- 2.1.1 This Guidance has been produced in order to assist those using the Study by providing advice on how the Study should be applied in practice. The Guidance explains how the Study sits alongside national and local planning policy and guidance and when the Study can be used during the planning application process or during the drafting of development plan policies.
- 2.1.2 The Guidance seeks to offer a step-by-step approach which can be applied by local authority planning officers, developers and the public, when using the Study.

2.2 Who should use this Guidance and the accompanying Study?

- 2.2.1 This document has primarily been prepared for use by local authority planning officers. The Guidance has been prepared to assist both development management and planning policy officers during the decision making process relating to planning applications for 'vertical infrastructure developments'. The Study provides an evidence base in relation to the existing extent and spatial distribution of, and anticipated cumulative effects associated with, existing and consented vertical infrastructure development in Cumbria and in the districts of Wyre and Lancaster in Lancashire. Officers can use this evidence to inform their assessments of proposals for further vertical infrastructure development. By providing a methodology to assist the assessment of planning applications for vertical infrastructure development, the Study provides officers with a tool to ensure that consistent and robust decisions are made on the cumulative impacts of such development proposals.
- 2.2.2 The document will also be useful to developers in the preparation of schemes for vertical infrastructure development. It will help to inform developers as to the methodology that will be used by the local authority in the assessment of planning applications for vertical infrastructure development. In addition, the baseline position set out in this document can be used by developers to understand the relative sensitivities of different locations throughout Cumbria and in parts of Lancashire to vertical infrastructure development and the existing scale and distribution of such infrastructure throughout these areas. In turn, this should help to inform developer decisions about the siting and design of vertical infrastructure.

2.3 What is the status of this Guidance?

- 2.3.1 The Study is an evidence base document. It will assist officers in understanding the position now in terms of the cumulative impacts of vertical infrastructure development (existing and consented) across the County of Cumbria and the Wyre and Lancaster Districts of Lancashire. The Study will provide support and guidance to officers in the assessment of proposals for vertical infrastructure developments, and in the development of robust and credible development plan policies.

3. Planning Policy Context

3.1 How does the Study and this Guidance relate to national and local planning policy documents and guidance?

National Planning Policy Framework

- 3.1.1 A set of core land-use planning principles is set out at paragraph 17 of the Framework which should underpin both plan-making and decision-taking. These core principles include that planning should contribute to conserving and enhancing the natural environment and that the use of renewable resources (for example, by the development of renewable energy) should be encouraged.
- 3.1.2 The Framework seeks to ensure the protection and enhancement of valued landscapes and states at paragraph 109 that the planning system should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes. The Framework goes on to require local planning authorities to set criteria based policies against which proposals for any development on or affecting protected landscape areas will be judged. It states that distinctions should be made between the hierarchy of international, national and locally designated sites, so that protection is commensurate with their status and appropriate weight is given to their importance and the contribution that they make to wider ecological networks⁷.
- 3.1.3 Great weight is placed on the need to conserve landscape and scenic beauty in National Parks and Areas of Outstanding Natural Beauty which have the highest status of protection in relation to landscape and scenic beauty. Paragraph 116 states that planning permission should be refused for major developments in these designated areas except in exceptional circumstances and where it can be demonstrated they are in the public interest.
- 3.1.4 The Framework explains the role that planning has in supporting the delivery of renewable and low carbon energy and associated infrastructure. Paragraph 97 of the Framework requires local planning authorities to recognise the responsibility on all communities to contribute to energy generation from renewable or low carbon sources in order to help increase the use and supply of renewable and low carbon energy. It advises that local planning authorities should design their policies to maximise renewable and low carbon energy development whilst ensuring that adverse impacts are addressed satisfactorily, including cumulative landscape and visual impacts.
- 3.1.5 In relation to planning applications for decentralised, renewable or low carbon energy, the Framework states that local planning authorities should approve applications, unless material considerations indicate otherwise, if its impacts are (or can be made) acceptable. It is stated that once suitable areas for renewable and low carbon energy have been identified in plans, local

⁷ This hierarchy is reflected in the “landscape category” strand of the assessment methodology.

planning authorities should also expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas.

National Planning Practice Guidance

- 3.1.6 The Practice Guidance provides additional advice detailing how the planning policy guidance of the Framework should be applied in practice. The Practice Guidance states that local plans should include strategic policies for the conservation and enhancement of the natural environment, including both designated landscapes and the wider countryside.

Landscape

- 3.1.7 The Practice Guidance: Landscape, paragraph 001, notes the benefits of Landscape Character Assessments in providing a tool to help understand the character and local distinctiveness of the landscape and identify the features that give it a sense of place. It states that such assessments can help to inform, place and manage change, and should be prepared, where appropriate, to complement Natural England's National Character Area profiles.

Renewable and Low Carbon Energy

- 3.1.8 The Practice Guidance: Renewable and low carbon energy, paragraph 001 explains that planning has an important role in the delivery of new renewable and low carbon energy infrastructure in locations where the local environmental impact is acceptable. The guidance states, at paragraph 005, that in identifying suitable areas for renewable and low carbon energy:

'local planning authorities will need to ensure they take into account the requirements of the technology and, critically, the potential impacts on the local environment, including from cumulative impacts.' (our emphasis)

- 3.1.9 The Practice Guidance notes that tools can be used to identify where impacts are likely to be acceptable, for example Landscape Character Areas could form the basis for considering which technologies at which scale may be appropriate in different types of location. It advises that Landscape Character Assessment carried out at a county or district level may provide a more appropriate scale for assessing the likely landscape and visual impacts of individual proposals than national assessments.
- 3.1.10 The Practice Guidance explains that identifying areas suitable for renewable energy within plans is a way to give certainty as to where such development will be permitted. It states that where councils have identified suitable areas for, for example, onshore wind farms, they should not have to give permission outside those areas for speculative applications involving the same type of development when they judge the impact to be unacceptable.
- 3.1.11 It explains that in identifying suitable areas for renewable energy, it is important for local planning authorities to be clear on the factors which will be taken into account when considering individual proposals. It states that these factors may be dependent on the investigatory work underpinning the identified area. It explains that the expectation should always be that an application should only be approved if the impact is (or can be made) acceptable.

Cumulative Impacts of Vertical Infrastructure

Part 1: Key Findings & Guidance

3.1.12 Paragraph 007 explains that criteria based policies relating to the consideration of renewable energy proposals for inclusion in Local Plans and for the consideration of planning applications can be useful when they are expressed positively and that, in shaping local criteria, it is important to make several factors clear, as follows:

- The need for renewable or low carbon energy does not automatically override environmental protections;
- **Cumulative impacts require particular attention**, especially the increasing impact that wind turbines and large scale solar farms can have on landscape and local amenity as the number of turbines in an area increases;
- Local topography is an important factor in assessing whether wind turbines could have a damaging effect on landscape. The impact can be as great in predominantly flat landscapes as in hilly or mountainous areas;
- Great care should be taken to ensure heritage assets are conserved in a manner appropriate to their significance, including the impact of proposals on views important to their setting;
- Proposals in National Parks and Areas of Outstanding Natural Beauty, and in areas close to them, where there could be an adverse impact on the protected area, will need careful consideration;
- Protecting local amenity is an important consideration which should be given proper weight in planning decisions.

