

APPENDIX 8.2

LANDSCAPE AND VISUAL METHODOLOGY

APPENDIX 8.2: METHODOLOGY FOR LANDSCAPE AND VISUAL IMPACT ASSESSMENT

- 8.1 The methodology employed in carrying out the landscape and visual assessment of the development proposals for Ebberston Moor 'A' Well Site to Knapton Gas Pipeline has been drawn from best practice guidelines and the Landscape Institute and the Institute of Environmental Management & Assessment's "Guidelines for Landscape and Visual Impact Assessment" Third Edition (Routledge, 2013). The aim of these guidelines is to set high standards for the scope and contents of landscape and visual impact assessments and to establish certain principles that will help to achieve consistency, credibility and effectiveness in landscape and visual impact assessment.
- 8.2 Landscape and visual impact assessments may be different from other specialist studies because they are generally undertaken by professionals who are also involved in the design of the landscape and the preparation of subsequent management proposals. This can allow the assessment to proceed as an integral part of the overall scheme design rather than as a discrete study carried out once the proposals have been finalised. Landscape and visual impact assessment, in common with any assessment of environmental effects, includes a combination of objective and subjective judgements, and it is therefore important that a structured and consistent approach is used to ensure that it is as objective as possible. Judgement should always be based on training and experience, and be supported by clear evidence and reasoned argument. Accordingly, it is recommended that suitably qualified and experienced landscape professionals carry out landscape and visual impact assessments.
- 8.3 A typical landscape assessment could include the following illustrative material:
- Aerial Photograph;
 - Site Context Plan;
 - Landscape Character Plan;
 - Topographical Features Plan;
 - Site Appraisal Plan;
 - Visual Appraisal Plan;
 - Site Appraisal Photographs;
 - Site Context Photographs; and
 - Extracts from Landscape Character Assessment.

Landscape and Visual Effects

- 8.4 This methodology describes the process used in assessing the effect of the development proposals on the landscape features and visual amenity receptors surrounding the Application Site and on the Application Site's contribution to the existing landscape character and its resource.
- 8.5 Landscape and visual assessments are separate, although linked, procedures. The existing landscape and its existing visual context all contribute to the existing 'baseline' for landscape and visual impact assessment studies. The assessment of the potential effect on the landscape is carried out as an effect on an environmental resource, i.e. the landscape features or character. Visual effects are assessed as one of the interrelated effects on population.
- 8.6 Landscape effects derive from changes in the physical landscape, which may give rise to changes in its character and how this is experienced. This may in turn affect the perceived value ascribed to the landscape.
- 8.7 Visual effects relate to the changes that arise in the composition of available views as a result of changes to the landscape, to people's responses to the changes, and to the overall effects with respect to visual amenity.
- 8.8 The assessment of effects aims to:-
- Identify systematically the likely effects of the development;
 - Indicate the measures proposed to avoid, reduce, remedy or compensate for those effects, primarily as part of the iterative design process and then as more specific mitigation measures; and
 - Provide an assessment and professional judgement on the magnitude of the effects and the nature and significance of these effects in a logical and objective well-reasoned fashion.
- 8.9 Effects may be positive (beneficial), neutral, or negative (adverse), direct or indirect, and can be secondary or cumulative, permanent or temporary (short, medium or long term). They can also arise at different scales (local, regional or national) and have different levels of significance. These aspects are examined in more detail in later sections of the methodology.

