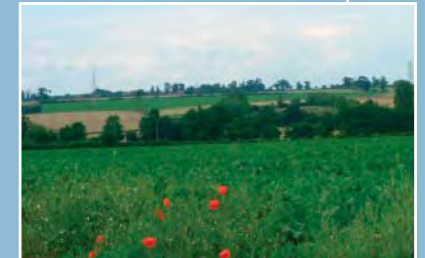


South Norfolk District

Wind Turbine Landscape Sensitivity Study



Final Report

for South Norfolk District Council by Land Use Consultants



**SOUTH NORFOLK DISTRICT:
WIND TURBINE LANDSCAPE
SENSITIVITY STUDY**

Prepared for

South Norfolk District Council

**by
Land Use Consultants**

**April 2006
[Final Amendments January 2008]**

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I. INTRODUCTION

Background

- I.1. South Norfolk District Council commissioned Land Use Consultants (LUC) to undertake a study to inform proposals for wind turbine development in the South Norfolk District, and to assist in the formulation of appropriate policies. The study area encompasses the entire district, approximately 907.65 km² of predominantly rural land, located to the south of the City of Norwich. It builds on the South Norfolk Landscape Assessment at the Type level¹ which identified seven landscape character types, ranging from the distinctive Rural River Valleys, the high, flat Plateau Farmland, and the undulating Tributary Farmland. It also draws on the more detailed character assessments of the Norwich Policy Area and Rural Policy Area².
- I.2. The study was undertaken over a six-month timescale between April and September 2005.

Need for the study

- I.3. South Norfolk District despite having relatively modest wind speeds is attracting increasing interest as a location for siting wind turbine developments. The project has been undertaken against the background of PPS22³, which encourages local authorities to respond positively to renewable energy projects and to develop criteria-based policies against which applications can be assessed.
- I.4. The planning process allows for consideration of a wide range of factors, it is less well equipped to provide a tool for evaluating landscape impacts. Less easily defined concepts including visual impacts, impacts on character and the integrity of the landscape, cumulative impacts and sequential experiences of the landscape, are particularly difficult to evaluate on a consistent case-by-case basis. Given potential pressures for turbine development, there is clearly a need for developing a transparent, robust and defensible evaluation framework that can provide a sound baseline for making decisions about wind energy development applications on landscape grounds and provide positive guidance to developers.

¹ South Norfolk Landscape Assessment Volume I Landscape Types of South Norfolk District June 2001. Land Use Consultants.

² South Norfolk Landscape Character Assessment: Landscape Character Areas of the NPA (June 2001) and Landscape Character Areas of the RPA (April 2006). Land Use Consultants

³ Planning Policy Statement 22: Renewable Energy. HMSO. 2004

- I.5. The aim of the study is to provide guidance for those seeking to identify suitable sites for the location of wind turbines and for the council in providing an initial response to such proposals. It will also help in the formulation of criteria against which specific proposals may be assessed in relation to landscape impact.

The brief for the study

- I.6. The brief identifies three main objectives for the study:
- i) Consider the implications of different scales of turbine development for the various landscape types in the District;
 - ii) Develop guidance to assist with appropriate siting of turbines to help inform the planning process.
 - iii) Draw conclusions about the sensitivities of the different landscape types with South Norfolk;

How the report should be used

- I.7. The study provides strategic guidance on the landscape factors influencing the location of wind turbines within South Norfolk District. It is intended to set out a positive approach to guide development rather than absolute thresholds. Clearly, turbines can form a very visible feature in the landscape, although not all landscapes are sensitive to the same degree. This study has aimed to articulate which characteristics of the landscape are sensitive to different forms of turbine development. In addition to individual landscape sensitivities, it also considers the relationship between landscapes particularly in terms of views and visual connections, and recognises that tall structures, such as wind turbines, can have a very high impact in views from adjacent (more) sensitive areas such as The Broads.
- I.8. The study builds on the information in the South Norfolk Landscape Assessment at the Type level. It sets out a robust and transparent evaluation framework following the guidance set out the recent Landscape Character Assessment Guidance⁴ and the subsequent Topic Paper 6⁵.
- I.9. The results should help guide the right type of development to the right location to ensure that the key characteristics and values of the landscape are not adversely affected. It is not intended to ‘stereotype’ any landscape type as suitable for a particular type of development. Nor, does it suggest that simply by virtue of having guidance that some landscapes are more suitable for such development. **Clearly, any decision on an application for wind turbines should not be considered in isolation, and should**

⁴ Countryside Agency and Scottish Natural Heritage (2002) *Landscape Character Assessment Guidance for England and Scotland* CAX 84.

⁵ Countryside Agency and Scottish Natural Heritage (2004) *Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity*.

be the subject of a site-specific investigation, drawing on the information in this guidance. The decision will also need to draw on a range of factors including biodiversity value, historic environment and other planning and economic issues. The effect of cumulative development will be a further key factor influencing individual decisions.

1.10. The report has been prepared for South Norfolk District Council. It is envisaged that it will have a number of potential applications:

- contribute to planning policy in relation to wind energy developments;
- provide objective baseline information to allow developers to consider effects on the landscape in identifying locations for wind energy developments;
- assist development control officers in making decisions on individual applications by setting out the aspects of the landscape that are most sensitive to this type of development and providing a clear set of criteria and baseline against which to judge the landscape effects of development;
- provide a basis for further stakeholder consultation to widen public understanding of wind turbine development and landscape sensitivities.

