

This Annex 1 document should be read in conjunction with the main document as context is not repeated. (Page and Figure numbers continue from the main document).

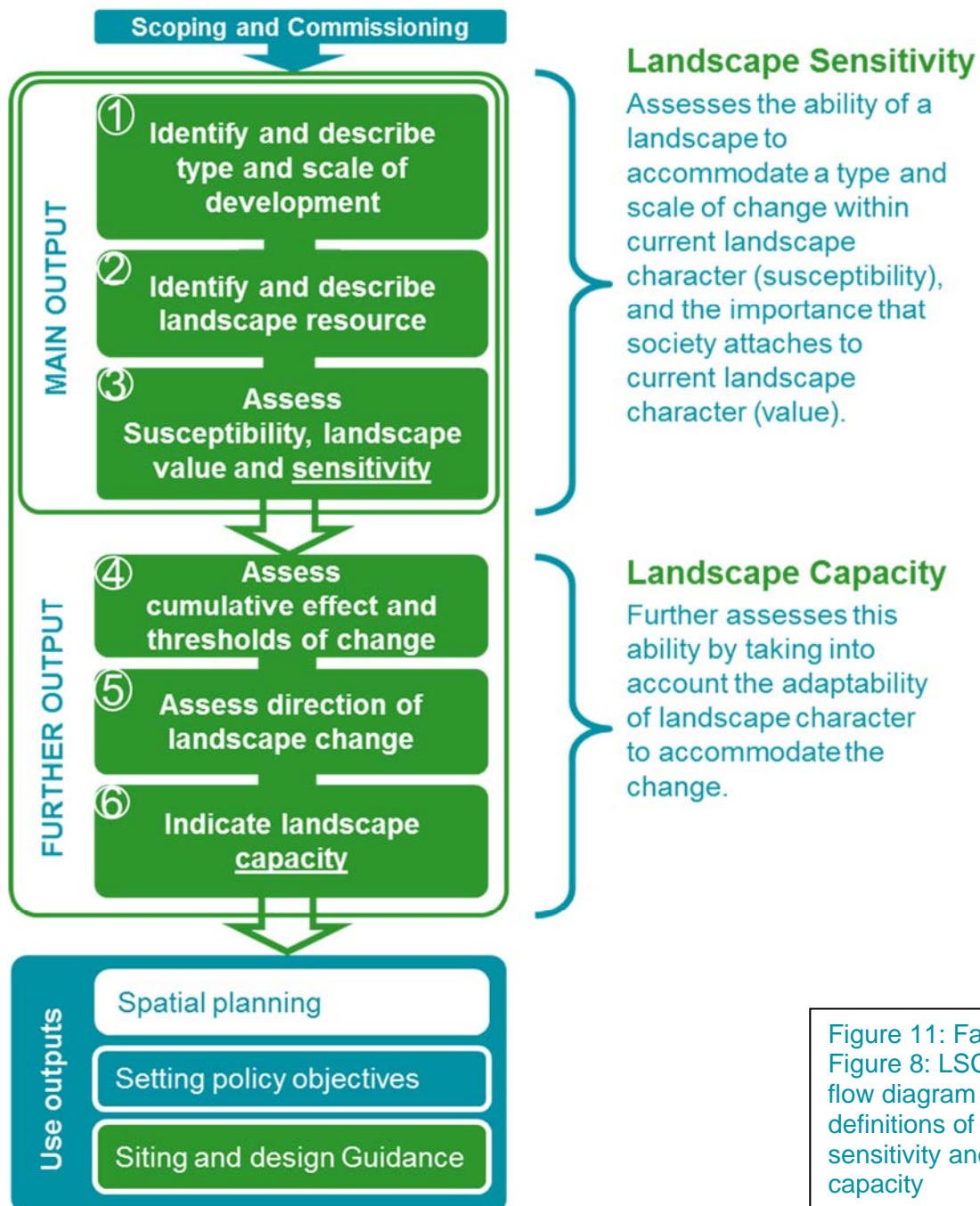


Figure 11: Facsimile of Figure 8: LSCA method flow diagram with definitions of landscape sensitivity and landscape capacity

## 12 Contents of Annex 1

<b>13</b>	<b>Stage 1: The type and scale of development to be considered</b>	<b>24</b>
13.1	Typical landscape characteristics of wind turbine developments	25
13.2	Typical landscape characteristics of solar photo-voltaic (PV) developments	28
<b>14</b>	<b>Stage 2: Identify and describe the landscape resource</b>	<b>30</b>
14.1	Extent of study area	30
14.2	The right scale of landscape reporting unit	30
14.3	Taking into account views and visual factors in LSCA	31
14.4	Planning policy areas	32
14.5	Cross-border working	32
14.6 – 14.8	Landscape Character Areas	33
14.9 – 14.11	Using LANDMAP	35
14.12	Adding further information to LCAs	35
14.13	Using LANDMAP: evaluations and management guidelines	36
14.14	Geological, ecological, heritage or cultural importance	36
<b>15</b>	<b>Stage 3 Part 1: Assessing landscape susceptibility</b>	<b>37</b>
15.1 – 15.3	Definitions, scope and need for criteria	37
15.4	Landscape susceptibility criteria for wind turbine developments	38
15.5	Landscape susceptibility criteria for solar PV developments	41
<b>16</b>	<b>Stage 3 Part 2: Assessing landscape value</b>	<b>45</b>
16.1	The concept	45
16.2	The nature of landscape value	46
16.3	The level of landscape value	46
16.4	LANDMAP and landscape value	47
<b>17</b>	<b>Stage 3 Part 3: Assessing landscape sensitivity</b>	<b>48</b>
<b>18</b>	<b>Stage 4: Assessing the cumulative effect</b>	<b>49</b>
18.1	The baseline for assessing the cumulative effect on landscape character	49
18.2	Types of cumulative effect	50
18.3	Assessing how cumulative effects change landscape character	51
<b>19</b>	<b>Stage 5: Setting the direction for landscape change</b>	<b>53</b>
<b>20</b>	<b>Stage 6: Assess Landscape capacity</b>	<b>56</b>
<b>21</b>	<b>Siting and design guidelines</b>	<b>58</b>
<b>APPENDIX 1: Glossary</b>		<b>60</b>
<b>APPENDIX 2: Past guidance on LSCA</b>		<b>61</b>
<b>APPENDIX 3: Variations in LSCA practice across the UK</b>		<b>62</b>
<b>APPENDIX 4: Examples of presentation techniques</b>		<b>63</b>



### 13 Stage 1: The type and scale of development to be considered

Section 6.1 (main document) outlines the general principles for this stage. The effect of having different scenarios for the sensitivity assessment is illustrated in Figure 12 below.

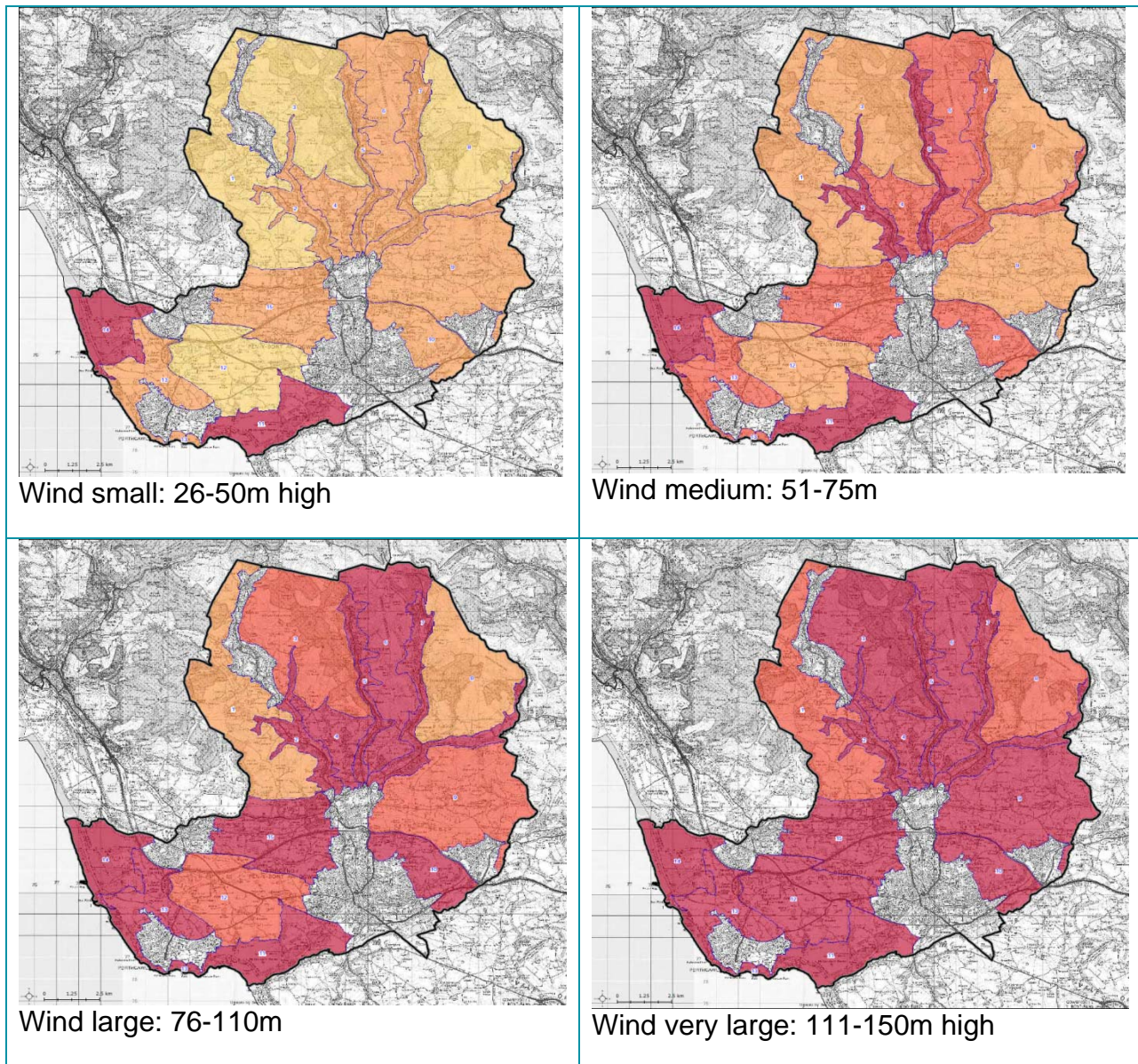


Figure 12: Illustrating spatial variation in landscape sensitivity to wind turbines by landscape character area, by turbine height.<sup>19</sup> As can be seen here, represented through landscape sensitivity levels, the scale of development (represented by height of turbines) has a huge difference on the ability of the landscape to accommodate the development type, as well as landscape character (as represented by the different landscape areas on the maps). Key: red = higher sensitivity, yellow = lower.

<sup>19</sup> Bridgend County Borough Council. 2014. Renewables in the Landscape: Supplementary Planning Guidance. Commissioned report from LUC.

### 13.1 Typical landscape characteristics of wind turbine developments

#### 13.1.1 Wind turbine height to blade tip

SNH 2017 guidance<sup>20</sup> summarises the range of wind turbine heights used today:

*Wind energy technology has developed quickly, and significantly larger wind turbines are now available. Turbines typically consist of 60 – 100 metre high towers with blades of 40 metres or more, so their overall height to blade tip is between 100 – 140 metres, though larger turbines are available. Longer blades result in a greater rotor area and this, combined with the fact that they extend upwards into higher wind velocities, means that their wind capture and energy production is significantly larger than the smaller turbines. Since 2010, mainly as a result of the Feed in Tariff, slightly smaller turbines have been more readily available, measuring between 60-80 metres to blade tip. This provides greater flexibility in choosing a turbine appropriate to local landscape characteristics.*

Further enquiry<sup>21</sup> indicates that as technology is changing, it is not possible to equate megawatt output to wind turbine size. In other words megawattage is not relevant in LSCA. Furthermore<sup>22</sup>, it is anticipated that the greater efficiency of taller turbine height in capturing more wind is leading to most projects in planning or in development in Wales today having blade tip heights of somewhere between **125m and 155m**. The removal of subsidy is likely to mean turbine tip heights will continue to increase.

Over recent years, landscape assessment practitioners and those preparing associated guidance<sup>23</sup> have found it helpful to categorise turbines into height classes. These have been used to inform the extent of study areas in LVIA and are shown in Figure 13, being a digest of past proposals plus an additional ‘extremely large’ category to reflect recent increases in turbine height. In LSCA these height classes can be adopted to form appropriate development scenario height categories, since the height ranges have evolved with reference to their differing levels of likely landscape and visual effects.

Wind turbine size class	Micro	Small	Medium	Large	Very Large	Extremely large
Turbine height to blade tip (metres)	<25	26-49	50-79	80-108	109-140	141+
Typical distances used in Wales in the extent of study areas for landscape & visual impact assessments. These are <b>not</b> Zones of Theoretical Visibility.	2 km	5 km	8 km	11 km	15 km	20 km

Figure 13: The typical wind turbine height categories used in past cases in Wales in LVIA study with associated distances for study areas to reflect the potential spread of landscape and visual effects.

<sup>20</sup> Scottish Natural heritage. 2017. Siting and Designing Wind farms in the landscape. Edition 3a. [Available on-line]. <https://www.nature.scot/siting-and-designing-wind-farms-landscape-version-3a> [Accessed 27 May 2018].

<sup>21</sup> Scottish Natural Heritage. Brenden Turvey. [Phone call, June 2018]

<sup>22</sup> Welsh Government. Charlotte Gibson, Energy Division. [Email 9 July 2018]

<sup>23</sup> Natural Resources Wales. 2016. How we consider the effects of tall structures on landscapes and views. Quick Guide 10. [Available from Natural Resources Wales].



### 13.1.2 Windfarm size - numbers of turbines in a cluster.

The number of turbines in a cluster in an area (which may comprise one or more developments) have been categorised in the SNH 2017 guidance as follows.

Wind farm cluster	Number of Turbines
Small	1-3
Medium	3-20
Large	20-50
Very Large	50+

Figure 14: Wind farm scale by number of turbines (from SNH 2017 guidance)

In LSCA our concern is with the cumulative effect of *all* turbines in a landscape rather than in LVIA where the focus is on distinguishing those from a specific development.

### 13.1.3 Further factors that can affect landscape character susceptibility to wind turbine developments

- **Large size and scale relative to setting** – turbines usually standing out as landmark features in comparison to the scale of other elements and features in the landscape
- **Prominently sited** – turbines are on exposed slopes and hilltops to maximise their exposure to wind energy. Windfarm layout /arrangement provides some opportunity for mitigation, e.g. keeping back from plateau edges and avoiding development on both sides of valleys
- **Distinctive form** – with tall towers and large, usually 3 blade designs but occasionally different. Their form and that of any anemometer mast is likely to contrast with all but the most industrial and developed landscape settings.
- **Moving parts** – the rotating blades draw in the eye
- **Appearing light or dark compared to their backdrop** – depending on weather, sun lighting angle and direction. Increasing light/dark contrast makes the the turbines appear more visually prominent and stand out from their landscape setting.
- **Aviation lighting** - on turbines above 150m height
- **Wide access tracks** – which may need to break fresh ground or be cut into hillsides, are needed. While in existing afforested areas there may already be a network of access tracks, in other areas such as open moorland, new tracks may need to be cut.
- **Other ancillary infrastructure**, transformer, overhead electricity lines, remaining land management and security restrictions.



Figure 15: Wind turbines that have been 'key-holed' into an area of extensive forestry at Maes Gwyn windfarm on the Hirfynydd ridge above the upper Neath Valley, seen from a popular mountain road view point and with a backdrop of the Brecon Beacons National Park.

