

Chapter overview

- Scope
- Establishing the visual baseline
- Predicting and describing visual effects
- Assessing the significance of visual effects
- Judging the overall significance of visual effects

Scope

- 6.1 An assessment of visual effects deals with the effects of change and development on the views available to people and their visual amenity. The concern here is with assessing how the surroundings of individuals or groups of people may be specifically affected by changes in the content and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements.
- 6.2 Scoping should identify the area that needs to be covered in assessing visual effects, the range of people who may be affected by these effects and the related viewpoints in the study area that will need to be examined. The study area should be agreed with the competent authority at the outset and should consider the area from which the proposed development will potentially be visible. The emphasis must be on a reasonable approach which is proportional to the scale and nature of the proposed development. At the scoping stage the study area will only be defined in a preliminary way and is likely to be modified as more detailed analysis is carried out, in discussion with the competent authority.

See Paragraphs 6.6–6.23 for more detail on mapping areas of visibility and on visual receptors and representative viewpoints.

Establishing the visual baseline

- 6.3 Baseline studies for visual effects should establish, in more detail than is possible in the scoping stage, the area in which the development may be visible, the different groups of people who may experience views of the development, the viewpoints where they will be affected and the nature of the views at those points. Where possible it can also be useful to establish the approximate or relative number of different groups of people who will be affected by the changes in views or visual amenity, while at the same time recognising that assessing visual effects is not a quantitative process.
- 6.4 These factors are all interrelated and need to be considered in an integrated way rather than as a series of separate steps. It is also important to be aware that visual baseline

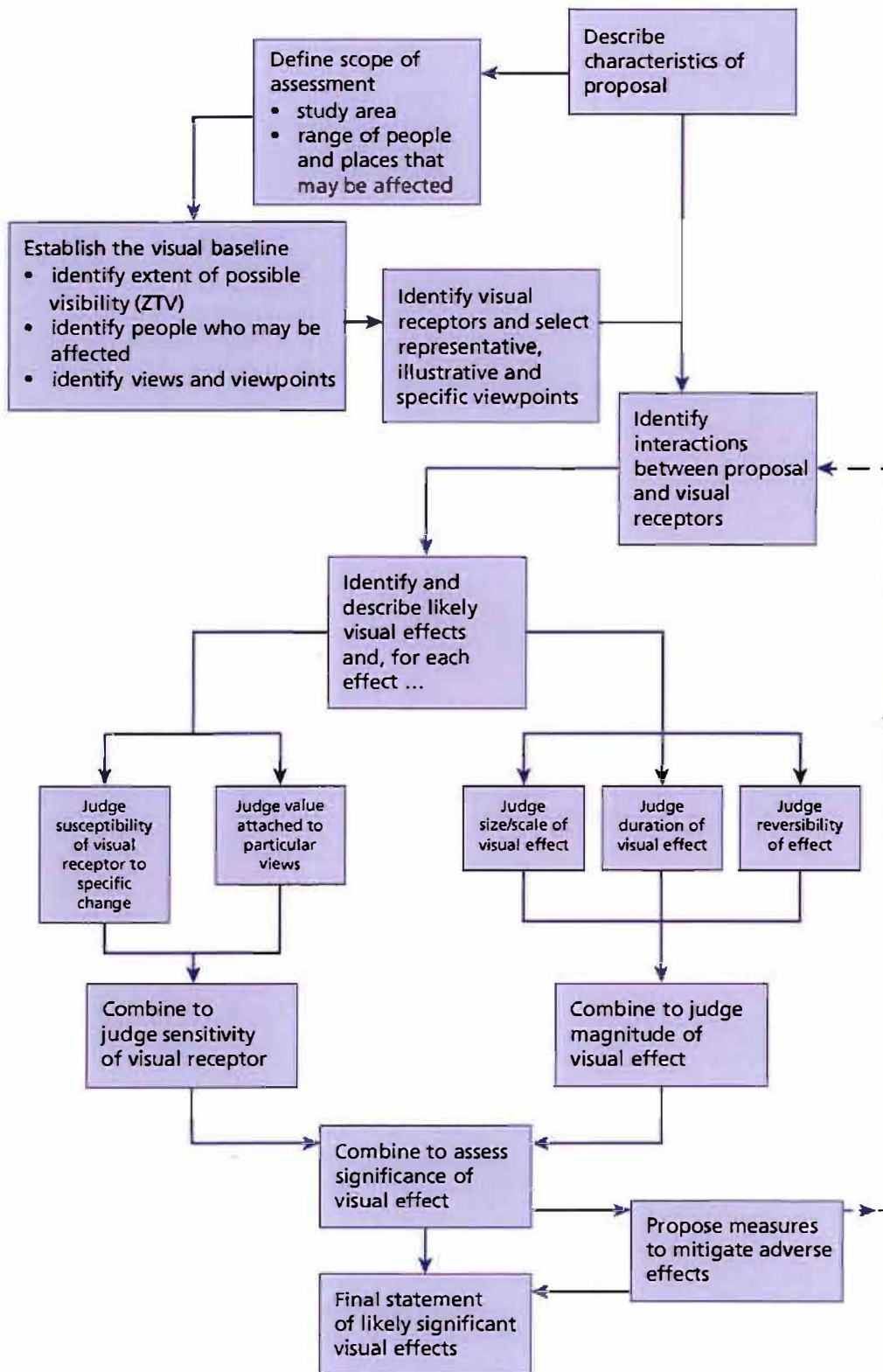


Figure 6.1 Steps in assessing visual effects

Figure 6.2 A site context plan identifying public rights of way, registered parks and gardens, an Area of Outstanding Natural Beauty and Conservation Areas. People visiting or using any of these may be visual receptors

data may require updating at intervals, particularly to reflect modifications to the design as a result of the iterative design process.

Interrelationships with the cultural heritage topic area need to be borne in mind when developing the visual baseline and identifying visual effects. Specialist input from cultural heritage professionals is likely to be required to interpret the range of relevant cultural heritage studies that may help to identify important viewpoints. Development proposals may, for example, have visual effects on the settings of heritage assets, including important views to and from those assets – settings are defined as ‘the surroundings in which a heritage asset is experienced’ (English Heritage, 2011). Where there are heritage assets in the vicinity of the proposed development their settings will need to be taken into account when mapping visibility and defining important views that may be altered by the proposal. In urban areas there may be particular interest in strategic views relating to heritage assets, landmarks and other key views and vistas that may have been defined by cultural heritage experts.¹ Some townscape assessments can also help with this.

6.5

Mapping visibility

Land that may potentially be visually connected with the development proposal – that is, areas of land from which it may potentially be seen – must be identified and mapped at the outset, bearing in mind the comments in Paragraph 6.2 about reasonableness and proportionality. Visibility mapping is an important tool in preparing the visual effects baseline but does not in its own right identify the effects. It can also play an important part in the different stages of the iterative design process. It can, for example, contribute to the early stages of site design and assessment to determine the potential visibility of a site compared to a similar development located on an alternative site. It can also be used to help in the consideration of concept layout and design alternatives in response to the potential visibility of different options.

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There are two main approaches to mapping visibility:

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1. Manual approaches use map interpretation, cross sections through the site in relation to its surroundings and visual envelope mapping on site. This means standing at the location of the development and looking out to identify and map the land that is visible from that and other points within the site. This can establish the outer limit or visual envelope of the land that may be visually connected with the proposal. These methods are time consuming and involve a degree of subjectivity since they depend on judgements made by the surveyor and do not allow for the fact that the highest point of the development is likely to be well above the surveyor's eye line. Nevertheless, they can still be helpful in initial scoping and for smaller projects, including appraisals outside EIA.
2. Digital approaches use elevation data to create a digital terrain model of the study area and calculate inter-visibility between points or along lines radiating out from the development location, to construct a map showing the area from which the proposal may theoretically be visible.

Use of digitally mapped areas of visibility has increasingly become the norm since the previous edition of this guidance was published, although it is less commonly used in

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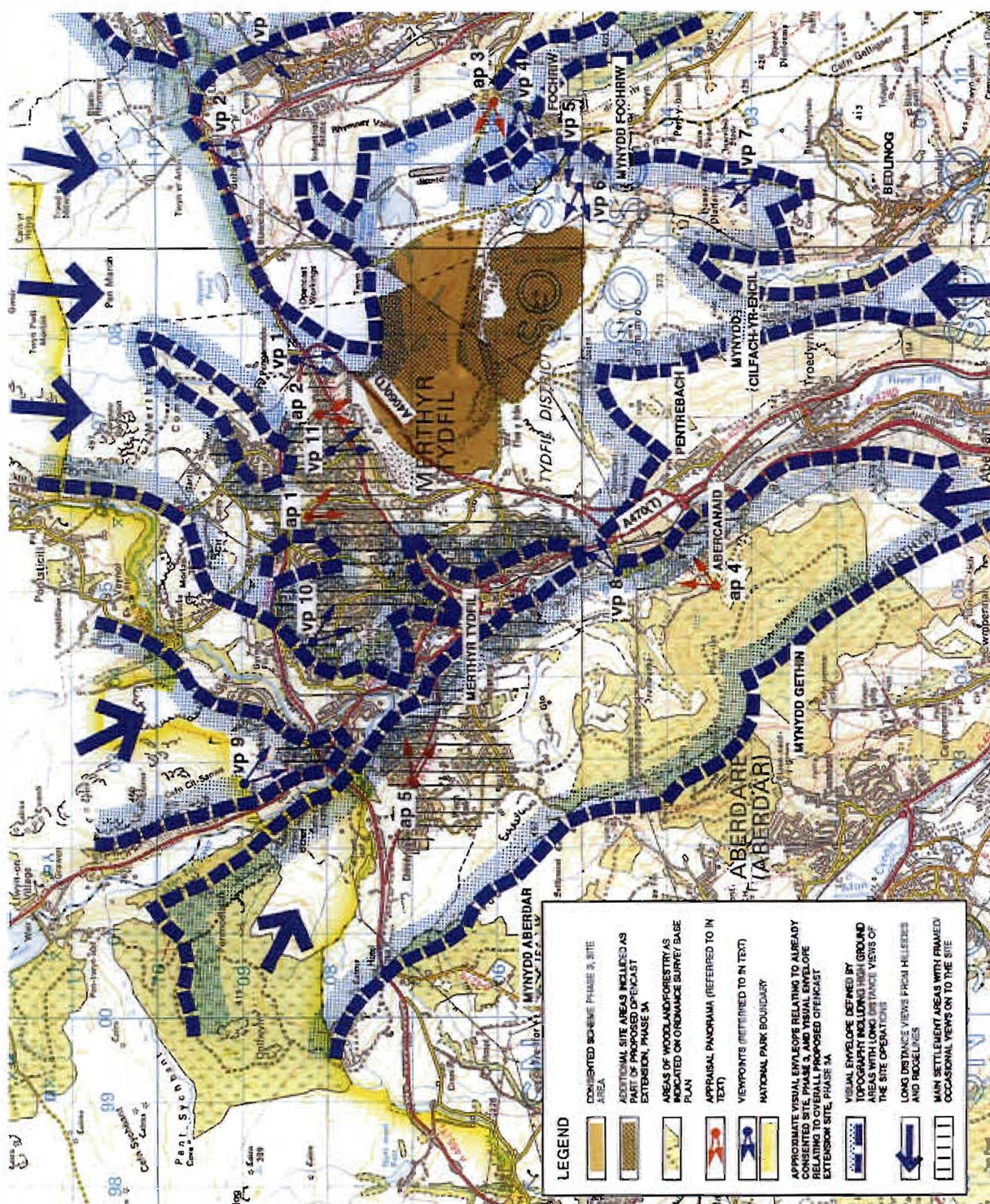


Figure 6.3 A manual approach to visual envelope mapping using topographic analysis and viewpoint surveys

urban areas because of the difficulty of mapping and modelling accurately the buildings and structures that would influence potential visibility. The map products of this process are referred to as either the Zone of Visual Influence (ZVI) or the Zone of Theoretical Visibility (ZTV). The second of these (ZTV) is now recommended since it makes clear that the area so defined only shows land from which the proposal may theoretically be visible. That is, it treats the world as 'bare earth' and does not take account of potential screening by vegetation or buildings. Desk study, using digital methods, should identify the ZTV for the development proposal and, where appropriate, should be constructed using multiple-point analysis, combining ZTV maps for different parts of the proposal.

In the case of linear developments such as road or rail schemes the ZTV must be constructed for a sequence of points along the road, a process that can now easily be carried out digitally (see Figure 6.5). In addition, the height of structures such as bridges or gantries, and of vehicles that will use the route, should be built into the ZTV construction so that the visibility of all aspects of the proposal is considered.

6.9

The ZTV mapping is the desk study component of the visibility analysis. In reality many factors other than terrain will influence actual visibility. Other landscape components that may affect visibility, for example buildings, walls, fences, trees, hedgerows, woodland and banks, can in theory be added to digital models that are based on terrain but this is difficult to achieve accurately, especially for a large study area. Their effects are best judged by field surveys that can examine and record their location, size and extent, and their effect in screening visibility at key points. Landmarks in the vicinity of the site can be useful as reference points when looking towards the site to identify its location in the view, and public viewpoints that may have views of the site and proposed development can be identified and the extent of the views checked. Site surveys are therefore essential to provide an accurate baseline assessment of visibility.

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Both ZTV mapping and site survey should assume that the observer eye height is some 1.5 to 1.7 metres above ground level, based on the midpoint of average heights for men and women. The assumed eye height used must in any case be clearly stated. The effects of distance on views must also be considered – for example parts of the ZTV that are most distant from the proposal may be omitted from the final visual effects baseline if it is judged that visibility from this distance will be extremely limited. This will vary with the type of project and must be agreed with the competent authority.

6.11

For some types of development the visual effects of lighting may be an issue. In these cases it may be important to carry out night-time 'darkness' surveys of the existing conditions in order to assess the potential effects of lighting and these effects need to be taken into account in generating the 3D model of the scheme. Quantitative assessment of illumination levels, and incorporation into models relevant to visual effects assessment, will require input from lighting engineers, but the visual effects assessment will also need to include qualitative assessments of the effects of the predicted light levels on night-time visibility. The visibility survey and definition of ZTVs may need to be reviewed and updated as siting, layout and design proposals are progressively refined and lighting effects become clearer.