Limitations of the study

1.11. The following points should be noted:

- the study is undertaken from the starting point that wind turbine applications are, and will continue to come forward within the district; it does not debate the merits of wind turbines *vis a vis* other forms of renewable energy development or offshore turbine development;
- this study only considers landscape and visual considerations, clearly there are many other factors which will all influence decisions;
- the study provides strategic guidance to inform decision-making at the landscape type level and help focus the approach of officers. Local variations in character (within a landscape type) will also need to be considered in relation to individual applications;
- the study does not negate the need for detailed considerations of landscape and visual impact on a case-by-case basis in relation to an individual application or part of an environmental statement.

Structure of this report

I.12. The report is presented in three parts.

Part 1: Introduction

- Introduction to the study.
- Method statement.
- The landscape character types.

Part 2: The Landscape Character Types: Key Characteristics, Sensitivity Judgements and Guidance

I.13. This is the main part of the report. It follows a standard format for each of the seven landscape types and includes:

- Location and boundaries.
- Matrices showing sensitivity judgements made against key characteristics of the landscape followed by a landscape sensitivity overview.
- Guidance on key sensitivities to wind turbine development. The guidance also notes any opportunities for such development with recommendations on siting and arrangements where appropriate, including a consideration of the effects of cumulative development.

Part 3: Summary

I.14. The report concludes with a summary of the results for the individual landscape types allowing conclusions to be drawn at the district scale to guide location of different types of turbine development.

2. METHOD STATEMENT

Introduction

- 2.1. This chapter sets out method for undertaking the study. Findings from the study will be used to inform policy and planning decisions and potentially be incorporated into preparation of a Supplementary Planning Document. The method adopted therefore aims to be transparent, robust and defensible.
- 2.2. There is clear guidance on landscape assessment as set out in the recent publication '*Landscape Character Assessment: Guidance for England and Scotland, The Countryside Agency and Scottish Natural Heritage 2002*'. The subsequent '*Topic Paper 6*': sets out further guidance on approaches to evaluating landscape sensitivity. Our method in South Norfolk builds on current best practice described in the Topic Paper and LUC's considerable experience from previous and ongoing studies, notably adaptation of methods developed for assessing sensitivity to wind turbine development in Scotland and a recent study for Breckland and King's Lynn & West Norfolk Councils.
- 2.3. The study is based on the existing South Norfolk Landscape Assessment at the Type level, supplemented by field work to collect additional information specifically relating to this study and provide the basis for the evaluation. It was piloted within the landscape character type *Rural River Valleys* and the results were reviewed by South Norfolk District Council. The agreed approach was then rolled out across the study area.

Determining Wind Turbine Typologies

- 2.4. The first task was to determine a range of generic wind turbine typologies against which the assessment of capacity could be undertaken. The study does not develop typologies based on individual commercial models but develops typologies based on features such as hub height, number and layout. It is based on an understanding of the industry and the types of models considered to be most efficient in the area and likely to come forward in future planning applications in South Norfolk. For the purposes of this study we have assumed a commercial turbine of up to 120m height. It is assumed that variations in height of + or – 20m will generally not be discernable on the ground. An indication of the size of turbine is provided in **Figure 2.1**.

- 2.5. Currently, the largest commercial on-shore turbines are a maximum of 120-150m height. The judgement in this study should therefore cover this maximum height range. It is unlikely that commercial turbines of a larger height will come forward. In some instances, for example in relation to a specific development, local renewable energy projects may include smaller turbines. The study specifically excludes building-integrated or turbines of <25m. Judgement should be exercised in extrapolating the results of this study to turbines of less than 100m. In general its main conclusions will be relevant, although in some cases local circumstances may mean that there are lower sensitivities, for example presence of screening elements.
- 2.6. Developments are therefore grouped into four broad types based on the number of commercial turbines – single, small scale, medium and large scale. The study specifically does not address small domestic installations or offshore developments.
- **Single Turbine** – a single turbine.
 - **Small Group** – a development of 2 – 6 turbines.
 - **Medium Group** – lower end, a development of 6-12 turbines. Upper end, a development of 12-25 turbines.
 - **Large Group** – a development of 25 plus turbines.
- 2.7. The four typologies single, small, medium and large are relative terms representing arbitrary divisions of a continuum; they have been developed simply as an aid to the evaluation and making of judgements. If a planning application is received on the threshold of a type, for example for 6 or 7 turbines the judgements for both a small and medium group of turbines should be reviewed. The term ‘group’ applies to a single development of turbines in close proximity (usually on a single site). In cases where applications are made for further turbines in relation to an existing development, the judgement will need to consider the total number of turbines (existing and proposed). If more than one turbine development is proposed in close proximity, i.e. more than one development being visible in a single view, each will need to be considered on its own merits and effect on landscape sensitivities. It should be noted that the sensitivity judgements in this report relate to the sensitivity of the landscape to one single development. The report sets out separate recommendations on cumulative development.
- 2.8. A commercial wind turbine development may include a range of ancillary structures such as access tracks, power/pylon lines, sub stations, fencing, anemometers. Built structures such as sub stations maybe located on site or off site.
- 2.9. These generic typologies were taken forward to allow visualisation of the effect of different scales of development within the landscape.