## Landscape Sensitivity and Capacity Assessment in relation to on-shore wind and solar photo-voltaic developments



Figure 16: Rolling upland wind turbine landscape at Pen-y-Cymoedd. Areas identified in TAN 8 Strategic Search Areas for wind farms are typically like this: extensive, sparsely populated upland plateaux, dominated by impoverished moorland and/or conifer plantation and a general absence of nature conservation, landscape or heritage designations. The wind turbines and their access tracks are fitted into a landscape already managed for extensive plantation forestry and moorland.



Figure 17: The sky-lining effect, seen here looking west towards Maerdy Wind farm, zoomed in to illustrate the effect of the turbines rising from 'somewhere within or behind' forestry.

Further detail on how wind turbines can affect landscape character are provided in other documents: While a general description of factors affecting the landscape and visual impact of wind turbines can be found in '*Designing Wind Farms in Wales*<sup>24</sup>, more detailed and specific descriptions of each factor listed above can be found in the SNH 2017 document, which also covers a number of other siting and design considerations, such as multiple wind farms.

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<sup>24</sup> Design Commission for Wales. 2014. *Designing Wind Farms in Wales*. [Available on-line]. <https://dcfw.org/designing-wind-farms-in-wales-2/> [Accessed 27 May 2018].

## 13.2 Typical landscape characteristics of solar photo-voltaic (PV) developments

### 13.2.1 Area of spread

This relates to the size of arrays and their apparent dominance across a landscape as a proportion of land cover. To date, most solar PV proposals have been relatively small, and LSCA categories used elsewhere reflect this. For example in Stratford<sup>25</sup>, categories used included ‘*very small*’ under 1 hectare, and the ‘*very large*’ category was over 25 hectares, with intermediate categories of 1-5ha, 5-15ha and 15-25ha. As with wind turbine developments, as the technology improves, the size of developments are likely to increase, and the author was informed of a current proposal (not in Wales) for 500 hectares, but this may be an exception. As such, definitive categories to be used in scenarios in LSCA should be reviewed.

### 13.2.2 Cluster of spread

This relates to the clustering effect into one part of a landscape (with multiple developments spreading out), typically to reflect close proximity to grid connections. Given this experience<sup>26</sup>, a single cluster (which might comprise more than one development) may be the most practical scenario to use in LSCA.

### 13.2.3 Further factors that can affect landscape character susceptibility to solar PV developments

- **Very Low-rise** – solar photo-voltaic panels are constructed in arrays which range from single height to double height, or approximately 1.5 to 4m high.
- **Spreading** – like a field crop, with issues of location of the array in relation to topography- e.g. ridges, hillsides and valley sides. . From a distance, a field of these panels can appear as a single visual mass, and their reflectivity and smoothness can be akin to that of a lake of water, large greenhouse, or some plastic agricultural crop coverings like ‘poly-tunnels’. Seen from behind, panel orientation may be less conspicuous, although the supporting steel structure can be visible at close range.
- **Containment** – the relationship of the array to landscape pattern and enclosure, especially field boundary pattern and the effects of choice of micro-siting
- **Geometric shape** – shape and size of the array, and needing to avoid straight lines in irregular landscapes. Arrays are typically laid in straight lines with gaps to optimise the exposure to sun and for maintenance. The panels are rigid and double height panels and above are less flexible to ‘flow’ with topography than single height panels. Imposing bold geometric shapes may increase the appearance of an urban or industrial landscape.
- **Occupying open southerly aspects**, whether on a gentle hillside or on flat ground. The panels are angled towards best sun capture, typically between 20 and 40 degrees from level. Steeply sloping or sites with uneven or rugged topography are usually avoided for technical reasons. Panels can be roof-mounted, such as on large factories or agricultural warehouses.
- **Can be higher than hedges or field boundaries** - Whilst single height arrays are within the height of trimmed hedges, stone walls or clawdd, higher arrays are only contained by outgrown field hedges or nearby woodland.

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<sup>25</sup> White Consultants, in association with Steven Warnock. 2014. Stratford-on-Avon District Renewable Energy Landscape Sensitivity Study. Final report for Stratford-on-Avon District Council. [On-line]. <https://www.stratford.gov.uk/doc/205819/name/ED4114%20Renewable%20Energy%20Landscape%20Sensitivity%20Study%20July%202014.pdf> [Accessed 20 June 2018].

<sup>26</sup> Melanie Croll CMLI. Devon County Council. Personal contact June 2018.



## Landscape Sensitivity and Capacity Assessment in relation to on-shore wind and solar photo-voltaic developments

- **Glare and reflective surface** - despite a matt surface to maximise solar collection, glint or glare can be an issue. The glint or glare varies according to the angle of view and different lighting and atmospheric conditions and usually occurs for a short period after sunrise or before sunset. Some panels have a blue tint.
- **Ancillary infrastructure** - including access tracks, transformers and overhead electricity lines, remaining land management (e.g. hedgerows) and security restrictions.



Figures 18: © Melanie Downes, sourced from Devon Landscape Policy Group Advice Note 2<sup>27</sup>;  
Figure 19: Blue Post, Devon, © Kim Gray.



Figures 20 & 21: Solar PV developments are not limited to sunnier coastal or lowland areas of Wales. This one is in an upland area at Mynydd Fochriw.

<sup>27</sup> LUC. 2013. Accommodating Wind and Solar PV Developments in Devon's landscape. Report for Devon Landscape Policy Group (Published as Devon Landscape Policy Group Advice Note 2). Chapter 3. [On-line]. <http://www.devon.gov.uk/devon-guidance-v6-june-2013-final-report.pdf> [Accessed 27 May 2018].





Figure 22: seen from a distance, this development being near Hirwaun, might resemble a 'lake', except for its location across a rolling plateau.

## 14 Stage 2: Identify and describe the landscape resource

**Section 6.2 (main document) outlines the general principles for this stage.**

### 14.1 Extent of study area

The default study area will be the entire planning area of the LPA. However, if the REA results in excluding some areas for other reasons, then that may reduce the relevant area to assess in LSCA. This issue is less likely for wind, moderately likely for Solar PV, and highly likely for some other forms, such as micro-hydro, where siting choice is very limited.

### 14.2 The right scale of landscape reporting unit

The actual size of a landscape reporting unit will be determined by the extent of the particular pattern of elements and features of that characterise that part of the study area, plus the nature of the development type being considered. As wind turbines are very large structures, necessarily sited in visually prominent locations, suitably broad-scale reporting units are needed in LSCA. Similarly for solar PV, broad-scale units would reflect their large surface coverage. Conveniently, the same scale of reporting units may be used for both wind and solar PV development types.

## Landscape Sensitivity and Capacity Assessment in relation to on-shore wind and solar photo-voltaic developments

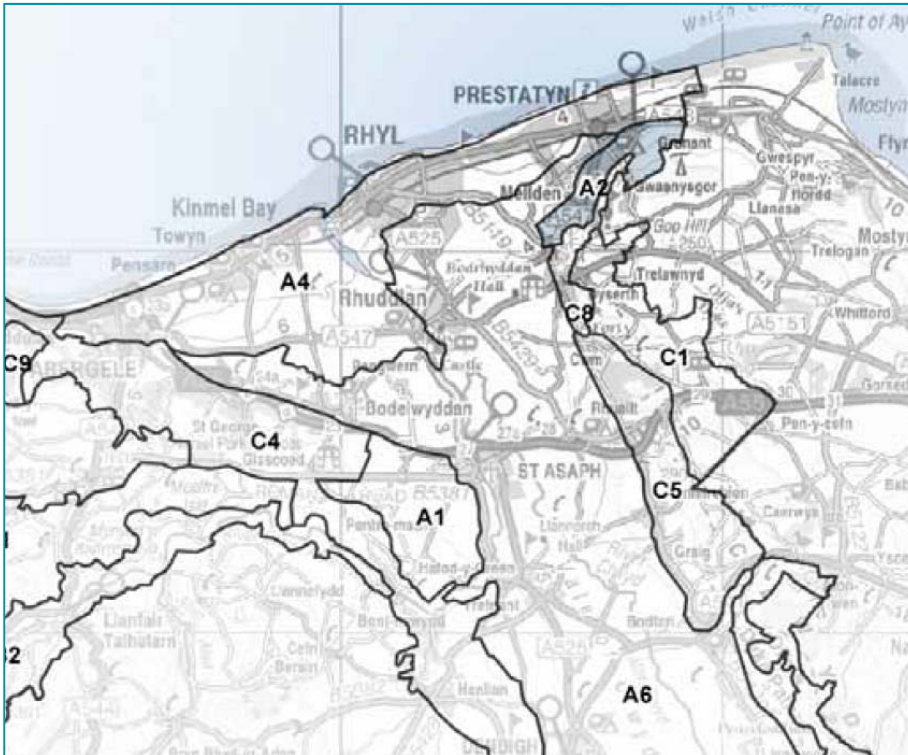


Figure 23: An example<sup>28</sup> of a map showing landscape character areas used for assessing landscape sensitivity to onshore wind turbine developments. Bounded by the black lines, their sizes and shapes vary according to the extent of similar landscape character. Map scale: the base map grid squares are at 10km intervals.

### 14.3 Taking into account views and visual factors in LSCA

Section 6.2 (main report) explains that in LSCA, visual factors are taken into account through reference to the visual qualities of landscape character areas. Views and visibility are not directly assessed in LSCA as spatially they are a different concept and change intimately over a short distance within a single character area, and a single view may extend across a number of character areas. Views and visibility are more effectively assessed as part of an LVIA, as they are very specific to the siting and design of an individual proposal, which of course is not known in LSCA.

While feedback suggests that attempting to spatially mix inter-visibility or visual buffer zones into the LSCA is practically too complex, it may be helpful to plot visual buffer zones around Designated Landscapes as a separate layer of landscape evidence (which would not be part of the LSCA).

- An example of a visual buffer zone this is where the spread of visual effects may be into a Designated Landscape where there is a statutory duty on Planning Authorities to protect natural beauty, as expressed through the special qualities of the area. A series of graded visual 'buffer' zones may be drawn around the Designated Landscape and overlaid as a separate map layer to the LSCA, to alert readers of the LSCA to this additional issue when considering individual development proposals that arise. In the case of wind turbine developments, the gradations on the buffer can be related to the different turbine size categories used in the LSCA, as shown in Figure 13 and be expressed in terms of the extent of study areas used in LVIA.

<sup>28</sup> Conwy County Borough Council & Denbighshire County Council. 2013. Conwy and Denbighshire Landscape Sensitivity and Capacity Assessment for Wind Energy Development. Final report by Gillespies.



#### 14.4 Planning policy areas

LSCA should use landscape character-based reporting units, as the basis of the assessment is the ability of landscape character to accommodate the change. Planning policy areas are a different spatial concept, however there may be instances where they are helpfully one and the same as landscape character areas.

More typically, Planning policy areas may apply to just some parts of the landscape (e.g. Special Landscape Areas) or be influenced by non-landscape factors (e.g. TAN 8 Strategic Search Areas for wind farms). They may have boundaries reflecting administrative convenience or follow 'defensible' boundaries in planning terms, such as following a major road, which more likely cuts through an area of similar landscape character.

In consequence, Planning policy areas are normally best shown as separate map layers to the landscape character areas, shown on map images with a different graphic.

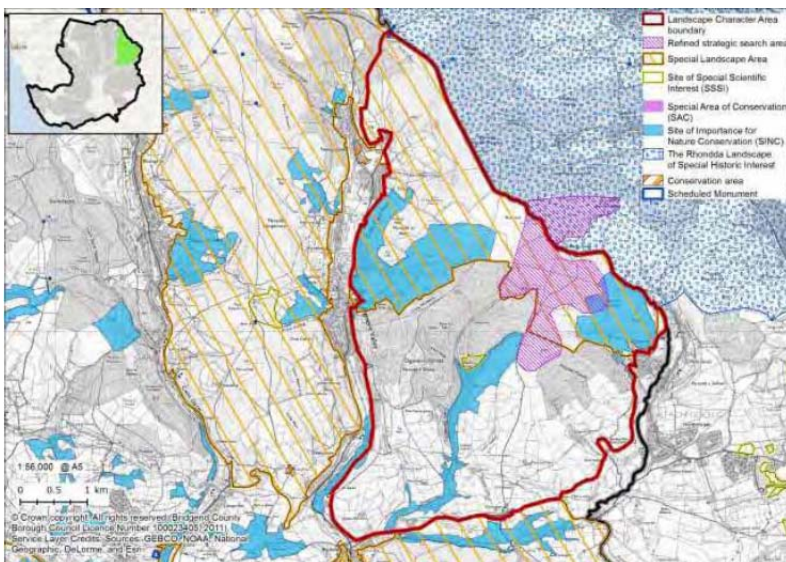


Figure 24: illustrating the spatial relationship of a landscape character area (red line boundary) and the mesh of various other landscape-relevant planning policy designation areas.<sup>29</sup>

In relation to Policy, see also: *Acknowledging Landscape Value* in Stage 3 and *Direction of change* in stage 5.

#### 14.5 Cross-border working

Some assessments have been carried out spanning the study area across more than one local planning authority. This is encouraged. As well as possible advantages of pooling resources and sharing expertise, such assessments can make better sense of cross-border landscapes to provide greater consistency between the assessment of one side and the other.

It is also helpful to distinguish which sections of a LPA study area boundary coincide with changes in landscape character, and which sections do not, where similar landscape character continues beyond and into the next planning authority area.

<sup>29</sup> Bridgend County Borough Council. 2014. Renewables in the Landscape: Supplementary Planning Guidance. Commissioned report from LUC.

### 14.6 The concept of Landscape character areas (LCAs)

A place-based spatial concept is needed distinguish one part of the study area from another while individually forming discrete units that collectively cover the entire study area. LCAs provide these, reflecting “*the extent to which a distinct and recognisable pattern of elements, features and qualities occurs within the [character] area, to give a clear sense of place*”<sup>30</sup> that “*makes one landscape different from another, rather than better or worse*”<sup>31</sup>. Characteristics and qualities that are typical or commonplace to find in the area are identified, as opposed to what is rare or special, and LCAs also identify any unique features that define the area. In addition, broadly similar LCAs can also be classified into types to promote consistency in the LSCA.

### 14.7 Existing LCAs in Wales

Many Local Planning Authorities have already prepared LCAs. They are often published as part of Supplementary Planning Guidance and may include landscape management policies and siting and design guidelines. Existing LCAs can be adopted for use in LSCA subject to their being:

- Of an appropriate spatial scale,
- Of sufficient written detail and spatial boundary resolution, and
- Up to date and of sound technical standard.

Boundary amendments, area amalgamations or sub-divisions, or enhancing the text on key characteristics and qualities may arise from amending existing LCAs.

Coverage, scale, level of spatial resolution and detail varies across different existing LCA assessments. In Wales, **National** Landscape Character Areas<sup>32</sup> provide a broad overview of landscape character, and many local authorities have all or part coverage at a more detailed local scale, sometimes known as county scale or **Local** LCAs, often contained within landscape sensitivity and capacity assessments<sup>33</sup>.

Additionally, **LANDMAP** information is available for all parts of Wales as a National dataset, at a consistent scale, coverage and detail. *See section below on using LANDMAP.*

Seascape character assessments<sup>34</sup> may also be available, which provide more detail about coastal character. **National Marine** Character Areas provide the broad-scale overview for all coastal parts of Wales and **local seascape** character assessments provide more detail in some areas.