Baseline Studies

- 8.10 The initial step in any landscape or visual impact assessment is to review the existing landscape and visual resource in the vicinity of the proposed development – that is the baseline landscape and visual conditions. The data collected will form the basis from which the magnitude and significance of the landscape and visual effects of the development may be identified and assessed. The purpose of baseline studies is to record and analyse the existing landscape features, characteristics, the way the landscape is experienced, and the condition and the value or importance of the landscape and visual resources in the vicinity of the proposed development. This requires research, classification and analysis of the landscape and visual resources as follows:
- 8.11 The desktop study explores patterns and scale of landform, land cover and built development, which give guidance on the general landscape character of the surrounding area. Any special values that may apply, such as designated landscapes i.e. AONB, Green Belt, Conservation Areas, Listed Buildings, strategic viewing corridors, TPOs and public rights of way in the vicinity of the Application Site as appropriate and specific potential receptors of landscape and visual impact, including important components of the landscape, as well as residents, visitors, travellers through the area and other groups of viewers should also be noted.
- 8.12 The desk study provides a sound basis for subsequent field survey work including the identification of landscape character areas around the Application Site, the likely extent to which the Application Site is likely to be visible (that is the visual envelope or zone of visual influence) and principal viewpoints. The field survey identifies and records specific sensitive receptors. The term “receptor” is used in landscape and visual impact assessments to mean an element or assemblage of elements that would be directly or indirectly affected by the proposed development, including ‘landscape receptors’ such as vegetation features and physical areas which provide a particular sense of landscape character, and ‘visual receptors’ meaning particular groups of people who are likely to be affected.
- 8.13 Landscape character assessment, and particularly the stage of characterisation, is the basic tool for understanding the landscape and is the starting point for baseline surveys. There is a well established methodology developed in the UK by the Countryside Agency (now Natural England) and Scottish Natural Heritage. The baseline studies provide a concise description of the existing character of the Application Site and its surrounding landscape, and the classification of the landscape into distinct character areas or types, which share common features and characteristics. The condition of the landscape, i.e. the state of an individual area of landscape should be described as factually as possible, and a judgement also needs

to be made on the value or importance to society of the affected landscape. The assessment of landscape importance includes reference to policy or designations as an indicator of recognised value, including specific features or characteristics that justify the designation of the area. This information is needed as part of the baseline to establish why the landscape is considered to be of value at a national, regional or local level.

8.14 The area of study for the visual assessment extends to the whole of the area from which the Application Site and its proposed scheme is visible (the visual envelope or zone of visual influence).

8.15 The approximate visibility of the Application Site as existing should be determined through topographical analysis, and the actual extent of visibility checked in the field to identify and take account of the localised screening effect of buildings, walls, fences, trees, hedgerows and banks. Principal viewpoints within the area surrounding the Application Site should also be identified, and the viewpoints used for photographs selected to demonstrate the relative visibility of the Application Site (and existing features or development on it) and its relationship with the surrounding landscape and built forms. The selection of the key viewpoints should be based on the following criteria:-

- The requirement to provide an even spread of representative viewpoints within the visual envelope, and around all sides of the Application Site;
- The requirement to provide representative viewpoints that consider a human's normal field of vision (i.e. panoramic views);
- From locations which represent a range of near, middle and long distance view;
- Whilst private views are relevant, public viewpoints, i.e. from roads and public rights of way and other areas of open public access, are selected since they are the most significant in terms of the number of receptors affected; and
- Views from sensitive receptors within designated landscapes.

8.16 The study encompasses groups of properties, roads, public rights of way and public open space that lie within the visual envelope or zone of visual influence of the Application Site. The term "properties" includes dwellings, public buildings, community facilities and places of employment. The extent of visibility of the Application Site is based on a grading of degrees of visibility, from a visual inspection of the Application Site and surrounding area. There is, in any visual assessment, a continuity of degree of visibility ranging from no view of the Application Site to full open views. To indicate the degree of visibility of the Application Site

from any location, including from roads, railway lines, public rights of way, public open space and properties, three categories have been used:-

- a) **Truncated / No View:** truncated / curtailed / no view of the Application Site or it is difficult to perceive;
- b) **Partial View:** a view of part of the Application Site, or a filtered view of the Application Site or a distant view where the Application Site is perceived as a small part of the view; and
- c) **Open View:** a clear view of a significant proportion of the Application Site within the wider landscape.