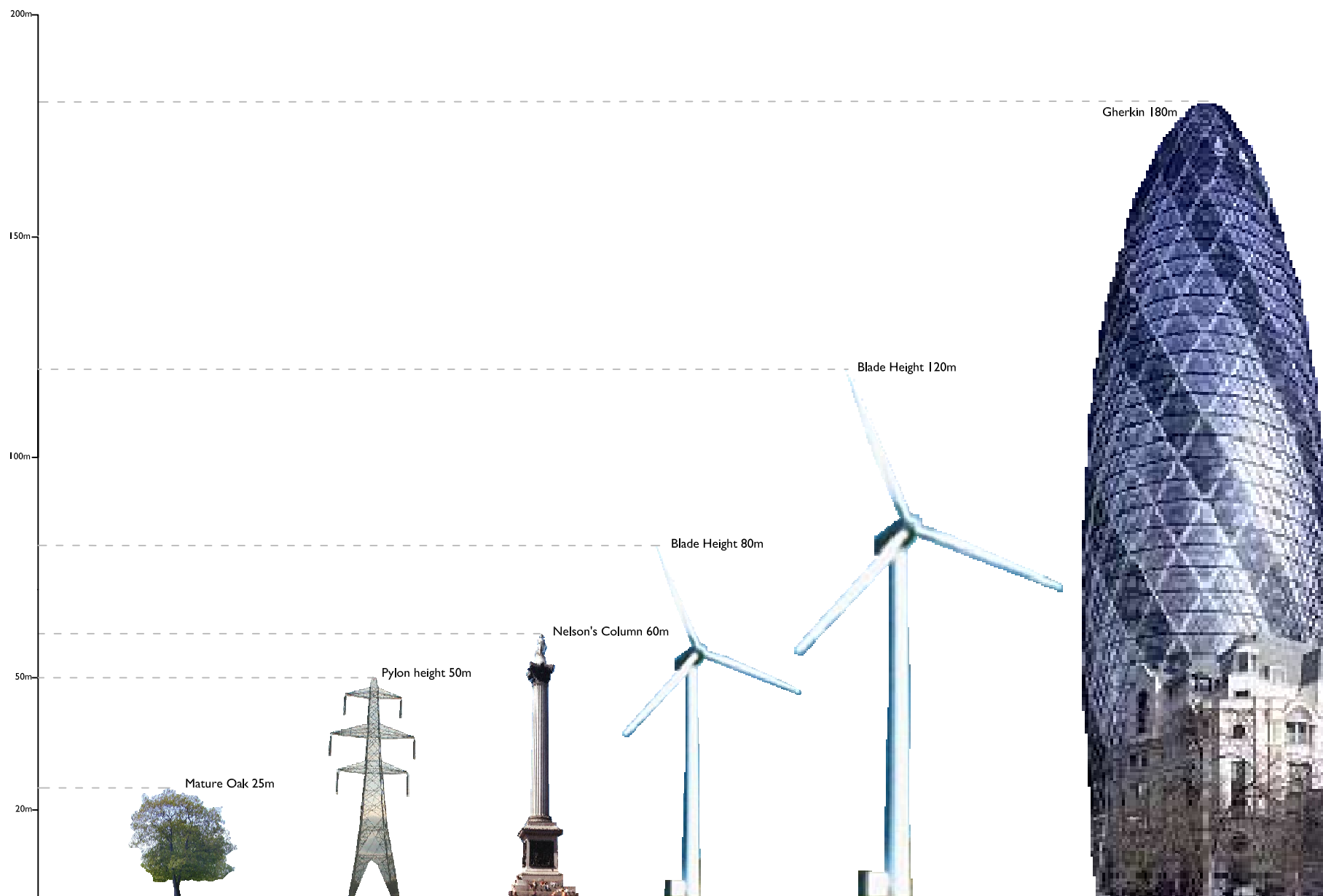


Figure 2.1 Turbine Height Comparisons 1:1250@A3

Identifying attributes likely to be sensitive to wind turbine development

- 2.10. Topic Paper 6 states that in making judgements on overall landscape sensitivity careful consideration needs to be given to two aspects:
- landscape character sensitivity;
 - visual sensitivity.
- 2.11. For the purposes of this study the particular attributes of the landscape likely to be sensitive to wind turbine development have been identified under the following headings:

| <i>Landscape Character</i> | <i>Visual</i> |
|--|--|
| <ul style="list-style-type: none">• Scale and Enclosure | <ul style="list-style-type: none">• Relationship to prominent Built Structures and Landmarks |
| <ul style="list-style-type: none">• Landform and Topography | <ul style="list-style-type: none">• Skyline |
| <ul style="list-style-type: none">• Land Cover Pattern | <ul style="list-style-type: none">• Views and Visual Connections with Adjacent Landscapes |
| <ul style="list-style-type: none">• Settlement Pattern and Density | |
| <ul style="list-style-type: none">• Remoteness and Tranquillity | |

These headings are closely linked and to an extent interchangeable, for example information on scale and enclosure and land cover will influence the extent that any development is visible within the landscape.

Desk Study – Review of the Landscape Character Assessment

- 2.12. The study is based on the South Norfolk Landscape Assessment Volume I Landscape Types of South Norfolk District June 2001 which identified seven landscape types across the District. The review of the assessment considered:
- the appropriateness of the existing classification for the purpose of assessing sensitivity to turbine development;

- reviewing the key characteristics and descriptions to elucidate those key characteristics to be taken forward as part of the sensitivity analysis.

2.13. The initial desk study confirmed that the classification was appropriate for the study, although noted a number of variations within the landscape types, which would need to be considered in the evaluation. The desk study identified key characteristics under each of the headings set out in para. 2.10 (above). The results provided a checklist to inform the field survey and provided the basis for the analysis.