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<sup>30</sup> Natural Resources Wales. 2017. LANDMAP. Visual and Sensory Aspect Methodology. Page 29, Field No. 48 ‘Character’ [On-line] <https://cdn.naturalresources.wales/media/677816/visual-sensory-landmap-methodology-2016-v2.pdf?mode=pad&rnd=131472708500000000> [Accessed 26 July 2018]

<sup>31</sup> Landscape Institute and Institute of Environmental Management and Assessment. 2013. Guidelines for landscape and Visual Impact Assessment. 3rd edition. (GLVIA3). [Not-On-line]

<sup>32</sup> Natural Resources Wales. 2018. National landscape Character Areas. [web page]. <http://naturalresources.wales/evidence-and-data/maps/nlca/?lang=en> [Accessed 20 June 2018]

<sup>33</sup> Landscape Institute. 2015. Landscape Character Reading List. Technical Information Note. [Available on-line]. <https://www.landscapeinstitute.org/technical-resource/landscape-character/> [Accessed 20 June 2018]

<sup>34</sup> Natural Resources Wales. 2018. Marine Character Areas. [web page]. <http://naturalresources.wales/evidence-and-data/maps/marine-character-areas/?lang=en> [Accessed 20 June 2018]



### 14.8 Identifying new LCAs

The approach for landscape character assessment is described in separate guidance, notably that produced by Natural England<sup>35</sup> as well as older but more detailed guidance produced by the former Countryside Agency and Scottish Natural Heritage<sup>36</sup>, and in Wales, information from LANDMAP<sup>37</sup> is used to inform LCAs (see on). The approach takes into account both the natural and cultural characteristics, as well as perceptual and aesthetic qualities of the landscape, as illustrated in Figure 25.



Figure 25: The range of influences that shape landscape character and our perception of it, showing where these sit within the 5 themed aspect layers of LANDMAP information (inner 'rim' of the 'wheel'). Adapted from Natural England's 'An approach to landscape character assessment' 2014.

<sup>35</sup> Natural England. 2014. An Approach to Landscape Character Assessment. [On-line]. <https://www.gov.uk/government/publications/landscape-character-assessments-identify-and-describe-landscape-types> [Accessed 24 May 2018].

<sup>36</sup> Countryside Agency and Scottish Natural Heritage. 2002. Landscape Character Assessment: Guidance for England and Scotland. [On-line]. <https://www.nature.scot/professional-advice/landscape-change/landscape-character-assessment> [Accessed 24 May 2018].

<sup>37</sup> Natural Resources Wales. 2018. LANDMAP – the Welsh landscape baseline. [Web page]. [www.naturalresources.wales/landmap](http://www.naturalresources.wales/landmap) [Accessed 24 May 2018].

#### 14.9 Using LANDMAP: the starting point for LCA

LANDMAP is an all-Wales baseline landscape resource where landscape characteristics, qualities and influences on the landscape are recorded and evaluated. There are specific references to using LANDMAP in PPW. LANDMAP therefore provides a head start for LCA in Wales, being a principal source of many of the spatial and written details.

LANDMAP provides five sets of local-scale, themed ‘aspect’ areas, each as a separate layer in GIS, being:

- Geological landscapes
- Landscape habitats
- Historic landscapes
- Visual and Sensory landscapes
- Cultural landscapes.

LANDMAP covers all parts of Wales and each layer has been created by relevant specialists in the aspect. Aspect area boundaries are resolved to 1:10,000 scale. LANDMAP information and guidance notes explain more and are available on Natural Resources Wales’ website<sup>38</sup>. Figure 25 also illustrates the relationship between LANDMAP’s five aspects and the natural and cultural characteristics and perceptual qualities referred to in landscape character assessment guidance.

#### 14.10 Using LANDMAP: Taking the Visual and Sensory Aspect as a ‘lead’ layer

It is common for LANDMAP’s visual and sensory aspect to be used as the lead layer (or first layer to be considered), and amended accordingly in relation to influences from the other four aspects: geological, habitats, historic and cultural. The focus of the visual and sensory aspect, on experiential characteristics and qualities, fits well with the focus in LSCA of highlighting the qualities that arise from landscape character.

It is also common for the information in the cultural aspect to be taken more as an influence on landscapes brought out in written descriptions rather than as a significant influence on defining the extent of character areas, which are instead principally defined in spatial extent by land form, land cover and land use.

#### 14.11 Using LANDMAP’s ‘levels’

Levels of detail can be varied in LANDMAP using the typology in the Visual and Sensory Aspect, which groups different areas of similar or related types together. The default and most detailed spatial division published to date is ‘Level 3’, but if changed to ‘Level 2’ then far fewer spatial divisions are shown. Level 2 types alone will not entirely create larger landscape character areas, for example major roads, settlements and water bodies may still be split out as different types within larger areas. But as a tool for exploration, LANDMAP can assist greatly in desk stages of identifying landscape character areas.

#### 14.12 Adding further information to LCAs

While LANDMAP provides a starting point for landscape character assessment it should not be regarded as the end point and important understanding may not be gained by solely viewing and overlaying map layers in a GIS application.. Further detail from field

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<sup>38</sup> Natural Resources Wales. 2018. LANDMAP – the Welsh landscape baseline. [web page]. [www.naturalresources.wales/landmap](http://www.naturalresources.wales/landmap) [Accessed 24 May 2018].



## Landscape Sensitivity and Capacity Assessment in relation to on-shore wind and solar photo-voltaic developments

observations is likely to be needed to tease out what aspects of the landscape are most relevant to the assessment, the result being clearer thinking and explanations and therefore a more robust LSCA.

In addition to landscape character, some landscape functions will be helpful to record, for example:

- a gateway to a wider area, such as entering Wales through the Vale of Llangollen
- separation between settlements, such as the mountain ridges in the South Wales valleys
- a distinct edge or marked change in character that separates areas, such as the edge of the Wentwood Forest along the ridge that adjoins the Usk Vale.

Specialist expertise and existing information should be therefore be combined with local knowledge and some further desk and field work, ideally including reference photographs.

### 14.13 Using LANDMAP: evaluations and management guidelines

LANDMAP is more than just a starting point for LCA. It also includes:

- a suite of criteria-based evaluations - that can be used to inform judgements of landscape sensitivity
- a series of landscape management guidelines - that can assist in judging the direction of landscape change needed if landscape character is to be maintained or enhanced.

Reference to these will also be needed at relevant points in the assessment.

### 14.14 Geological, ecological, heritage or cultural importance

LSCA primarily draws upon the visual and sensory aspect. It draws on other aspects in a supporting role in order to reflect the influences of land form, land cover and land use in defining and describing landscape character, and the cultural aspect in reflecting associations with particular areas.

LSCA does not consider the importance of geology, ecology or heritage assets in their own right. LSCA only considers these other aspects in terms of their contribution to:

- providing physical elements and features of landscape character (rivers, stone walls, castles, woodland etc)
- understanding their importance to providing experiential landscape qualities, such as the abundance of semi-natural vegetation contributing to the sense of wildness, and the subjects of cultural associations, such as the picturesque drama of the river gorge in the lower Wye Valley being a draw for artists over the centuries.

## 15 Stage 3 Part 1: Assessing landscape susceptibility

Section 6.3 (main document) outlines the general principles for this stage.

### 15.1 A note on definitions

Landscape sensitivity combines judgements of landscape susceptibility and landscape value. Careful definition of terms is required, as their use in past assessments and guidance lacks consistency. At first glance, GLVIA3 provides a number of useful terms, but its definitions are closely related to the needs of LVIA and refer to specific receptors and developments, which are not known in LSCA. This guidance adapts these definitions to provide the right focus in LSCA. *Definitions are offered in the Glossary of Annex 1.*

### 15.2 Scope

Landscape susceptibility considers the ability of a landscape to accommodate a type and scale of change while maintaining or enhancing current landscape character. The assessment is value neutral and does not consider whether such change matters to society.

Visual aspects are considered only in relation to landscape character and qualities and not in relation to specific views and visibility. This is because views and visibility change over a short distance and can only be assessed on a case by case basis with knowledge of a specific development on a specific site.

### 15.3 The need for criteria

The assessment uses criteria relevant to the type of development, but applicable to any landscape. Each criterion is defined at the outset so that its effect is understood consistently. A susceptibility judgement is made for each criterion, so that conclusions can highlight which criteria are more susceptible to change than others, while narratives explain the nature of that susceptibility.

The assessment is carried out for each landscape character area, for each criterion, and for each type and scale of development. Relevant criteria can differ slightly between the types of development. That might be a lot of assessment, but the process is streamlined using standard tables.

Criteria should be:

- **relevant** - to the development type
- **multiple** – to cover all the issues
- **applied** – to show the nature of effect. Similar criteria may have different effect on different types of development.

The following susceptibility criteria tables (Figures 26 – wind and 27 – Solar PV) assist the identification of characteristics and qualities of the landscape that may be susceptible to change. These tables were developed with reference to *Stratford-on Avon District Renewable Energy Landscape Sensitivity Study*<sup>39</sup> (from where the sketches have been copied); *Conwy and Denbighshire Landscape Sensitivity and Capacity Assessment for*

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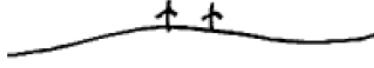


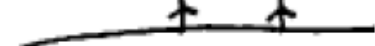
<sup>39</sup> White Consultants with Steven Warnock. 2014. Stratford-on-Avon District Renewable Energy Landscape Sensitivity Study. Final report for Stratford-on-Avon District Council. [On-line] <https://www.stratford.gov.uk/doc/205819/name/ED4114%20Renewable%20Energy%20Landscape%20Sensitivity%20Study%20July%202014.pdf> [Accessed 25 June 2018]

## Landscape Sensitivity and Capacity Assessment in relation to on-shore wind and solar photo-voltaic developments

*Wind Energy Development*<sup>40</sup> and *A Guide to Commissioning a Landscape Capacity Study*<sup>41</sup>

### 15.4 Landscape susceptibility criteria for wind turbine developments

Figure 26 below – wind turbine criteria

WIND - LAND FORM		
Criterion	Characteristics that are less susceptible to wind turbines	Characteristics that are more susceptible to wind turbines
<b>Scale (of land form)</b>	<ul style="list-style-type: none"> <li>Larger scale landforms where a wind turbine would be of comparatively minor scale</li> </ul> 	<ul style="list-style-type: none"> <li>Smaller scale, or well-defined land forms where the scale of wind turbine would dominate</li> </ul> 
<b>Topography</b>	<ul style="list-style-type: none"> <li>Upland plateau, gently rolling or flat landscapes, where wind turbines are less easily scaled against landform.</li> </ul> 	<ul style="list-style-type: none"> <li>Complex landforms with distinctive changes in level, including undulating landscapes, steeply sloping valley sides and hillsides, narrow valley floors, where turbines would reduce the apparent scale or drama.</li> </ul> 
<b>Enclosure (by landform)</b>	<ul style="list-style-type: none"> <li>Enclosing landform where potentials exist to contain the wider spread of visual effects of turbines</li> </ul> 	<ul style="list-style-type: none"> <li>Open and exposed landscapes where visibility of turbines remains apparent and are not contained by landform</li> </ul> 







WIND - LAND COVER		
Criterion	Characteristics that are less susceptible to wind turbines	Characteristics that are more susceptible to wind turbines
<b>Scale (of land cover)</b>	<ul style="list-style-type: none"> <li>Larger scale land cover, where by comparison the turbines are</li> </ul>	<ul style="list-style-type: none"> <li>Smaller scale land cover, where by comparison the turbines are a larger</li> </ul>

<sup>40</sup> Gillespies. 2014. Isle of Anglesey, Gwynedd and Snowdonia National Park Landscape Sensitivity and Capacity Assessment. Report to Isle of Anglesey Council, Gwynedd Council and Snowdonia National Park. [Not on line but relevant extracts are published by respective authorities].

<sup>41</sup> Scottish Natural Heritage. 2011. A Guide to Commissioning a Landscape Capacity Study. [On-line]. <https://www.nature.scot/sites/default/files/2017-06/B858929%20-%20A%20Guide%20to%20Commissioning%20an%20Landscape%20Capacity%20Study%20-%2025%20May%202011.pdf> [Accessed 25 June 2018].





Landscape Sensitivity and Capacity Assessment  
in relation to on-shore wind and solar photo-voltaic developments

	<p>a smaller feature</p> 	<p>feature</p> 
<p><b>Type and pattern of land cover</b></p>	<ul style="list-style-type: none"> <li>Conifer plantations or arable crops, where simplicity of land cover and simple geometry compliments that of the turbines.</li> </ul> 	<ul style="list-style-type: none"> <li>Irregular field patterns or complex land cover mosaics, such as pastoral farmland with hedgerows and individual trees and meandering watercourses, where the geometry and simplicity of turbines would appear out of place</li> </ul> 
<p><b>Enclosure (by land cover)</b></p>	<ul style="list-style-type: none"> <li>Land cover enclosure, such as woodland, limits wider visibility.</li> <li>The area of ground from which a (visible) turbine rises is widely obscured by land cover.</li> </ul> 	<ul style="list-style-type: none"> <li>Open, unenclosed landscapes, or where turbines and the ground from where they rise, are widely visible.</li> </ul> 
<p><b>Time depth</b></p>	<ul style="list-style-type: none"> <li>Landscapes dominated by recent enclosure, immature vegetation, and few features, indicating a low degree of visible historic time depth</li> <li>LANDMAP Historic landscapes: Moderate or Low Evaluation</li> </ul>	<ul style="list-style-type: none"> <li>Landscapes distinctly exhibiting one or more periods of the past, for example older enclosure patterns (prehistoric/medieval) rough ground and relict features, ancient and other broadleaf woodland, historic parkland, water meadows, orchards or other traditional features.</li> <li>Areas on the Registers of Outstanding and Special Historic landscapes, Parks and Gardens. LANDMAP Historic landscapes: Outstanding or High Evaluation</li> </ul>
<p><b>Integrity of land cover</b></p>	<ul style="list-style-type: none"> <li>Landscapes that lack clear structure or with fragmented and poorly managed land cover, indicating a low degree of integrity</li> </ul>	<ul style="list-style-type: none"> <li>Landscapes indicating a high level of historic continuity with the past, where contemporary functions build closely on the features left from past times.</li> </ul>

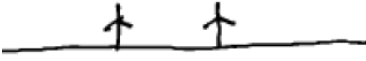
WIND - SETTLEMENT, DEVELOPMENT AND TRANSPORT		
Criterion	Characteristics that are less susceptible to wind turbines	Characteristics that are more susceptible to wind turbines
<b>Level of built development</b>	<ul style="list-style-type: none"> <li>Concentrations of built development form a key part of</li> </ul>	<ul style="list-style-type: none"> <li>Scattered, low density or dispersed settlement, unpopulated areas,</li> </ul>

**Landscape Sensitivity and Capacity Assessment**  
in relation to on-shore wind and solar photo-voltaic developments

	the present character of the landscape	where rural land use traditions, field patterns and land use predominate over built development.
<b>Type of built development and historic character</b>	<ul style="list-style-type: none"> <li>Large scale, modern standardised, industrial infrastructure, warehousing, offices or volume housing estate development, where there has been little attempt to respond to local natural or historic character.</li> </ul>	<ul style="list-style-type: none"> <li>Where small-scale or historic settlement character prevails, showing an intimate response to natural resources and which retains a high degree of time depth, historic continuity and intactness, and where new development is of a scale, siting and design that closely follows this character.</li> </ul>
<b>Legibility (notwithstanding cumulative effects)</b>	<ul style="list-style-type: none"> <li>Ad hoc or imposed development dominates, lacking clear form, function or location rationale in relation to landscape setting, with many disparate or unrelated elements ('clutter') and apparent lack of mitigation.</li> <li>There is little identifiable context from present development to inform future development.</li> </ul>	<ul style="list-style-type: none"> <li>A clear pattern, geometry or design palette, where a harmonious coordination of elements and features is evident. While this can provide a specific context for the siting and design for a wind turbine, this can also mean limits on where and what could be accommodated.</li> </ul>
<b>Vertical elements</b>	<ul style="list-style-type: none"> <li>Landscapes with many man-made vertical elements and features; masts, chimneys or pylons (notwithstanding cumulative issues)</li> </ul> 	<ul style="list-style-type: none"> <li>Few or no man-made vertical elements, where turbines would create new landmark features.</li> </ul> 