3.1.13 Paragraph 022 of the Practice Guidance relates to the **assessment of cumulative landscape and visual impacts** from wind turbines. The guidance advises that these two matters are best considered separately. It explains that the cumulative landscape impacts are the effects of a proposed development on the fabric, character and quality of the landscape; it is concerned with the degree to which a proposed renewable energy development will become a significant or defining characteristic of the landscape. It explains that cumulative visual impacts concern the degree to which proposed renewable energy development will become a feature in particular views (or sequences of views), and the impact this has upon the people experiencing those views.

3.1.14 Paragraph 023 of the Practice Guidance sets out **the information that is needed to assess cumulative landscape and visual impacts** of wind turbines. It explains that, when assessing the significance of impacts, a number of criteria should be considered including the sensitivity of the landscape and visual resource and the magnitude or size of the predicted change. Some landscapes may be more sensitive to certain types of change than others and it should not be assumed that a landscape character area deemed sensitive to one type of change cannot accommodate another type of change. The guidance states that, in assessing the impact on visual amenity, factors to consider include establishing the area in which a proposed development may be visible, identifying key viewpoints, the people who experience the views and the nature of the views. The guidance provides a list of information which can usefully inform cumulative assessments as follows:

- A base plan of all existing windfarms, consented developments and applications received, showing all schemes within a defined radius of the centre of the proposal under consideration;

- For those existing or proposed windfarms within a defined radius of the proposal under consideration, a plan showing cumulative 'zones of visual influence'. (A zone of visual influence is the area from which a development or other structure is theoretically visible). The aim of the plan should be to clearly identify the zone of visual influence of each windfarm, and those areas from where one or more windfarms are likely to be seen;
- The base plan and plan of cumulative zones of visual influence will need to reflect local circumstances, for example, the areas covered should take into account the extent to which factors such as the topography and the likely visibility of proposals in prevailing meteorological conditions may vary;
- Maps of cumulative zones of visual influence are used to identify appropriate locations for visual impact studies. These include locations for simultaneous visibility assessments (i.e. where two or more schemes are visible from a fixed viewpoint without the need for an observer to turn their head, and repetitive visibility assessments (i.e. where the observer is able to see two or more schemes but only if they turn around);
- Sequential effects on visibility occur when an observer moves through a landscape and sees two or more schemes. Common routes through a landscape (e.g. major roads; long distance paths or cycle routes) can be identified as 'journey scenarios' and the proposals impact on them can be assessed;
- Photomontages showing all existing and consented turbines, and those for which planning applications have been submitted, in addition to the proposal under consideration. The viewpoints used could be those identified using the maps of cumulative zones of visual influence. The photomontages could be annotated to include the dimensions of the existing turbines, the distance from the viewpoint to the different schemes, the arc of view and the format and focal length of the camera used; and
- At the most detailed level, description and assessment of cumulative impacts may include the following landscape issues: scale of development in relation to landscape character or designations, sense of distance, existing focal points in the landscape, skylining (where additional development along a skyline appears disproportionately dominant) and sense of remoteness or wildness.

Commentary

- 3.1.15 National planning policy places an emphasis on the need to protect and enhance valued landscapes. This requirement is balanced with the Government's support for the delivery of renewable and low carbon energy and associated infrastructure. Cumulative impact is recognised as a key, emerging issue which needs to be taken into account.
- 3.1.16 In accordance with the requirements of national planning policy guidance, this Study aims to provide evidence to help inform decisions relating to the provision of energy related infrastructure (including renewable and low carbon energy), as well as other types of vertical infrastructure e.g. telecommunications masts, specifically in relation to the cumulative impact of such developments.

3.2 Local Planning Policy

- 3.2.1 The Study covers the following Local Planning Authority areas within the Counties of Cumbria and Lancashire:

Cumulative Impacts of Vertical Infrastructure

Part 1: Key Findings & Guidance

- Allerdale Borough Council
- Barrow Borough Council
- Carlisle City Council
- Copeland Borough Council
- Eden District Council
- Lake District National Park Authority
- Lancaster City Council
- South Lakeland District Council
- Wyre Borough Council
- Yorkshire Dales National Park Authority.

3.2.2 The Study provides an evidence base to support several policies within the existing development plan for each of these local planning authority areas, and will help to inform emerging Local Plan policies for these authorities. Existing development plan policies⁸ which are of relevance to the Study include:

Allerdale Local Plan (adopted July 2014)

- Policy S19 Renewable Energy and Low Carbon Technologies
- Policy S20 Nationally Significant Infrastructure Projects
- Policy S33 Landscape

Barrow Local Plan Review 1996-2006 (adopted August 2001)

- Saved Policy D1 Countryside
- Saved Policy D45 Energy Generation Projects
- Saved Policy D47 Wind Energy Installations
- Saved Policy D52 Communication Lines
- Saved Policy D54 Telecommunication Masts

Carlisle District Local Plan 2001-2016 (adopted September 2008)

- Saved Policy CP1 Landscape Character
- Saved Policy CP8 Renewable Energy
- Saved Policy EC19 Telecommunications
- Saved Policy EC21 Overhead Power Lines

Copeland Local Plan 2013-2028 (adopted December 2013)

- Policy ER2 Planning for the Renewable Energy Sector
- Policy ER3 The Support Infrastructure for the Energy Coast
- Policy ENV5 Protecting and Enhancing the Borough's Landscapes
- Policy DM2 Renewable Energy Development in the Borough
- Policy DM23 Information and Communications Technology

⁸ These lists reflect the present development plans and will need to be updated along with other data for the study area during future maintenance of the Study.

- Policy DM26 Landscaping

Eden Core Strategy (adopted March 2010)

- Policy CS16 Principles for the Natural Environment
- Policy CS20 Renewable Energy

Lake District National Park Core Strategy (adopted October 2010)

- Policy CS01 National Significance and Distinctive Nature of the Lake District
- Policy CS16 Generating Renewable and Low Carbon Energy
- Policy CS25 Protecting the Spectacular Landscape

Lancaster Core Strategy (adopted July 2008)

- Policy E1 Environmental Capital
- Policy ER7 Renewable Energy

Lancaster District Local Plan (adopted April 2004)

- Saved Policy E4 Countryside
- Saved Policy E22 Wind Turbines
- Saved Policy E23 Telecommunications
- Saved Policy E24 Electricity Lines

South Lakeland Core Strategy (adopted October 2010)

- Policy CS7.7 Energy and the Low Carbon Economy
- Policy CS8.2 Protection and Enhancement of Landscape and Settlement Character

South Lakeland Local Plan (adopted 1997)

- Saved Policy CS26 Wind Energy
- Saved Policy C31 Cumulative Impact of Renewable Energy Projects

Wyre Local Plan (adopted July 1999)

- Saved Policy SP13 Development in the Countryside
- Saved Policy CIS2 Telecommunications
- Saved Policy CIS4 Power Lines and Overhead

Yorkshire Dales Local Plan (adopted April 2006)

- Saved Policy GP1 National park purposes
- Saved Policy U4 Telecommunications
- Saved Policy U6 Small scale renewable developments
- Saved Policy U7 Utility service lines
- Saved Policy NE1 The open upland.