Field survey

2.14. A tailored field survey sheet (Appendix I) was developed to provide a consistent structured means of collating information and making judgements. A rapid survey of each landscape type was undertaken to verify information obtained from the desk study and collect additional information where gaps had been identified, specifically in relation to aspects of the landscape likely to be sensitive to turbine developments.

Sensitivity analysis

2.15. In this study, sensitivity is defined as the extent to which the character of the landscape is vulnerable to being changed as a result of wind turbine development. It is an indication of the overall robustness of the landscape and the extent that it can accommodate wind turbine development. It is an overall judgement and recognises that some attributes of the landscape may be more important in defining character than others and may be more sensitive. The judgement is not therefore a simple sum of the sensitivity of all attributes and is based on transparent professional analysis, rather than any form of scoring system. The judgements on sensitivity were made on a three-point scale:

Low – key characteristics of the landscape are robust and would not be adversely affected by turbine development. The landscape would be able to accommodate development without a significant change in character.

Moderate – key characteristics of the landscape are vulnerable and maybe adversely affected by turbine development. The landscape may have some ability to absorb types of wind energy development without a significant change in character.

High - key characteristics of the landscape are fragile and would be adversely affected by turbine development. Wind turbine development would be likely to result in a significant change in character.

- 2.16. For each of the seven landscape types, a matrix was developed to assess the sensitivity of each of the characteristics to the 4 types of wind energy development.

| Key Characteristics of the landscape | Single Turbine | Small Group | Medium Group | Large Scale Group |
|---|----------------|-------------|--------------|-------------------|
| Scale and Enclosure | | | | |
| Landform and Topography | | | | |
| Land Cover Pattern | | | | |
| Settlement Pattern and Density | | | | |
| Prominent Built Structures and Landmarks | | | | |
| Skyline | | | | |
| Views and Visual Connections with Adjacent Landscapes | | | | |
| Remoteness and Tranquillity | | | | |
| Overall Sensitivity Judgement | | | | |

- 2.17. The sensitivity judgements relate to broad thresholds of change rather than absolutes. **It should be noted that guidance contained in any single row of the table should not be considered in isolation. The sensitivity of the combination of landscape characteristics (each column) should be considered in forming a judgement about overall sensitivity of the landscape to each scale of development. However, the judgement is not simply an average for all the characteristics in any column - as some characteristics maybe deemed to be so sensitive that they have an overriding influence on the overall sensitivity of the landscape.**

Providing guidance

- 2.18. For those landscape types where sensitivity is identified to be low or moderate, guidance notes are provided on the siting, form and arrangement of turbines and their associated ancillary structures. Guidance is not provided for the landscape types where overall sensitivity is judged to be high, as these areas are considered to be least suitable for the location of wind turbine developments.

3. THE LANDSCAPE TYPES

Landscape classification

- 3.1. Land Use Consultants carried out a landscape character assessment of South Norfolk, at the type level, in 2001. The district-wide assessment identifies seven landscape types. Each type represents a generic landscape that has a common combination of geology, topography, vegetation and human influences. The seven landscape types are the building blocks for this study and provide the baseline for assessing sensitivities to wind turbine development. The landscape types are indicated below and illustrated on **Figure 3.1**.

| | Character Area | Chapter | Page no. |
|----|----------------------------------|----------------|-----------------|
| A: | Rural River Valleys | 4 | 13 |
| B: | Tributary Farmland | 5 | 19 |
| C: | Tributary Farmland with Parkland | 6 | 29 |
| D: | Settled Plateau Farmland | 7 | 39 |
| E: | Plateau Farmland | 8 | 49 |
| F: | Valley Urban Fringe | 9 | 57 |
| G: | Fringe Farmland | 10 | 65 |

Format

- 3.2. The information in each landscape type is presented in the following format.

Location and boundaries

- 3.3. The introductory paragraph describes the location of the landscape type within the study and the nature of the boundaries including relationship to adjoining landscape types. The more detailed character areas, which lie within the landscape type are listed.

Key characteristics

- 3.4. The key characteristics are taken directly from the landscape assessment and are presented as bullet points summarising the fundamental characteristics of each landscape type.

Sensitivity to turbine development

- 3.5. Considers the sensitivity of key characteristics of the landscape to different scales of wind turbine development.

Guidance

- 3.6. The identified sensitivities of the landscape are used to generate guidance on siting and form of turbine development appropriate to landscape character.

Cumulative development

- 3.7. Provides summary notes on the potential for the landscape to accommodate cumulative development.

Key characteristics

- 3.4. The key characteristics are taken directly from the landscape assessment and are presented as bullet points summarising the fundamental characteristics of each landscape type.