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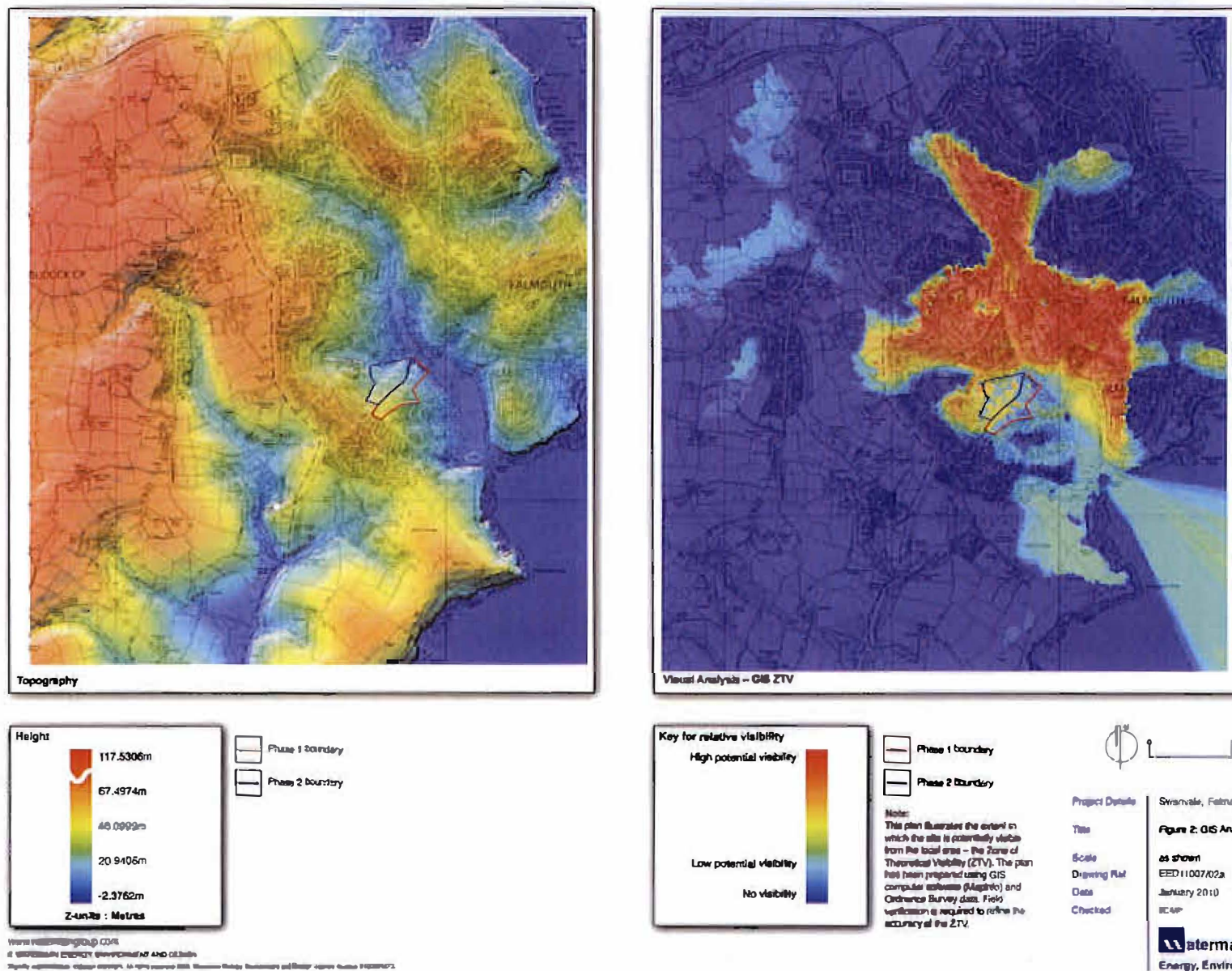


Figure 6.4 Topographical analysis and ZTV for proposed urban development

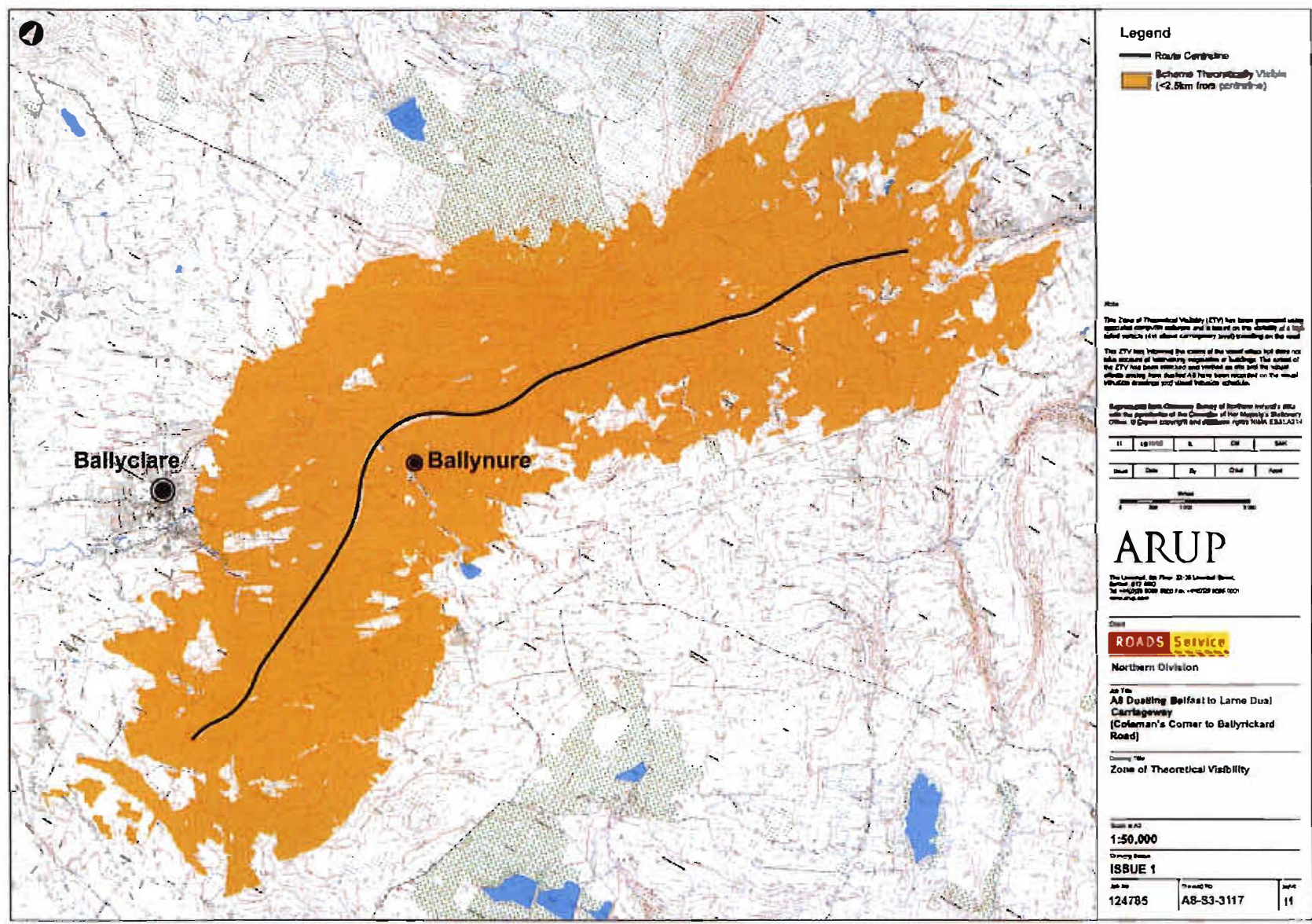


Figure 6.5 Computer-generated ZTV of a road scheme to a distance of 2.5 kilometres from the centreline



Figure 6.6 View over the South Wales valley town of Rhymney, showing the contrast of urban lighting in the valley and the darkness of the enclosing ridges

Receptors of visual effects

- 6.13 The ZTV identifies land that, theoretically, is visually connected with the proposal and this is refined by site survey to confirm the extent of visibility. But in parts of this area there will be relatively few people to experience the effects of the proposal on views. The baseline studies must therefore identify the people within the area who will be affected by the changes in views and visual amenity – usually referred to as ‘visual receptors’. They may include people living in the area, people who work there, people passing through on road, rail or other forms of transport, people visiting promoted landscapes or attractions, and people engaged in recreation of different types.
- 6.14 People generally have differing responses to changes in views and visual amenity depending on the context (location, time of day, season, degree of exposure to views) and purpose for being in a particular place (for example recreation, residence or employment, or passing through on roads or by other modes of transport). During passage through the landscape, certain activities or locations may be specifically associated with the experience and enjoyment of the landscape, such as the use of paths, tourist or scenic routes and associated viewpoints.
- 6.15 The types of viewers who will be affected and the places where they will be affected should be identified. Where possible an estimate should also be made of the numbers of the different types of people who might be affected in each case. Where no firm data are available this may simply need to be a relative judgement, for example noting comparatively few people in one place compared with many in another.

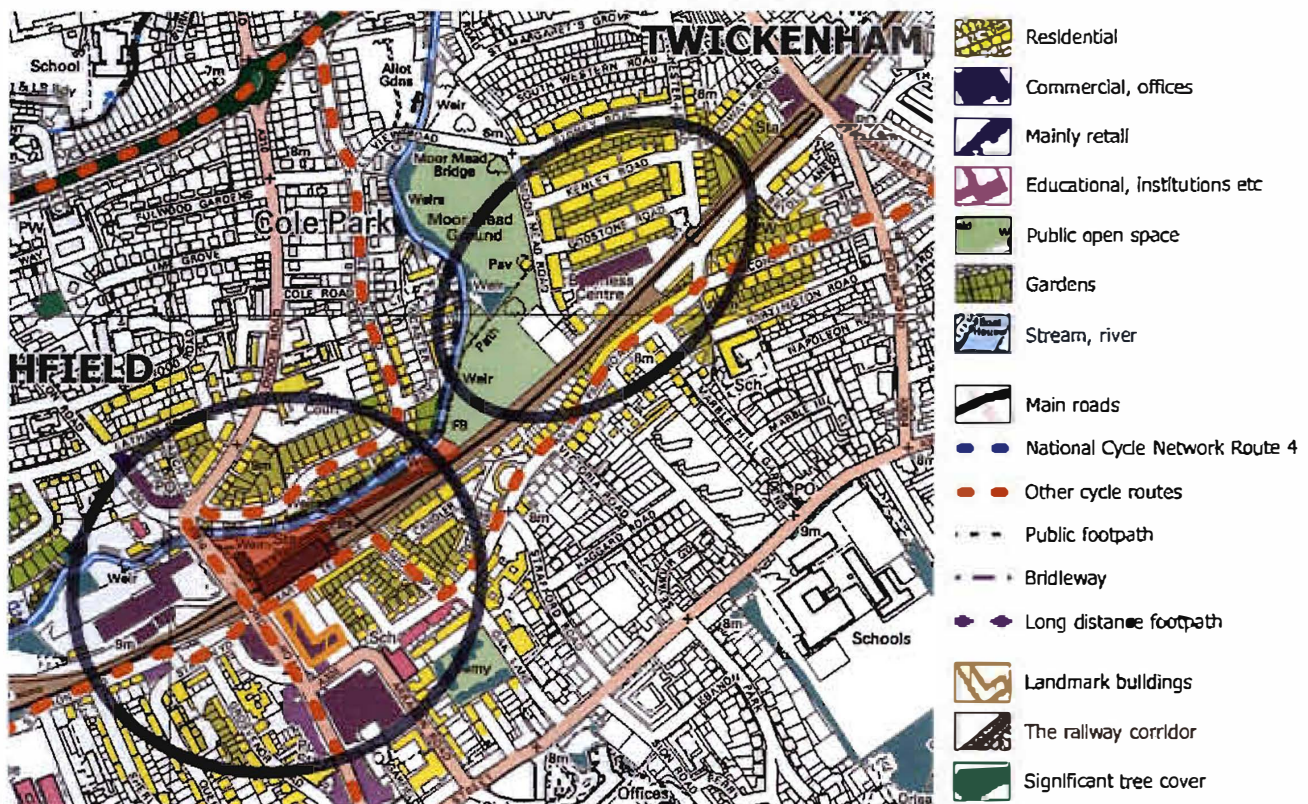


Figure 6.7 Mapping the locations of potential visual receptors in an urban context

Viewpoints and views

The viewpoints from which the proposal will actually be seen by these different groups of people should then be identified (but see Paragraphs 6.18 and 6.19 for detail on selecting viewpoints). They may include:

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- public viewpoints, including areas of land and buildings providing public access – in England and Wales, this includes different forms of open access land, and public footpaths and bridleways; in Scotland, a range of recognised paths also exists, while access rights apply to most land and inland water;
- transport routes where there may be views from private vehicles and from different forms of public transport;
- places where people work.

In some instances it may also be appropriate to consider private viewpoints, mainly from residential properties. In these cases the scope of such an assessment should be agreed with the competent authority, as must the approach to identifying representative viewpoints since it is impractical to visit all properties that might be affected. Effects of development on private property are frequently dealt with mainly through 'residential amenity assessments'. These are separate from LVIA although visual effects assessment may sometimes be carried out as part of a residential amenity assessment,

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Figure 6.8 Plan showing a range of viewpoints around a proposed urban development to be used for photographs of existing views

in which case this will supplement and form part of the normal LVIA for a project. Some of the principles set out here for dealing with visual effects may help in such assessments but there are specific requirements in residential amenity assessment.

The viewpoints to be used in an assessment of visual effects should be selected initially through discussions with the competent authority and other interested parties at the scoping stage. But selection should also be informed by the ZTV analysis, by fieldwork, and by desk research on access and recreation, including footpaths, bridleways and public access land, tourism including popular vantage points, and distribution of population. **6.18**

Viewpoints selected for inclusion in the assessment and for illustration of the visual effects fall broadly into three groups: **6.19**

1. **representative viewpoints**, selected to represent the experience of different types of visual receptor, where larger numbers of viewpoints cannot all be included individually and where the significant effects are unlikely to differ – for example, certain points may be chosen to represent the views of users of particular public footpaths and bridleways;
2. **specific viewpoints**, chosen because they are key and sometimes promoted viewpoints within the landscape, including for example specific local visitor attractions, viewpoints in areas of particularly noteworthy visual and/or recreational amenity such as landscapes with statutory landscape designations, or viewpoints with particular cultural landscape associations;
3. **illustrative viewpoints**, chosen specifically to demonstrate a particular effect or specific issues, which might, for example, be the restricted visibility at certain locations.

The selection of the final viewpoints used for the assessment should take account of a range of factors, including: **6.20**

- the accessibility to the public;
- the potential number and sensitivity of viewers who may be affected;
- the viewing direction, distance (i.e. short-, medium- and long-distance views) and elevation;
- the nature of the viewing experience (for example static views, views from settlements and views from sequential points along routes);
- the view type (for example panoramas, vistas and glimpses);
- the potential for cumulative views of the proposed development in conjunction with other developments.

Issues relating to the cumulative effects of proposals are covered in Chapter 7.

The viewpoints used need to cover as wide a range of situations as is possible, reasonable and necessary to cover the likely significant effects. It is not possible to give specific guidance on the appropriate number of viewpoints since this depends on the context, the nature of the proposal and the range and location of visual receptors. The **6.21**

emphasis must always be on proportionality in relation to the scale and nature of the development proposal and its likely significant effects, and on agreement with the competent authority and consultation bodies.

- 6.22 In addition to fixed views, the viewpoints should also, as far as possible, cover important sequential views along key routes and transport corridors. Viewpoints should cover both near and more distant views, though not so distant as to be meaningless, unless it is useful to demonstrate the influence of distance. And they should cover the full range of different types of people who may be affected. The detailed location of each viewpoint should be carefully considered and should be as typical or representative as possible of the view likely to be experienced there. The details of viewpoint locations should be accurately mapped and catalogued and the direction and area covered by the view recorded. The information should be sufficient for someone else to return to the exact location and record the same view.
- 6.23 At each agreed viewpoint baseline photographs should be taken to record the existing views. The Landscape Institute has published separate technical guidance on photography and photomontage in Landscape and Visual Impact Assessment (Landscape Institute, 2011), which should be consulted when taking baseline photographs. Additional useful information is also available from other sources.²

Combining the baseline information

- 6.24 The completed visual baseline should focus on information that will help to identify significant visual effects. Visual receptors, viewpoints and views that have been



Figure 6.9 The details of viewpoint locations should be accurately mapped and catalogued and the direction and area covered by the view recorded

identified as unlikely to experience significant visual effects either at the scoping stage or in establishing the baseline should not be included in detailed reporting but should be noted, with reasons given for their exclusion. A baseline report should combine information on:

- the type and relative numbers of people (visual receptors) likely to be affected, making clear the activities they are likely to be involved in;
- the location, nature and characteristics of the chosen representative, specific and illustrative viewpoints, with details of the visual receptors likely to be affected at each;
- the nature, composition and characteristics of the existing views experienced at these viewpoints, including direction of view;
- the visual characteristics of the existing views, for example the nature and extent of the skyline, aspects of visual scale and proportion, especially with respect to any particular horizontal or vertical emphasis, and any key foci;
- elements, such as landform, buildings or vegetation, which may interrupt, filter or otherwise influence the views.