<b>WIND – VIEWS, SCENERY, TRANQUILLITY</b>		
Criterion	Characteristics that are less susceptible to wind turbines	Characteristics that are more susceptible to wind turbines
<b>Visibility</b>	<ul style="list-style-type: none"> <li>No elevated views over the landscape</li> <li>Open but inaccessible area</li> <li>Very few views of the area from residential property, public rights of way open access land, visitor destinations, promoted routes, key transport routes</li> </ul>	<ul style="list-style-type: none"> <li>Open or exposed landscape.</li> <li>Elevated views, views in, out, or across the landscape.</li> <li>Accessible area.</li> <li>Many views of the area from residential property, public rights of way, open access land, visitor destinations, promoted routes, key transport routes</li> </ul>
<b>Nature of views</b>	<ul style="list-style-type: none"> <li>Available views of the area would be long distant, and panoramic.</li> </ul>	<ul style="list-style-type: none"> <li>Available views of the area would be close, middle distant, or framed</li> </ul>
<b>Skyline</b>	<ul style="list-style-type: none"> <li>No distinctive natural landform or land cover on skylines</li> <li>Vertical man-made elements or features break the skyline</li> </ul>	<ul style="list-style-type: none"> <li>Skylines are an important and distinctive component of landscape setting, e.g. providing a backdrop to foreground landscape</li> </ul>

**Landscape Sensitivity and Capacity Assessment**  
in relation to on-shore wind and solar photo-voltaic developments

		<ul style="list-style-type: none"> <li>Landscapes where skylines are not broken by vertical man-made elements or features.</li> </ul>
<b>Focal points</b>	<ul style="list-style-type: none"> <li>Views are of a type and lack distinct features.</li> </ul>	<ul style="list-style-type: none"> <li>Views include distinctive features (e.g. a particular mountain or castle)</li> </ul>
<b>Visual setting for nearby Designated Landscape</b>	<ul style="list-style-type: none"> <li>A relatively self-contained landscape, with limited visual relationship to nearby other areas of acknowledged landscape sensitivity, such as Designated Landscapes and Registered Historic Landscapes.</li> </ul>	<ul style="list-style-type: none"> <li>A landscape with a high degree of inter-visibility with, and forming a backdrop to, nearby areas of acknowledged landscape sensitivity, such as Designated Landscapes and Registered Historic Landscapes.</li> <li>A landscape located on approaches / gateways to these other sensitive landscapes.</li> </ul>
<b>Marine visual setting</b>	<ul style="list-style-type: none"> <li>A number of artificial isomorphic features in the sea</li> <li>Actively used seascape with noise, busyness etc.</li> </ul>	<ul style="list-style-type: none"> <li>Absence of visible physical man-made features</li> <li>Absence of visible human activities on the sea.</li> </ul>
<b>Scenic quality</b>	<ul style="list-style-type: none"> <li>Lacking picturesque scenes and/or including detracting elements and features to the scenic quality</li> <li>LANDMAP Visual and Sensory Low to Moderate: low scenic quality, weak sense of place, disturbed or eroded landscape quality.</li> </ul>	<ul style="list-style-type: none"> <li>Picturesque combinations of topography, land cover, harmonious cultural features evident</li> <li>LANDMAP Visual and Sensory Outstanding or High: Distinctive character, high scenic quality, strong sense of place, high Integrity.</li> </ul>
<b>Tranquillity</b>	<ul style="list-style-type: none"> <li>Noise, movement, close to visible signs of human activity, settlement and development with intrusive built features.</li> </ul>	<ul style="list-style-type: none"> <li>Abundance of quiet, calm, wild, tranquil qualities combined with a lack of man-made noise, activity or intrusive built features.</li> </ul>



**15.5 Landscape susceptibility criteria for solar PV developments**

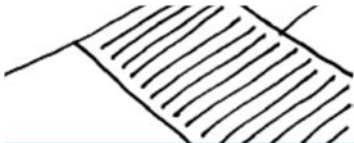
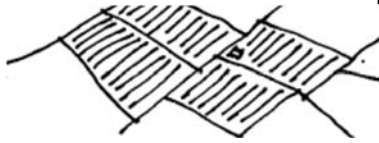
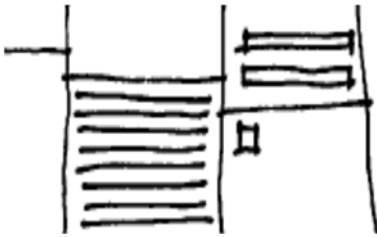

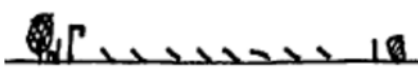
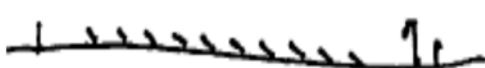
Figure 27 below – Solar PV susceptibility criteria

<b>SOLAR PV - LAND FORM</b>		
Criterion	Characteristics that are less susceptible to wind turbines	Characteristics that are more susceptible to wind turbines
<b>Scale (of land form)</b>	<ul style="list-style-type: none"> <li>Larger scale landforms where a Solar PV would be of comparatively minor scale</li> </ul> 	<ul style="list-style-type: none"> <li>Smaller scale, or well-defined land forms that may be disrupted by the rigid lines of panels</li> </ul> 
<b>Topography</b>	<ul style="list-style-type: none"> <li>Upland plateau, gently rolling or flat landscapes, where solar PV may be less widely</li> </ul>	<ul style="list-style-type: none"> <li>Complex landforms with distinctive changes in level, including undulating landscapes, steeply sloping valley sides and hillsides, narrow valley</li> </ul>



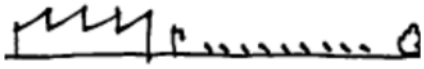

Landscape Sensitivity and Capacity Assessment  
in relation to on-shore wind and solar photo-voltaic developments

	<p>visible.</p> 	<p>floors, where would be highly visible.</p> 
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<b>SOLAR PV - LAND COVER</b>		
Criterion	Characteristics that are less susceptible to wind turbines	Characteristics that are more susceptible to wind turbines
<b>Scale (of land cover)</b>	<ul style="list-style-type: none"> <li>Larger scale land cover, where a given size of Solar PV cover is not dominant</li> </ul> 	<ul style="list-style-type: none"> <li>Smaller scale land cover, where a given size of Solar PV cover may be a dominant over the landscape-scale</li> </ul> 
<b>Type and pattern of land cover</b>	<ul style="list-style-type: none"> <li>By conifer plantations or arable crops, or where simplicity or mono-culture of land cover and simple geometry compliments that of the Solar PV.</li> </ul> 	<ul style="list-style-type: none"> <li>Irregular field patterns or complex land cover habitat mosaics, such as pastoral farmland with hedgerows and individual trees and meandering watercourses, and abundant semi-natural habitats, where the geometry and simplicity of Solar PV would be in great contrast.</li> </ul> 
<b>Enclosure (by land cover)</b>	<ul style="list-style-type: none"> <li>Land cover enclosure, such as woodland, limits wider visibility.</li> </ul> 	<p>Open, unenclosed landscapes, that are widely visible.</p> 
<b>Time depth</b>	<ul style="list-style-type: none"> <li>Landscapes dominated by recent enclosure, immature vegetation, and few features, indicating a low degree of visible historic time depth</li> <li>LANDMAP Historic landscapes: Moderate or Low Evaluation</li> </ul>	<ul style="list-style-type: none"> <li>Landscapes distinctly exhibiting one or more periods of the past, for example older enclosure patterns (prehistoric/medieval) rough ground and relict features, ancient and other broadleaf woodland, historic parkland, water meadows, orchards or other traditional features.</li> <li>Areas on the Registers of Outstanding and Special Historic landscapes, Parks and Gardens. LANDMAP Historic landscapes: Outstanding or High Evaluation</li> </ul>


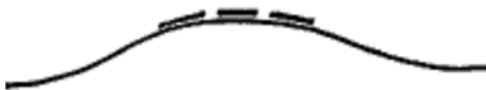
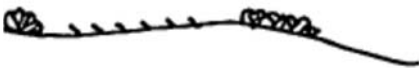

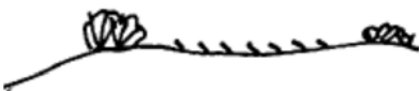

**Landscape Sensitivity and Capacity Assessment**  
in relation to on-shore wind and solar photo-voltaic developments

<b>Integrity of land cover</b>	<ul style="list-style-type: none"> <li>Landscapes that lack clear structure or with fragmented and poorly managed land cover, indicating a low degree of integrity</li> </ul>	<ul style="list-style-type: none"> <li>Landscapes indicating a high level of historic continuity with the past, where contemporary functions build closely on the features left from past times.</li> </ul>
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<b>SOLAR PV - SETTLEMENT, DEVELOPMENT AND TRANSPORT</b>		
Criterion	Characteristics that are less susceptible to wind turbines	Characteristics that are more susceptible to wind turbines
<b>Level of built development</b>	<ul style="list-style-type: none"> <li>Concentrations of built development</li> </ul> 	<ul style="list-style-type: none"> <li>Scattered, low density or dispersed settlement, or unpopulated areas, where rural land use traditions, field patterns and land use predominate over built development.</li> </ul> 
<b>Type of built development and historic character</b>	<ul style="list-style-type: none"> <li>Large scale areas of hard surfacing, modern standardised, industrial infrastructure, warehousing, offices or car parking.</li> </ul>	<ul style="list-style-type: none"> <li>Where small-scale or historic settlement character prevails, showing an intimate response to natural resources and which retains a high degree of time depth, historic continuity and intactness, and where new development is of a small scale, and of siting and design that closely follows this character.</li> </ul>
<b>Legibility (not withstanding cumulative effects)</b>	<ul style="list-style-type: none"> <li>Ad hoc or imposed development dominates, lacking clear form, function or location rationale in relation to landscape setting, with many disparate or unrelated elements ('clutter') and apparent lack of mitigation. There is little identifiable context from present development to inform future development.</li> </ul>	<ul style="list-style-type: none"> <li>A clear pattern, geometry or design palette, where a harmonious coordination of elements and features is evident. While this can provide a specific context for the siting and design for Solar PV, this can mean limits on where and what could be accommodated.</li> </ul>

<b>SOLAR PV – VIEWS, SCENERY, TRANQUILLITY</b>		
Criterion	Characteristics that are less susceptible to wind turbines	Characteristics that are more susceptible to wind turbines
<b>Visibility</b>	<ul style="list-style-type: none"> <li>No elevated views over the landscape</li> <li>Open but inaccessible area</li> <li>Very few views of the area from residential property, public rights of way open access land, visitor destinations, promoted routes, key transport routes</li> </ul>	<ul style="list-style-type: none"> <li>Open or exposed landscape.</li> <li>Elevated views, views in, out, or across the landscape.</li> <li>Accessible area.</li> <li>Many views of the area from residential property, public rights of way, open access land, visitor destinations, promoted routes, key transport routes</li> </ul>

**Landscape Sensitivity and Capacity Assessment**  
in relation to on-shore wind and solar photo-voltaic developments

<b>Nature of views</b>	<ul style="list-style-type: none"> <li>Available views of the area would be long distant, or panoramic.</li> </ul>	<ul style="list-style-type: none"> <li>Available views of the area would be close, middle distant, or framed</li> </ul>
<b>Skyline</b>	<ul style="list-style-type: none"> <li>No distinctive natural landform or land cover on skylines</li> <li>Man-made elements or features already break the skyline</li> </ul> 	<ul style="list-style-type: none"> <li>Skylines are an important and distinctive component of landscape setting, e.g. providing a backcloth to foreground landscape</li> <li>Landscapes where skylines are not broken by vertical man-made elements or features.</li> </ul> 
<b>Focal points</b>	<ul style="list-style-type: none"> <li>Views are of a type and lack distinct features.</li> </ul> 	<ul style="list-style-type: none"> <li>Views include distinctive features (e.g. a particular mountain or castle)</li> </ul> 
<b>Visual setting for nearby Designated Landscape</b>	<ul style="list-style-type: none"> <li>A relatively self-contained landscape, with limited visual relationship to nearby other areas of acknowledged landscape sensitivity, such as Designated Landscapes and Registered Historic Landscapes.</li> </ul> 	<ul style="list-style-type: none"> <li>A landscape with a high degree of inter-visibility with, and forming a backdrop to, nearby areas of acknowledged landscape sensitivity, such as Designated Landscapes and Registered Historic Landscapes.</li> <li>A landscape located on approaches / gateways to these other sensitive landscapes.</li> </ul> 
<b>Marine visual setting</b>	<ul style="list-style-type: none"> <li>A number of artificial isomorphic features in the sea</li> <li>Actively used seascape with noise, busyness etc.</li> </ul>	<ul style="list-style-type: none"> <li>Absence of visible physical man-made features</li> <li>Absence of visible human activities on the sea.</li> </ul>
<b>Scenic quality</b>	<ul style="list-style-type: none"> <li>Lacking picturesque scenes and/or including detracting elements and features to the scenic quality</li> <li>LANDMAP Visual and Sensory Low to Moderate: low scenic quality, weak sense of place, disturbed or eroded landscape quality.</li> </ul>	<ul style="list-style-type: none"> <li>Picturesque combinations of topography, land cover, harmonious cultural features evident</li> <li>LANDMAP Visual and Sensory Outstanding or High: Distinctive character, high scenic quality, strong sense of place, high Integrity.</li> </ul>
<b>Tranquillity</b>	<ul style="list-style-type: none"> <li>Noise, movement, close to visible signs of human activity, settlement and development with intrusive built features.</li> </ul>	<ul style="list-style-type: none"> <li>Abundance of quiet, calm, wild, tranquil qualities combined with a lack of lack man-made noise, activity or intrusive built features.</li> </ul>



## 16 Stage 3 Part 2: Assessing landscape value

### 16.1 The concept

Landscape value refers to the nature and degree of importance that society attaches to the current landscape character and qualities of an area. In other words, landscape value in LSCA is concerned with the degree of importance that society places on conserving or enhancing current landscape character and qualities.

It is therefore not concerned with lost past values, but it does reflect current historic landscape values and cultural associations. It is not concerned with personal values, or potential future values.

GLVIA3 paragraphs 5.19 to 5.32 and its Box 5.1 outline the main indicators of landscape value typically used in landscape assessment. Figure 28, below, takes this further by distinguishing between the *nature* and the *level* of the landscape value, which respectively reflects valued characteristics and qualities, and evidence that society attaches a high importance to their being in a specific landscape.