Sensitivity to turbine development

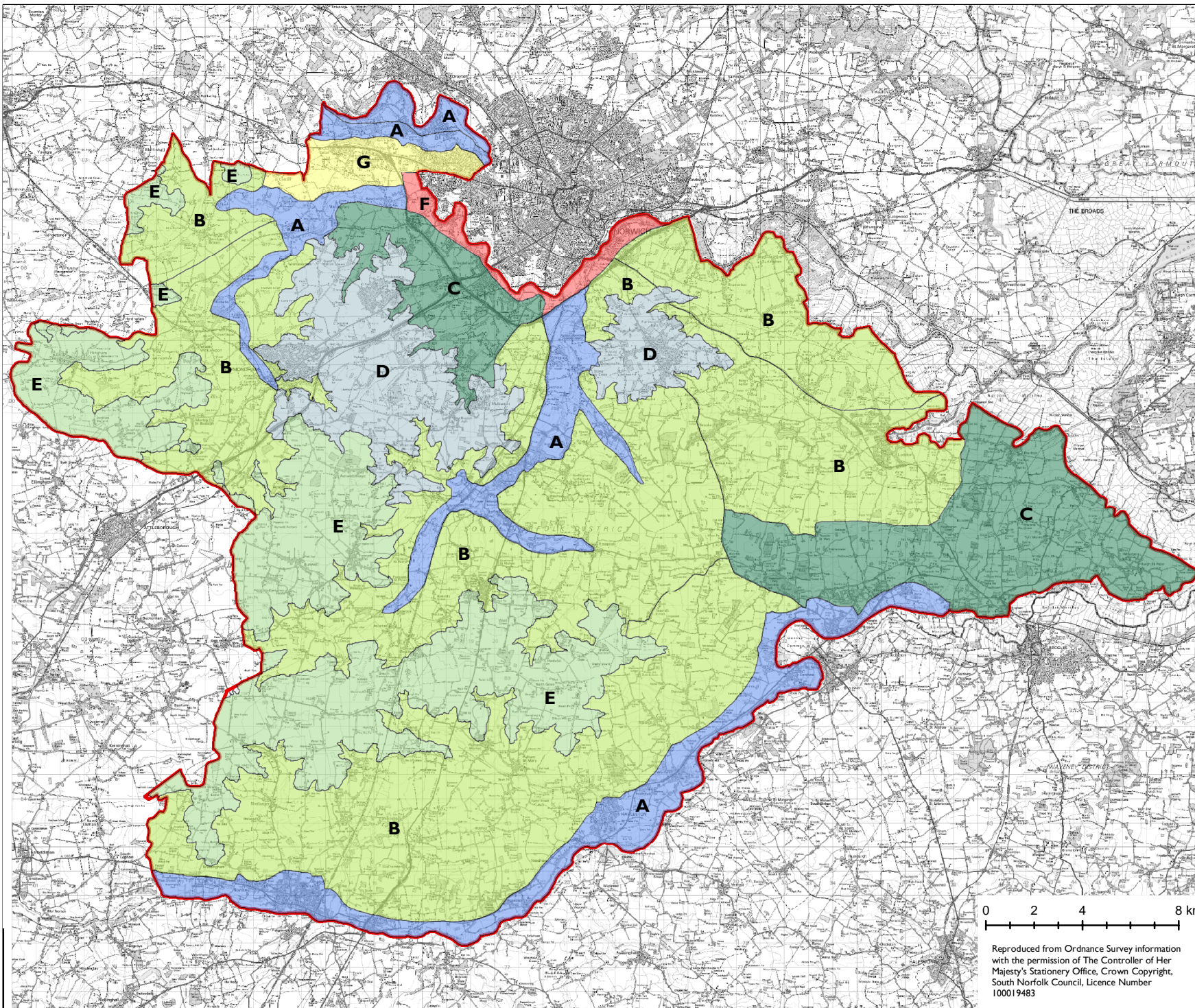
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Guidance

- 3.6. The identified sensitivities of the landscape are used to generate guidance on siting and form of turbine development appropriate to landscape character.

Cumulative development

- 3.7. Provides summary notes on the potential for the landscape to accommodate cumulative development.



South Norfolk Wind Turbine Sensitivity Study

Figure 3.1: South Norfolk Landscape Types

Key

District Boundary

Landscape Types

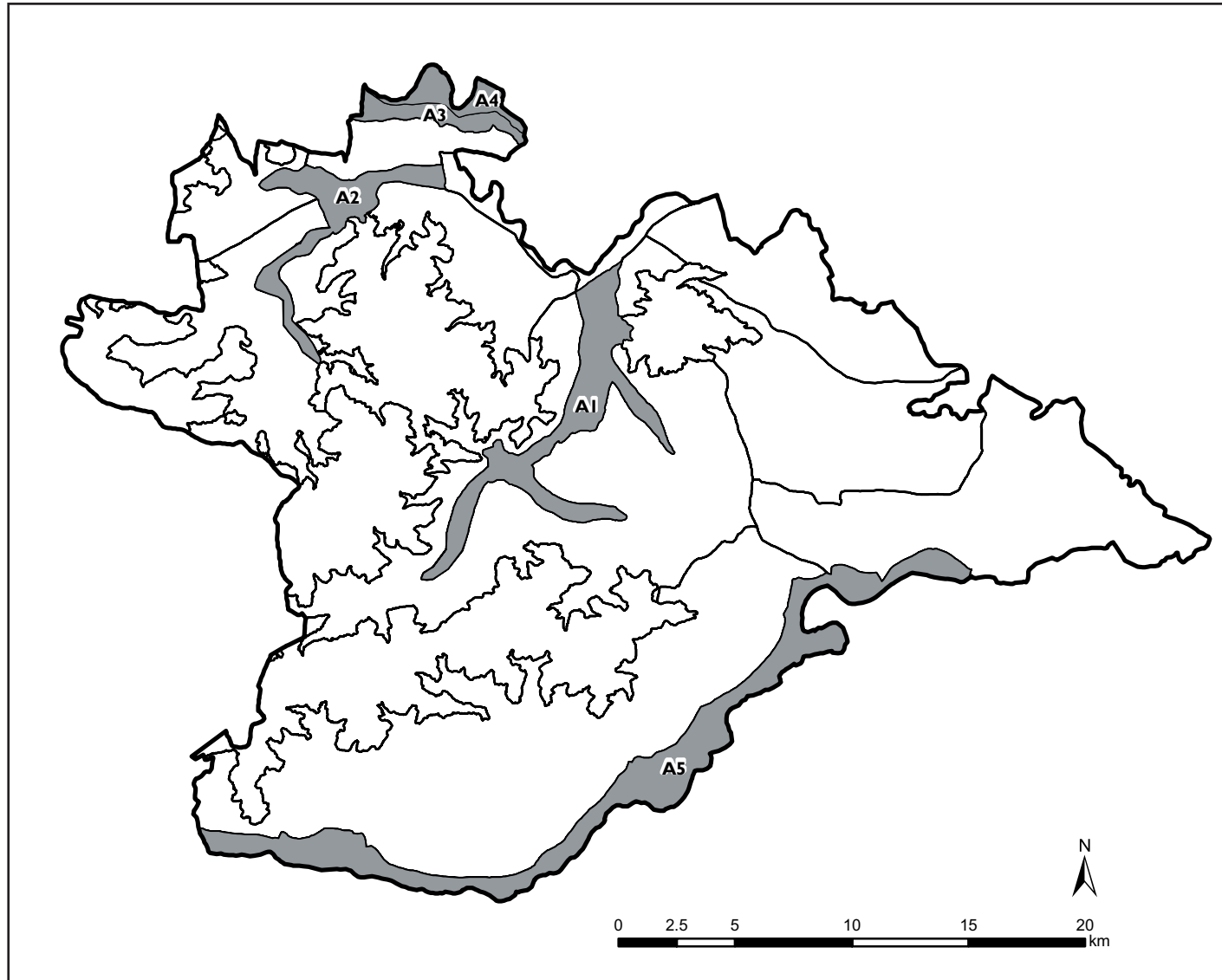
- A: Rural River Valley
- B: Tributary Farmland
- C: Tributary Farmland with Parkland
- D: Settled Plateau Farmland
- E: Plateau Farmland
- F: Valley Urban Fringe
- G: Fringe Farmland