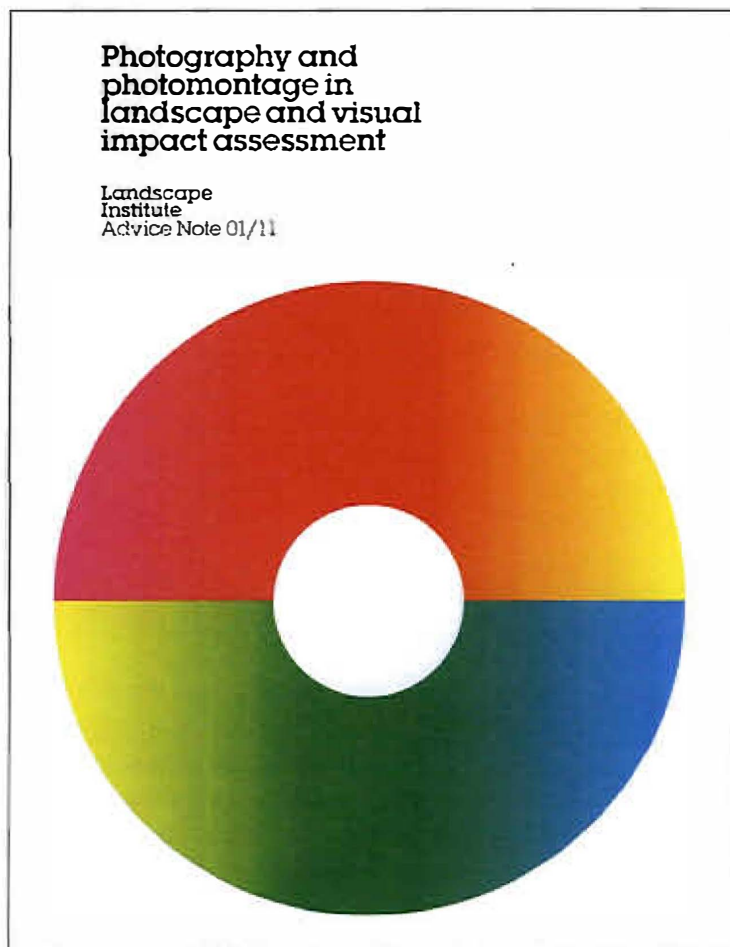


Figure 6.10 Landscape Institute technical advice note

- 6.25** The potential extent to which the site of the proposed development is visible from surrounding areas (the ZTV), the chosen viewpoints, the types of visual receptor affected and the nature and direction of views can all be combined in well-designed plans. Existing views should be illustrated by photographs or sketches with annotations added to emphasise any particularly important components of each view and to help viewers understand what they are looking at. It is important to include technical information about the photography used to record the baseline, including camera details, date and time of photography and weather conditions.

Predicting and describing visual effects

- 6.26** Preparation of the visual baseline is followed by the systematic identification of likely effects on the potential visual receptors. Considering the different sources of visual effects alongside the principal visual receptors that might be affected, perhaps by means of a table, will assist in the initial identification of likely significant effects for further study. Changes in views and visual amenity may arise from built or engineered forms and/or from soft landscape elements of the development. Increasingly, attention is being paid to the visual effects of offshore developments on what may be perceived to be valued coastal views.
- 6.27** In order to assist in description and comparison of the effects on views it can be helpful to consider a range of issues, which might include, but are not restricted to:
- the nature of the view of the development, for example a full or partial view or only a glimpse;
 - the proportion of the development or particular features that would be visible (such as full, most, small part, none);
 - the distance of the viewpoint from the development and whether the viewer would focus on the development due to its scale and proximity or whether the development would be only a small, minor element in a panoramic view;
 - whether the view is stationary or transient or one of a sequence of views, as from a footpath or moving vehicle;
 - the nature of the changes, which must be judged individually for each project, but may include, for example, changes in the existing skyline profile, creation of a new visual focus in the view, introduction of new man-made objects, changes in visual simplicity or complexity, alteration of visual scale, and change to the degree of visual enclosure.
- 6.28** Consideration should be given to the seasonal differences in effects arising from the varying degree of screening and/or filtering of views by vegetation that will apply in summer and winter. Assessments may need to be provided for both the winter season, with least leaf cover and therefore minimum screening, and for fuller screening in summer conditions. Discussion with the competent authority will help to determine whether the emphasis should be on the maximum visibility scenario of the winter condition of vegetation, or whether both summer and winter conditions should be used. The timing of the assessment work and the project programme will also influence the practicality of covering more than one season.

As with landscape effects an informed professional judgement should be made as to whether the visual effects can be described as positive or negative (or in some cases neutral) in their consequences for views and visual amenity. This will need to be based on a judgement about whether the changes will affect the quality of the visual experience for those groups of people who will see the changes, given the nature of the existing views. 6.29

Methods of communicating visual effects are covered in Chapter 8.

Assessing the significance of visual effects

The visual effects that have been identified must be assessed to determine their significance, based on the principles described in Paragraphs 3.23–3.36. As with landscape effects, this requires methodical consideration of each effect identified and, for each one, assessment of the nature of the visual receptors and the nature of the effect on views and visual amenity. 6.30

Sensitivity of visual receptors

It is important to remember at the outset that visual receptors are all people. Each visual receptor, meaning the particular person or group of people likely to be affected at a specific viewpoint, should be assessed in terms of both their susceptibility to change in views and visual amenity and also the value attached to particular views. 6.31

Susceptibility of visual receptors to change

The susceptibility of different visual receptors to changes in views and visual amenity is mainly a function of: 6.32

- the occupation or activity of people experiencing the view at particular locations; and
- the extent to which their attention or interest may therefore be focused on the views and the visual amenity they experience at particular locations.

The visual receptors most susceptible to change are generally likely to include: 6.33

- residents at home (but see Paragraph 6.36);
- people, whether residents or visitors, who are engaged in outdoor recreation, including use of public rights of way, whose attention or interest is likely to be focused on the landscape and on particular views;
- visitors to heritage assets, or to other attractions, where views of the surroundings are an important contributor to the experience;
- communities where views contribute to the landscape setting enjoyed by residents in the area.

Travellers on road, rail or other transport routes tend to fall into an intermediate category of moderate susceptibility to change. Where travel involves recognised scenic routes awareness of views is likely to be particularly high.

6.34 Visual receptors likely to be less sensitive to change include:

- people engaged in outdoor sport or recreation which does not involve or depend upon appreciation of views of the landscape;
- people at their place of work whose attention may be focused on their work or activity, not on their surroundings, and where the setting is not important to the quality of working life (although there may on occasion be cases where views are an important contributor to the setting and to the quality of working life).

6.35 This division is not black and white and in reality there will be a gradation in susceptibility to change. Each project needs to consider the nature of the groups of people who will be affected and the extent to which their attention is likely to be focused on views and visual amenity. Judgements about the susceptibility of visual receptors to change should be recorded on a verbal scale (for example high, medium or low) but the basis for this must be clear, and linked back to evidence from the baseline study.

6.36 The issue of whether residents should be included as visual receptors and residential properties as private viewpoints has been discussed in Paragraph 6.17. If discussion with the competent authority suggests that they should be covered in the assessment of visual effects it will be important to recognise that residents may be particularly susceptible to changes in their visual amenity – residents at home, especially using rooms normally occupied in waking or daylight hours, are likely to experience views for longer than those briefly passing through an area. The combined effects on a number of residents in an area may also be considered, by aggregating properties within a settlement, as a way of assessing the effect on the community as a whole. Care must, however, be taken first to ensure that this really does represent the whole community and second to avoid any double counting of the effects.

Value attached to views

6.37 Judgements should also be made about the value attached to the views experienced. This should take account of:

- recognition of the value attached to particular views, for example in relation to heritage assets, or through planning designations;
- indicators of the value attached to views by visitors, for example through appearances in guidebooks or on tourist maps, provision of facilities for their enjoyment (such as parking places, sign boards and interpretive material) and references to them in literature or art (for example ‘Ruskin’s View’ over Lunedale, or the view from the Cob in Porthmadog over Traerh Mawr to Snowdonia which features in well-known Welsh paintings, and the ‘Queen’s View’ in Scotland).

Magnitude of the visual effects

Each of the visual effects identified needs to be evaluated in terms of its size or scale, the geographical extent of the area influenced, and its duration and reversibility. 6.38

Size or scale

Judging the magnitude of the visual effects identified needs to take account of: 6.39

- the scale of the change in the view with respect to the loss or addition of features in the view and changes in its composition, including the proportion of the view occupied by the proposed development;
- the degree of contrast or integration of any new features or changes in the landscape with the existing or remaining landscape elements and characteristics in terms of form, scale and mass, line, height, colour and texture;
- the nature of the view of the proposed development, in terms of the relative amount of time over which it will be experienced and whether views will be full, partial or glimpses.

Geographical extent

The geographical extent of a visual effect will vary with different viewpoints and is likely to reflect: 6.40

- the angle of view in relation to the main activity of the receptor;
- the distance of the viewpoint from the proposed development;
- the extent of the area over which the changes would be visible.

Duration and reversibility of visual effects

As with landscape effects these are separate but linked considerations. Similar categories should be used, such as short term, medium term or long term, provided that their meaning is clearly stated with clear criteria for the lengths of time encompassed in each case. Similar considerations related to reversibility apply, as set out in Paragraph 5.52. 6.41

Judging the overall significance of visual effects

To draw final conclusions about significance the separate judgements about the sensitivity of the visual receptors and the magnitude of the visual effects need to be combined, to allow a final judgement about whether each effect is significant or not, as required by the Regulations, following the general principles set out in Chapter 3, and also in Chapter 5 in relation to landscape effects. Significance of visual effects is not absolute and can only be defined in relation to each development and its specific location. It is for each assessment to determine the approach and if necessary to adopt a consistent approach across all the EIA topic areas. 6.42

As indicated in Chapter 3, there are two main approaches to combining the individual judgements made under the criteria (although there may also be others): 6.43

1. They can be sequentially combined into assessments of sensitivity for each receptor and magnitude for each effect. Sensitivity and magnitude can then be combined to assess overall significance.

2. They can be arranged in a table to provide an overall profile of each identified effect. An overview can then be taken of the distribution of the assessments for each criterion to make an informed professional judgement about the overall assessment of the significance of the effect.

6.44 There are no hard and fast rules about what makes a significant effect, and there cannot be a standard approach since circumstances vary with the location and context and with the type of proposal. In making a judgement about the significance of visual effects the following points should be noted:

- Effects on people who are particularly sensitive to changes in views and visual amenity are more likely to be significant.
- Effects on people at recognised and important viewpoints or from recognised scenic routes are more likely to be significant.
- Large-scale changes which introduce new, non-characteristic or discordant or intrusive elements into the view are more likely to be significant than small changes or changes involving features already present within the view.

6.45 Where visual effects are judged to be significant and adverse, proposals for preventing/avoiding, reducing, or offsetting or compensating for them (referred to as mitigation) should be described. The significant visual effects remaining after mitigation should be summarised as the final step in the process.

Further details on mitigation is provided in Paragraphs 4.21–4.43.

Summary advice on good practice

- An assessment of visual effects deals with the effects of change and development on the views available to people and their visual amenity.
- Scoping should identify the area that needs to be covered in assessing visual effects, the range of people who may be affected by these effects and the related viewpoints in the study area that will need to be examined.
- The study area should be agreed with the competent authority at the outset and should cover the area from which the proposed development will potentially be visible. The emphasis must be on a reasonable approach which is proportional to the scale and nature of the proposed development.
- Baseline studies for visual effects should establish, in more detail than is possible in the scoping stage, the area in which the development may be visible, the different groups of people who may experience views of the development, the viewpoints where they will be affected and the nature of the views at those points.
- These factors are all interrelated and need to be considered in an integrated way rather than as a series of separate steps.

Interrelationships with the cultural heritage topic area need to be borne in mind when developing the visual baseline and identifying visual effects. Specialist input from cultural heritage professionals is likely to be required to interpret the range of relevant cultural heritage studies that may help to identify important viewpoints.

Areas of land from which the proposed development may potentially be visible must be identified and mapped at the outset of the assessment of visual effects.

Digitally mapped areas of visibility should be referred to as the Zone of Theoretical Visibility (ZTV), making clear that the area so defined only shows land from which the proposal may **theoretically** be visible.

Many factors other than terrain will influence actual as opposed to theoretical visibility. Site surveys are essential to provide an accurate baseline assessment of visibility.

Both ZTV mapping and site survey should assume that the observer eye height is some 1.5 to 1.7 metres above ground level, based on the midpoint of average heights for men and women.

For some types of development the visual effects of lighting may be an issue. In these cases it may be important to carry out night-time 'darkness' surveys of the existing conditions in order to assess the potential effects of lighting.

The baseline studies must identify the people within the area who will be affected by the changes in views and visual amenity – usually referred to as 'visual receptors' – and the viewpoints from which the proposal will actually be seen.

In cases where it is appropriate to consider private viewpoints from residential properties the scope of such an assessment should be agreed with the competent authority. Visual effects assessment may sometimes be carried out as part of residential amenity assessments, in which case this will supplement the normal LVIA for a project.

The viewpoints to be used should be selected in part through discussions with the competent authority and other interested parties, initially at the scoping stage but also informed by the ZTV analysis, by fieldwork and by desk research on access and recreation.

Viewpoints selected for inclusion in the assessment and for illustration of the visual effects may be chosen as representative viewpoints, specific viewpoints or illustrative viewpoints, and should cover as wide a range of situations as is reasonable and necessary to cover the likely significant effects. The emphasis must always be on proportionality in relation to the scale and nature of the development proposal.

The details of viewpoint locations should be accurately mapped and catalogued and the direction and area covered by the view recorded. The information should be sufficient for someone else to return to the exact location and record the same view.

The Landscape Institute's technical guidance on photography and photomontage in Landscape and Visual Impact Assessment should be consulted when taking baseline photographs.

The completed visual baseline should focus on information that will help to identify significant visual effects. A baseline report may combine all the key information about

visual receptors, viewpoints and views, using text, maps and annotated photographs and sketches.

Consideration of the different sources of visual effects alongside the principal visual receptors that might be affected should allow systematic identification of likely visual effects.

An informed professional judgement should be made about whether the visual effects should be categorised as positive or negative (or in some cases neutral), with the criteria used in reaching this judgement clearly stated.

The visual effects that have been identified must be assessed to determine their significance, based on the principles described in Chapter 3. This requires methodical consideration of each effect identified and, for each one, assessment of the sensitivity of the visual receptor and the magnitude of the effect on views and visual amenity.

Final judgements must be made about which visual effects are significant, as required by the Regulations. There are no hard and fast rules about what makes a significant effect, and there cannot be a standard approach since circumstances vary with the location and context and with the type of proposal.

Where visual effects are judged to be significant and adverse, proposals for preventing/avoiding, reducing, or offsetting or compensating for them (referred to as mitigation) should be described. The significant visual effects remaining after mitigation should be summarised as the final step in the process.