Defining landscape value:	
The <i>nature</i> of Landscape value	The <i>level</i> of landscape value
Highlight the <b>defining</b> or best expressed valued characteristics and qualities, as opposed to all characteristics and qualities, and only highlight what the evidence supports.	Use the <b>status</b> of the evidence to indicate the <b>degree of importance</b> that society attaches to conserving current landscape character and qualities.
Examples of...	
Inherently valued landscape characteristics and qualities (wherever they occur)	Possible sources of evidence to indicate their high value to society in a specific landscape area
<ul style="list-style-type: none"> <li>• <b>Natural characteristics</b> and processes (e.g. a braiding river or species-rich habitat)</li> <li>• <b>Historic characteristics</b> that indicate great time depth or maturity (e.g. stone walls or an ancient tree)</li> <li>• <b>Scenic quality</b></li> <li>• <b>Tranquillity</b></li> <li>• <b>Sense of wildness</b></li> <li>• <b>Distinctiveness / sense of place</b></li> <li>• <b>Harmonious change</b>, integrity, well-planned design and quality (condition) of the physical state.</li> <li>• <b>Rarity</b> of the character type</li> <li>• <b>Classic example / study interest</b></li> <li>• <b>Cultural associations</b> of a landscape area.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Planning</b> evidence in public plans, policies, designations and registrations, that society wishes to protect or conserve the character and qualities of a specific landscape</li> <li>• <b>LANDMAP</b> evaluations</li> <li>• <b>Conservation</b> management or control of local landscapes to conserve their character and qualities, whether by special interest groups or by local communities.</li> <li>• <b>Creative expression</b> inspired by a particular landscape in the arts, literature or modern media (e.g. paintings, sculpture, poetry, songs, events, crafts) or inspiring locally distinct products or place-based branding.</li> <li>• <b>Popularity</b> for recreation, tourism, pilgrimage and other uses or services, where people visit to appreciate the specific landscape. (e.g. people visiting Snowdon, Portmeirion or Rhosilli Bay).</li> </ul>

Figure 28: The nature of inherently valued landscape characteristics and qualities, and possible sources of evidence of the level of importance that society attaches to such values in a specific landscape.

It is important to understand this distinction since the presence of a landscape designation is a societal response to, rather than a cause of, landscape value. What is actually valuable are the characteristics and qualities of the area. Indeed, there might be another similar landscape area that remains undesignated, but which still has landscape value.

To take account of this, all landscapes should be considered as potentially having multiple values and a variety of sources should be consulted.

### 16.2 The nature of landscape values useful to inform LSCA

Evidence should relate to a specific landscape, rather than be generic values that may be attached to any landscape, so that spatial distinction can be made in LSCA.

Evidence will be in terms of, or terms that can be related to, landscape characteristics and qualities. Evidence may be expressed at the scale of the whole landscape, through an important site within it, or through individual or groups of characteristics and qualities. In many instances, landscape value will be difficult to isolate exclusively to one individual characteristic or quality. The variety of sources will yield expressions in many different formats and some interpretation may be needed.

Planning evidence (including existing plans, policies and designations) is likely to yield much evidence of what is highly valued and where, with LANDMAP evaluations providing an equally important overview that can be mapped rapidly across wide areas.

In nationally Designated Landscapes (National Parks and Areas of Outstanding Natural Beauty) the 'special qualities' that are being conserved under the designation are identified in their landscape management plan.

In LSCA, reporting at the whole landscape scale will be sufficient for purpose, with a short list of key defining values picked out in narrative.

### 16.3 The level of landscape value

The level of importance to society, of individual landscapes, characteristics or qualities, is determined with reference to various factors as follows.

Landscape designations or registered areas, and some heritage or ecology-related designations will provide a starting point to indicate the highest levels of value that society formally acknowledges in specific landscapes. There is a statutory duty to protect natural beauty in National Parks and Areas of Outstanding Natural Beauty, which make up 25% Wales. The degree of value in planning that is attached to both types of area are therefore taken to be the highest and equal.

- **National Parks** are extensive tracts of country which by reason of their natural beauty and the opportunities they afford for open-air recreation are nationally important landscapes and therefore it is in the nation's interest to safeguard them. The purposes of National Parks are to conserve and enhance their natural beauty, wildlife and cultural heritage and to promote opportunities for understanding and enjoyment of the special qualities which they were designated for.
- **Areas of Outstanding Natural Beauty (AONBs)** are areas whose distinctive landscape character and natural beauty are so outstanding that it is in the nation's interest to safeguard them. The primary purpose of an AONB designation is to conserve and enhance natural beauty. The needs of agriculture, forestry, rural industries and the economic and social needs of local communities should also be taken into consideration. The demand for recreation can be met but must be consistent with the conservation of natural beauty.

## Landscape Sensitivity and Capacity Assessment in relation to on-shore wind and solar photo-voltaic developments

- **Special Landscape Areas (SLAs)** are local landscape designations and their presence and extent may vary between different LPAs. While not of the same prominence as those nationally designated, they serve an important function in identifying areas exhibiting many ‘special qualities’ but which are not in National Parks and AONBs. As with any designation, the absence of SLAs does not indicate there are no ‘special qualities’.
- **Registered Historic Landscapes, Parks and Gardens** are managed by Cadw. The Registered Historic Landscapes are particular landscape-scale areas of Wales that have been identified as clearly exhibiting one or more historic periods or processes. In simple terms they are being recognised for their high value in terms of their historic landscape character. Parks and gardens operate at a smaller scale, often encompassing the extent of a designed landscape park, and some of them are of a landscape-scale.
- **Heritage Coast** is another form of registered area, (as opposed to a designation). They reflect our most scenic and undeveloped sections of coastline. In Wales most Heritage Coast is subsumed within Nationally Designated Landscapes, and are therefore already within areas reflecting the highest level of landscape value. The only exceptions, which do not imply lower landscape value, are: Great Orme (Conwy); parts of the Ceredigion Coast and Glamorgan Heritage Coast. The Local Planning Authority for each of these areas will have plans and policies that identify and reflect their landscape value.

TAN 8 is not an indicator of current landscape value, but takes account of Nationally Designated Landscapes, with other factors, in spatial planning for renewable energy. *But see Stage 5 on direction-setting where TAN 8 is more relevant.*

### 16.4 LANDMAP and landscape value

LANDMAP<sup>42</sup> evaluations indicate the nature and level of importance of different landscape areas. It’s national GIS dataset allows for a rapid spatial exploration across a wide study area. The evaluation criteria reflect landscape qualities that are highly valued by society, such as scenic quality and sense of place. Although LANDMAP evidence itself is of a lesser weight in decision-making that of statutory designations or registrations, LANDMAP evaluation levels do reflect a level of importance in terms of national/international to region/county and local, and little importance.

Judgement is needed with reference to the type of development being considered, as to which LANDMAP evaluation criteria will be most relevant. Figure 29 picks out evaluation criteria likely to be most relevant to wind and Solar PV developments in LSCA

LANDMAP information and associated guidance can be accessed via NRW’s website: [www.naturalresources.wales/landmap](http://www.naturalresources.wales/landmap)

Geological Landscape	Landscape Habitats	Visual and Sensory	Historic Landscape	Cultural Landscape*
Research value Educational value	<b>Priority habitats Significance</b>	<b>Scenic quality Integrity</b>	<b>Integrity Survival</b>	Recognition /transparency

<sup>42</sup> Natural resources Wales. 2017. LANDMAP – the Welsh landscape baseline. Web page. [on-line] <https://naturalresources.wales/landmap> [Accessed 21 March 2017]



## Landscape Sensitivity and Capacity Assessment in relation to on-shore wind and solar photo-voltaic developments

Historical value <b>Rarity / uniqueness</b> <b>Classic example</b>	Opportunity Expansion rates Sensitivity Connectivity / cohesion Habitat evaluation Importance for key species	<b>Character</b> <b>Rarity</b>	<b>Condition</b> <b>Rarity</b> Potential	Rarity Group Value Survival
<p>Examples<sup>43</sup> of what information that can be gained from LANDMAP's evaluations:</p> <ul style="list-style-type: none"> <li>• A landscape that is particularly rare/unique or special in the local context</li> <li>• An area of recognisable character with a strong sense of place and/or scenic qualities</li> <li>• An area with a distinct landform or topography, forming a discrete and recognisable area in the local landscape</li> <li>• A landscape with particular cultural associations, represented in art, literature, music, language or folklore</li> <li>• A landscape with strong character linked to natural or cultural factors, which contribute to an understanding of historic character, wider cultural values or create a strong degree of naturalness</li> </ul>				

Figure 29: LANDMAP evaluation criteria with **bold criteria** likely to be most relevant to indicate higher landscape value in LSCA. \*Cultural landscapes are not evaluated by degree of importance but reference to the descriptive information against criteria may be of relevance.

### 17 Stage 3 Part 3: Assessing landscape sensitivity

Landscape sensitivity combines judgements of landscape susceptibility and landscape value. This is the stage when further judgement is made to pick out what is most susceptible and valuable about the current landscape character from all the evidence gathered so far. The focus differs from GLVIA3, which refers to specific receptors in relation to a specific development. Landscape sensitivity may be seen as the conclusion of the main output in LSCA as further stages are more contextual.

A level of sensitivity is of little practical use to inform landscape change unless the underlying reasons why, are also presented. This will:

- **provide interpretation of the susceptibility and value evidence base** to highlight the defining issues,
- **reflect the nuance of some criteria being more sensitive** in a specific landscape than others, and
- **help to avoid users incorrectly writing off moderate or low sensitivity landscapes** as places where there are no landscape issues to consider.

Judging sensitivity should not be:

- **leaps of faith** - readers should be able to understand how the assessor came up with the findings.
- **overly processed** - avoid complexities that lose meaning in landscape terms, such as adding together scores through a series of stages, as these are difficult to unravel and lead to aggregate scores that mask the key issues.
- **counter-intuitive** - minimise 'double counting' or 'cancelling out' which happens when arithmetical approaches are used to combine criteria levels. If a landscape is highly susceptible against one criterion, this is not 'cancelled out' by its being of low susceptibility against another criterion. The key issue to report in the findings is the attribute and criterion that is susceptible.

<sup>43</sup> Natural Resources Wales. 2017. LANDMAP and Special Landscape Areas. LANDMAP Guidance Note 1. [On-line]. <https://cdn.naturalresources.wales/media/680613/landmap-guidance-note-1-landmap-slas-2017.pdf?mode=pad&rnd=13147269416000000> [Accessed 26 June 2018]

## Landscape Sensitivity and Capacity Assessment in relation to on-shore wind and solar photo-voltaic developments

- **pre-weighted** – it is for the assessment to determine the level of influence each criterion.

Sensitivity Level	Definition
High	Key characteristics of the landscape would be adversely affected by the renewable energy development. Such development would result in a significant change in character. Likely to be unsuitable for the renewable energy development.
Moderate-high	Many of the key characteristics of the landscape would be adversely affected by the renewable energy development. Such development would result in a noticeable change in character. There may be some limited opportunity to accommodate the renewable energy development without changing landscape character. Great care would be needed in locating infrastructure.
Moderate	Some of the key characteristics of the landscape are vulnerable and may be adversely affected by the renewable energy development. Although the landscape may have some ability to absorb some development, it is likely to cause some change in character. Care would be needed in locating infrastructure.
Low-moderate	Few key characteristics of the landscape would be adversely affected by the renewable energy development. The landscape is likely to be able to accommodate development without only minor change in character.
Low	Key characteristics of the landscape are robust and would not be adversely affected by the renewable energy development. The landscape is likely to be able accommodate development without a significant change in character.

Figure 30: Illustrating a five-point scale of sensitivity level with definitions, to reflect nuance in variation<sup>44</sup>

Levels of sensitivity should be defined in relation to landscape character, and be calibrated with at least 5 levels to reflect nuance, for example High, moderate-high, moderate, moderate-low and low, as illustrated in Figure 30. It may not be necessary to provide a landscape sensitivity map showing levels, since there will be a (more useful) landscape capacity map. However, for transparency, both may be requested.

Similarly, the presentation of landscape sensitivity might be combined in a larger table and form at the end together with that of landscape capacity, so all the components of the assessment can be seen in one place. Advice on presentation is given in the main document, with examples of presentation offered in Annex 1, Appendix 4.

### 18 Stage 4: Assessing the cumulative effect

**Section 6.4 (main document) outlines the general principles for this stage.**

#### 18.1 The baseline for assessing the cumulative effect on landscape character

Landscapes are not static. They change in many different ways, over time. The cumulative effect on landscape character, within the context of LSCA, is that which builds up over time as more of the type of development takes place. Cumulatively the effect can change landscape character. A lot of existing development may already have done so. Our concern is not about stopping all landscape change but instead is about the management of landscape change.

An aspect of the management of change relates to a type of development accumulating over time in a landscape to the point where a threshold is crossed, beyond which landscape character is changed. While this is not an exact science expressed in numerical terms, it is a very useful broad judgement to make for understanding the effects on landscape character.

<sup>44</sup> Pembrokeshire Coast National Park Authority. 2014. Renewable Energy. Supplementary Planning Guidance to the Local Development Plan for the Pembrokeshire Coast National Park. Commissioned Report from White Consultants.

## Landscape Sensitivity and Capacity Assessment in relation to on-shore wind and solar photo-voltaic developments

Cumulative assessment here is of more limited scope than what may be included in LVIA as specific sites and development proposals are not known in LSCA. However it does reflect how existing development may already have changed landscape character by crossing notional 'thresholds' of change. These thresholds can also be used to inform discussion about how further development could change landscape character.

Set in the present, not the past or the future, the baseline for cumulative effect assessment includes existing and consented development. If the consented were not included then a greater capacity might be identified in an area than was actually still available. The scope of what development to include is that which shares similar characteristics to the type of development being considered. So, for example, for wind turbines, tall masts, pylons and chimney stacks might also be included. For solar PV, then large glasshouses might also be included. Where they form part of the visible setting, offshore wind turbines may also be included, despite not being located within the area being assessed.

This stage in the assessment does not suggest whether such change is desirable or not.

### 18.2 Types of cumulative effect

Cumulative effects are additional to the impact to be expected from the developments taken individually. Scottish Natural Heritage (SNH)<sup>45</sup> developed a definition of cumulative effects, subsequently adopted in guidance developed for Pembrokeshire and Carmarthenshire in relation to wind turbines<sup>46</sup>, as:

*“the additional changes caused by a proposed development in conjunction with other similar developments or as the combined effects of a set of developments taken together” (para. 7).*

Based on GLVIA<sup>347</sup>, cumulative effects can result from **physical changes to individual landscape elements and features** (such as hedges buildings, roads, rivers etc). This can also lead to change in **landscape character** where those key physical characteristics that define the character are changed. Change can be from their removal, modification or addition.

Within the scope of LSCA, the effects being assessed are those that result from the development scenarios – in other words, using generalised scenarios, the cumulative effects are considered at a fairly general level. This means that ancillary works such as widening access roads, felling trees, reducing public access or the erection of overhead wires, all of which tend to be very site specific, won't be included in the assessment, and would need to be considered on a case by case basis through LVIA when a development application occurs.

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<sup>45</sup> Scottish Natural Heritage. 2012. Assessing the Cumulative Impact of Onshore Wind Energy Developments. Guidance. [Available on-line]. <https://www.nature.scot/sites/default/files/2017-09/A675503%20-%20Assessing%20the%20cumulative%20impact%20of%20onshore%20wind%20energy%20developments.pdf> [Accessed 16 May 2018].

<sup>46</sup> Carmarthenshire County Council, Pembrokeshire Coast National Park Authority and Pembrokeshire County Council. 2013. Cumulative Impact of Wind Turbines on Landscape and Visual Amenity Guidance. Commissioned Report from White Consultants. [Available on-line] [https://www.pembrokeshire.gov.uk/Objview.asp?object\\_id=3446](https://www.pembrokeshire.gov.uk/Objview.asp?object_id=3446) [Accessed 16 May 2018]

<sup>47</sup> Landscape Institute and Institute of Environmental management and Assessment. 2013. Guidelines for Landscape and Visual Impact Assessment (GLVIA). 3<sup>rd</sup> Edition.



## Landscape Sensitivity and Capacity Assessment in relation to on-shore wind and solar photo-voltaic developments

These changes may also change the **experience of a landscape**, such as changes to sense of place, scale, enclosure, diversity, pattern, colour, wildness, tranquillity, and historic or visual integrity.