Cumulative Impacts of Vertical Infrastructure

Part 1: Key Findings & Guidance

- 3.2.3 The Study should be considered in conjunction with the Cumbria Wind Energy Supplementary Planning Document (WESPD), which provides guidance for wind energy development across the County of Cumbria and the Landscape Sensitivity to Wind Energy Developments in Lancashire.
- 3.2.4 The continuing relevance of the WESPD in light of current NPPF and NPPG policy has been confirmed in recent appeal decisions. The SPD includes a detailed landscape capacity assessment, which highlights the key characteristics and particular sensitivities which inform the potential capacity of different landscape areas to support wind energy development. This has been developed to enable a consistent and holistic approach to be taken when considering the effects of wind energy development on the distinctive and often high quality landscape character of Cumbria. The WESPD contains guidance on the assessment of cumulative impact of wind turbines, which should be read in conjunction with this work when considering turbine developments.

Other Relevant Guidance

- 3.2.5 The following landscape character assessments have informed and should be read in conjunction with the guidance:

Natural England, National Landscape Character Areas

Cumbria County Council (2011) Cumbria Landscape Character Guidance and Toolkit: Part 1 Landscape Character Guidance;

Cumbria County Council (2011) Cumbria Landscape Character Guidance and Toolkit: Part 2 Landscape Character Toolkit;

Chris Blandford Associates (2008) Lake District National Park: Landscape Character Assessment and Guidelines (part of the Lake District National Park Landscape Character Supplementary Planning Document, adopted 19th October 2011);

Yorkshire Dales National Park Authority (2001) Yorkshire Dales National Park Landscape Character Assessment;

Land Use Consultants (2010) The Solway Coast Area of Outstanding Natural Beauty Landscape and Seascape Character Assessment;

Lovejoy (2005) Landscape Sensitivity to Wind Energy Developments in Lancashire;

Environmental Resources Management (2000) A Landscape Strategy for Lancashire: Landscape Character Assessment;

Environmental Resources Management (2000) A Landscape Strategy for Lancashire: Landscape Strategy, and

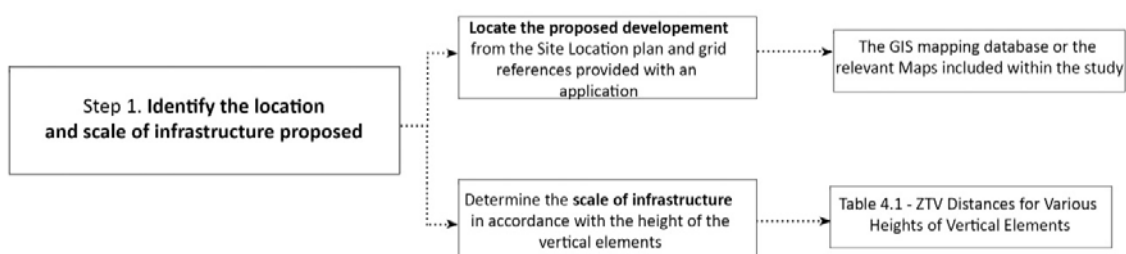
Chris Blandford Associates (2009) Forest of Bowland Area of Outstanding Natural Beauty: Landscape Character Assessment.

4. Application of the Study and Guidance

4.1 How can the Study be used?

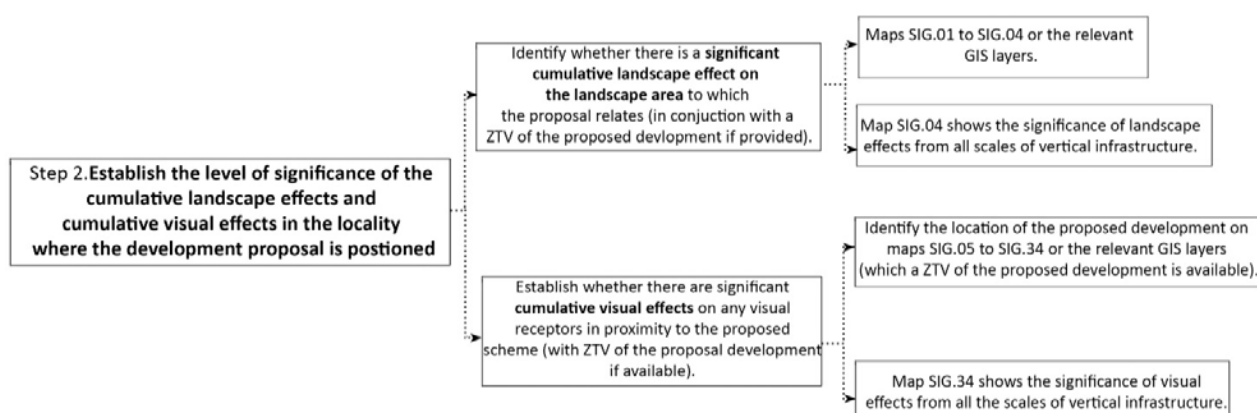
- 4.1.1 This user guidance summarises the steps that should be taken when assessing proposals for vertical infrastructure development.

1. Establish the location of the proposed development and the scale of its vertical components.



- 4.1.2 This is the starting point regardless of whether an initial appraisal or a detailed assessment is to be carried out. It enables the appropriate mapping to be consulted, the landscape areas in which the proposal site is located or that occur within its surroundings to be identified. The information and assessment for those areas can be considered and the visual receptors that may be affected identified, as a first step.