8.17 The final stage in the field survey identifies and addresses specific sensitive receptors including landscape elements and features that may be directly affected by the development, as well as residents, visitors and other groups of viewers. In the case of landscape receptors, the field survey included the recording of topographic, geological and drainage features, woodland, tree and hedgerow cover, land use, field boundaries and artefacts, access and rights of way, and illustrating the findings on a **Site Context Plan, Topographical Features Plan, Landscape Character Plan** and **Site Appraisal Plan**, and in a series of **Site Appraisal Photographs**. In the case of visual receptors, the types of views affected, an estimate of their numbers and whether there were few or many, duration of viewing, and potential seasonal screening effects was noted.

8.18 Following the field survey, the extent to which the Application Site is visible from the surrounding area is confirmed, identifying the views into / towards the Application Site, identifying specific elements such as landform, buildings or vegetation which interrupt, filter or otherwise influence views, and illustrating the findings on the **Visual Appraisal Plan**. The locations of principal viewpoints were also mapped and these existing views are illustrated by annotated **Site Context Photographs**. The photographs are taken at eye level, using a 50mm lens on a Canon digital camera in order to provide a realistic representation of visibility with the naked eye. Photographs are taken with an overlap allowing panoramic photographs to be produced by splicing together individual photographs digitally, with minor retouching to eliminate variations in colour tone. The photographs are taken in accordance with Circular 01/11, published by the Landscape Institute.

- 8.19 By the end of this stage of the study, it should be possible to advise, in landscape and visual terms, on the development's acceptability in principle, and its preferred siting, layout and design.
- 8.20 Based on the material set out above, a **Landscape Opportunities and Constraints Plan** for the Application Site can be prepared to illustrate the development potential of the land and any associated measures required to retain and enhance features considered integral to the acceptability of the proposed development. This plan is used to liaise with master planners and guide the parameters for potential development of the Application Site.
- 8.21 As part of iterative design process a **Landscape Strategy Plan** is prepared, detailing landscape measures required to assist in the absorption of the proposed development within the Application Site and its assimilation within the wider landscape. This plan is used to inform the detailed design elements expressed within the Design and Access Statement. It will also detail a plant pallet from which species used throughout the development shall be drawn.

Identification and Assessment of Landscape and Visual Effects

- 8.22 The assessment of effects aims to:-
- Identify systematically the likely landscape and visual effects of the development;
 - Indicate the measures proposed to avoid, reduce, remedy or compensate for these effects (mitigation measures);
 - Estimate the magnitude of the effects as accurately as possible; and
 - Provide an assessment of the nature and significance of these effects in a logical and well-reasoned fashion.
- 8.23 Consideration is given to the impacts on completion of development and at Year 25 so that the residual effects of the development after mitigation are identified.

a) **Landscape Effects**

- 8.24 These include the direct and indirect effects of the development on individual landscape elements and features, as well as the effect upon the general landscape character and quality of the surrounding area. Landscape effects are described clearly and objectively, and the extent and duration of any adverse/beneficial effects quantified, using five categories of effects, indicating a gradation from high to low (i.e. high, medium, low, very low, neutral i.e.

no change). Some effects have been quantified, i.e. how many mature trees and how many metres of hedgerow are to be lost as a result of a proposed development, etc. and this type of factual data has the advantage of helping to put in context the degree of change that will occur.

8.25 Wider effects on landscape character and quality are less easy to predict and professional judgement is imperative to provide a fully reasoned objective conclusion/judgement. A clear picture of likely effects is presented by referring back to the baseline landscape character assessment, and describing how the development may alter existing patterns of landscape elements and features.

b) **Visual Effects**

8.26 The assessment of visual effects describes:-

- The changes in the character of the available views resulting from the development; and
- The changes in the visual amenity of the visual receptors.

8.27 The visual effect of a development on a view will depend upon a number of factors. These can be summarised as:-

- (a) The nature of the proposal;
- (b) Its siting in the landscape;
- (c) Its size;
- (d) Its detailed design; and
- (e) The position and distance from which it is viewed.

8.28 The position from which the development is viewed (factor (e) above) has two components, namely distance and location. In general terms, the greater the distance, the less the effect will be. This arises from two factors. Firstly, doubling the distance between viewer and object means its perceived effect will be reduced not by a half but by a quarter. Secondly, in any conditions other than clear visibility, increasing the distance between object and observer will introduce obscuration from rain, haze, mist or similar atmospheric effects, thereby further reducing the effect of the object.