As visual experience is an important aspect of the experience of a landscape, GLVIA3 distinguishes between **visual effects**:

- **in combination** where two or more developments are seen in the same arc of a view (i.e. without moving the viewer's head),
- **in succession**, in different arcs of view (i.e. where the viewer must move their head to see them) and
- **in sequence**, where features are seen on a journey either frequently one after another, or occasionally, which depends on both the speed of the traveller and the distance between viewpoints.

The SNH guidance provides some illustrations:

- Example 1 – where the combined effect of **clustering** is less than the sum of each separate development: *“An isolated house A in the countryside has a visual impact, standing out in its natural setting. Another isolated house B has a similar visual impact, taken alone. However, if the two houses are sited close together, the visual impact of the two together may be only a little greater than for either house A or B taken alone, as they will appear as a single cluster.”*
- Example 2 – where the combined effect of **dispersed** developments is greater than the sum of each separate development: *“Windfarm A sited on a ridge on one side of a valley is highly visible but acceptable, providing a single visual focus on an otherwise unremarkable skyline. A second windfarm B on a ridge on the other side of the valley would have a similar effect, if it were on its own. However, the effect of having two windfarms sited on either side of the valley may be to make the observer feel surrounded by development. The combined effect of both may be much greater than the sum of the two individual effects.”*

### 18.3 Assessing how cumulative effects change landscape character

Existing and consented developments, of the type being considered, are placed on a scale that ranges from no such development through to being intensively developed. Their place on the scale provides a way to represent both the degree of existing cumulative effect and the likely cumulative effect if further development took place. The scale should reflect **thresholds** where landscape character changes with further development, and at least 5 categories (four thresholds) are needed if it is to sufficiently reflect nuance. Figure 31 illustrates such a scale in relation to wind turbines.

This cumulative assessment is different to what might be done within the context of LVIA. An LVIA might naturally support further development within areas where similar existing development is a key characteristic. However, this may be counter-balanced by the capacity for that area to absorb such development if the area is already be close to reaching a threshold.

Landscape Sensitivity and Capacity Assessment  
in relation to on-shore wind and solar photo-voltaic developments


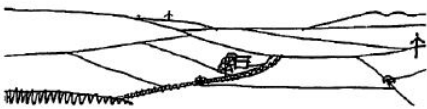



Landscape type (in relation to wind turbines)	Illustrative landscape	Notes
1. Landscape character area with no wind turbines		No turbines within an area and not visible except at a distance where they are very small or inconspicuous.
2. Landscape character area with occasional wind turbines and/or inter-visible with that in another landscape		Turbines are visible but are not at a scale, number, spacing or extent that makes them a defining/key characteristic. Turbines might be seen occasionally at close quarters but more often within background views.
3. Landscape character area with wind turbines		Turbines are located and visible and are at a scale and/or a spacing that makes them one of the defining/key characteristics. Turbines might be seen in the foreground, mid-ground or background. However, there would be other key characteristics which would be strong and there would be sufficient separation between turbines for views without turbines and other characteristics remaining dominant in these parts of the area.
4. Wind turbine landscape		Turbines are frequent and may include extensive wind farms and are the dominant, defining characteristic but there is separation between groups of turbines. However within these areas wind turbines are likely to be visible.
5. Wind farm		Landscape fully developed as a wind farm with no clear separation between groups of turbines.

Figure 31: Illustrating increasing amounts of wind turbine development in a landscape, with thresholds of landscape change. Reproduced from Carmarthenshire County Council, Pembrokeshire Coast National Park Authority and Pembrokeshire County Council. 2013. Cumulative Impact of Wind Turbines on Landscape and Visual Amenity Guidance. Commissioned Report from White Consultants.

The LSCA should place the present landscape somewhere in the scale, taking into account existing and consented developments, with reference to:

- how close the present landscape character is to reach the next threshold, and
- the effect on landscape character on crossing that threshold.

## Landscape Sensitivity and Capacity Assessment in relation to on-shore wind and solar photo-voltaic developments

One scale will suffice for a variety of landscapes and provide consistency in assessment. If the study area includes extreme variations in landscape character areas (for example ranging from rugged mountains to rolling plains, or from open moors to heavily industrialised or urban areas) then more than one scale might be used.

While Figure 31 is for wind turbines, a similar approach can be used in setting out Solar PV or other development types. In Solar PV developments, clustering near a grid connection has been a notable cumulative effect:

*“Cumulative effects of multiple schemes are a significant issue for planning authorities to deal with because free standing solar PV developments tend to cluster around grid connection points. Development of multiple proposals may eventually result in a situation where solar PV developments become the overwhelming influence on the landscape”<sup>48</sup>*

Localised cumulative effects should be noted if the pattern does not represent the landscape character areas as a whole.

The judgement of cumulative effect and when a threshold is crossed provides context for the assessment and is not intended to indicate exact numbers or quantities of development. It is more to set out a way of thinking about landscape capacity to inform policy development, in particular for landscape objective-setting.

### 19 Stage 5: Setting the direction for landscape change

**Section 6.5 (main document) outlines the general principles for this stage.**

#### 19.1 The need to consider setting the direction for landscape change

Setting objectives for the future management of a landscape is a matter of policy-making involving a much wider range of factors than just those of the LSCA, and normally this involves steer from both public consultation and other policies. However, within the confines of LSCA, a judgement *has* to be made, as to the intended direction for future management of a landscape, where this is not already clear from agreed policy. For without this indication, the LSCA can only make judgements on landscape capacity in relation to *maintaining or enhancing current landscape character*. However, protecting *all* current landscape character from change is neither practical nor desirable, and may understate capacity where some landscape change would be acceptable in policy terms.

In LSCA a range of landscapes with different futures will be identified. The object is to distinguish in general terms between those landscapes whose character and qualities are such that society would want to protect them, and those that would benefit more from some degree of landscape character change. This research may also be of interest to policy-makers when they consider setting spatial policy objectives.

#### 19.2 Existing policy having already set the direction for landscape change

In many landscapes, existing policy will have already set out the preferred direction for change. Relevant policies to consider are *spatial* ones, that distinguish a *particular* landscape having a *particular* agreed long term direction of change widely agreed upon.

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<sup>48</sup> LUC. 2013. Accommodating Wind and Solar PV Developments in Devon’s landscape. Report for Devon Landscape Policy Group (Published as Advice Note 2). Para. 3.6. [On-line]. <http://www.devon.gov.uk/devon-guidance-v6-june-2013-final-report.pdf> [Accessed 27 May 2018].



## Landscape Sensitivity and Capacity Assessment in relation to on-shore wind and solar photo-voltaic developments

General policies that could apply to any landscape, such as the need for more renewable energy development, or policies that, while important, are not expressed in the form of a landscape objective, such as the target to reduce CO<sub>2</sub>, are not useful within the scope of LSCA. The evidence needed to set a direction for landscape change is that which underpins a long-term policy and which is identifiable as a landscape objective.

As with considering landscape value and referring to policy to indicate this, there is a danger of creating a circular argument between evidence informing policy and vice-versa.

See Section 6.7, which lists *Planning designations and registered landscapes*. Designated and registered landscapes indicate areas where there will be specific long-term policies to protect, restore or enhance current landscape character.

While TAN 8 Strategic Search Areas for wind farm developments do not represent specific *landscape value* for wind farm landscapes, they are an established spatial policy that specifically accepts landscape character change from this type of development. This is summarised in Figure 32 below.




Area	Policy objective (summarised)
 National Parks and Areas of Outstanding Natural Beauty	no change in <i>landscape character</i> from wind turbines
 Not within the other two categories (ie not red or green areas)	no significant change to <i>landscape character</i> from wind turbines
 Within (and immediately adjacent to) Strategic Search Areas (SSA)	accept significant change to <i>landscape character</i> from wind turbines

Figure 32: A summary of TAN 8 spatial policy objectives for landscape character in Wales

The Local Planning Authority should be able to advise the assessor on other areas of their county where there are specific direction-setting landscape policy objectives in place. For example they may have local policies to protect Special Landscape Areas, existing landscape character assessments may include landscape objectives, and some nature conservation or heritage designations that require 'landscape-scale' conservation, may in effect determine a policy of protecting landscape character from change. For example, National Nature Reserves, or large tracts of land being managed by bodies such as the National Trust for conservation, and World Heritage Sites.

### 19.3 LANDMAP and landscape management recommendations

All parts of Wales have been assessed in LANDMAP. Where the direction of change is not clear, reference should be made to LANDMAP's Visual and Sensory Aspect, which includes landscape management recommendations relating to key characteristics and qualities to be conserved, enhanced or changed. This information will provide further evidence to inform the direction of change judgement.

### 19.4 Protect – accommodate – change - restructure

Figure 33 illustrates the direction-setting concept, showing Character Type A, which is currently on a path of change from a type of development increasing over time, that would eventually result in its changing to Character Type B.

## Landscape Sensitivity and Capacity Assessment in relation to on-shore wind and solar photo-voltaic developments

The direction setting options provide 4 possible planning policy responses. While actually setting such policy is beyond the scope of LSCA, indication of what would be a reasonable response to the LSCA evidence needs to be offered as otherwise the judgement of capacity could only be based on the response of maintaining existing landscape character, which could under-represent capacity where landscape character change is the more likely future management direction.

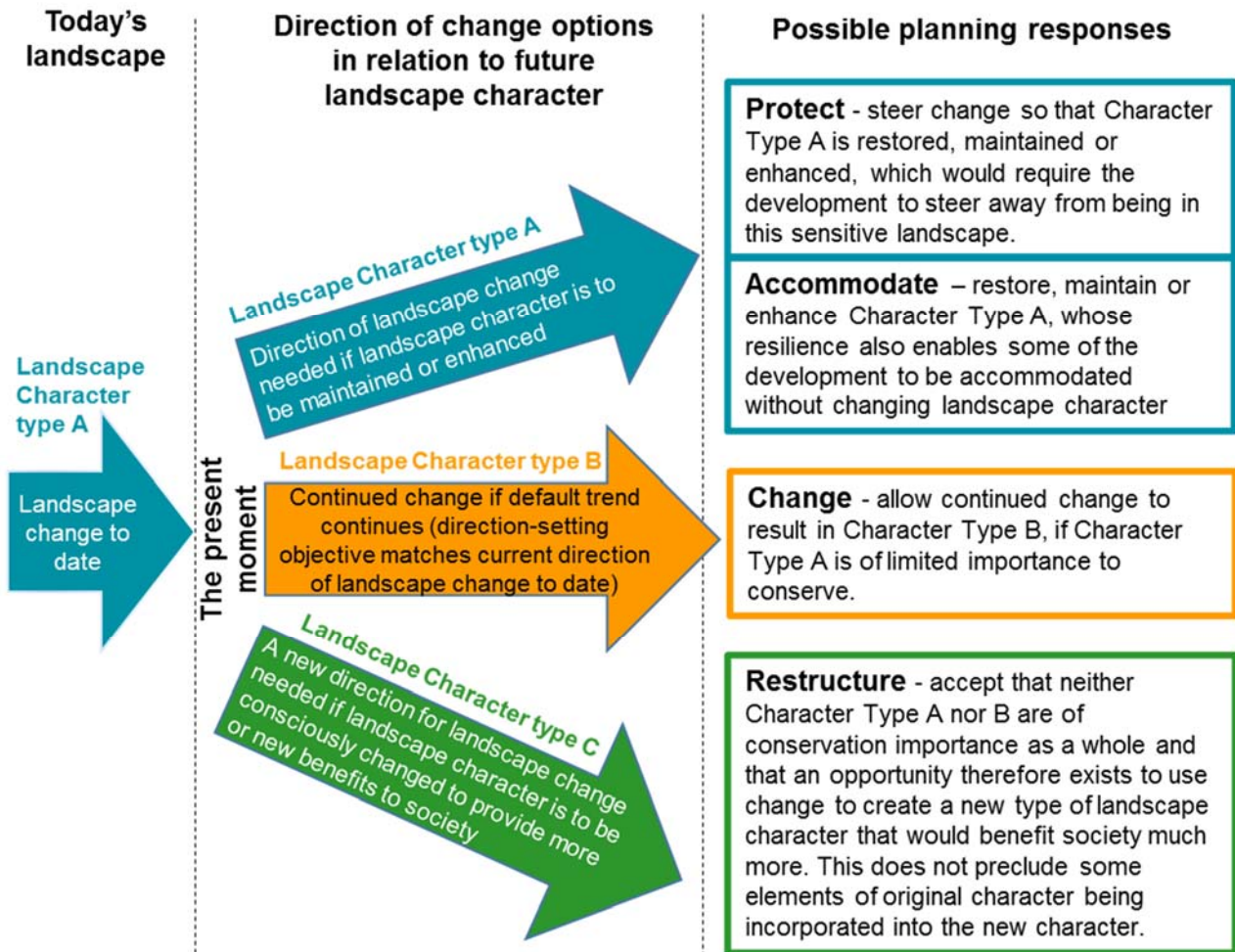


Figure 33: Comparing the possible directions for landscape character change.

If no direction of landscape change were set then, in this example, Landscape Character Type A would continue to change over time with further amounts of development to eventually result in Landscape Character Type B.

Where there is no clear existing landscape objective, the direction-setting stage of LSCA can be used to get landscape onto the agenda for wider discussion in a more sophisticated way. It can also open discussion about the planning need to set a landscape objective to steer future landscape change, and provide a context to inform siting and design guidance that relates to the type of development in the landscapes concerned.

The LSCA needs to record:

- The direction of landscape change suggested by the LSCA evidence
- The reasons why that direction is suggested.

Setting a landscape objective is described in further detail by the **Design Commission for Wales**<sup>49</sup> guidelines, but within the context of setting out principles for appropriate siting and design for onshore wind farms. It is based on similar guidelines for Scotland.

In conclusion, while landscape objective-setting is not a task for LSCA, the need to set a direction for future landscape change for each landscape being assessed may, in some cases, be more of a matter of a review. This review would include spatial policy, where it directly relates to landscape character and qualities, with existing landscape character assessments and LANDMAP filling most of the gaps.

## 20 Stage 6: Assess Landscape capacity

**Section 6.6 (main document) outlines the general principles for this stage.**

### 20.1 Expressing landscape capacity

Many landscape capacity judgements in past assessments are expressed on a scale with around five grades to reflect nuance, normally being 'high' 'moderate-high', 'moderate', 'moderate-low' and 'low', and are backed up by short narratives to underpin the judgements for each landscape character area. These grades then translate to colour grading on a map to landscape capacity spatially. The grades on the scale should be directly related to those on the Stage 4 cumulative effects scale. That then allows for presentation and map keys to express capacity in terms of landscape character. As illustrated in Figure 34 below, this would steer readers away from incorrectly thinking in capacity terms akin to filling a bucket with water to capacity.