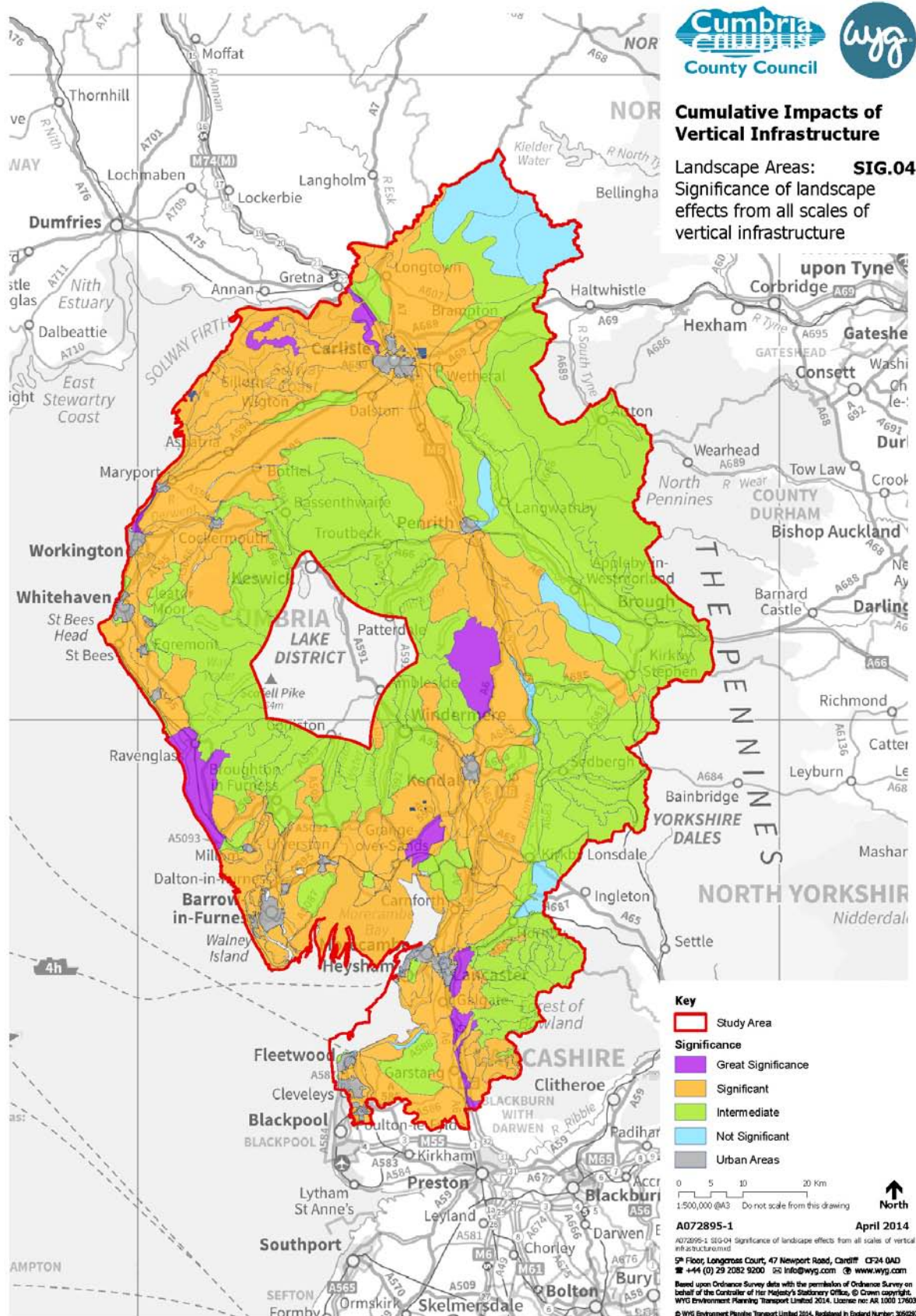
2. Initial appraisal; establish the significance of existing cumulative landscape effects and cumulative visual effects in the locality of the proposed development



Cumulative Impacts of Vertical Infrastructure

Part 1: Key Findings & Guidance

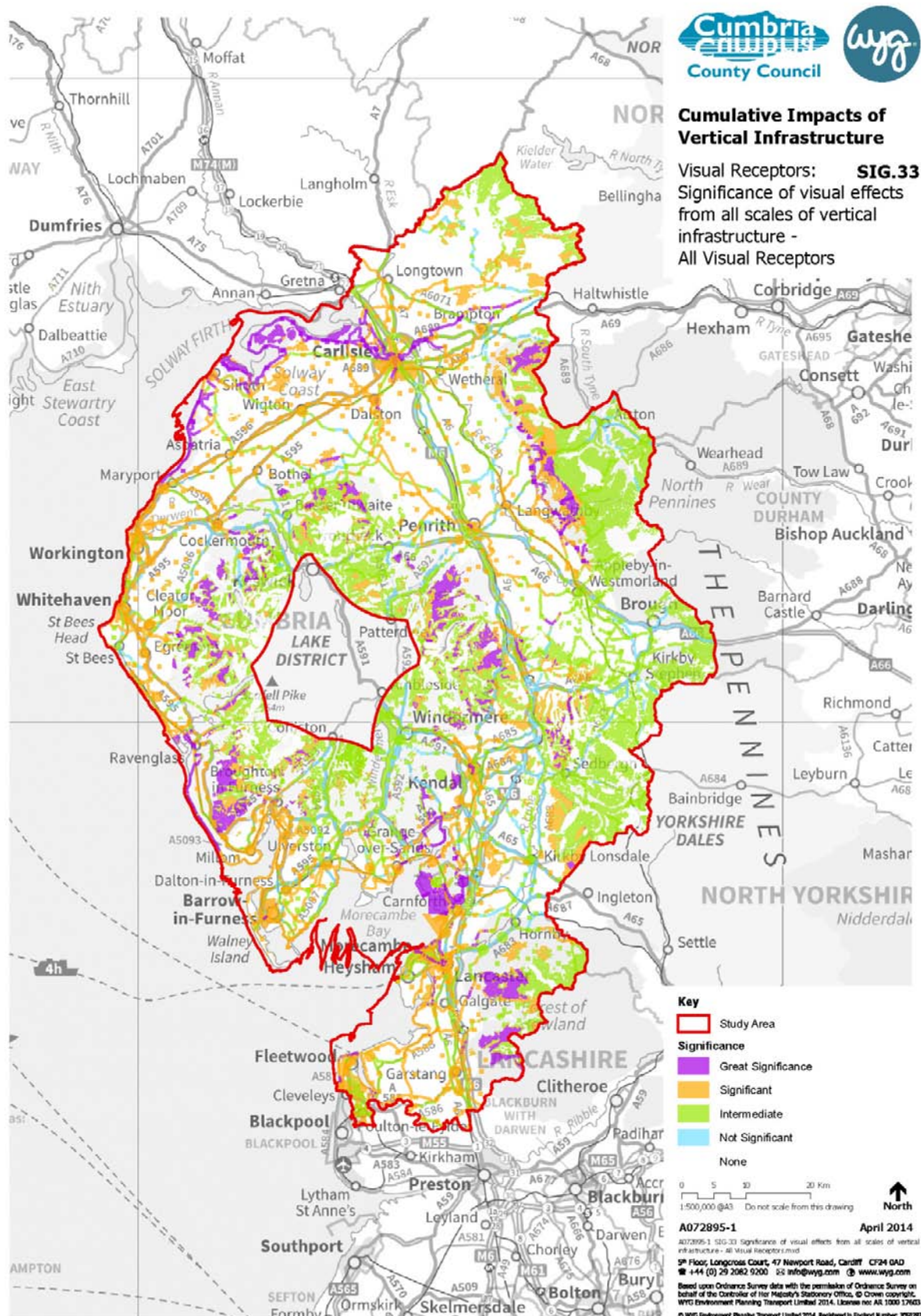
- 4.1.3 Officers should identify the significance of cumulative landscape and visual effects of existing vertical infrastructure at the location of the proposed development. In order to do so, officers should identify the location of the proposed development. A site location plan and grid references should have been provided with an application in order to allow the officer to locate the proposed development on the GIS mapping database or the maps included within the Study.
- 4.1.4 Once the location of the proposed development has been determined, Map SIG.04 or the relevant GIS layers should be viewed in order to understand the current level of significance of cumulative landscape effects for all scales of vertical infrastructure at that location.
- 4.1.5 Map SIG.33 or the relevant GIS layers should be referred to in order to understand the current level of significance of cumulative visual effects from all scales of existing vertical infrastructure at that location.