0 2 4 8 km

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Landscape Type A: Rural River Valleys



4. LANDSCAPE TYPE A: RURAL RIVER VALLEYS

LOCATION AND BOUNDARIES

- 4.1. The Rural River Valley Landscape Type is very important in giving spatial definition to and creating variety within the South Norfolk Landscape. There are five areas which correspond to this landscape type, the boundary of this landscape type is defined primarily by topography and corresponds with the upper crest of the valley side, which generally occurs below the 30m AOD contour.

Character Areas within the Landscape Type

- A1: Tas Rural River Valley
- A2: Yare/Tiffey Rural River Valley
- A3: Tud Rural River Valley
- A4: Wensum Rural River Valley
- A5: Waveney Rural River Valley

SENSITIVITY TO WIND TURBINE DEVELOPMENT

- 4.2. The following table considers the key characteristics of the landscape type under each of the eight attributes identified as being potentially sensitive to turbine development. The sensitivity of each characteristic of the landscape has been evaluated in relation to five different scales of turbine development: single (1 turbine), small (2-6 turbines), medium (6-12 turbines), medium-large (12-25 turbines) and large (25+ turbines).
- 4.3. Considering each characteristic independently results in a comprehensive, integrated assessment and provides a detailed understanding of the sensitivity of the landscape and the reasons for its sensitivity. **Note that it is the combination of key characteristics that**

should be considered (i.e. each column) in forming a judgement about sensitivity to turbine development. The guidance contained in any single row of the table, should not be considered in isolation.

- 4.4. Note that where a high sensitivity is made for a single turbine this is likely to remain the same for a greater number of turbines and is not repeated (in the table). Any differences in relation to a larger number of turbines are noted.