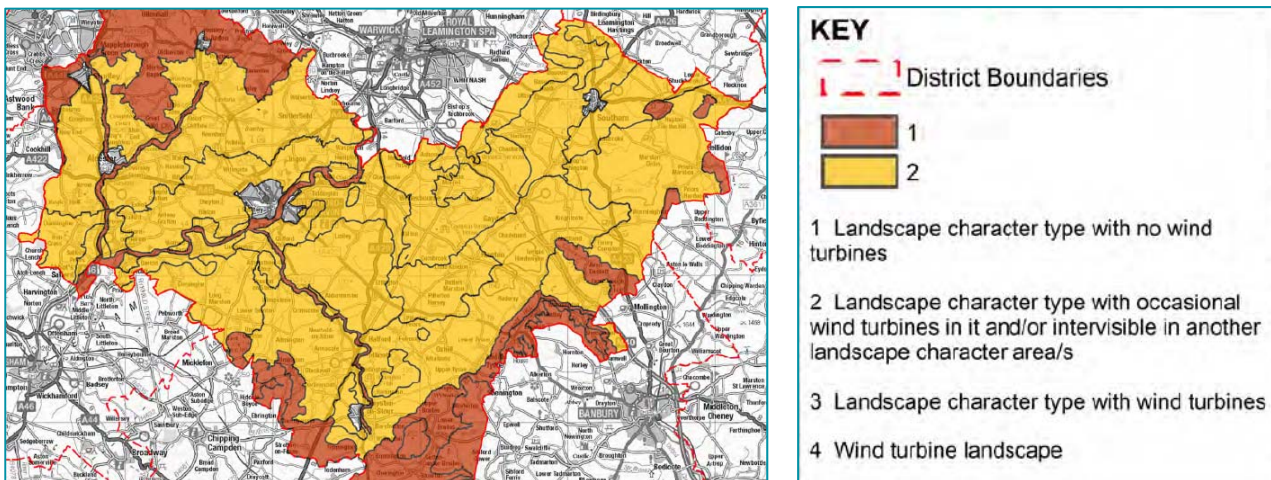


Figure 34: While spatially, the landscape capacity for wind turbines is illustrated on the map using colour grades, they key references the capacity in terms of the effect on landscape character (the choices being numbered here as 1,2,3 and 4, and in this example map, there are no instances of types 3 and 4).

### 20.2 The contents of a landscape capacity assessment

This final stage brings together all the information from previous stages, i.e. landscape sensitivity, cumulative effects and thresholds, and direction of change, as illustrated in Figure 35, and provides the context for further work (beyond the scope of LSCA) to agree a landscape policy objective and prepare siting and design guidelines.

<sup>49</sup> ARUP. 2014. Designing Wind Farms in Wales. Commissioned guidance from Design Commission for Wales. [On-line]. <http://cdn.dcfw.org.uk/Designing-Windfarms-in-Wales-2014.pdf> [Accessed 20 March 2017].



Landscape Sensitivity and Capacity Assessment  
in relation to on-shore wind and solar photo-voltaic developments

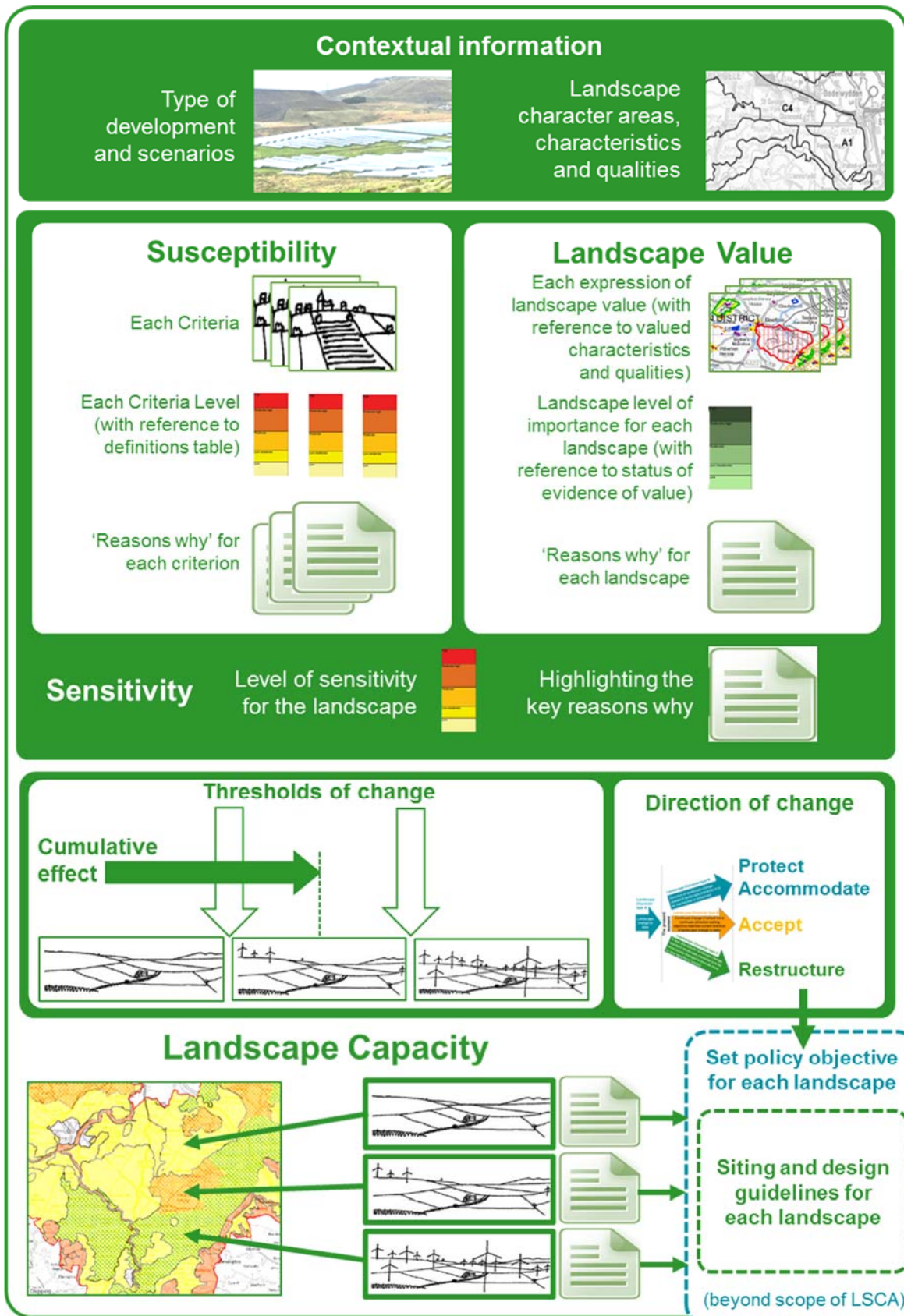


Figure 35: Landscape Capacity, as a final stage in the assessment, brings all the assessment outputs together into a final judgement, and can lead on to siting and design guidelines.

### 20.3 Conclusions

**A qualitative judgement** - Landscape capacity is a *qualitative* and not a *quantitative* judgement, and capacity can sometimes be altered where better siting and design could potentially allow for more development to be accommodated before landscape character is changed. An assumption is therefore made in LSCA that good design and reasonable (unspecified) mitigation is used. This is an important detail to note since otherwise it might be assumed there is capacity for unmitigated development.

**Sufficient to distinguish between higher and lower capacity landscapes** - Landscape capacity provides a broad indication sufficient to distinguish between different landscape areas to inform spatial strategy and policy-making, in the absence of a specific site and specific proposal. It is not intended to provide specific numerical amounts of development capacity on which to hang the determining arguments for individual development proposals.

**Sensitivity and capacity are not opposite expressions** - There is no simple relationship of high sensitivity meaning low capacity and vice-versa. They are both about the ability to accommodate change, but while sensitivity considers the ability of current landscape character, landscape capacity further considers this in the context of landscape change.

**Landscape capacity is what is finally reported** - Landscape capacity brings together all the outputs of the previous stages and the judgement of capacity is based on picking out the most influential issues. This is not about ranking or arithmetically calculating a total, but a judgement backed up with reasoning expressed in terms of landscape character.

**LSCA must reflect complexity and nuance but provide simple messages** - In forming a summary, presentation is an important issue and further advice is offered in the main guidance document, Section 8, with presentation illustrations in Annex 1 Appendix 4.

## 21 Siting and design guidelines

**The principles are outlined in the main document, Section 9.3.**

The principles acknowledge that siting and design is beyond the scope of LSCA but in practice may be presented with the LSCA in Supplementary Planning Guidance. Distinction is made to guidelines specific to the type of development, but which can apply to any landscape, and guidelines that are landscape-specific and apply to any type of development. LPAs are likely to include the latter in their SPG and Figure 36 illustrates this, showing how specific sections can refer to the renewable energy types.

### LCA 1: Llangynwyd Rolling Uplands and Forestry

**For wind turbines:**

**Key characteristics and features:**

- The distinctive undulating upland topography, with largely undeveloped skylines forming a backdrop to views from nearby settlements.
- Panoramic views from high ridgelines in the south across the County Borough and views to the prominent church tower of Llangynwyd, which forms a local landmark and human-scale feature.
- Important historic features which are set within the Margam Mountain Landscape of Special Historic Interest, including Y Bwlwarcaw hillfort and Llangynwyd Castle Scheduled Monuments.

## Landscape Sensitivity and Capacity Assessment in relation to on-shore wind and solar photo-voltaic developments

- Areas of valued semi-natural habitats (some of which are designated), including heathland, blanket bog, acid grassland, fen and marsh.
- The scenic qualities of the upland landscape, traditionally grazed by sheep with high levels of tranquillity and predominantly pastoral landscape contributing to a locally valued rural character.

### Guidelines:

- The LCA's important heritage features including Y Bwlwarcau hillfort, Llangynwyd Castle and Llangynwyd Conservation Area are protected.
- The siting of wind turbines and their ancillary equipment avoids areas of valuable open upland habitats such as heathland, blanket bog, acid grassland, fen and marsh.
- The presence of wind turbines does not impact on the characteristic views, particularly to the Llangynwyd church tower and the panoramic open views from southern ridgelines across the wider County Borough and beyond.
- The strong rural and often remote character, locally valued due to the close proximity of urban development, is retained.
- Wind energy development does not overwhelm the human scale of the landscape features found in the south, including the settlement of Llangynwyd, scattered farmsteads, trees and stone walls.

### For Solar PV developments (same LCA):

#### Key characteristics and features:

- Strong historic pattern of irregular fields enclosed by hedgerows, tree belts and stone walls.
- The open tracts of traditionally grazed uplands and other valued semi-natural upland habitats including heathland, blanket bog and acid grassland.
- Important historic features which are set within the Margam Mountain Landscape of Special Historic Interest, including Y Bwlwarcau hillfort and Llangynwyd Castle Scheduled Monuments.
- Its strongly rural and tranquil character, valued due to the close proximity of the LCA to urban development.

### Guidelines:

- The strong field pattern, which is historic in origin and recognised as a characteristic feature in the Margam Mountain Landscape of Special Historic Interest, is not degraded by solar PV development.
- Important heritage features including Y Bwlwarcau hillfort, Llangynwyd Castle and Llangynwyd Conservation Area are protected.
- Valuable semi-natural habitats associated with upland areas such as heathland, blanket bog, acid grassland, fen and marsh are retained.
- The strong rural and tranquil character, locally valued due to the close proximity of urban development, is retained.
- Characteristic views to the LCA from surrounding urban developments and the role of the landscape as a backdrop to valley floor settlements are retained.

Figure 36: Example key characteristics from a landscape character area that were found to be sensitive to a particular type of development, and siting and design guidelines for them. (from Bridgend, relating to wind turbines and solar PV)

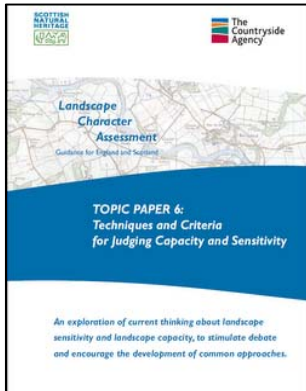
## APPENDIX 1: Glossary

Presented in the order that they would be encountered in LSCA assessment stages.

Landscape Term (and key reference in document)	Definition, as applied to LSCA
<b>Landscape (4.1)</b>	An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors
<b>Landscape Resources</b>	Defined aspects of the landscape that have the potential to be affected by the type of proposal. (The equivalent in GLVIA3 are landscape and visual receptors)
<b>Landscape Character Area (6.2) (14.6)</b>	The extent to which a distinct and recognisable pattern of elements, features and qualities occur within the area, to give a clear sense of place that makes one landscape different from another, rather than better or worse.
<b>LANDMAP (14.9)</b>	an all-Wales baseline landscape resource where landscape characteristics, qualities and influences on the landscape are recorded and evaluated
<b>Landscape Susceptibility (6.3) (15)</b>	The ability of a landscape to accommodate a type and scale of change while maintaining or enhancing current landscape character
<b>Landscape Value (6.3) (16)</b>	The nature and degree of importance that society attaches to the current landscape character.
<b>LANDMAP evaluations (6.8)</b>	Criteria reflecting landscape qualities that are typically highly valued by society, such as scenic quality and sense of place, indicating the degree of importance of a quality for each landscape aspect area
<b>Landscape Sensitivity (6.3) (17)</b>	The ability of a landscape to accommodate a type and scale of change within current landscape character, and the importance that society attaches to current landscape character. It combines judgements of landscape susceptibility and landscape value
<b>Cumulative effect (6.4) (18)</b>	The degree to which a landscape character has already been affected by a type and scale of change
<b>Threshold of landscape character change (6.4) (18.3)</b>	A tipping point when continued change alters landscape character from one type to another
<b>Direction for landscape change (6.5) (19)</b>	Distinguishing in general terms between those landscapes whose character and qualities may be worth wholly protecting, and those that offer scope for some change. Typically this ranges from protect from change, accommodate some change within landscape character, allow change to landscape character, or restructure to create a new type of landscape character
<b>Landscape Capacity (6.6) (20)</b>	The ability of a landscape to accommodate a type and scale of change, the importance of current landscape character, and its adaptability to accommodate such change.
<b>Landscape objective (19.4)</b>	Formalising a preferred direction for landscape change in Planning Policy

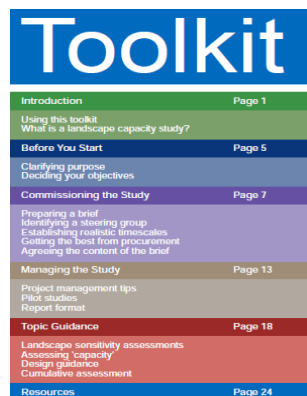
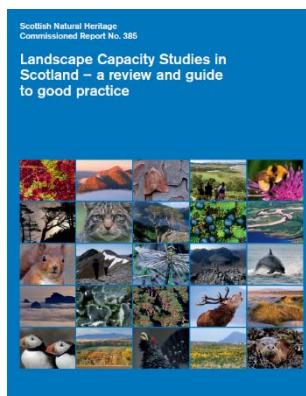


## APPENDIX 2: Past guidance on LSCA

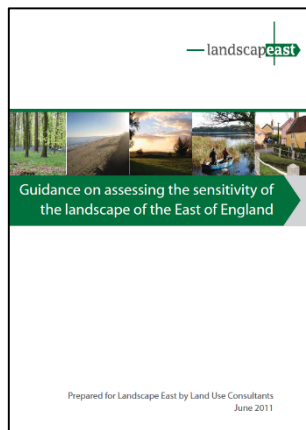


In 2002, The Countryside Agency and Scottish Natural Heritage jointly published Topic Paper 6: “*Techniques and Criteria for Judging Capacity and Sensitivity*”. **(TP6)**.

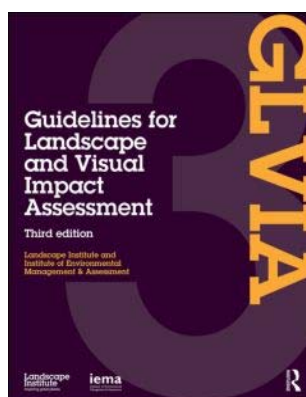
TP6 set out many of the principles still followed by many landscape sensitivity and capacity assessments today. The discursive style of the guide illustrated the variety of practice. Although still an important reference, TP6 also raised a number of questions for further discussion.



In 2010 Scottish Natural Heritage (**SNH**) carried out a review of such studies in Scotland to provide a guide to good practice. This resulted in their Commissioned Report 385: “*Landscape Capacity Studies in Scotland – a review and guide to good practice*” and subsequently their *Landscape Capacity Toolkit*. The toolkit is designed for the needs of those commissioning an assessment.