4-1 Overall significance of cumulative landscape effects of vertical infrastructure

Cumulative Impacts of Vertical Infrastructure

Part 1: Key Findings & Guidance



4-2 Overall significance of cumulative visual effects from vertical infrastructure

4.1.6 The significance for the cumulative landscape and visual effects will be categorised as:

- Great Significance;s
- Significant;
- Intermediate; or
- Not Significant

4.1.7 Additional maps and GIS layers are also available which show the cumulative landscape effects separately for small-, medium- and large-scale vertical infrastructure ([Maps SIG.01 to SIG.03](#)). Maps and GIS layers are also available which show the cumulative landscape effects for a range of visual receptors and separately for small-, medium- and large-scale vertical infrastructure ([Maps SIG.05 to SIG.32](#)).

4.1.8 If a ZTV has been provided with the development proposal, it may be useful at this point to overlay it on [Map SIG.33](#), or the individual maps of cumulative visual effects to understand the interaction of the visibility of the proposal with existing levels of cumulative visual effects within the area influenced by the development proposal.

4.1.9 The definitions used in the assessment for the different scales of infrastructure and the appropriate extents for ZTVs in relation to the height of the vertical element are as follows:

Table 4.1 ZTV Distances for Various Heights of Vertical Elements

Height of vertical element (m)	Scale of infrastructure	ZTV distance (km)
up to 50	small-scale	15
51-100	medium-scale	25
Over 100	large-scale	35

Source: Table 3.1 of Part 2: The Assessment

4.1.10 These definitions can be used by officers to define the scale and associated ZTV of the proposal they are assessing. The landscape areas affected, the visual receptors affected, and existing visibility of vertical infrastructure in the relevant area, (which will contribute to the overall cumulative effect locally), can then be identified.

4.1.11 The Study has determined the significance of existing cumulative landscape effects and cumulative visual effects at each locality by applying the steps set out below. In assessing planning applications for further vertical infrastructure, officers can work through these steps in order to understand the components which contribute to significance of effect, and to assist in determining the net effect of the scheme under consideration.

4.1.12 It is possible that, at this stage, the initial appraisal will have provided enough contextual information to enable a decision to be made about the cumulative effects of the proposal under consideration. However, a more detailed appraisal is likely to be required for more complex projects or where there are pressure points affecting decision-making. Then it is advisable to proceed through each step of the assessment process and build up evidence and justification for

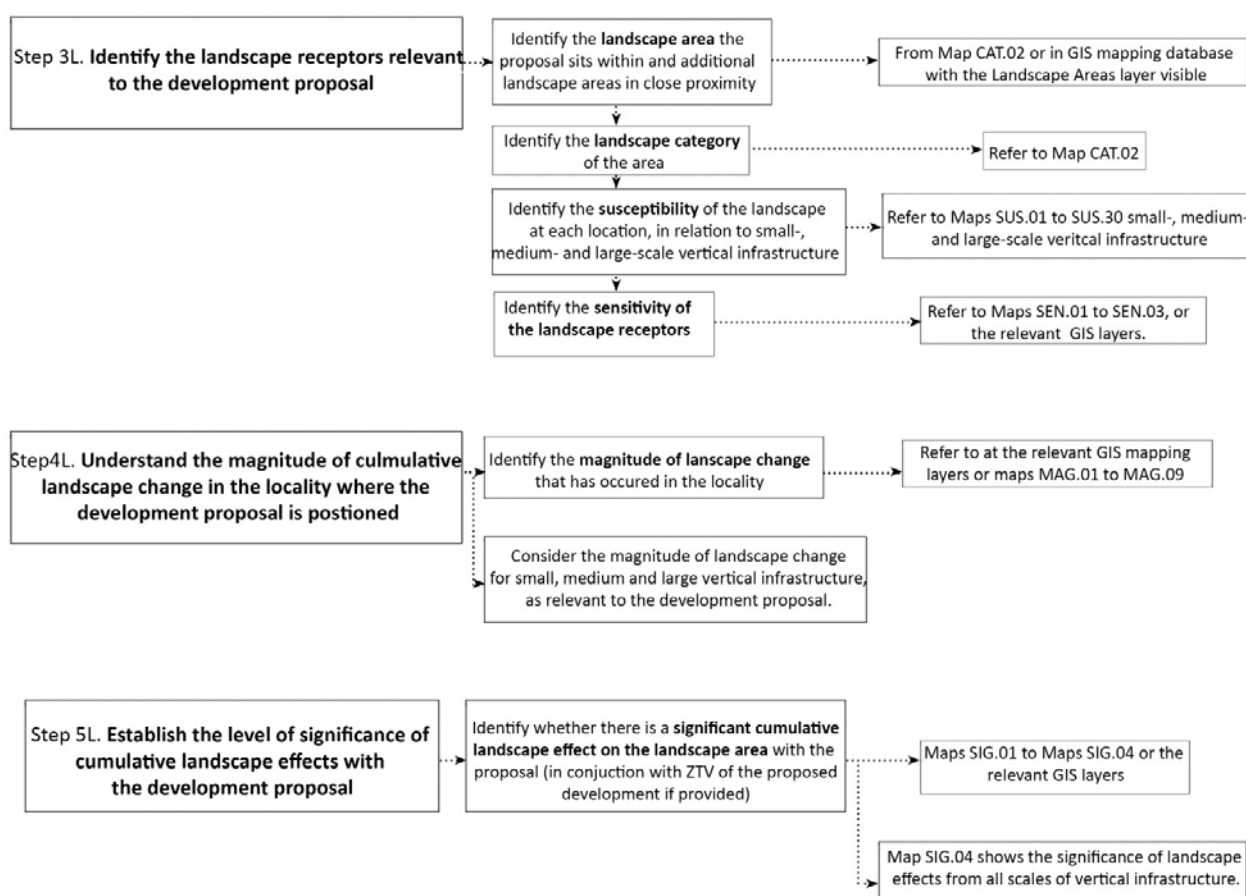
Cumulative Impacts of Vertical Infrastructure

Part 1: Key Findings & Guidance

judgements made about the additional effects of the development proposal and to inform the decision to be made.

3. Identify the landscape and visual receptors relevant to the development proposal and their sensitivity

- 4.1.13 In order to assess the cumulative impact of a proposal for vertical infrastructure development, both the landscape and visual receptors which have the potential to be affected should be identified. Landscape receptors are the defined aspects of the landscape resource that have the potential to be affected by a proposal and visual receptors are individuals and/or defined groups of people who have the potential to be affected by a proposal.



Landscape Receptors

- 4.1.14 In identifying the relevant landscape receptors, officers should identify which landscape area⁹ the proposal sits within and any additional landscape areas which adjoin or fall within the ZTV of the

⁹ Because the landscape character assessments used as the baseline for this Study describe variously landscape types and sub-types as well as landscape character areas, the term “landscape areas” is used here, meaning geographically unique areas of landscape character, landscape type or sub-type.

development proposal, and which therefore have the potential to be impacted upon. This can be achieved by locating the position of the development proposal on [Map CAT.02](#) or in the GIS mapping database with the Landscape Areas layer visible.