| | Single Turbine | Small Group | Medium Group | | Large Group |
|--|--|-------------|--------------|-------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Scale and Enclosure <ul style="list-style-type: none"> A semi-enclosed landscape with some long views within the valleys but restricted views out. Areas of more intimate character on the valley floor. Some river valleys less enclosed than others e.g. A1 Tas and the wider A5: Waveney Valley. | High The small scale- semi enclosed landscape is typical of the South Norfolk river valleys. A single turbine is highly likely to dominate the overall valley scale and would occupy a large proportion of the zone of visibility within river valley views. | High | High | High | High |
| Landform and Topography <ul style="list-style-type: none"> Distinct valley landform created by glacial and fluvial activity with wide, flat valley floodplain and sloping valley sides with the crest typically at just below the 30m contour. | High There is also no obvious functional purpose for a turbine – the valleys being sheltered from wind. Even where the valley floor is relatively wide a turbine could be very dominant in relation to the scale of the valley. Similarly the valley crests are important in defining the enclosure of the valley and would be over- powered by the imposition of a tall structure on the skyline. | High | High | High | High |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|--|---|-------------|--------------|-------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Land Cover Pattern <ul style="list-style-type: none"> • Distinctive land cover – small scale field pattern and prevalence of grazed pastures on the valley floor, with mix of arable and pasture on the valley sides. • Characteristic ecological assemblages – reeds and marsh, wet meadows/pastures, woodland plus areas of heathland. High ecological value recognised in designations (SAC/SSSI's) • Willow pollards and lines of poplar flank ditches and watercourses. • Some areas of active mineral working and open water associated with mineral extraction sites, for example in A3: Tud and A4: Wensum valleys. | High The river valleys contain land cover elements uncommon in the district (wetland vegetation, heathland and wet meadows/pastures) and of high ecological value. These elements would all be highly sensitive to change or any form of development. The small scale irregular land cover would make it difficult to link or connect a turbine to particular features. The semi-industrial character of areas under excavation for sand and gravel may be less sensitive to a small single turbine, for example by linking to visitor infrastructure associated with after use of restored land. | High | High | High | High |
| Settlement Pattern and Density <ul style="list-style-type: none"> • Settlements predominantly small and nucleated of strong vernacular character with scattered farms on the valley floor and linear settlements at the valley crests. • Medium sized market towns characteristic of the Waveney Valley. | High Settlement is predominantly small scale and nucleated. A single turbine would dominate individual buildings and clusters of development. In the Waveney Valley, the larger market towns that have expanded beyond the immediate valley crests maybe less sensitive to a small single turbine, although careful siting would be essential to avoid adverse impacts on valued townscape elements and setting. | High | High | High | High |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|---|--|-------------|--------------|-------|---|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Prominent Built Structures and Landmarks <ul style="list-style-type: none"> Landmark features include windmills, round-towered churches, watermills and historic river crossings (bridges and fords). More recent prominent built structures include the main roads that follow some valley corridors including the A140 and rail line within A1: Tas Valley and A1066 and A143 of the A5: Waveney Valley. Other valleys are less accessible. The Norwich Southern Bypass is a new feature making the periphery of the A1: Tas Valley and A2: Yare/Tiffey valley. Pylons, where present are dominant within the context of the valley setting. | High The presence of distinctive landmark features including windmills, churches, mills give a high sensitivity. The site, setting and views to these features should be conserved. The construction of further vertical features could result in visual clutter. In theory the presence of main roads could provide a focus to anchor turbine development, however care in siting and design would be critical particularly to maintain the uncluttered valley ridges and skylines. The rural character of the landscape in the vicinity of the Norwich Southern Bypass should also be respected. | High | High | High | High |
| Skyline <ul style="list-style-type: none"> The valley crests form a skyline in views from the valley floor marking the transition to the adjacent landscape type. In A5: Waveney Valley - a series of churches on the ridgeline form a prominent landmark. Skyline is usually undeveloped creating a rural context. Woodland along the valley crest is a key feature of A3: Tud River Valley. | High The open skyline is important in contributing to the rural character of the valleys. Any form of vertical development on the valley crest could appear over dominant and disrupt the scale of the valleys. In addition, views to landmark features on the skyline such as churches would be cluttered skyline development. | High | High | High | High A large scale group would dominate both the tree-lined and open character of the skylines. |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|---|---|-------------|--------------|-------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Views and Visual Connections with Adjacent Landscapes <ul style="list-style-type: none"> Views within the valleys vary from long range and open to some more enclosed, confined views. Views frequently include landmark features. Views into adjacent landscapes are for the most part restricted by the ridges marking the limits of the valleys. There are some views into the valleys from the surrounding higher land. Key views from Waveney Valley into The Broads. | High A turbine would be dominant in the context of the channelled valley views. It would also have potential to disrupt the views of landmark features. However the adjacent landscape types are generally not considered sensitive to this scale of development, with the key exception of The Broads (in relation to the Waveney Valley). | High | High | High | High |
| Remoteness and Tranquillity <ul style="list-style-type: none"> Although not remote, the generally quiet character, low density of settlement contribute to the perception of an intimate, tranquil rural landscape within the River Valleys. | High This is a very quiet and tranquil landscape – a single turbine could interrupt this character. | High | High | High | High |

LANDSCAPE SENSITIVITY OVERVIEW

Single Turbine, Small Group, Medium Group and Large Group

The evaluation of sensitivities indicates that the *River Valleys* landscape type overall has a **high sensitivity** to all scales of turbine development.