8.29 The net effect of these factors is that the visual impact of an object will begin to fall away rapidly with increasing distance. Visibility will reduce substantially beyond 1.5 km (1 mile),

and beyond 5 km (3 miles). Binoculars or some other aid to visibility would probably be necessary in order to perceive any detail of the proposed development.

8.30 A visual assessment study involves systematically identifying all the visual receptors (i.e. all properties or groups of properties, and users of roads and public rights of way) that are likely to be affected by the development, and within the visual envelope of the development. The method seeks to assess the impact of the development in terms of the degree of change in the view experienced by the observer. The results are presented in a systematic form allowing an informed judgement to be made of the impact of the development proposals. In the assessment of views there is likely to be a continuum in the degree of visibility of the development from Open View to No View, and in order to assist in the description and comparison of the effect on views, simplified categories were used which considered: -

- The extent of the view that would be occupied by the development (degree of visual intrusion): Full, Partial, Glimpse etc;
- The proportion of the development or particular features that would be visible: Full, Most, Small Amount, None;
- The distance of the viewpoint from the development and whether the viewpoint would focus on the development due to proximity, or the development would form one element in a panoramic view; and
- Whether the view is transient or one of a sequence of views, as from a moving vehicle or footpath.

8.31 Changes in visual amenity may arise from both built or engineered forms, and soft landscape elements of the development. The contribution that areas of planting introduced as part of the proposed development are considered, and the height of this planting for assessment purposes is as follows:-

- Planting at Year 1: Whips / transplants 60-150cm
Larger stock 3.5-4.5 metres; and
- Planting at Year 15: 5 – 9.5 metres;

8.32 The assessment of effects assumes planting within the Proposed Development at 10 years post-implementation, having established and matured to a considerable degree. Whilst growth rates are dependent on species and conditions, a reasonable assumption of 1m growth every 3 years can be made for whips and transplants, especially as planting would be subject to a positive ongoing management regime subject to agreement with the local authority.

- 8.33 Changes in visual amenity may also arise from lighting proposals for the development, including the day time effect of lighting apparatus on landscape character, skylines, key views and visual receptors; and the night-time effect of the proposed light sources.
- 8.34 Consideration should also be given to the seasonal differences in effects arising from the degree of vegetative screening and/or filtering of views that would apply in summer and winter. Thus assessment may be provided for "average" and "worst-case" situations (the latter being the season with least leaf cover and therefore minimal vegetative screening).

Sensitivity of Receptors (for Visual Effects)

- 8.35 The sensitivity of visual receptors in views will be dependent on:-
- The location and context of the viewpoint;
 - The expectations and occupation or activity of the receptor; and
 - The importance of the view (which may be determined with respect to its popularity or numbers of people affected, its appearance in guide books, on tourist maps, and in the facilities provided for its enjoyment and reference to it in literature or art).
- 8.36 The most sensitive receptors may include:-
- Users of all outdoor recreation facilities, including public rights of way, whose attention or interest may be focused on the landscape;
 - Communities where the development results in changes in the landscape setting or value of views enjoyed by the community; and
 - Occupiers of residential properties with views affected by the development.
- 8.37 Other receptors include people engaged in outdoor sport and recreation, people travelling through or past the affected landscape in cars, on trains or other transport routes, and people at their place of work. The least sensitive receptors are likely to be people at their place of work, or engaged in similar activities whose attention may be focused on their work or activity, and who therefore may be potentially less susceptible to changes in the view.
- HIGH: activity resulting in a high interest or appreciation of the view (e.g. residents or people engaged in outdoor recreation whose attention is largely focussed on the landscape) and/or a high value of existing view (e.g. unspoilt countryside or a Conservation Area)

- MEDIUM: activity resulting in a medium interest or appreciation of the view (e.g. people engaged in outdoor recreation that does not largely focus on an appreciation of the landscape e.g. motorists travelling through an area of rural roads) and/or a medium value of existing view (e.g. suburban residential areas or intensively farmed countryside); and
- LOW: activity resulting in a low interest or appreciation of the view (e.g. people at work or motorists travelling through an area on fast roads) and/or low value of existing view (e.g. industrial areas or derelict land)