Chapter 7

Assessing cumulative landscape and visual effects



Chapter overview

- Scope and definitions
- What should cumulative effects include?
- Types of cumulative effect
- Assessing cumulative landscape effects
- Assessing cumulative visual effects
- Mitigating cumulative effects

Scope and definitions

- 7.1 Assessment of cumulative effects is required both by the EIA and the SEA Directives and by the associated Regulations. Cumulative effects have been defined in a broad generic sense as 'impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project' (Hyder, 1999: 7).
- 7.2 Cumulative landscape and visual effects must be considered in LVIA when it is carried out as part of EIA. The 2002 edition of these guidelines defined cumulative landscape and visual effects as those that:
- result from additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future.
- (Landscape Institute and IEMA, 2002: 85)
- 7.3 Since this definition was published there has been particular emphasis on exploring the cumulative effects of wind farm development. This results both from the number of such schemes requiring assessment and the potentially high level of visibility of these tall structures, which means that cumulative visual effects in particular may be more likely. In Scotland considerable effort has been devoted to addressing definitions and interpretations of cumulative landscape and visual effects specifically in relation to wind farms and the resulting guidance has been used widely, and not only in Scotland. This defines:
- cumulative effects as 'the additional changes caused by a proposed development in conjunction with other similar developments or as the combined effect of a set of developments, taken together' (SNH, 2012: 4);
 - cumulative landscape effects as effects that 'can impact on either the physical fabric or character of the landscape, or any special values attached to it' (SNH, 2012: 10);
 - cumulative visual effects as effects that can be caused by combined visibility, which 'occurs where the observer is able to see two or more developments from one viewpoint' and/or sequential effects which 'occur when the observer has to move to another viewpoint to see different developments' (SNH, 2012: 11).
- 7.4 This is an evolving area of practice that is relevant to all forms of development and land use change, not only to wind farms. It is not appropriate to prescribe the approach

to such assessment since the issues related to cumulative effects depend on the specific characteristics of both the development proposal and the location. Those involved in assessing cumulative landscape and visual effects should ensure that they keep abreast of relevant new guidance that may emerge in relation to particular forms of development and give careful thought to an appropriate approach. Such assessments can become very substantial tasks and this makes it very important to agree the approach on a case-by-case basis, depending on the specific project. The scope of cumulative landscape and visual effects in particular must be agreed at the outset, in discussion with the competent authority and consultation bodies. The EIA co-ordinator will also need to ensure that a consistent approach is adopted across different topic areas.

The challenge is to keep the task reasonable and in proportion to the nature of the project under consideration. Common sense has an important part to play in reaching agreement about the scope of the assessment. Where the competent authority and other stakeholders are uncertain about the preferred approach the landscape professional may have to exercise judgement about what is appropriate and proportionate and be able to justify the approach taken. It is always important to remember that the emphasis in EIA is on likely significant effects rather than on comprehensive cataloguing of every conceivable effect that might occur. Carefully thinking through what significant cumulative landscape and visual effects are likely to be generated by the proposal should allow a sensible decision to be reached at the scoping stage.

7.5

What should cumulative effects include?

Although the broad definitions above, of cumulative effects in general and cumulative landscape and visual effects in particular, are widely adopted, there are different interpretations of what should be included in a cumulative effects assessment. The EIA Regulations require that in describing the aspects likely to be significantly affected by a development, consideration should be given to the interrelationships between the different environmental factors. In EIA practice these potentially quite complex interrelationships are increasingly being examined as part of the assessment of cumulative effects. They are then dealt with under the heading of within-project (or intra-project) cumulative effects.¹

7.6

Where this interpretation is applied in an EIA, those conducting the LVIA may need to consider possible links between landscape and visual effects and effects identified in other topic areas – for example relationships between noise effects and visual effects, both of which may be related to the line of sight between source and receptor, or the effects of features created by hydrology mitigation measures on landscape character. But landscape professionals are unlikely to have to carry out a comprehensive assessment of this type of within-project cumulative effect unless also acting as the EIA co-ordinator.

7.7

Of greater importance for LVIA are the cumulative landscape and visual effects that may result from an individual project that is being assessed interacting with the effects of other proposed developments in the area. These are often referred to in EIA practice as inter-project or between-project cumulative effects. Dealing with them requires decisions about what other proposals should be included. The two key questions are:

7.8

1. What types of cumulative effect should be considered – should they be only those from projects of the same type as the main project under consideration or include those from other types of development in the vicinity?
2. What past, present or future proposals should be considered, either for the same or different types of development?

What types of development should be included?

- 7.9** Cumulative effects assessment can be relevant to any form of development. In order to ensure a proportional response to the particular development proposal under consideration agreement should be reached in the scoping stage, through discussion with the competent authority and consultation bodies and judgement by the assessor, on the scope of the cumulative effects assessment.
- 7.10** In most cases the focus of the cumulative assessment will be on the additional effect of the project in conjunction with other developments of the same type (as, for example, in the case of wind farms; see SNH, 2012). In some cases, development of another type or types will be relevant and may help to give a more complete picture of the likely significant cumulative effects. For example, previous or planned road improvements or developments such as energy-from-waste facilities are likely to be relevant ‘other developments’ when assessing cumulative effects in relation to a major urban extension.
- 7.11** The requirement for consideration of cumulative landscape and visual effects is a matter for agreement at the scoping stage of the assessment but could relate to one or a combination of:
- other examples of the same type of development;
 - other types of development proposed within the study area, including those that may arise as an indirect consequence of the main project under consideration;
 - in the case of large, complex projects, different scheme components or associated and ancillary development that in some cases may require their own planning consent.²
- 7.12** In consultation with the competent authority (who in turn may liaise with other consultation bodies) it is also necessary to agree the geographic extent (or study area) over which the cumulative effects will be assessed.³ The work involved in assessing cumulative effects will require the use of information supplied by the competent authority and consultation bodies about other schemes being considered in the cumulative assessment, especially those still in the consenting system. As discussed in Paragraph 7.5, agreement between all parties on the extent of such work should consider what is reasonable and proportional in the circumstances.

Timescale of proposals for inclusion

- 7.13** This section sets out how development proposals at different stages in the planning process, whether of the same or different types, should be treated in assessing cumulative landscape and visual effects. Taking ‘the project’ to mean the main proposal that is being assessed, it is considered that existing schemes and those which are under construction should be included in the baseline for both landscape and visual effects

assessments (the LVIA baseline). The baseline for assessing cumulative landscape and visual effects should then include those schemes considered in the LVIA and in addition potential schemes that are not yet present in the landscape but are at various stages in the development and consenting process:

- schemes with planning consent;
- schemes that are the subject of a valid planning application that has not yet been determined.

Schemes that are at the pre-planning or scoping stage are not generally considered in the assessment of cumulative effects because firm information on which to base the assessment is not available and because of uncertainty about what will actually occur, that is, it is not 'reasonably foreseeable'. But there may be occasions where such schemes may be included in the assessment if the competent authority or consultation bodies consider this to be necessary. Such a request should only be made if absolutely necessary to make a realistic assessment of potential cumulative effects. It should be noted that in England and Wales guidance from the Planning Inspectorate explicitly indicates that nationally significant infrastructure applications should consider this aspect in scoping their cumulative effects (Planning Inspectorate, 2012).

7.14

The baseline for the LVIA itself will include evidence about change that may affect the landscape in the future (as described in Paragraph 5.18). There may therefore be some degree of overlap with the baseline for the cumulative effects assessment. The key is to ensure that the assessment is true to the spirit of the generic definition of cumulative effects in dealing with 'other past, present or reasonably foreseeable actions' but that it is again proportional and reasonable and focuses on likely significant effects.

7.15

There is no doubt that stakeholders, including local communities, will not draw artificial distinctions between what already exists or is under construction and is therefore part of the LVIA baseline, and what may happen as a result of schemes that may be implemented in the future. They will be concerned about the totality of the cumulative effect of past, present and future proposals. Those assessing these effects should reflect these concerns as realistically as possible while still keeping the task to a manageable scale. EIA co-ordinators will ultimately need to ensure that a consistent approach is adopted throughout the EIA and that the assessment of cumulative landscape and visual effects is in line with this. To re-emphasise the point made in Paragraph 7.5, the key for all cumulative impact assessments is to focus on the likely significant effects and in particular those likely to influence decision making.

7.16

Types of cumulative effect

There are many different types of cumulative landscape and visual effect that may need to be considered. They can include:

7.17

- the effects of an extension to an existing development or the positioning of a new development such that it extends or intensifies the landscape and/or visual effects of the first development;

- the 'filling' of an area with either the same or different types of development over time, such that it may be judged to have substantially altered the landscape resource and views or visual amenity;
- the interactions between different types of development, each of which may have different landscape and/or visual effects and where the total effect is greater than the sum of the parts;
- incremental change as a result of successive individual developments such that the combined landscape and/or visual effect is significant even though the individual effects may not be;
- temporal effects, referring to the cumulative impacts of simultaneous and/or successive projects that may affect communities and localities over an extended period of time;
- effects of development which have indirect effects on other development, either by enabling it – for example a road development enabling new warehouses to be constructed at a roundabout – or disabling it – for example by sterilising land; both may in turn have landscape and/or visual effects;
- landscape and/or visual effects resulting from a future action that removes something from the existing landscape which may have consequences for other existing or proposed development – for example an existing woodland may be felled or a building removed, and this in turn may reveal views of existing or proposed developments that would otherwise remain screened.

7.18 Agreement should also be reached about whether the cumulative effects assessment is to focus primarily on the additional effects of the main project under consideration, or on the combined effects of all the past, present and future proposals together with the new project. Some of those involved may tend to favour a limited view focused on the additional effects of the project being assessed, on top of the cumulative baseline. Some stakeholders may however be more interested in the combined effects of all the past, current and future proposals, including the proposed scheme. Again discussion will be needed at the scoping stage with the competent authority and the consultation bodies about what can reasonably be expected, especially as assessing combined effects involving a range of different proposals at different stages in the planning process can be very complex. Furthermore the assessor will not have assessed the other schemes and cannot therefore make a fully informed judgement. A more comprehensive overview of the cumulative effects must rest with the competent authority.

Assessing cumulative landscape effects

7.19 Cumulative landscape effects may result from adding new types of change or from increasing or extending the effects of the main project when it is considered in isolation. For example, the landscape effects of the main project may be judged of relatively low significance when taken on their own, but when taken together with the effects of other schemes, usually of the same type, the cumulative landscape effects may become more significant.

Defining a study area

7.20 As with other aspects of cumulative effects, it will be important to agree with the competent authority and other stakeholders both the approach to defining a study area

and the resulting proposed study area. The approach must be reasonable and proportional in order to keep the task manageable and ensure that the focus is on cumulative landscape effects that are likely to be significant.

There are three practical approaches:

7.21

1. Since the concern is with the accumulation of effects on landscape character and the components that contribute to it, the most logical way to define a study area may be to use the boundaries of the Landscape Character Type(s) or area(s), or some equivalent area, that the proposal sits within. This allows judgements about when the cumulative landscape effects of the main project together with other developments become such as to change the landscape character in the area to a significantly different character, perhaps sufficient to create a new landscape type or sub-type.
2. Another approach is to use the Zone of Theoretical Visibility (ZTV) defined in assessing the visual effects of the scheme itself and the areas of overlap with the ZTVs defined for the cumulative visual effects assessment. This is likely to be particularly useful when the development in question may be seen in conjunction with other developments in the vicinity and so may influence landscape character, even if the other projects are not in the same character area. In this case a combination of the two methods may be most appropriate.
3. A study area may be suggested by the competent authority and/or stakeholders based on one or both of the two approaches above, or on other local considerations, including views expressed to the competent authority by local groups, and supported by clear justification.

Establishing the baseline for cumulative landscape effects

The baseline information for the assessment will usually start from the baseline for the main project being assessed but this may need to be modified, in terms of both the extent of the area covered and the content, to allow for the inclusion of other schemes. The process will be the same as that described in Chapter 5. For reasons of economy and efficiency maximum use will need to be made of existing Landscape Character Assessments but, importantly, new surveys may be needed if existing ones do not meet the specific needs of the assessment of cumulative effects.

7.22

If new surveys should be needed to cover the wider study area for cumulative effects, they should follow the same procedures as the baseline survey for the main project being assessed. The result should be a clear, well-structured and accessible account of the landscape of the wider study area, covering its character, any division of the landscape into character types or areas, and identification of key characteristics that give each landscape its distinctive character.

7.23

See Chapter 5 for details of baseline studies for landscape effects assessment.

The baseline survey should also identify designated landscapes in the study area, whether at international, national, regional or, where appropriate, local levels. Where

7.24

there are no designations an assessment should be made of the value attached to the landscape using the same methods as for the main project assessment.

See Chapter 5 for details of how to assess the value of landscapes where no formal designation exists.

Identifying the landscape effects and assessing their significance

- 7.25 Once the range of developments to be considered and the extent of the study area have been agreed and the landscape baseline established, a map and inventory of all the relevant projects to be considered should be prepared. Enough must be known about the nature of the other projects to allow their landscape effects to be predicted and described. This will allow the effects of the main proposal being assessed to be set alongside these of the additional projects and the cumulative effects identified. Cumulative landscape effects, either additional or combined as agreed in scoping, are likely to include effects:
- on the fabric of the landscape as a result of removal of or changes in individual elements or features of the landscape and/or the introduction of new elements or features;
 - on the aesthetic aspects of the landscape – for example its scale, sense of enclosure, diversity, pattern and colour, and/or on its perceptual or experiential attributes, such as a sense of naturalness, remoteness or tranquillity;
 - on the overall character of the landscape as a result of changes in the landscape fabric and/or in aesthetic or perceptual aspects, leading to modification of key characteristics and possible creation of new landscape character if the changes are substantial enough.
- 7.26 The cumulative landscape effects (as with the landscape effects of the principal scheme under consideration) must be considered particularly in terms of consequences for the key characteristics of the landscape in question. Judgements must be made about the compatibility of the proposals being considered with the existing characteristics of the landscape – for example its scale and pattern – and whether or not the character of the landscape is changed to such an extent that it becomes a new landscape type or sub-type.
- 7.27 In order to keep the task of assessing cumulative landscape effects to a reasonable and manageable scale the prediction of effects and assessment of their significance should ideally progress in parallel so that it is clear that the emphasis will always be on the most significant effects. The approach to assessing the significance of cumulative landscape effects should be guided by the same principles as the approach to the initial project assessment. It should consider:
- the susceptibility of the landscape receptor to the type of change under consideration; for cumulative landscape effects it is possible that existing landscape sensitivity studies that cover the study area could provide useful preliminary information, but