4.1.15 Each landscape area is linked to a table which identifies the overall sensitivity of the landscape area i.e. the receptor. The tables detailing how the assessments of landscape sensitivity to vertical infrastructure development for each area have been concluded are in the [Landscape Character Assessment Tables](#) (and summarised in the attribute data linked to the Landscape Areas GIS layer). Each table includes a number of sub-headings detailing the factors which have been taken into account in order to assess the overall sensitivity of the area to each scale of vertical infrastructure. These factors include:

- The key characteristics of the landscape area
- The susceptibility of the landscape area to vertical infrastructure
- Guidance for future decision making for the landscape area
- Landscape designations within the landscape area
- Policies covering the landscape area

4.1.16 In assessing development proposals for vertical infrastructure officers should **take into consideration the relative sensitivity of the landscape receptor to vertical infrastructure development** as defined by the assessment ([Maps SEN.01 to SEN.03](#)), **and the specific characteristics and sensitivities of the landscape receptors** as set out in the relevant table which have determined this.

Visual Receptors

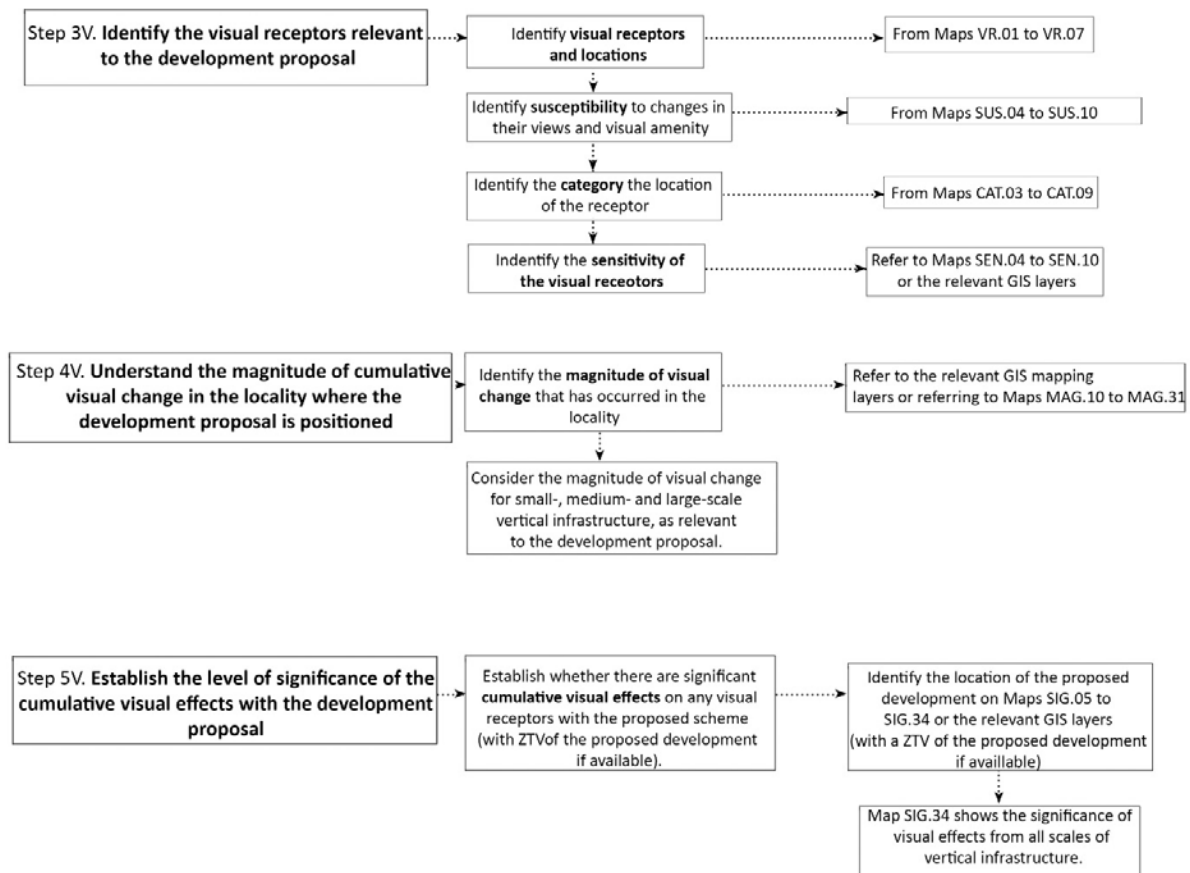
4.1.17 The Study identifies places where people viewing the landscape (the visual receptors), which are present throughout the Study area and include routes, i.e. roads, railway lines and strategic public rights of way, settlements, tourist attractions, promoted visitor facilities and scenic routes and viewpoints; these are identified on [Maps VR.01 to VR.07](#).

4.1.18 The officer should identify any visual receptor locations falling within the ZTV of the development proposal, by locating the position of the development proposal and considering whether any of the visual receptors identified on the GIS mapping database or on [Maps VR.01 to VR.07](#) have the potential to be affected by the development proposal. It should be noted that there may be additional places where visual receptors may be present in addition to those identified within the Study and therefore if the officer is aware of any further visual receptor locations where there is potential for effects on visual amenity, then these should also be taken into account. For example, in the Arnside and Silverdale AONB, in addition to the CROW access land and the long distance footpaths identified in the Study, there are areas of locally agreed access land and PROWs¹⁰.

¹⁰ Although not incorporated into the GIS on which the CIVI assessment is based, the system and methodology have been designed to allow their future incorporation, when data for them are available.

Cumulative Impacts of Vertical Infrastructure

Part 1: Key Findings & Guidance



- 4.1.19 The Study identifies the sensitivity of visual receptors (Maps SEN.04 to SEN.10). If required, how the assessment of sensitivity was arrived at can be investigated further, by considering their susceptibility to changes in their views and visual amenity (shown on Maps SUS.04 to SUS.10), and the landscape category at the location of the receptor (shown on Maps CAT.03 to CAT.09). A matrix is detailed at Table 3.12 of Part 2 – the Assessment which shows how susceptibility and the landscape category have been combined to determine sensitivity.

Table 4.2 Matrix for assessing Visual Sensitivity

	Landscape category of the location			
Susceptibility	A	B	C	D
High	Great	High	Moderate	Moderate
Moderate	High	High	Moderate	Slight
Slight	Moderate	Moderate	Slight	Slight

Source: Table 3.12 of Cumulative Impacts of Vertical Infrastructure Assessment

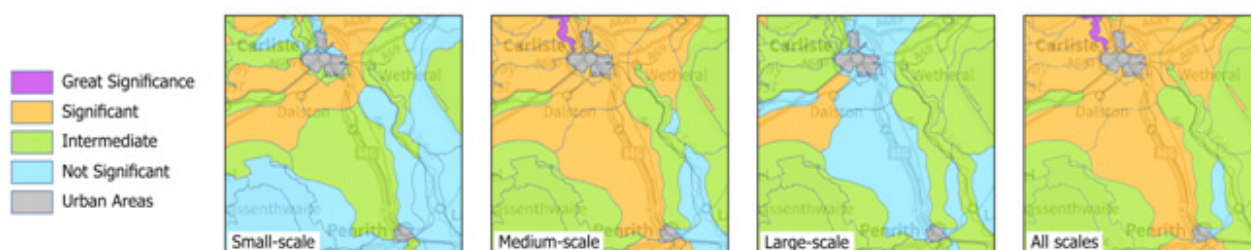
- 4.1.20 Officers should **identify the sensitivity of the visual receptors affected** by the development which they are assessing by referring to Maps SEN.04 to SEN.10 or the relevant GIS layers.