Sensitivity of Receptors (Landscape Character)

- 8.38 The sensitivity of the landscape to change is reflected in the degree to which the landscape is able to accommodate change (due to a particular development or land use change) without adverse effects on its character. This may be influenced by the extent of changes in topography and/or existing vegetation or new planting. These and other factors also influence the visibility of the proposed development and therefore influence the extent of its effect on the perceived character and visual amenity of the surrounding landscape
- 8.39 Sensitivity of Landscape Character Area (LCA) is determined by an understanding of published landscape character assessments. Based on this published information, an analysis of the sensitivity of landscape character within and adjacent to the Application Site is undertaken to enable an assessment of effects of the Proposed Development on landscape character.
- 8.40 Each LCA to be assessed has been assigned a sensitivity based on the character and quality of the existing landscape and its ability to accommodate change. Sensitivity of LCA has been classified as High, Medium or Low as follows:
- High: landscape of distinctive components and characteristics, sensitive to small changes;
 - Medium: landscape of relatively common components and characteristics, reasonably tolerant of changes; and
 - Low: landscape of relatively inconsequential components and characteristics, the nature of which is potentially tolerant of substantial change.

Magnitude of Change (for Visual Effects)

8.41 In the evaluation of the effects on views and the visual amenity of the identified receptors, the magnitude of scale or visual change is described by reference to: -

- The scale of change in the view with respect to the loss or addition of features in the view and changes in its composition;
- The degree of contrast or integration of any new features or changes in the landscape with the existing or remaining landscape elements;
- The duration and nature of the effect, whether temporary or permanent, intermittent or continuous;
- The angle of view in relation to the main activity of the receptor;
- The distance of the viewpoint from the proposed development; and
- The extent of the area over which the changes would be visible.

8.42 Magnitude of change in view results from a combination of the degree of change to the view resulting from the scheme with consideration of the extent of the area over which the changes would be visible, the period of exposure to the view and reversibility. Magnitude of change has been classified as High, Medium, Low, Very Low or Neutral, as follows: -

- High:** Where the scheme would cause a high degree of change in the existing view (e.g. loss of characteristic features) and/or high degree of exposure to view (e.g. near-distance or open views);
- Medium:** Where the scheme would cause a medium degree of change in the existing view (e.g. partial loss of characteristic features) and/or medium degree of exposure to view (e.g. middle distance or partial views);
- Low:** Where the scheme would cause a low degree of change in the existing view (e.g. limited loss of characteristic features) and/or low degree of exposure to view (e.g. long-distance, interrupted or glimpsed views)
- Very Low:** Where the scheme would cause a barely perceptible change to the existing view; and
- Neutral:** Where the scheme would cause no apparent change in the existing view.

Magnitude of Change (for Landscape Character)

8.43 Magnitude of change has been determined through a combination of the scale of the development, the type of development and the level of integration of new features with existing elements. Magnitude of change has been classified as High, Medium, Low, Very Low or Neutral, as follows:

- High: ranging from a limited change in landscape characteristics over an extensive area, to an intensive change over a more limited area;
- Medium: moderate change in a localised area;
- Low: minor change in a localised area;
- Very Low: virtually imperceptible change in any component; and
- Neutral: no change discernible in any component.

Significance of Effects

8.44 Significance is not absolute and can only be identified in relation to each individual development and its unique location. It is important that any assessment of significance adopts an informed and well-reasoned judgement, supported through a clear justification as to how the conclusions about significance for each effect have been derived. It should be emphasised that whilst this methodology is designed to be robust and transparent, professional judgement is ultimately applied to determine the level of significance applied to each effect.