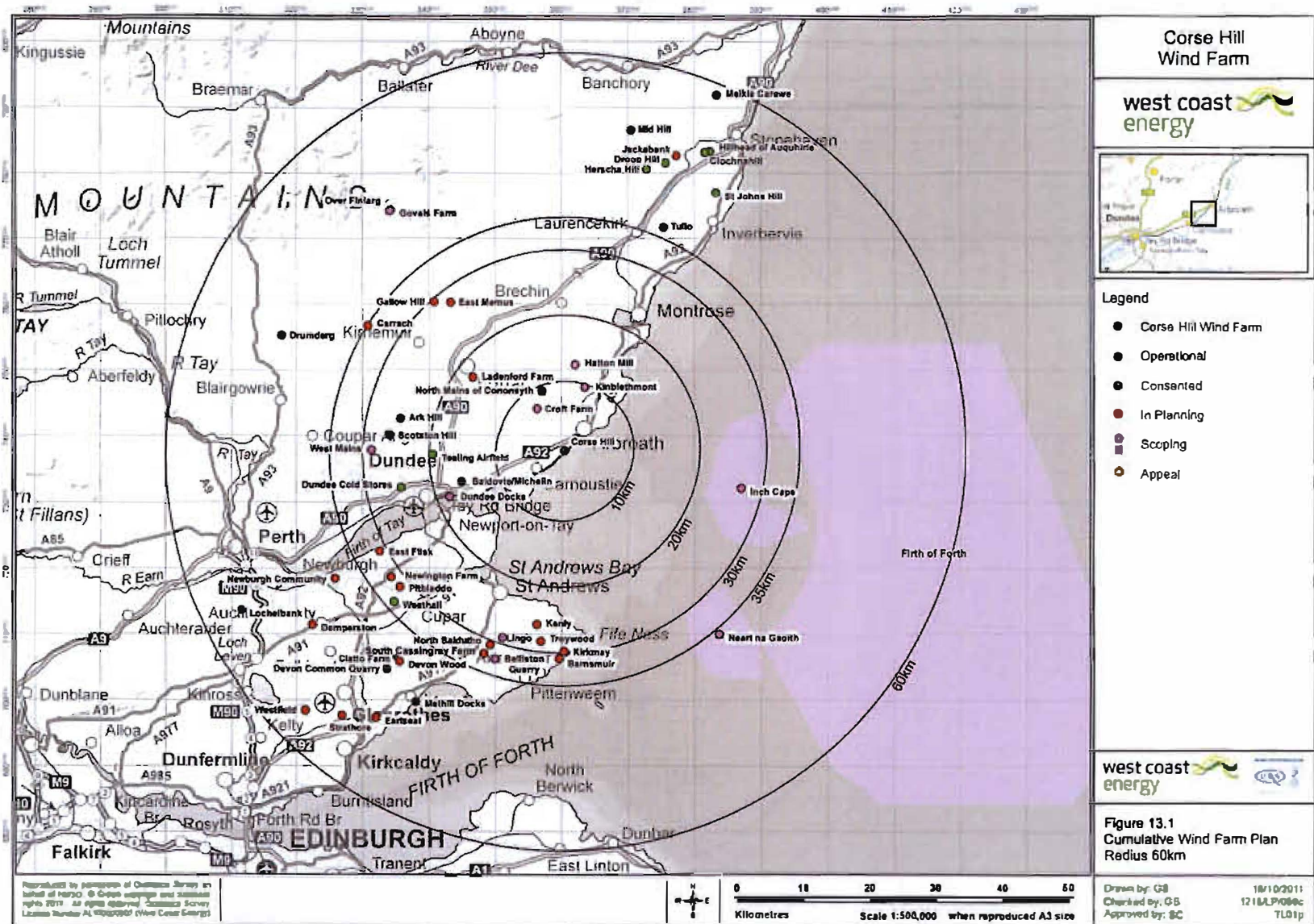


Figure 7.1A Preliminary cumulative landscape and visual effects study area for a wind farm



Figure 7.1B Second-stage cumulative landscape and visual effects study area for a wind farm

only if they cover the specific type of development included in the cumulative effects assessment and the specific location in question;

- the value attached to the receptor under consideration, reflecting in particular its designation status, including internationally recognised and nationally designated landscapes, locally designated landscapes and other valued components of the landscape;
- the size or scale of the cumulative landscape effects identified;
- the extent of the geographical area covered by the cumulative landscape effects identified;
- the duration of the cumulative landscape effects, including the timescales relating to both the project being assessed and the other projects being considered, and the extent to which the cumulative effects may be considered reversible.

The most significant cumulative landscape effects are likely to be those that would give rise to changes in the landscape character of the study area of such an extent as to have major effects on its key characteristics and even, in some cases, to transform it into a different landscape type. This may be the case where the project being considered itself tips the balance through its additional effects. The emphasis must always remain on the main project being assessed and how or whether it adds to or combines with the others being considered to create a significant cumulative effect.

7.28

Assessing cumulative visual effects

Cumulative visual effects are the effects on views and visual amenity enjoyed by people, which may result either from adding the effects of the project being assessed to the effects of the other projects on the baseline conditions or from their combined effect. This may result from changes in the content and character of the views experienced in particular places due to introduction of new elements or removal of or damage to existing ones.

7.29

Defining a study area

The study area for identifying potential cumulative visual effects may be defined by creating ZTVs (see Paragraphs 6.8–6.12) for each project that has been identified for inclusion. In theory, in those areas where the ZTVs overlap, people at identified viewpoints may be able to see one or more of the developments and will therefore potentially experience cumulative visual effects. Actual visibility does, however, depend upon a variety of factors, which can include topography, aspect, tree cover, buildings or other visual obstructions, elevation, direction and distance of view, and weather and light conditions.

7.30

The initial study area may include all the overlapping ZTVs of all the relevant projects. This approach has been particularly important in assessing wind farms, which can be visible over considerable distances (see Figures 7.1A and 7.1B), and so the study areas for cumulative effects can be very extensive. This may not necessarily be the case for other types of development.

7.31

The distance between the visual receptors or viewpoints and the various projects does influence the magnitude of the cumulative visual effects and so feeds into judgements

7.32

of their significance. Depending on the type of development it may be considered that more distant views are not likely to be significant and the study area can be reduced accordingly. As with cumulative landscape effects, common sense must prevail in deciding on the extent of study area that is appropriate and discussion with the competent authority and consultation bodies should assist in agreeing a reasonable area to be covered.

Establishing the baseline for cumulative visual effects

- 7.33** The starting point for the description of the visual baseline is likely to be the same as for the visual effects assessment of the main project being considered, although amendments may be needed as the assessment develops. Assuming that relevant visual receptors and viewpoints have been identified and used in defining the study area, the baseline should consider:
- the people likely to be affected at each location, the activity they are involved in (and therefore their susceptibility to changes in views and visual amenity) and the number, if this information is available, or relative number (as in Paragraph 6.15), of those involved;
 - the extent, nature and characteristics of the views and visual amenity enjoyed by those people at those viewpoints.

Identifying the visual effects and assessing their significance

- 7.34** As a number of separate developments must be considered, there is interest in the way in which they may be experienced. This is particularly relevant for wind farm cumulative visual effects assessment (see Table 7.1). At one viewpoint someone looking at the view in one direction may see all the projects at the same time, or someone turning through the whole 360 degrees may see different developments in different directions and sectors of the view in succession. Users of linear routes, especially footpaths or other rights of way, or transport routes, may potentially see the different developments revealed in succession as a series of sequential views. Both types of experience need to be considered where they are relevant.
- 7.35** Each view must be recorded and described at each selected viewpoint and also for the sequential views experienced on important linear routes, making clear the nature of the views of all the developments selected for inclusion in the assessment and the contribution of the project being assessed. Where the projects have yet to be constructed and may not even be fully designed, a judgement will have to be made about their appearance, making clear any assumptions made or information used.
- 7.36** The most significant cumulative visual effects may need to be illustrated by visualisations to indicate the change in views and visual amenity compared with the appearance of the project being assessed on its own. The visual receptors will already have been identified and categorised in terms of their importance and sensitivity to change and these assessments will be unchanged unless new ones have been added specifically for the cumulative effects assessment. The magnitude of the visual effects may, however, be altered by the addition of other developments and judgements must be made about this. Thought must also be given to the way in which any sequential views will be

Table 7.1 Types of cumulative visual effect (summary based on SNH, 2012)

<i>Generic</i>	<i>Specific</i>	<i>Characteristics</i>
Combined		
Occurs where the observer is able to see two or more developments from one viewpoint.	In combination	Where two or more developments are or would be within the observer's arc of vision at the same time without moving her/his head.
	In succession	Where the observer has to turn her/his head to see the various developments – actual and visualised.
Sequential		
Occurs when the observer has to move to another viewpoint to see the same or different developments. Sequential effects may be assessed for travel along regularly used routes such as major roads or popular paths.	Frequently sequential	Where the features appear regularly and with short time lapses between instances depending on speed of travel and distance between the viewpoints.
	Occasionally sequential	Where longer time lapses between appearances would occur because the observer is moving very slowly and/or there are larger distances between the viewpoints.

experienced, including the duration of views of other developments in combination with the project.

The approach to assessing the significance of cumulative visual effects should be guided by the same principles as the approach to the initial project assessment as set out in Chapter 6. It should consider the following criteria:

7.37

- the susceptibility of the visual receptors that have been assessed to changes in views and visual amenity;
- the value attached to the views they experience;
- the size or scale of the cumulative visual effects identified;
- the geographical extent of the cumulative visual effects identified;
- the duration of the cumulative visual effects, including the timescales relating to both the project being assessed and the other projects being considered, and the extent to which the cumulative effects may be considered reversible.

7.38 Higher levels of significance may arise from cumulative visual effects related to:

- developments that are in close proximity to the main project and are clearly visible together in views from the selected viewpoints;
- developments that are highly inter-visible, with overlapping ZTVs – even though the individual developments may be at some distance from the main project and from individual viewpoints, and when viewed individually not particularly significant, the overall combined cumulative effect on a viewer at a particular viewpoint may be more significant.

Mitigating cumulative effects

7.39 In accordance with the Regulations mitigation of significant adverse cumulative landscape and visual effects needs to be considered. However, the possible actions that might be taken to mitigate such effects are somewhat different from mitigation measures to address effects identified through the standard process of LVIA. As these effects arise from a number of different developments they cannot necessarily be addressed by measures related only to the main project being considered.

7.40 There may be some scope for reducing cumulative effects through changes to the main project being considered, for example by considering appropriate siting, by changing the scheme layout or by more conventional use of planting or screening in order to avoid or reduce its contribution to the cumulative effects. However, depending on the type of project, such traditional approaches may only work for cumulative visual effects in certain circumstances and for certain visual receptors.

7.41 Beyond this, wider concerns about cumulative effects may need to be addressed through measures such as:

- partnership working between developers, the consenting authority and statutory bodies to produce an agreed package of solutions;
- community compensation/offset packages, which may be linked to partnership working;
- consenting authority action, where the cumulative landscape and/or visual effects of the proposal combined with the cumulative baseline lead to a need for the consenting authority to take broader action, such as implementing an overarching mitigation programme or amending planning policies based on their judgement that the effects on receptors have reached or passed an acceptable threshold.

Summary advice on good practice

- Cumulative landscape and visual effects must be considered in LVIA when it is carried out as part of EIA.
- As this is an evolving area of practice those involved in assessing cumulative landscape and visual effects should ensure that they keep abreast of relevant new guidance that may emerge for particular forms of development.

The scope of cumulative landscape and visual effects must be agreed at the outset in discussion with the competent authority and consultation bodies.

As the emphasis is on **likely significant** effects, careful thought should be given to what significant cumulative landscape and visual effects are likely to be generated. This should allow a sensible decision to be reached at the scoping stage, so that the task is **reasonable and in proportion** to the nature of the project under consideration.

In EIA practice interrelationships between different environmental factors are increasingly being examined under the heading of within-project (or intra-project) cumulative effects, and those conducting an LVIA may need to consider possible links between landscape and visual effects and effects identified in other topic areas.

However, between-project (or inter-project) cumulative effects are usually of greater importance for LVIA and dealing with them requires decisions about what other projects or proposals should be included.

The scoping stage of the assessment should determine whether a cumulative effects assessment should consider other examples of the same type of development and/or other types of development proposed within the study area, including those that may arise as an indirect consequence of the main project under consideration, and/or, in the case of large, complex projects, different scheme components or associated and ancillary development that in some cases may require their own planning consent.

In terms of the timescale of proposals for inclusion, existing schemes and those under construction should be included in the baseline for both landscape and visual effects assessment (the LVIA baseline).

The baseline for assessing cumulative landscape and visual effects should include those schemes and in addition potential schemes that are not yet present in the landscape but are at various stages in the development and consenting process, including schemes with planning consent and schemes that are the subject of a valid planning application that has not yet been determined.

Schemes that are at the pre-planning or scoping stage are not generally considered in the assessment of cumulative effects because of lack of certainty, but there may be occasions where such schemes may be included if the competent authority or consultation bodies consider this to be necessary.

Decisions about what projects to include should consider what is reasonable and proportional in the circumstances but also try to anticipate concerns that may be raised by the public about cumulative effects.

Cumulative landscape effects may result from adding new types of change or by increasing or extending the effects of the main project when it is considered in isolation. The key for all cumulative impact assessments is to focus on the **likely significant** effects and in particular those likely to influence decision making.

A study area for cumulative landscape effects can be defined by using: the boundaries of the Landscape Character Type(s) or Area(s), or equivalent, that the project sits within; or the ZTV defined in assessing the visual effects of the scheme itself and areas of overlap with the ZTVs of projects defined for the cumulative visual effects assessment; or an area suggested by the competent authority and/or stakeholders.

Cumulative landscape effects must be considered particularly in terms of consequences for the key characteristics of the landscape in question.

The most significant cumulative landscape effects are likely to be those that would give rise to changes in the landscape character of the study area so as to result in significant effects on its key characteristics and even, in some cases, to transform it into a different landscape type.

The study area for identifying potential cumulative visual effects may include the overlapping ZTVs for all of the relevant projects to be considered.

The starting point for description of the visual baseline is likely to be the same as for the visual effects assessment of the main project being considered, although amendments may be needed as the assessment develops.

The view must be recorded and described at each selected viewpoint and also for the sequential views experienced on important linear routes, making clear the nature of the views of all the developments selected for inclusion in the assessment and the contribution of the project being assessed.

Where the projects have yet to be constructed and may not even be fully designed, a judgement will have to be reached about their appearance, making clear any assumptions made or information used.

The most significant cumulative visual effects may need to be illustrated by visualisations to indicate the changing views and visual amenity compared with the appearance of the project being assessed on its own.

The approach to assessing the significance of cumulative landscape and visual effects should be guided by the same principles as those for the assessment of the landscape and visual effects of the project itself.

Mitigation of significant adverse cumulative landscape and visual effects needs to be considered but cannot necessarily be addressed by measures related only to the individual project being considered. Consideration may need to be given to partnership working, to community offset/compensation packages and to consenting authority action, such as implementing an overarching mitigation programme or amending planning policies.

Chapter 8

Presenting information on landscape and visual effects



Chapter overview

- Introduction
- Structure and content of a landscape and visual impact report
- Presenting information on landscape and visual effects
- Review of the landscape and visual effects content of an Environmental Statement

Introduction

- 8.1 This chapter provides information on presentation techniques that may be used to communicate the results of landscape and visual assessments. The same broad principles apply where LVIA is carried out as:

- part of an EIA, and presented in a similar way to other environmental topics – landscape and visual effects usually appear either as separate or combined sections of the Environmental Statement;
- a standalone ‘appraisal’ presented as a separate report to accompany a planning application – this will contain the same type of information as for an EIA but at a level of detail which is appropriate to the scale and nature of the proposed development.

Where LVIA is undertaken as part of an EIA the approach to presentation should be discussed with the EIA co-ordinator to ensure the content included in the main text of the Environmental Statement is proportionate and appropriate to the significance of the findings of the LVIA.

- 8.2 Whether the LVIA is part of an Environmental Statement or a standalone document the presentation techniques must be carefully chosen and appropriately applied. These documents are generally subject to close scrutiny and may need to be explained and substantiated at a public inquiry. On the other hand the effort required to produce appropriate illustrative material, especially visualisations to show the proposed changes, must be kept in proportion to the nature of the proposed development. Landscape appraisals of smaller projects are unlikely to merit the same level of technical visualisation as larger projects subject to EIA. The approach to presentation and the level of sophistication required in the illustration of change should be discussed and agreed with the competent authority at the outset. Final production of an Environmental Statement should bear in mind the needs of those who will wish to read it, ensuring:

- ease of dissemination, which may favour electronic rather than paper copies for some audiences;
- ease of reference by thoughtful naming of files;
- appropriate font size and graphics to enable reading on screen; and
- attention to file sizes to aid access to illustrations, while still maintaining legibility.