4. Understand the magnitude of cumulative landscape change and cumulative visual change in the locality where the development is proposed

- 4.1.21 The Study assesses the magnitude of cumulative landscape change on landscape receptors and the magnitude of cumulative visual change on visual receptors taking into consideration the size or scale of change, the geographic extent of the area influenced, and its duration and reversibility.
- 4.1.22 Officers may identify the **existing magnitude of landscape change and visual change** that has occurred in the locality of the development proposal by looking at the relevant GIS mapping layers or referring to Maps MAG.01 to MAG.09, in relation to the magnitude of landscape change, or Maps MAG.10 to MAG.31, in relation to the magnitude of visual change. These plans show the magnitude of landscape and visual change assessed for each scale of vertical infrastructure.
- 4.1.23 In relation to the magnitude of change on visual receptors, the Study provides assessment of the magnitude of change for residents in and visitors to settlements, users of CROW or public access land, users of long distance footpaths, users of cycle routes, travellers on roads and railways, and visitors to tourist attractions.

5. Establish the significance of existing cumulative landscape effects and cumulative visual effects in the locality where the development is proposed

- 4.1.24 The Study identifies the significance of cumulative landscape effects and visual effects by combining the conclusions made in relation to the sensitivity of receptors and magnitude of change. As explained at Step 2, cumulative landscape and visual effects are identified to be: of great significance, significant, of intermediate significance, or not significant, for each scale of vertical infrastructure, as illustrated in Figure 4.1.



4-3 Comparative Significance of cumulative landscape effects

- 4.1.25 Table 4.3 shows how the significance of cumulative landscape effects has been derived, taking into account the sensitivity of receptors and magnitude of change.

Cumulative Impacts of Vertical Infrastructure

Part 1: Key Findings & Guidance

Table 4-1 Matrix for assessing Significance of landscape effects

	Magnitude			
Sensitivity	Very Large	Large	Medium	Small
Great	Great Significance	Great Significance	Significant	Intermediate
High	Great Significance	Significant	Significant	Intermediate
Moderate	Significant	Significant	Intermediate	Not Significant
Slight	Intermediate	Intermediate	Not Significant	Not Significant

Source: Table 3.10 of Part 2 - The Assessment

- 4.1.26 Table 4.4 shows how the significance of cumulative visual effects has been derived taking into account the sensitivity of receptors and magnitude of change.

Table 4-2 Matrix for assessment of Significance of visual effects

	Magnitude		
Sensitivity	Large	Medium	Small
Great	Great significance	Significant	Intermediate
High	Significant	Significant	Intermediate
Moderate	Significant	Intermediate	Not Significant
Slight	Intermediate	Not Significant	Not Significant

Source: Table 3.16 of Part 2 - The Assessment

6. Justify Judgements Utilising the Study Methodology

- 4.1.27 When considering proposals for vertical infrastructure development, officers should work through the steps detailed above in order to fully understand the baseline position at the location where the additional infrastructure development is proposed. By understanding the conclusions of the Study, the officer will be able to make a more informed assessment of the cumulative impact of additional vertical infrastructure development at the location proposed. The project environmental statement (if provided as part of the planning application submission) will provide an assessment of the landscape and visual and cumulative effects of the proposal itself. By following through the CIVI assessment steps, the officer will be able to collate the evidence needed to justify the conclusion about whether there might be further cumulative effect arising from the proposed development in addition to those existing.
- 4.1.28 The following is a checklist of the detailed factors which are of relevance in determining cumulative impact:

Scale of infrastructure proposed

- Small
- Medium
- Large

Landscape receptors

- Landscape areas defined from analysis of landscape character assessments

Landscape category

- As shown on Map CAT.02 and determined in accordance with the indicators set out in Part 2 - The Assessment Table 3.3

Landscape susceptibility

- As shown on Maps SUS.01, SUS.02 and SUS.03 and determined in accordance with the criteria set out in Part 2 – The Assessment paragraph 3.2.45 – 3.2.52

Landscape sensitivity

- As shown on Maps SEN.01 to SEN.03, determined by a combination of judgements on landscape category and landscape susceptibility

Magnitude of cumulative landscape change (direct and indirect)

- As shown on Maps MAG.01 to MAG.09 and determined in accordance with criteria set out in Part 2 – The Assessment Table 3.6 and 3.7

Significance of cumulative landscape effects

- As shown on Maps SIG.01 to SIG.04 (in conjunction with a ZTV of the proposed development if provided), determined by considering a combination of landscape sensitivity and magnitude of change.

Visual receptors

- Residents in and visitors to settlements
- Users of CROW/access land
- Users of long distance footpaths
- Users of cycle routes
- Travellers on roads
- Travellers on railways
- Visitors to tourist attractions

Visual receptor susceptibility

- As shown on Maps SUS.04 to SUS.10 and determined in accordance with the criteria set out in Part 2 – The Assessment Table 3.11

Cumulative Impacts of Vertical Infrastructure

Part 1: Key Findings & Guidance

Visual sensitivity

- As shown on Maps SEN.04 to SEN.10, determined by considering a combination of judgements on landscape category and visual receptor sensitivity

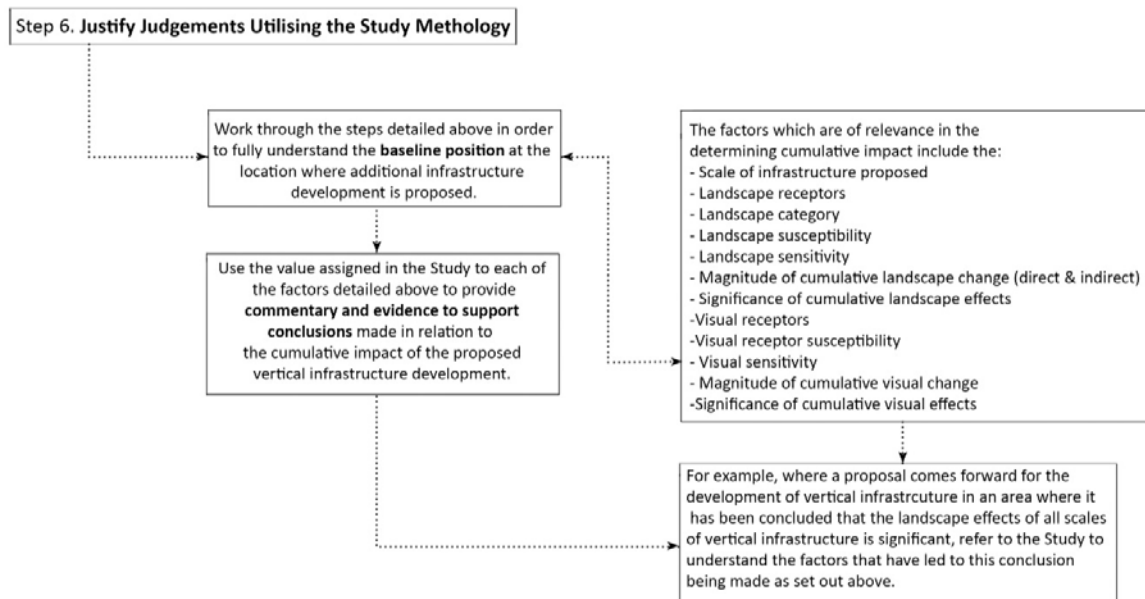
Magnitude of cumulative visual change

- As shown on Maps MAG.10 to MAG.31 and determined in accordance with the criteria set out in Part 2 – The Assessment Table 3.13