In 2011, Landscape East published a method for landscape sensitivity assessment that resolved many of the issues raised by TP6, although while there are many aspects to consider, the Landscape East publication offers an understanding of landscape sensitivity assessment without reference to capacity.



In 2013, revised guidance on sensitivity was given in the Landscape Institute’s *Guidelines for landscape and Visual Impact Assessment* (3<sup>rd</sup> Edition). **(GLVIA3)**. This is an important reference because it is almost universally quoted at Public Inquiries. However its application is specifically aimed at the assessment of landscape and visual effects where the specific development proposal and site are known. GLVIA3 introduced some changes to terms about sensitivity but the basic principles remain similar to TP6, except that it does not use the term capacity.

## APPENDIX 3: Variations in LSCA practice across the UK

Some assessments use the term capacity whereas others do not. For those that do refer to capacity, there is much variation in practice. Two of the main variants are:

### GLVIA3 versus TP6

Definitions used in some past assessments are different to those used in GLVIA3, published in 2013, and this guidance. Notably this applies to assessments taking their reference from **Topic Paper 6 (TP6)**<sup>50</sup>, published in 2002, GLVIA3 dropping the term 'capacity', re-assigning the term 'sensitivity' and introducing the new term 'susceptibility'. Figure 37 illustrates this for comparison.



The change in terminology does not change the general scope or purpose of the assessment as the basic understanding of the content of the component parts remains similar between older and newer assessments. As such, many existing assessments based on TP6 remain valid and continue to underpin local planning policies and guidance. However, to avoid confusion when reading older assessments, a careful 'translation' of old terminology is needed.

### Landscape Capacity studies in Scotland versus susceptibility

Some useful reference guidance originates from Scotland on different topics and forms of development, but readers in Wales should note the term 'capacity' is used to refer to what GLVIA3 calls 'susceptibility'. Scottish Natural Heritage has issued a statement of clarification on this<sup>51</sup>:

*In Scotland the terms "landscape capacity" or "landscape sensitivity" are often used interchangeably to refer to landscape studies that assesses a landscape's susceptibility to a particular type of development. This is a legacy of the early evolution of this work and how it was recognised in the wording of early planning guidance. We intend to continue using the term "landscape capacity study" for continuity and ease of understanding, but will be clear via introductory links or in other text that "susceptibility" would be a more correct description that reflects the terms of GLVIA3: i.e. an assessment of 'sensitivity' to a development type that does not take landscape value(s) into account.*

<sup>50</sup> Countryside Agency and Scottish Natural heritage. 2002. Topic Paper 6: Techniques and criteria for judging capacity and sensitivity. [Available on-line].

<http://publications.naturalengland.org.uk/publication/5146500464115712> [Accessed 24 May 2018].

<sup>51</sup> Scottish Natural Heritage. [Undated]. Landscape Capacity Study. [web page].

<https://www.nature.scot/professional-advice/landscape-change/landscape-tools-and-techniques/landscape-capacity-study> [Accessed 23 May 2018].

## APPENDIX 4: Examples of presentation techniques

This section is provided for illustration only, so that commissioning LPA officers have an idea of the kind of report that would result from LSCA. It is not intended to prescribe, or limit presentation and no implication is intended that the style of one consultancy is recommended over that of another. Indeed, further innovation is encouraged.

Everyone accepts that LSCA can result in a long evidence report, to be used as a reference document, and that key messages that are carried forward to inform siting and design guidelines that are aimed at a wider audience, need to be presented clearly and simply.

Many consultancies tackle this issue using tables to place the information in a logical and similar order for each landscape character area. Colour coding is often used to indicate the level, while narrative text, either in boxes in the table or linked to further in the report, are used to provide the narrative detail. Indeed this is the case in Figure 38 below.

Landscape Character Area		Assessed Sensitivity					Page no.
Ref	Name	Wind Energy	Field Scale Solar PV Energy	400 kV Overhead Line	Mobile Masts	Static Caravan/Chalet Parks	
<b>ANGELSEY</b>							
A01	Holyhead Mountain	VH	VH	VH		VH	60
A02	Holy Island	M-H	M-H	M-H		M-H	70
A03	Inland Sea	H	H	H		H	82
A04	North West Coast	VH	VH	VH		VH	92
A05	North West Anglesey	M	M	M		M	102
A06	Amlwch and Environs	M	M	M		M	116
A07	Parys Mountain	H	H	H		H	126
A08	Dulas Bay Hinterland	M-H	M-H	M-H		M-H	134
A09	Red Wharf Bay	M-H	M	M-H		M	146
A10	Penmon and Puffin Island	H	H	H		H	158
A11	Eastern Menai Strait	H	M-H	H		M-H	168
A12	East Central Anglesey	M-H	M	M-H		M	180
A13	Western Menai Strait	H	H	H		H	192
A14	Newborough	H	H	H		H	202
A15	Afon Cefni	M-H	M-H	M-H		M-H	212
A16	Aberffraw	M-H	M	M-H		M	224

Figure 38: Part of a summary table to indicate different levels of sensitivity to different types of development. The page numbers link to the detail of the report setting out the reasons why, with reference to susceptibility and landscape value<sup>52</sup>.

Within the detail of the report, providing 'levels' adjacent to the 'reasons why', is best practice as this is easiest for readers. The examples in Figures 39, and 40 show this. Note that reporting is done by each susceptibility criterion for the landscape, and once for the landscape as a whole for landscape value. Figure 41 illustrates how all the information from different assessment stages is brought together at the end in the capacity judgement.

<sup>52</sup> Gillespies. 2014. Isle of Anglesey, Gwynedd and Snowdonia National Park Landscape Sensitivity and Capacity Assessment. Report to Isle of Anglesey Council, Gwynedd Council and Snowdonia National Park. [Not on line but relevant extracts are published by respective authorities].

# Landscape Sensitivity and Capacity Assessment in relation to on-shore wind and solar photo-voltaic developments

Landscape Sensitivity to Wind Turbines			
Landscape Type No: 2		Landscape Character Type: Arden Parklands	
SUSCEPTIBILITY			
Main criteria	Factors	Susceptibility to wind energy: comments	Susceptibility
PHYSICAL			Lower → Higher
Landform scale and enclosure	Topographic form, scale, shape, enclosure and skyline	The landform is gently rolling plateau between 136m AOD to the north east to 150m AOD to the south west with areas of fairly flat land. This theoretically may be suitable for wind energy development except in proximity to where the land falls away outside the area such as to the south west to the valley floor at 124m AOD towards Tanworth-in-Arden and to the east as these edges are more exposed to view and would be more sensitive in relation to the scale of turbine.	[Bar chart showing susceptibility level]
Landcover pattern, scale and enclosure	Landcover type, scale, pattern, enclosure, condition	The landcover is mixed farming with ancient woodlands and parkland. The fields are semi-regular and small to medium in size in most places with some larger rationalised fields. The hedgerows are thick on roadsides but have been removed in	[Bar chart showing susceptibility level]

Figure 39: Part of a susceptibility assessment table showing two of the many criteria, the judgement of susceptibility level and reasons presented alongside.<sup>53</sup>

VALUE			
Main criteria		Comments	Value
Value			Lower → Higher
Value	Designations, cultural and conservation factors, special and scenic qualities.	The area lies in the Arden Candidate SLA whose special qualities include strong woodland and hedgerow tree cover including oaks, ancient woodlands and assarted fields. Umberlade Hall is listed as is its walled garden. There are a few isolated listed buildings such as farmhouses. Umberlade Park does not appear to be registered but it has	[Bar chart showing value level]

White Consultants 2/5 July 2014

Figure 40: Landscape value is presented in a similar way except reporting once for the whole landscape.

interest and use	the qualities of parkland including mature parkland trees set in grassland acting as a setting to the hall. This area has value.	[Bar chart showing sensitivity level]				
<b>SUMMARY OF SENSITIVITY</b>	Derived from above	The area has some characteristics which would support small wind energy development including gentle slopes/flat areas, strong enclosure in parts and the proximity of large roads, masts and limited tranquillity. However, sensitivity to wind energy development in terms of Umberlade Park and Hall, the proximity to valley slopes and wider views to the south west and east, the need to retain tree enclosure as part of the character of the area, and the proximity to some settlement may limit development.				
SENSITIVITY TO TURBINE HEIGHT		Sensitivity				
<i>Comments</i>		Low	Medium/low	Medium	High/medium	High
The potential for the wind energy development is limited to smaller scale developments which can be located away from the parkland and highly visible areas next to valley sides and be mitigated by woodland.						
<i>Turbine height to blade tip</i>						
15m to hub-35m						
>35-50m						
>50-80m						
>80-110m						
110m +						
SENSITIVITY TO TURBINE CLUSTER SIZE		Sensitivity				
<i>Comments</i>		Low	Medium/low	Medium	High/medium	High
The potential for the wind energy development is limited to smaller scale developments which can be located away from highly visible areas next to valley sides and be mitigated by woodland.						
<i>Turbine cluster size</i>						
Single turbine						
Small scale clusters (2-3 turbines)						
Medium scale clusters (4-7 turbines)						
Medium/large scale clusters (7-12 turbines)						
Large scale clusters (13-24 turbines)						
CAPACITY FOR WIND TURBINES		Maximum landscape character type status				
<i>Comments</i>		1	Landscape character type with no wind turbines			
The area may be able to accommodate some very carefully sited and designed small wind energy developments but they should be located so as not to be visible from Ancient Arden or the parkland.		2	Landscape character type with occasional wind turbines in it and/or intervisible in another landscape character area/s			
		3	Landscape character type with wind turbines			
		4	Wind turbine landscape			

Figure 41: In this example, the focus on reporting has been on sensitivity, as highlighted, with different development scenarios reported according to their different sensitivity levels. Note here that turbine height sensitivity and turbine cluster (numbers of turbines) are reported separately but ONE judgement of landscape capacity is offered at the end – using capacity levels expressed in terms of the effect on landscape character, rather than in quantitative terms of high or low. A coloured landscape capacity map is presented in the report as well (illustrated in this guidance in part in Figure 34).

Some concerns have been expressed on presenting maps showing sensitivity or capacity as they see them being used out of context to justify either developing or protecting on the simple basis of ‘high versus low’ areas on the map. However, a map is an essential tool of

<sup>53</sup> Stratford-on-Avon District Council. 2014. Stratford-on-Avon District Renewable Energy Landscape Sensitivity Study. Report by White Consultants in association with Steven Warnock. [On-line]. <https://www.stratford.gov.uk/doc/205824/name/A%20Background%20Method%20and%20Summaries%20Landscape%20Sensitivity%20Study%20July%202011.pdf> [Accessed 27 July 2018].



## Landscape Sensitivity and Capacity Assessment in relation to on-shore wind and solar photo-voltaic developments

communication and exploration in spatial planning, and by presenting a capacity map using the kind of key in Figure 34, a more intelligent discussion is encouraged.

The main supplementary planning guidance documents may need a simpler form of presentation that is accessible to a wider audience, and typically this would be combined with the presentation of siting and design guidance. An interesting approach to this is offered in guidance by Landscape East<sup>54</sup>, combining written, mapped, pictorial and sketched media in the form of a flow chart, and as illustrated in Figure 42.

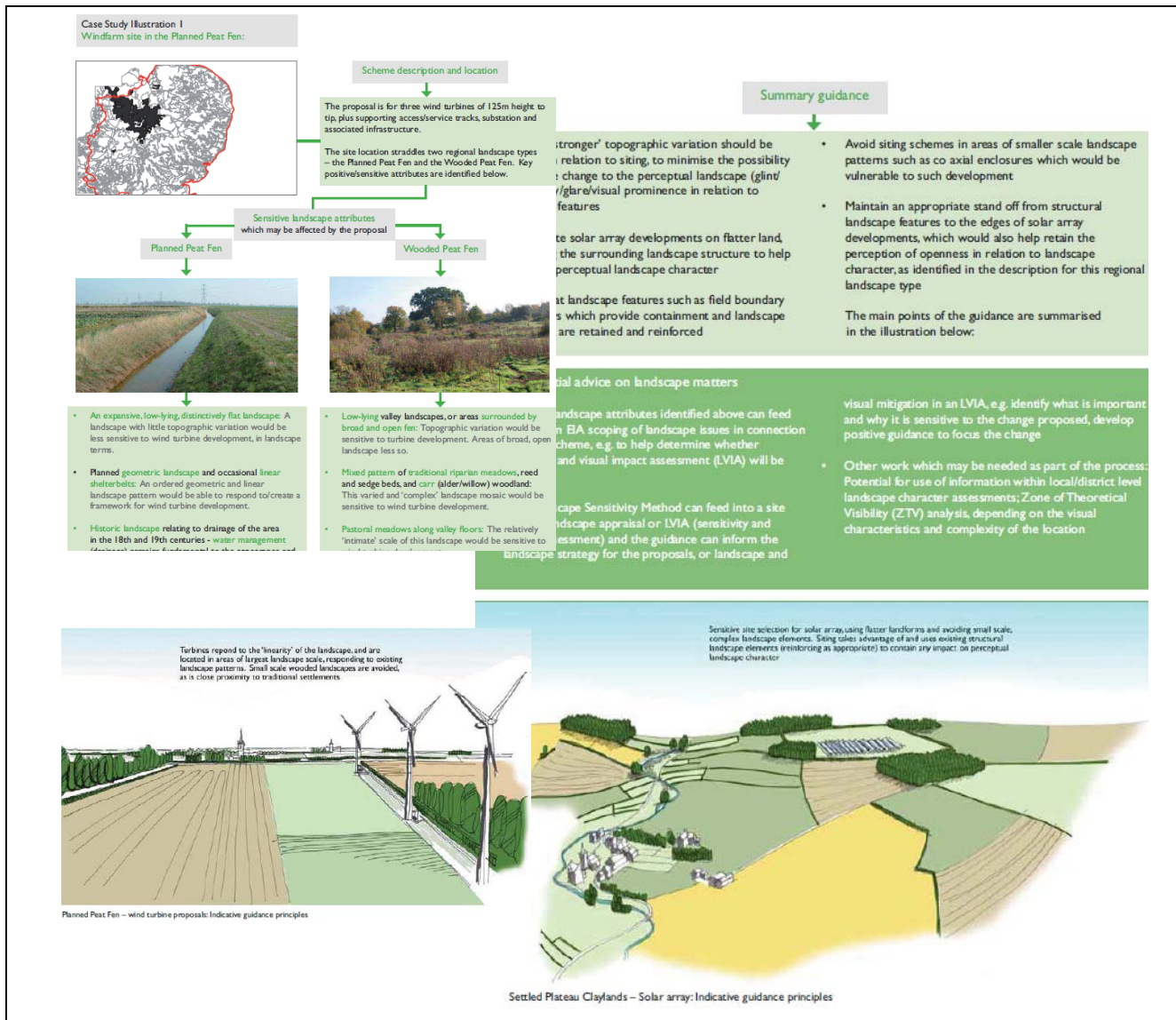


Figure 42: Model presentation of information from a landscape sensitivity assessment, combined with siting and design guidelines. Sketches, photographs and highlighting key characteristics and possible siting and design responses make this feel quite different to the landscape sensitivity assessment itself and very much rooted in the distinct and recognisable landscape character that users in this part of East Anglia may be familiar. The language is very positive, about what could be done, rather than about limitations because of landscape sensitivity. Click the link in the footnote below to read the whole document and see much more detail.

<sup>54</sup> LUC. 2011. Guidance on assessing the sensitivity of the landscape of the East of England. Report commissioned by Landscape East. [On-line]. <http://landscape-east.org.uk/sites/default/files/Landscape-East-Landscape-Sensitivity-Analysis-and-Recommendations-Jun11.pdf> [Accessed 28 May 2018].