Structure and content of a landscape and visual impact report

The structure and content of a report on the assessment of landscape and visual effects will follow a broadly similar pattern in each case, but there will be variations reflecting, for example, the scope of work agreed with the competent authority and consultees and the likely significance of the landscape and visual resources affected. In an EIA, agreement will be needed on how cumulative landscape and visual effects are to be covered – either as part of a separate cumulative effects section of the Environmental Statement or as a sub-section of the chapters dealing specifically with landscape and visual effects. 8.3

In view of the clear differences between landscape effects and visual effects and the potential for them to be confused, it is good practice to report on them separately. They may either be covered in two separate chapters of the Environmental Statement or in two clearly distinguished parts of the same chapter. The choice will depend on the complexity of the proposal and the issues that it raises. Relevant appendices, maps and illustrations should also be similarly distinguished. Care should be taken to ensure that the baseline information relevant to both landscape and visual effects is not separated too much from the identification and description of effects. In complex EIAs this can easily happen if the EIA co-ordinator decides that baseline conditions will be separately reported for all topics in the Environmental Statement. Placing the baseline description together with the assessment of the effects is usually more effective in allowing the chain of reasoning from the baseline to the effects assessment to be demonstrated. 8.4

In an Environmental Statement the structure of reporting should ideally be consistent across the environmental topics, covering the baseline conditions, description of the predicted effects, proposed mitigation and assessment of the significance of the effects. Reporting may reflect relationships between topics, for example placing cultural heritage and ecology topics relating to historic and natural dimensions of the landscape next to the landscape topic, since they are closely related to each other. Reporting may also reflect the relative significance of effects, for example by placing the LVIA before topics such as cultural heritage and ecology, where landscape and visual effects are seen as the key issues. Text should also make clear the nature of these and other inter-relationships and provide appropriate cross references. 8.5

The opening sections of any report on an LVIA should present basic information on matters such as objectives, responsibilities and methodology. In an EIA some of these topics will be common to the whole EIA and should be reported on in one place. Those specific to the LVIA, which may need to be reported separately, include: 8.6

- the planning and legal context relevant to landscape and visual matters, including planning policies and guidance dealing with relevant landscape matters, such as landscape designations and any relevant landscape strategies;
- the remit of those responsible for preparing the assessment;
- the scope of the assessment agreed with the competent authority and consultation bodies, including for example study areas, key landscape and visual issues, any issues omitted by agreement from the full assessment, agreed landscape and visual

receptors, selection of viewpoints, and the scope of and approach to the cumulative landscape and visual effects assessment;

- the methods used, including any specific landscape and visual assessment techniques and the approach to assessing significance;
- practical constraints encountered in carrying out the work, assumptions made and any data deficiencies that have been encountered, as required by the EIA Regulations.

8.7 The chapter(s) of the Environmental Statement dealing with landscape and visual effects, or the separate LVIA report, should contain:

- a clear description of any components of the proposed development that are of particular relevance to the assessment of landscape and visual effects;
- an explanation of how landscape and visual considerations contributed to the evolution of the scheme's design.

8.8 Landscape effects and visual effects should be covered separately and, in each case, reporting should include:

- description of the baseline conditions relevant to that topic, although if baseline information for all topics is in one chapter, the LVIA chapter should provide a summary of the key relevant findings;
- systematic identification and description of the potentially significant effects that are likely to occur;
- transparent and clearly explained assessment of the significance of the effects;
- description of further measures, in addition to those already incorporated into the scheme, designed to reduce significant adverse effects or to offset or compensate for them;
- explanation of the way that any measures included as part of the mitigation package will actually be delivered in practice, including reference to any need for monitoring;
- a summary of the significant effects remaining after mitigation.

Presenting information on landscape and visual effects

8.9 The choice of appropriate presentation techniques is crucial to good communication. Much of the detailed material about landscape and visual effects will be presented as written text supported by maps, illustrations and photographs. Writing should be comprehensive, covering all the material assembled in the assessment, but also concise and to the point and written in plain, easy-to-understand language. Above all it should be impartial and dispassionate, presenting information and reasoning accurately and in a balanced way and making clear where statements are based on the author's judgement. Clear and, as far as possible, standard definitions should be provided for any technical terms that are used, supported by a glossary of terms.

8.10 Tables and matrices, if used and described correctly, can be effective in complementing the text, providing a useful summary of important information. They can assist with comparisons, for example between different scheme options and types of effect, which can be especially valuable in the early stages of planning and design. They can also be a useful way of making potentially large volumes of complex information more readily accessible to the competent authority charged with making a decision, to consultees

and also to the public. Such tables must be carefully and consistently prepared, as decision makers may rely on them to provide a summary of the landscape and visual effects. It should, however, be stressed that these tables, and any matrices related to judgements of significance, should be used to support and to summarise narrative descriptive text, rather than to replace it.

See Paragraphs 3.30–3.36 for discussion of using tables and matrices in presenting assessments of significance.

Provided that they are well thought out, illustrations can often communicate information more quickly and easily than text. They can have an especially important role in relation to landscape and visual effects. Much essential landscape and visual information can be communicated through well-designed maps and plans, and appropriate photographs and other illustrative material. Text and illustrations need to work well together, with each complementing and supporting the other. Illustrations should be relevant to and support the text, which should cross-refer to them so readers can relate the text to the illustration or look to the illustration to help them understand what is being said in the text. Illustrations should support rather than duplicate the content of the text.

8.11

Illustrations, whatever their form, should have a specific purpose. They should be designed to provide information of clear relevance to the assessment and to aid communication. The amount and type of illustrative material should be in proportion to the task in hand and should be agreed in consultation with the competent authority. It is important to show as realistically as possible how the development will appear both in relation to the surrounding landscape and from specific viewpoints from which it will be seen by particular groups of people. There may be specific guidance on what the competent authority expects by way of illustrations in an Environmental Statement, which applies in particular administrative areas and/or to particular types of development. This should also guide the approach.

8.12

Map information

Maps and plans, at suitable scales and levels of detail, should be prepared using appropriate digital and manual methods and included in the Environmental Statement. They should illustrate key spatial aspects of the LVIA, including:

8.13

- the precise location and nature of the proposal, including information about phasing and any associated development in other locations;
- the landscape character of the area, including landscape types or areas that have been identified and, where appropriate, the distribution of important individual elements of the landscape that may be affected by the proposed development;
- evidence about the value attached to the landscape, including the boundaries of any relevant national, local or other designations;
- the agreed extent of the Zone of Theoretical Visibility (or equivalent) of the proposed development, at an appropriate scale and printed on an appropriate sheet

size to allow for ease of reference. The accompanying text should include details of how the ZTV has been constructed including, as necessary and appropriate:

- details of the topographic data source and its accuracy;
 - confirmation of whether or not it is based on bare ground survey or whether other land use data has been included;
 - confirmation as to whether earth curvature and refraction of light have been taken into account;
 - details of viewer eye height used to calculate the ZTV;
- the location of selected viewpoints used to assess visual effects;
 - distance zones indicating how far these viewpoints and different parts of the ZTV are from the proposed location of the project;
 - maps showing accurately the detailed location, direction of view and angle of view for each of the viewpoints, to be read in conjunction with the photographs and photomontages from these viewpoints;
 - in the case of cumulative effects, the location of the other developments included in the assessment, the location of relevant receptors, and the extent of associated ZTVs.
- 8.14 Geographical Information Systems (GIS) and related software can be especially useful in analysing and presenting information relevant to both the landscape and the visual baselines. These tools allow layers of data on a variety of topics to be collated, sieved, superimposed and incorporated in various ways into the Environmental Statement. Where it is relevant, this can be particularly useful in analysing and presenting relationships between baseline data on topics such as topography, soils, hydrology, vegetation and habitats, population and settlement patterns, transport networks, land use, and historical and cultural features, as well as their interactions that create landscape character.

Photographs and visualisations

- 8.15 Photographs can have an important role to play in communicating information about the landscape and visual effects of a proposed development, although it is acknowledged that they cannot convey exactly the way that the effects would appear on site. In dealing with landscape effects photographs should be included in the Environmental Statement to illustrate the landscape character of the site and its context. It is not possible to include photographs of every part of every different landscape and so photographs should be selected to illustrate a representative range of Landscape Character Types or Areas, and some of their important key characteristics. When incorporating photographs the following points should be considered:
- The locations from which the photographs are taken should be carefully chosen, in discussion with the competent authority.
 - Prevailing weather and atmospheric conditions and effects on visibility should normally be described, ideally using consistent Meteorological Office terminology,¹ and any effects of the conditions on the photographs should be noted.
 - Seasonal effects on the photographs and the landscape they are illustrating are important and should be noted.
 - Technical aspects of the photography, including lens type and focal length, should



EXISTING VIEW



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VIEWPOINT 18 PHOTOMONTAGE	
N/A	MARCH 2007
APPENDIX 3.4	

Figure 8.1 Photomontage of a new building near the urban edge showing its appearance from a viewpoint in the surrounding landscape after one year and after fifteen years (extract)

be stated with reasons given for the choices made. For further details see the Landscape Institute's technical note on photography (Landscape Institute, 2011).

Photographs should be used in the baseline for the visual effects assessment to illustrate existing views and visual amenity at agreed viewpoints. The predicted changes must be described in the text but should also be illustrated by means of visualisations showing, from representative viewpoints, how the changes in views will appear. It will not usually be possible to prepare visualisations for every viewpoint that has been identified and there will need to be discussions with the competent authority and consultation bodies to ensure that an appropriate number and range of viewpoints is used, allowing the significant visual effects to be illustrated at a range of representative locations covering the types of visual receptor.

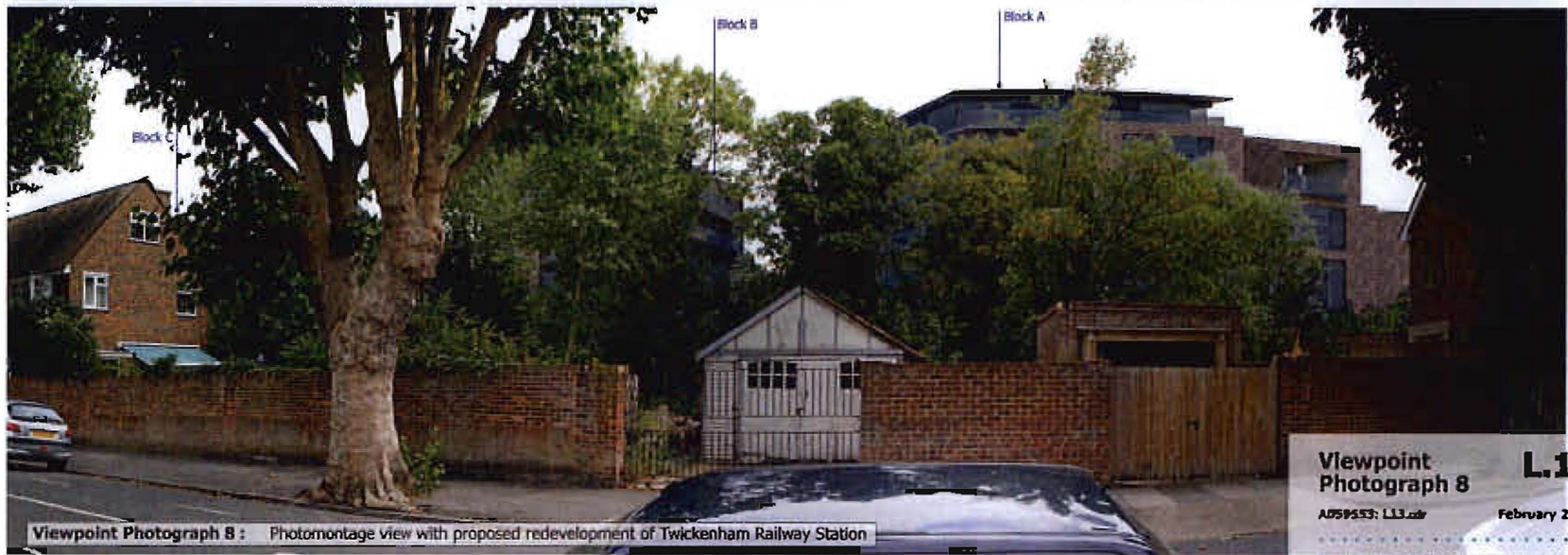
8.16

Since the second edition of this guidance was published there have been great developments in digital technology, providing a range of options including both two-dimensional (2D) and three-dimensional (3D) approaches. Many different factors need

8.17



Viewpoint Photograph 8 : View south from between 2b and 2c Cole Park Road (July 2010)



Viewpoint Photograph 8 **L.13**

ADSP/553: L13.cdr February 2011

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Figure 8.2A–B Photomontages illustrating the effects of seasonal change on the visibility of proposed buildings

Table 8.1 Choosing appropriate illustrative techniques

Step 1	Discuss the project with the client and the competent authority to work out what is required for illustration of the assessment, taking account of the audience. Consider the type of graphics and presentation likely to be most appropriate for the proposed development, taking account of the scale and complexity of the proposal and taking steps to ensure that the approach is proportionate – there is little advantage in using advanced techniques if a simple thumbnail sketch may be more appropriate.
Step 2	Explore further to determine which options should be pursued, from 2D photomontages to 3D animation or fully interactive virtual reality. This may reflect time constraints, resource issues and the needs of the different audiences involved.
Step 3	Consider the level of costs and benefits associated with each approach to enable the client to make an informed choice, bearing in mind the requirements of the Regulations and the requirements of the competent authority.
Step 4	Identify delivery dates for the presentation material and relate this to critical project milestones, such as submission of the planning application, to ensure appropriate time is allowed for key steps, such as delivery of Ordnance Survey data or preparation of a site survey, as well as for work with the project design team.
Step 5	Agree with the client the technique to be used, the projected costs and a programme, and inform the competent authority of the approach to be used.
Step 6	Allow time for consultation with the client and the competent authority at an intermediate stage to allow for any changes in the proposed development.

to be taken into account in deciding what form of illustrative techniques to use in a particular project, especially when choosing between 2D and 3D techniques. They need to be appropriate to the type and scale of project envisaged and also to take account of a wide range of practical considerations. Table 8.1 summarises some of the key steps to take in reaching decisions on which approach to use, assuming flexibility in the resources and time available.

Photomontage

- 8.18 Photomontage is the most widespread and popular visualisation technique for illustrating changes in views and visual amenity. A photomontage is the superimposition of an image onto a photograph for the purpose of creating a representation of potential changes to any view. Its main advantage is that it can illustrate the development within the 'real' landscape and from known viewpoints. The Landscape Institute has provided comprehensive guidance on this subject, noting that:

The objective of a photomontage is to simulate the likely visual changes that would result from a proposed development, and to produce printed images of a

size and resolution sufficient to match the perspective in the same view in the field.