8.45 The two principal criteria determining the significance of effects are the scale or magnitude of effect, and the environmental sensitivity of the location or receptor. With regard to visual receptors, a high significance of effect would be from high sensitivity receptors such as residential properties and public rights of way where they would receive a major change in the view. A low significance of effect would be from the least sensitive receptors, such as transport corridors, as viewers would be affected for a smaller period of time as they would experience transient views. Where no change is identified the significance of effect is assessed as neutral.

8.46 Example visual assessment categories are listed below:

Major Adverse: Typically proposed changes would cause a pronounced deterioration in the existing view.

Moderate Adverse:	Typically proposed changes would cause a noticeable deterioration in the existing view.
Minor Adverse:	Typically proposed changes would cause a minor deterioration in the existing view.
Negligible:	Typically proposed changes would cause barely discernible deterioration or improvement in the existing view.
Neutral:	No effect (either no change or neutral effect).
Minor Beneficial:	Typically proposed changes would cause a minor improvement in the existing view.
Moderate Beneficial:	Typically proposed changes would cause a noticeable improvement in the existing view.
Major Beneficial:	Typically proposed changes would cause a pronounced improvement in the existing view.

Significance Thresholds

8.47 These thresholds will be determined by considering both sensitivity and magnitude of change, with reference to any general terminology accepted for the whole Environmental Statement. Numerical scoring is not recommended in the "Guidelines for Landscape and Visual Impact Assessment".

Effects during Construction

8.48 It is recognised that project characteristics and hence sources of effects, will vary through time. The construction and operation phases of a development are characterised by quite different physical elements and activities. In the construction phase, sources of landscape and visual effects include:-

- Site access and haulage routes;
- Materials stockpiles and construction compounds;
- Construction equipment and plant;

- Utilities, including lighting; and
- Protection of existing features.

Mitigation

8.49 The purpose of mitigation is to avoid, reduce and where possible remedy or offset, any significant, negative (adverse) effects on the environment arising from the proposed development. Mitigation is thus not solely concerned with "damage limitation", but may also consider measures that could compensate for unavoidable residual effects. Mitigation measures may be considered under two categories:-

- Primary measures that intrinsically comprise part of the development design through an iterative process; and
- Secondary measures designed to specifically address the remaining (residual) negative (adverse) effects of the final development proposals.

8.50 Strategies to address likely negative (adverse) effects include:

- Avoid or reduce impact by changing form of development;
- Remediation of impact, (e.g.) by planting to 'soften', absorb and assimilate development into the landscape;
- Compensation of impact, (e.g.) by replacing felled trees with new trees; and
- Enhancement, e.g. creation of new landscape or habitat.

8.51 Guidelines for Mitigation:

- All negative (adverse) landscape and visual effects that are likely to occur throughout the project life cycle should be considered for mitigation, although the statutory requirement is limited to significant effects;
- Consultation with local community and special interest groups on the proposed mitigation measures is important;
- Landscape mitigation measures should be designed to suit the existing landscape character and needs of the locality, respecting and building on local landscape distinctiveness and helping to address any relevant existing issues in the landscape;
- It must be recognised that many mitigation measures, especially planting, are not immediately effective. Where planting is intended to provide 'softening' and assist in 'visually absorbing' the development, it may also be appropriate to assess residual

effects for different periods of time, such as day of opening, Year 5 in the case of the proposed Development and/or at maturity if required;

- The developer should demonstrate a commitment to the implementation of mitigation measures to agreed programme and budget;
- The proposed mitigation measures should address specific issues and performance standards should be identified for the establishment, management, maintenance and monitoring of new landscape features; and
- A programme of appropriate monitoring may be agreed with the regulatory authority, so that compliance and effectiveness can be readily monitored and evaluated.

8.52 Common Mitigation Measures include:

- Sensitive location and siting;
- Site layout;
- Choice of Site level;
- Appropriate form, materials and design of buildings. It is not always practical or desirable to screen buildings. In these cases the scale, design, colour and texture of building should be carefully considered;
- Lighting;
- Ground Modelling: for immediate screening effect but may in itself be an adverse impact unless carefully matched to existing landform;
- Planting: Structural planting can help to integrate and soften development as well as being of potential value as a wildlife habitat; and
- Use of recessive colouration.