Significance of cumulative visual effects

- As shown on Maps SIG.05 to SIG.34 (in conjunction with a ZTV of the proposed development if provided), determined by considering a combination of visual sensitivity and magnitude of change

4.1.29 The judgements set out in the Study assigning a value to each of the factors detailed above can be used by officers to provide commentary and evidence to support conclusions made in relation to the net cumulative impact of the vertical infrastructure development under consideration. For example, where a proposal comes forward for the development of vertical infrastructure in an area where it has been concluded that the landscape effects of all scales of vertical infrastructure is significant, the officer should refer to the Study to understand the factors that have led to this conclusion being made as set out above.



4.2 When can the Study and Guidance be used?

4.2.1 Local authority planning officers are advised to refer to this evidence based document at the following stages during the planning application process:

Pre-application discussions

- 4.2.2 This evidence base document should be referred to at the earliest possible stage in the planning application process. The utilisation of the Study at the pre-application stage will aid transparency by providing applicants, agents and developers with a clear understanding of the methodology which the local authority will use to inform their assessment of the cumulative impact of proposals for vertical infrastructure development.
- 4.2.3 This document details the information that will be required to support applications for vertical infrastructure development. By clearly setting out to applicants the information that will be required in order for such applications to be assessed at the pre-application stage, delays should be avoided during the latter stages of the application process. Data which should be requested from the applicant for proposals for vertical infrastructure development may include:
- Location of the proposal (site location plan and grid references for each structure proposed);
 - Hub and blade-tip height and rotor diameter of wind turbines;
 - Height of telecommunication masts and other vertical infrastructure;
 - ZTVs in accordance with agreed distances.
- 4.2.4 The use of this Study and Guidance at the pre-application stage will allow applicants, agents or developers to understand the baseline position at the location where additional vertical infrastructure is proposed. By being fully informed of the existing cumulative effects of vertical infrastructure development at the location of interest from the outset, all parties will be aware of the factors which need to be addressed in any planning application submission.
- 4.2.5 The Study and Guidance will be helpful to inform discussions at the pre-application stage which seek to encourage the siting of vertical infrastructure development in areas which are less sensitive to the cumulative effects of such development.

During the determination of planning applications

- 4.2.6 The Study and Guidance provides a framework which can be used by planning officers in the cumulative impact assessment of planning applications for vertical infrastructure development. The document provides data and mapping for officers to understand the existing cumulative impact of vertical infrastructure in locations throughout Cumbria and the districts of Lancaster and Wyre in Lancashire. In addition, the document provides a methodology which can be applied in the assessment of vertical infrastructure proposals, including the factors which need to be taken into account to inform such an analysis.

At appeals and inquiries

- 4.2.7 The document provides a clear and systematic approach to be applied in the determination of applications for vertical infrastructure development, which is based on robust evidence and assessment methodology. The use of this document to inform decisions on planning applications means that a consistent and transparent framework is in place and that it can be clearly demonstrated at appeal or inquiry how decisions have been arrived at.

Local Plan preparation

- 4.2.8 The Study and Guidance will be a useful tool to inform the preparation of Local Plan policies, particularly policies relating to landscape character, visual amenity and energy/infrastructure development. The Study and Guidance could also be used to assist the identification of suitable sites for vertical infrastructure/renewable energy developments in Local Plan areas. This would help to provide greater certainty as to where such development will be appropriate. In addition, the designation of appropriate sites for such development will provide local planning authorities with greater powers to refuse applications for such development in locations deemed to be unsuitable.

Nationally Significant Infrastructure Projects

- 4.2.9 The County Councils and Local Planning Authorities will perform a role as a statutory consultee when any Development Consent Orders (DCO) for Nationally Significant Infrastructure Projects (NSIPs) are submitted to the Planning Inspectorate and determined by the Secretary of State. This guidance can be used to help inform consultation responses provided by the County Councils and Local Planning Authorities in relation to NSIPs for vertical infrastructure, such as the North West Coast Connections project. The Study and Guidance will be a consideration which can be used to inform the Local Impact Report and other representations made.

4.3 Conclusion

- 4.3.1 From a detailed analysis of the landscape and visual aspects of the study area, it is clear that Cumbria and Lancashire have valued landscape areas and visual receptors that are currently being affected by the vertical infrastructure in place and due to be constructed. A concentration of effects is evident in a number of areas throughout the counties, along the western coast and Solway coast; along the corridor of land along the route of the M6, and along the corridor of land between Carlisle and Workington.
- 4.3.2 Future proposals are likely to intensify these effects and future major infrastructure developments may result in more areas of the counties experiencing Significant and Great Significance effects on the landscape and visual receptors.
- 4.3.3 The use of this document as a basis for future decision making and the application of the Guidance within it is intended to inform decisions about the effects different scales and extents of vertical infrastructure development may have in different parts of the counties, to reduce and, in the long term, aid in the avoidance of Significant and Great significance effects.
- 4.3.4 Due to the nature of these schemes and the temporary (although long term) duration of some structures, this assessment represents a snap shot in time and should be updated on a regular basis to incorporate schemes that have received planning permission; schemes that have been removed; new developments; and changes to landscape designations.
- 4.3.5 Additional sets of receptors may be included, for example tourists attractions not currently taken into account by CIVI, as data for them become available, or the areas of access land beyond those designated under the CROW Act, or other receptors important in particular localities. The

CIVI GIS provides tools which can be applied to added receptor groups and for added developments. The key to its continuing relevance and value to decision making will be maintenance and updating of the GIS.

- 4.3.6 The GIS is at the heart of the CIVI assessment and, through updating, will represent the most up-to-date information, superseding the “paper reports”. The process of assembling the baseline data for the Study has generated a consistently tabulated set of the information in all the landscape character assessments within the study area, enabling consistent judgements to be made across the study area. The LCA Tables have been extended to include the outcomes of the assessment, the sensitivity to the different scales of vertical infrastructure, the magnitude of change at each scale and the resultant significance of existing cumulative effects on the landscape in each area.
- 4.3.7 In conclusion, CIVI provides a wealth of information and brings together a large amount of data about the landscape and the places where people may be enjoying views of the landscape in the study area. The CIVI assessment provides a valuable baseline with which to evaluate development proposals for further vertical infrastructure development and a resource to support decision-making about such development proposals.