(Landscape Institute, 2011: 3)

To meet the rigorous requirements of planning applications and public inquiries photomontages must be technically accurate, to a degree appropriate to the nature of the project. If other images are also prepared simply to show the nature of the proposed development then the same degree of accuracy may not be required, although fair representation remains important. As both products may appear graphically similar it is vital that all parties understand the distinction between them, in terms of the time that they take to prepare, the associated costs and their practical use, remembering their purpose is to illustrate the effects on viewers rather than to illustrate the proposals themselves (as in artists' impressions). 8.19

The photomontages that are included in an Environmental Statement must meet appropriate standards, as described in the Landscape Institute's advice note on requirements for photography and photomontage. There is also specific guidance on preparing and presenting visual representations of wind farms, produced in Scotland but which, as noted previously, is widely used elsewhere. Particular reference should be made to these documents (and any amendments) for detailed technical guidance and for discussion of more theoretical aspects of visual representation. This is an evolving area of practice and landscape professionals should be alert to any new guidance that may emerge. 8.20

Approaches to the preparation of photomontages and the means of making them available to different audiences should be discussed with the competent authority at the scoping stages and as the work on the assessment evolves. The methods used, any difficulties that may arise, decisions taken and final specifications for the visual material included in or with the Environmental Statement should all be set out clearly in a statement of methods. 8.21

In preparing photomontages key requirements are that: 8.22

- all viewpoints that are to be used should be photographed at locations that are representative of the view in question and of the character of the location;
- sufficiently high-quality photographs should be used as the starting point for the production of the images;
- weather conditions shown in the photographs should (with justification provided for the choice) be either:
 - representative of those generally prevailing in the area; or
 - taken in good visibility, seeking to represent a maximum visibility scenario when the development may be highly visible;
- the photomontages should show relevant components of the development that are predicted to be visible from each viewpoint, including any associated land use change and, where appropriate and feasible, access arrangements;
- rendering of the photomontages should in general be as photorealistic as possible, but:



Figure 8.3 Cumulative photomontage of redevelopment at Twickenham Railway Station with other permitted development, a neighbouring hotel extension. Note the aspect ratio of the image to encompass the vertical field of view of the urban context; camera used in portrait orientation

- where the scheme is not fully developed visualisations must be based on clearly stated assumptions about how the development may appear;
- for large-scale urban developments block models are often used, illustrating scale, massing and arrangement, but without architectural detailing – although not photorealistic these can still be useful in representing the change in the view;
- the field of view and image sizes of the completed photomontages should be selected to give a reasonably realistic view of how the landscape will appear when the image

is held at the correct specified viewing distance from the eye (usually between 300 millimetres and 500 millimetres).

8.23

Visual representations can never be the same as the real experience of the change that is to take place. They are tools designed to assist all interested parties to understand how the change proposed will affect views at particular viewpoints. It is sometimes argued that the most suitable way to view photomontages is in the field where they can be compared with the real view. There is no doubt that this is desirable, but it is not always possible, especially for the general public, and one of the purposes of photomontages is to make up for the fact that not all interested parties can visit the site and the viewpoints. It is therefore essential that not only should the development itself be represented fairly and accurately but that it should be capable of being understood within its landscape context (see Landscape Institute, 2011). Careful thought must also be given to how images are made available to different audiences, including sizes and types of image and printing quality. Photomontages should be printed at an appropriate scale for comfortable viewing at the correct distance.

8.24

Photomontages are preceded by creation of wirelines or wireframes, which in themselves can be a valuable aid to understanding the effects of a proposed development. These are computer-generated line drawings, based on a digital terrain model combined with information about the location and scale of components of the development, to give a relatively simple indication of how the proposal will appear from different viewpoints. They are relatively quick to produce and so can be developed for a larger number of viewpoints, only some of which may then need to be used for preparation of full photomontages and for reporting purposes.

8.25

It has been common practice in the past, especially for wind farms, to present photomontages in what has been called the 'triple arrangement', in which, for a particular view, a panoramic baseline photograph, a matching wireframe image of the proposal and a fully rendered photomontage are combined on one landscape-format A3 sheet. It is now generally accepted that this arrangement may compromise other important standards such as image size and ideal viewing distance. This form of presentation may still be useful for discussion between landscape professionals involved in technical work on assessing visual effects, but in general is not considered to be the best way to communicate with non-landscape experts, for example in the competent authority or stakeholder organisations, or with the general public. For non-expert audiences the emphasis should be on images that are more straightforward to read and that do not require a high degree of technical interpretation.

8.26

Photomontages should be reproduced at an agreed image size and should show an appropriate level of detail. Together with associated baseline photographs and wireframes for key viewpoints, these will generally be incorporated into a separate volume of the Environmental Statement, although this can sometimes make cross-referencing to the text more difficult.

8.27

The Non-Technical Summary of the Environmental Statement, which is required to communicate the content to a wider non-specialist audience (IEMA, 2012b), may also include some photomontages of key views in an appropriate format but in this case it should be emphasised that they are only selected images and that full understanding

requires examination of the full set of images. For all audiences guidance should be provided on how to view the image in order to best represent how the proposal would appear if constructed. The different views to be included in the Non-Technical Summary should be agreed with the EIA co-ordinator and the competent authority in advance and the location of the viewpoints should be clearly shown in each case.

3D models

- 8.28** More advanced approaches to visualisation are based on 3D computer simulations, such as virtual reality models built up from map data, digital terrain models and aerial photographic data. They can range from simple massing studies to inclusion of significant levels of detail. Such models are not required for most projects and are demanding of resources and computer power. They can, however, where appropriate, cover a sufficiently large area to demonstrate the wider context and setting of a proposed development. Once a 3D model has been created, it becomes possible to view any aspect of the development from any viewpoint contained within the boundary of the model as well as to create and view fly-through imaging. Once baseline conditions are modelled, variations to a scheme can be relatively easily produced and compared.
- 8.29** Such approaches are most useful where there is a need to portray complex developments in more detail than can easily be achieved using a single or even several photomontages – for example where there is a requirement to select a large number of viewpoints, moving perhaps from an aerial to a ground perspective and on into the interior of a building. An animated sequence may also be helpful in explaining the orientation of a site more dynamically than a series of single photographs can achieve. Equally they do not necessarily represent the way that people would actually experience the change and so can be misleading in an assessment context.
- 8.30** Achieving a high level of detail in such models takes considerable time and can incur considerably higher costs. The purpose of and audience for the model must be carefully considered before deciding what is required, in discussion with the client and the competent authority. The precise choice of techniques for illustration of a particular scheme will depend on the data available, and especially on the timing of the work and the budget available. Several economies may also be possible – for example using the same model to generate an accurate 2D perspective, which may then form the basis of a 3D animated virtual reality sequence.
- 8.31** Careful thought must be given to how the competent authority, stakeholders and the public will view graphic and especially 3D material and animations. Ideally all parties should have access to the same type of information and illustrative material. Digital images cannot always be incorporated into hard copy reports like the Environmental Statement itself or its technical appendices. But they can be supplied on a CD or DVD, or incorporated into a presentation using software programmes such as PowerPoint, or made available on websites to allow as many people as possible to have access to them. More complex material, especially 3D and animated graphics, must be used with caution as people may not have access to the necessary technology to view it. Public meetings or exhibitions are likely to be the main way of showing such information but these may only reach a limited number of stakeholders.

Viewpoint 5

View north west towards the application site from Bridge Street. This view is from the location of strategic viewpoint 2 identified in the Character Assessment & Tall Buildings Strategy for Northampton's Central Area. This viewpoint is representative of visual receptors Res2 and Tra1



Photomontage of the proposed building



GPS co-ordinates: 475475, 259756
GPS elevation: 84m AOD

Viewer height: 1.6m
Date and time: 28/10/2011 13:49

PR	10/10/11	13	PR	PR
PR	PR	PR	PR	PR

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Non-digital forms of visual representation

- 8.32 Other non-digital visualisation techniques may also be appropriate, for example when speed of production and available budget are limiting factors, or simply when they are preferred. The main alternatives are overlays and perspective sketches – either hand drawn or constructed over computer-generated wire lines. Hand-drawn work can be more time consuming than the digital equivalent and is more difficult to amend but can still be useful if well executed. Artists' impressions should only be used if they are sufficiently accurate to be meaningful and their limitations are made clear.
- 8.33 Physical (as opposed to digital) models tend to be expensive to produce, but can be particularly useful in public consultation, especially in urban settings. As 3D printers become more affordable, they may in future offer an option for generating physical models more rapidly.
- 8.34 Finally, using photographs of similar developments to illustrate what a proposal may be like can be very helpful, provided it is made absolutely clear that they are of another development and are indicative and for illustrative purposes only.

Review of the landscape and visual effects content of an Environmental Statement

- 8.35 Competent authorities receiving Environmental Statements will often subject the documents to formal review of both the adequacy of the content and of their quality. The review process will usually check that the assessment:
- meets the requirements of the relevant Regulations;
 - is in accordance with relevant guidance;
 - is appropriate and in proportion to the scale and nature of the proposed development;
 - meets the requirements agreed in discussions with the competent authority and consultation bodies during scoping and subsequent consultations.
- 8.36 The summary good practice points in this guidance should assist in review of the landscape and visual effects content of an Environmental Statement. In addition, several existing sources may also help anyone involved in reviewing this topic to decide what to look for:
- IEMA has developed a set of general criteria for reviewing Environmental Statements and registrants for the EIA Quality Mark must meet the criteria (IEMA, 2011a).
 - The former Countryside Commission published criteria for reviewing the landscape and countryside recreation content of Environmental Statements (Countryside Commission, 1994).
 - Appendix 1 of Scottish Natural Heritage's handbook on Environmental Impact Assessment contains useful tests to help judge the landscape and visual effects content of Environmental Statements (David Tyldesley and Associates, 2009).
- 8.37 The competent authority may need to consider whether it would be advisable to seek specialist advice or expertise, or indeed to appoint an independent third party to carry

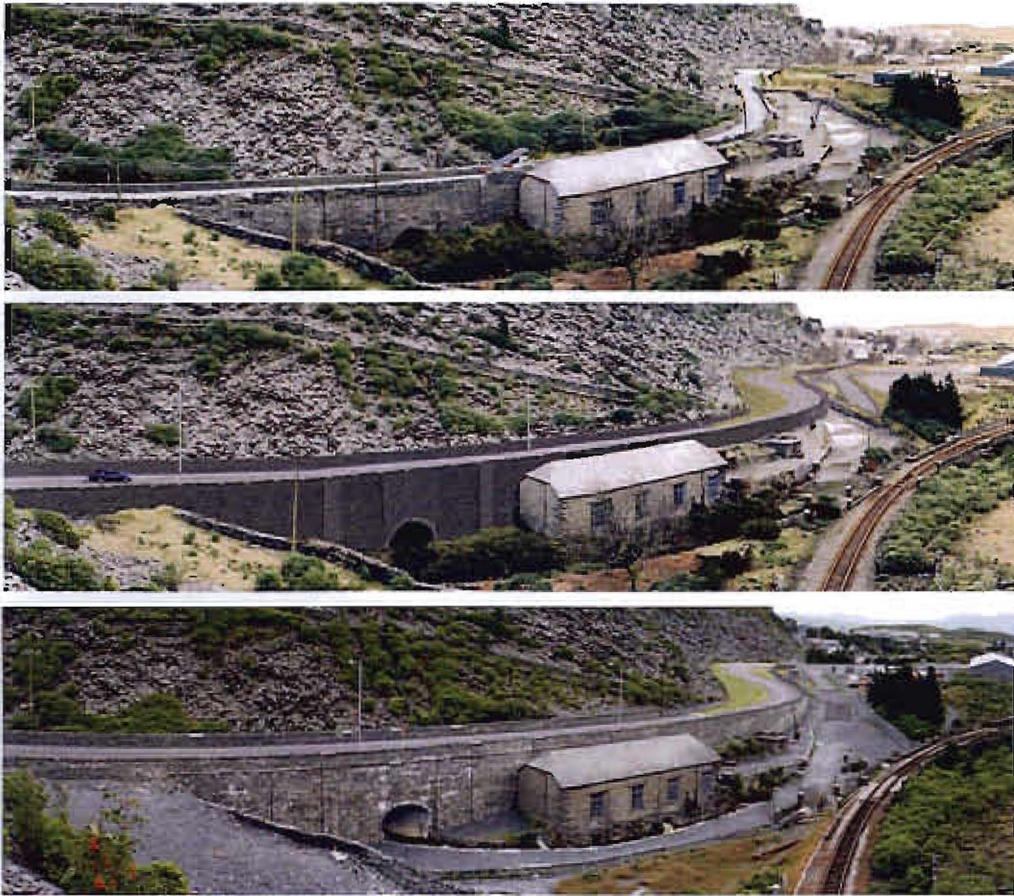


Figure 8.5 Review and monitoring: what actually happened compared with what was predicted in the LVIA

Top: Pre-existing view

Middle: Photomontage of proposed road improvement

Bottom: As-built view

out or advise on the review. Advice on whether landscape and visual effects are adequately and effectively covered should, if required, be sought from suitably qualified landscape professionals. Whoever carries out the review, it should generally consider, among other matters that may be agreed:

- the scope, content and appropriateness of both the landscape and the visual baseline studies;
- the methods used in conducting the assessment of landscape and visual effects;
- the accuracy and completeness of the identification of the landscape and visual effects;
- the appropriateness of proposed mitigation, both in terms of measures incorporated into the scheme design and those identified to mitigate further the effects of the scheme;
- the approach to judging the significance of the effects identified, in terms of transparency and clarity of communication, and accuracy in identifying and describing the significant residual effects;

- the appropriate handling of cumulative landscape and visual effects, given the agreed scope and requirements for this work;
- the appropriate communication of all aspects of the assessment of landscape and visual effects in text, tables and illustrations;
- the effectiveness of visualisations in communicating the visual effects of the proposals at agreed viewpoints.

Summary advice on good practice

- The same broad principles for presenting landscape and visual effects information apply whether LVIA is carried out as part of an EIA or as a standalone 'appraisal'.
- Where LVIA is undertaken as part of an EIA, the approach to presentation should be discussed with the EIA co-ordinator to ensure the content included in the main text of the Environmental Statement is proportionate and appropriate to the significance of the findings of the LVIA.
- Presentation techniques must be carefully chosen and appropriately applied. The approach to presentation and the level of sophistication required in the illustration of change should be discussed and agreed with the competent authority at the outset.
- The effort required to produce appropriate illustrative material, especially visualisations to show the proposed changes, must be kept in proportion to the nature of the proposed development.
- The structure and content of a report on the assessment of landscape and visual effects will follow a broadly similar pattern in each case, but with variations reflecting particular circumstances.
- Agreement will be needed on how cumulative landscape and visual effects are to be covered – either as part of a separate cumulative effects section of the Environmental Statement or as a sub-section of the chapters dealing specifically with landscape and visual effects.
- In view of the clear differences between landscape effects and visual effects and the potential for them to be confused, it is good practice to report on them separately and to clearly distinguish between them.
- Ideally baseline information relevant to landscape and to visual effects should not be separated from the identification and description of effects, but where the EIA co-ordinator wishes to have a separate chapter on baseline findings the main findings should be summarised in the landscape and visual chapters.
- In an Environmental Statement the structure of reporting will need to be consistent across the environmental topics and to reflect relationships between topics, for example placing cultural heritage and ecology/nature conservation topics next to the landscape topic.
- Reporting of both landscape effects and visual effects should include description of the baseline, identification and description of effects, assessment of the significance of the effects, and description of mitigation measures, including how they will be delivered.

8 Presenting information on landscape and visual effects

The choice of appropriate presentation techniques is crucial to good communication.

Text should be comprehensive but also concise and to the point, and written in plain and easy-to-understand language.

Text should be impartial and dispassionate, presenting information and reasoning accurately and in a balanced way, and making clear where statements are based on the author's judgement.

Clear definitions should be provided for any technical terms that are used, supported by a glossary of terms.

Tables, and any matrices related to judgements of significance, should be used to support and to summarise narrative descriptive text rather than to replace it.

Text and illustrations need to work well together, with each complementing and supporting the other and with illustrations supporting rather than duplicating the content of the text.

The amount and type of illustrative material should be in proportion to the task in hand and should be agreed in consultation with the competent authority.

Maps, at suitable scales and levels of detail, should be prepared using appropriate digital methods and included in the Environmental Statement to illustrate key spatial aspects of the LVIA.

Photographs can have an important role to play in communicating information about the landscape and the visual effects of a proposed development, although they cannot convey exactly the way that the effects would appear on site.

For landscape effects photographs should illustrate the landscape character of the site and its context, from locations carefully chosen in discussion with the competent authority, with prevailing weather and atmospheric conditions described, seasonal effects noted, and technical details of the photography recorded.

In the baseline for visual effects photographs should illustrate existing views and visual amenity at agreed viewpoints. Change is best illustrated by means of visualisations, although these are not a substitute for descriptions in the text and may need to be accompanied by further explanation and description.

Choosing the right approach for visualisations requires careful consideration. They need to be appropriate to the type and scale of project envisaged and also to take account of a wide range of practical considerations.

Photomontage is the most widespread and popular visualisation technique for illustrating changes in views and visual amenity. It must be technically accurate to a degree appropriate to the nature of the project and reflecting discussions with the competent authority.

The photomontages that are included in an Environmental Statement must meet appropriate standards as described in the Landscape Institute's advice note (and any amendments) on requirements for photography and photomontage, and reflect other relevant guidance.

Photomontages should be based on sufficiently high-quality photographs that are representative of the view in question, show appropriate (and justified) levels of

visibility, show relevant components of the development as realistically as possible, and be printed at an appropriate scale for comfortable viewing at the correct distance.

Presenting photomontages in the 'triple arrangement', in which a panoramic baseline photograph, a matching wireframe image of the proposal and a fully rendered photomontage are combined, may compromise other important standards such as image size and ideal viewing distance.

Photomontages should be reproduced at an agreed image size and should show an appropriate level of detail. They may be incorporated into a separate volume of the Environmental Statement if necessary.

The Non-Technical Summary of the Environmental Statement may also include some photomontages of key views but it should be emphasised that they are only selected images and that full understanding requires examination of the full set of images.

3D models are most useful where there is a need to portray complex developments in more detail than can easily be achieved using a single or even several photomontages. They are not required for most projects and are demanding of resources and computer power.

Careful thought must be given to how the competent authority, stakeholders and the public will view graphics, and especially 3D material and animations. Ideally all parties should have access to the same type of information and illustrative material.

Non-digital visualisation techniques, such as overlays and perspective sketches (either hand drawn or constructed over computer-generated wire lines), may also be appropriate, for example when speed of production and available budget are limiting factors, or simply when they are preferred and illustrate the proposals adequately.

The competent authority will review the adequacy of the landscape and visual effects material included in the Environmental Statement, and the summary good practice points in this guidance and several other existing sources may help in this. If specialist advice or expertise is required to assist with the review it should be sought from suitably qualified landscape professionals.

Glossary

This glossary has been prepared specifically for this edition of the GLVIA and defines the meanings given to these terms as used in the context of this guidance.

Access land Land where the public have access either by legal right or by informal agreement.

Baseline studies Work done to determine and describe the environmental conditions against which any future changes can be measured or predicted and assessed.

Characterisation The process of identifying areas of similar landscape character, classifying and mapping them and describing their character.

Characteristics Elements, or combinations of elements, which make a contribution to distinctive landscape character.

Compensation Measures devised to offset or compensate for residual adverse effects which cannot be prevented/avoided or further reduced.

Competent authority The authority which determines the application for consent, permission, licence or other authorisation to proceed with a proposal. It is the authority that must consider the environmental information before granting any kind of authorisation.

Consultation bodies Any body specified in the relevant EIA Regulations which the competent authority must consult in respect of an EIA, and which also has a duty to provide a scoping opinion and information.

Designated landscape Areas of landscape identified as being of importance at international, national or local levels, either defined by statute or identified in development plans or other documents.

Development Any proposal that results in a change to the landscape and/or visual environment.

Direct effect An effect that is directly attributable to the proposed development.

'Do nothing' situation Continued change or evolution in the landscape in the absence of the proposed development.

Ecosystem services The benefits provided by ecosystems that contribute to making human life both possible and worth living. The Millennium Ecosystem Assessment (www.unep.org/maweb/en/index.aspx) grouped ecosystem services into four broad categories:

1. supporting services, such as nutrient cycling, oxygen production and soil formation – these underpin the provision of the other 'service' categories;
2. provisioning services, such as food, fibre, fuel and water;
3. regulating services, such as climate regulation, water purification and flood protection;
4. cultural services, such as education, recreation, and aesthetic value.

Elements Individual parts which make up the landscape, such as, for example, trees, hedges and buildings.

Enhancement Proposals that seek to improve the landscape resource and the visual amenity of the proposed development site and its wider setting, over and above its baseline condition.

Environmental Impact Assessment (EIA) The process of gathering environmental information; describing a development; identifying and describing the likely significant environmental effects of the project; defining ways of preventing/avoiding, reducing, or offsetting or compensating for any adverse effects; consulting the general public and specific bodies with responsibilities for the environment; and presenting the results to the competent authority to inform the decision on whether the project should proceed.

Environmental Statement A statement that includes the information that is reasonably required to assess the environmental effects of the development and which the applicant can, having regard in particular to current knowledge and methods of assessment, reasonably be required to compile, but that includes at least the information referred to in the EIA Regulations.

Feature Particularly prominent or eye-catching elements in the landscape, such as tree clumps, church towers or wooded skylines OR a particular aspect of the project proposal.

Geographical Information System (GIS) A system that captures, stores, analyses, manages and presents data linked to location. It links spatial information to a digital database.

Green Infrastructure (GI) Networks of green spaces and watercourses and water bodies that connect rural areas, villages, towns and cities.

Heritage The historic environment and especially valued assets and qualities such as historic buildings and cultural traditions.

Historic Landscape Characterisation (HLC) and Historic Land-use Assessment (HLA) Historic characterisation is the identification and interpretation of the historic dimension of the present-day landscape or townscape within a given area. HLC is the term used in England and Wales, HLA is the term used in Scotland.

Indirect effects Effects that result indirectly from the proposed project as a consequence of the direct effects, often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects.

Iterative design process The process by which project design is amended and improved by successive stages of refinement which respond to growing understanding of environmental issues.

Key characteristics Those combinations of elements which are particularly important

to the current character of the landscape and help to give an area its particularly distinctive sense of place.

Land cover The surface cover of the land, usually expressed in terms of vegetation cover or lack of it. Related to but not the same as land use.

Land use What land is used for, based on broad categories of functional land cover, such as urban and industrial use and the different types of agriculture and forestry.

Landform The shape and form of the land surface which has resulted from combinations of geology, geomorphology, slope, elevation and physical processes.

Landscape An area, as perceived by people, the character of which is the result of the action and interaction of natural and/or human factors.

Landscape and Visual Impact Assessment (LVIA) A tool used to identify and assess the likely significance of the effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity.

Landscape character A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.

Landscape Character Areas (LCAs) These are single unique areas which are the discrete geographical areas of a particular landscape type.

Landscape Character Assessment (LCA) The process of identifying and describing variation in the character of the landscape, and using this information to assist in managing change in the landscape. It seeks to identify and explain the unique combination of elements and features that make landscapes distinctive. The process results in the production of a Landscape Character Assessment.

Landscape Character Types (LCTs) These are distinct types of landscape that are relatively homogeneous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur they share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement pattern, and perceptual and aesthetic attributes.

Landscape classification A process of sorting the landscape into different types using selected criteria but without attaching relative values to different sorts of landscape.

Landscape effects Effects on the landscape as a resource in its own right.

Landscape quality (condition) A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements.

Landscape receptors Defined aspects of the landscape resource that have the potential to be affected by a proposal.

Landscape strategy The overall vision and objectives for what the landscape should be like in the future, and what is thought to be desirable for a particular landscape type or area as a whole, usually expressed in formally adopted plans and programmes or related documents.

Landscape value The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of reasons.

Magnitude (of effect) A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is short or long term in duration.

Parameters A limit or boundary which defines the scope of a particular process or activity.

Perception Combines the sensory (that we receive through our senses) with the cognitive (our knowledge and understanding gained from many sources and experiences).

Photomontage A visualisation which superimposes an image of a proposed development upon a photograph or series of photographs.

Receptors See Landscape receptors and Visual receptors.

Scoping The process of identifying the issues to be addressed by an EIA. It is a method of ensuring that an EIA focuses on the important issues and avoids those that are considered to be less significant.

Seascape Landscapes with views of the coast or seas, and coasts and adjacent marine environments with cultural, historical and archaeological links with each other.

Sensitivity A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value related to that receptor.

Significance A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic.

Stakeholders The whole constituency of individuals and groups who have an interest in a subject or place.

Strategic Environmental Assessment (SEA) The process of considering the environmental effects of certain public plans, programmes or strategies at a strategic level.

Susceptibility The ability of a defined landscape or visual receptor to accommodate the specific proposed development without undue negative consequences.

Time depth Historical layering – the idea of landscape as a ‘palimpsest’, a much written-over manuscript.

Townscape The character and composition of the built environment including the buildings and the relationships between them, the different types of urban open space, including green spaces, and the relationship between buildings and open spaces.

Tranquillity A state of calm and quietude associated with peace, considered to be a significant asset of landscape.

Visual amenity The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through an area.

Visual effects Effects on specific views and on the general visual amenity experienced by people.

Visual receptors Individuals and/or defined groups of people who have the potential to be affected by a proposal.

Visualisation A computer simulation, photomontage or other technique illustrating the predicted appearance of a development.

Zone of Theoretical Visibility (ZTV; sometimes Zone of Visual Influence) A map, usually digitally produced, showing areas of land within which a development is theoretically visible.

Notes

Chapter 1

1. (Paragraph 1.16) Scottish Executive Development Department (1999), for example, notes in the glossary definitions of 'impacts' and 'effects' that 'In this PAN, except where the context indicates otherwise, the words impact and effect have been used interchangeably.'

Chapter 3

1. (Paragraph 3.45) See for example Swanwick, Bingham and Parfitt (2003) and references therein; also Planning Aid (2010).

Chapter 4

1. (Paragraph 4.2) In England this is summarised in an approach that has become known as the 'Rochdale Envelope'. See Planning Inspectorate (2012).
2. (Paragraph 4.41) For further detail see IEMA (2011b), Box 6.5B.

Chapter 5

1. (Paragraph 5.4) See Swanwick and Land Use Consultants (2002). In Wales, landscape information is available in the LANDMAP system, developed by the Countryside Council for Wales, which systematically records and evaluates the landscape in five layers or aspects in a GIS, which in turn can be combined to produce Landscape Character Assessments. This can be found online at <http://www.ccw.gov.uk/landmap>. Natural England have published *An Approach to Seascape Character Assessment (NECR105)* which is available online at <http://publications.naturalengland.org.uk/publications/2729852>
2. (Paragraph 5.21) At the time of writing, no National Parks have been designated in Northern Ireland, although legislation has been introduced enabling their establishment in the future.

Chapter 6

1. (Paragraph 6.5) See for example GLA (2010).
2. (Paragraph 6.23) See for example the technical appendices in horner + maclellan and Envision (2006).

Chapter 7

1. (Paragraph 7.6) See for example the discussion on cumulative effects assessment in IEMA (2011b), Section 6.
2. (Paragraph 7.11) See European Commission (2012).
3. (Paragraph 7.12) Further guidance on defining the geographic and temporal scope of cumulative impact assessments can be found in Hyder (1999).

Chapter 8

1. (Paragraph 8.15) Refer to the Met Office website for visibility definitions: <http://www.metoffice.gov.uk/weather/uk/guide/key.html>

References

- Council of Europe (2000) *European Landscape Convention*, Strasbourg: Council of Europe.
- Countryside Commission (1994) *Environmental assessment: the treatment of landscape and countryside recreation issues*, CCP 326, Cheltenham: Countryside Commission.
- David Tyldesley and Associates (2009) *A handbook on Environmental Impact Assessment*, 3rd edition, Inverness: Scottish Natural Heritage.
- English Heritage (2011) *The setting of heritage assets*, London: English Heritage.
- European Commission (2001) *Directive 2001/42/EC of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment*.
- European Commission (2011) *Directive 2011/92/EU of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment*.
- European Commission (2012) *Interpretation suggested by the Commission as regards the application of the EIA Directive to ancillary/associated works*.
- GLA (2010) *London View Management Framework: supplementary planning guidance*, London: Greater London Authority.
- HM Government, Northern Ireland Executive, Scottish Government and Welsh Assembly Government (2011) *UK Marine Policy Statement*, London: The Stationery Office.
- horner + maclellan and Envision (2006) *Visual representation of windfarms: good practice guidance*, Inverness: Scottish Natural Heritage.
- Hyder (1999) *Guidelines for the assessment of indirect and cumulative impacts as well as impact interactions*, Report for EC DG XI Environment, Nuclear Safety & Civil Protection NE80328/D1/3, Luxembourg: Office for Official Publications of the European Communities.
- IEMA (2010a) *Climate change adaptation and EIA* (Principle series), Lincoln: Institute of Environmental Management & Assessment.
- IEMA (2010b) *Climate change mitigation and EIA* (Principle series), Lincoln: Institute of Environmental Management & Assessment.
- IEMA (2011a) *EIA Quality Mark ES review criteria*, Lincoln: Institute of Environmental Management & Assessment.
- IEMA (2011b) *The state of Environmental Impact Assessment practice in the UK*, Lincoln: Institute of Environmental Management & Assessment.
- IEMA (2012a) *Considering ecosystem services in Environmental Impact Assessment* (E-Brief Issue 6), Lincoln: Institute of Environmental Management & Assessment.
- IEMA (2012b) *Effective Non-Technical Summaries for Environmental Impact Assessment* (E-Brief issue 7), Lincoln: Institute of Environmental Management & Assessment.
- IEMA/Land Use Consultants (2008) *Environmental Management Plans*, Lincoln: Institute of Environmental Management & Assessment.

References

- ILP (2011) *Guidance notes for the reduction of obtrusive light*, GN01:2011, Rugby: Institution of Lighting Professionals.
- Landscape Institute (2008a) *Landscape architecture and the challenge of climate change*, London: Landscape Institute.
- Landscape Institute (2008b) *Royal Charter of Incorporation*, London: Landscape Institute.
- Landscape Institute (2011) *Photography and photomontage in Landscape and Visual Impact Assessment*, Advice Note 01/11, London: Landscape Institute.
- Landscape Institute and IEMA (2002) *Guidelines for Landscape and Visual Impact Assessment*, 2nd edition, London: Spon Press.
- Planning Aid (2010) *Good practice guide to public engagement in development schemes*, Birmingham: Planning Aid, London: RTPI and London: Communities and Local Government.
- Planning Inspectorate (2012) *National Infrastructure Planning Advice Note 9: The Rochdale Envelope*, Bristol: Planning Inspectorate.
- Scottish Executive Development Department (1999) *Environmental Impact Assessment: Planning Advice Note*, PAN 58.
- SNH (2012) *Assessing the cumulative impact of onshore wind energy development*, Inverness: Scottish Natural Heritage.
- Swanwick, C. and Land Use Consultants (2002) *Landscape Character Assessment for England and Scotland*, Cheltenham: Countryside Agency and Battleby: Scottish Natural Heritage.
- Swanwick, C., Bingham, L. and Parfitt, A. (2003) *Landscape Character Assessment: how stakeholders can help*, Cheltenham: Countryside Agency and Battleby: Scottish Natural Heritage.
- UNECE (1998) *Aarhus Convention on access to information, public participation in decision-making and access to justice in environmental matters*, Geneva: United Nations Economic Commission for Europe.
- World Commission on Environment and Development (1987). *Our common future: report of the World Commission on Environment and Development*, Oxford: Oxford University Press.

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