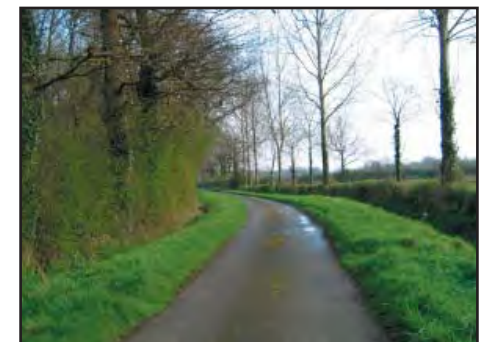
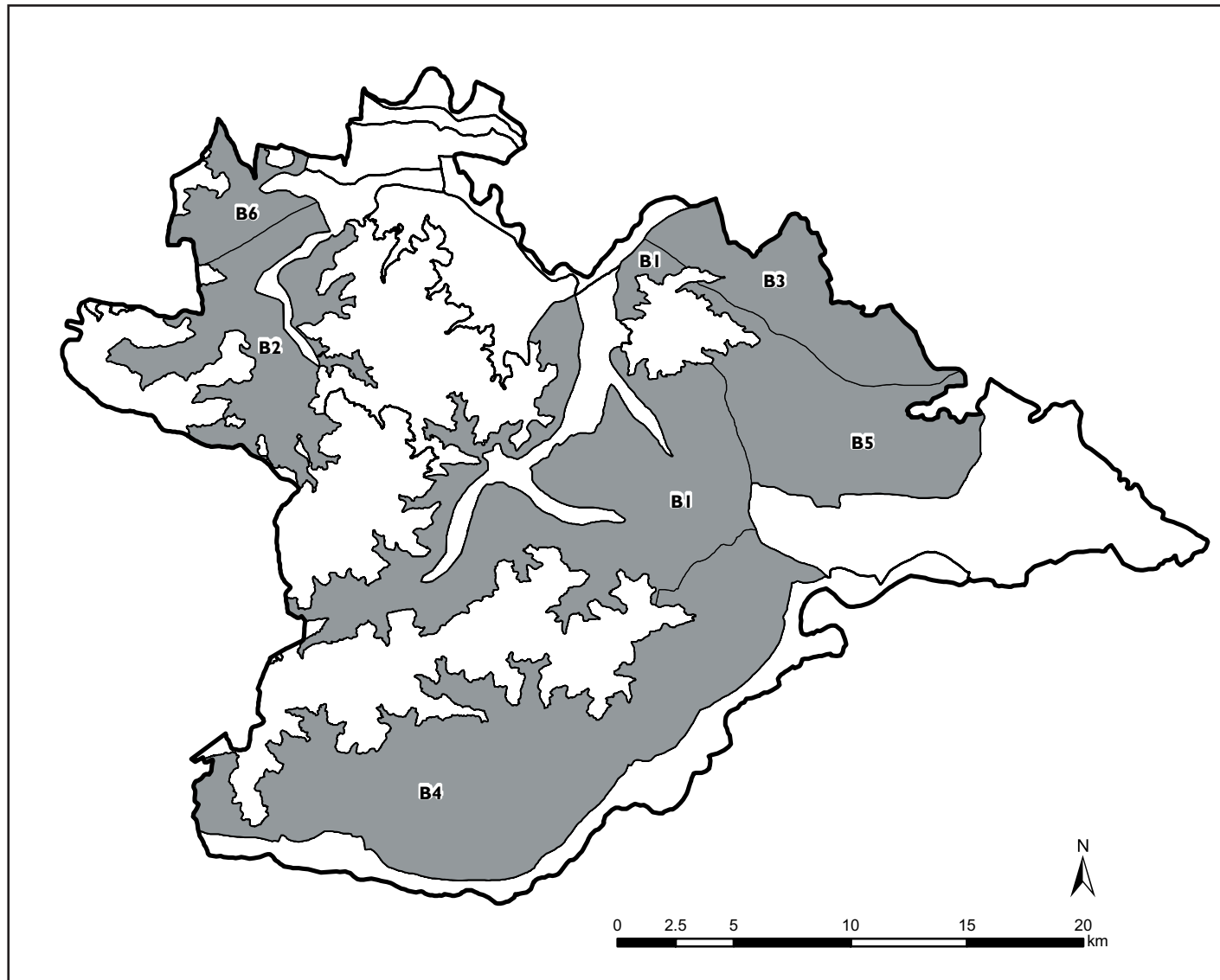
Within South Norfolk the River Valley landscapes have a very distinctive character and strong sense of place. They contain a large number of important (rare) features including landmark features such as windmills, round towered churches and mills as well as diverse habitats of wetland, woodland and heathland. The grazed, pastoral valleys floors contrast strongly with the arable dominated farmland of the majority of the District. In addition, they retain an intact rural character, which in places is highly tranquil and undisturbed. It is suggested that large scale development of vertical structures would have a detrimental impact on the special character and qualities of the river valleys.

This is an intimate and enclosed landscape within which wind turbines would be incongruous and dominate the overall small scale character of the valleys. Due to the valley landform, a turbine or turbines would occupy and dominate the restricted zone of visibility and this could also result in turbines appearing much closer to settlements than is actually the case. This is particularly apparent when compared to other, more open landscapes that provide extensive and unrestricted views and provide greater opportunity to site turbines further from settlements. The importance of retaining and uncluttered setting and views to key landmark features is a further consideration. A further key factor determining the unsuitability of the *River Valleys* landscape to turbine development is the lack of any sense of turbines performing a functional role such as is evident in open landscapes where both the speed of and exposure to wind is considerably greater – evoking a more rational, functional image.

GUIDANCE

- 4.5. The Rural River Valleys have a **high** sensitivity to any form of wind turbine development and further guidance is therefore not provided. Landscapes that are judged to have low or moderate sensitivity are considered more appropriate for the location of turbines.

Landscape Type B: Tributary Farmland



5. LANDSCAPE TYPE B: TRIBUTARY FARMLAND

LOCATION AND BOUNDARIES

- 5.1. The tributary farmland occupies a large extent of the South Norfolk landscape occurring across the whole of the district. It is a broad transitional landscape type defined by the plateau uplands and river valleys, lying between 20m and 50m AOD.

Character Areas within the landscape type:

- Tas Tributary Farmland (B1)
- Tiffey Tributary Farmland (B2)
- Rockland Tributary Farmland (B3)
- Waveney Tributary Farmland (B4)
- Chet Tributary Farmland (B5)
- Yare Tributary Farmland (B6)

SENSITIVITY TO WIND TURBINE DEVELOPMENT

- 5.2. The following table considers the key characteristics of the landscape type under each of the eight attributes identified as being potentially sensitive to turbine development. The sensitivity of each characteristic of the landscape has been evaluated in relation to five different scales of turbine development: single (1 turbine), small (2-6 turbines), medium (6-12 turbines), medium-large (12-25 turbines) and large (25+ turbines).
- 5.3. Considering each characteristic independently results in a comprehensive, integrated assessment and provides a detailed understanding of the sensitivity of the landscape and the reasons for its sensitivity. **Note that it is the combination of key characteristics that**

should be considered (i.e. each column) in forming a judgement about sensitivity to turbine development. The guidance contained in any single row of the table, should not be considered in isolation.

- 5.4. Note that where a high sensitivity is made for a single turbine this is likely to remain the same for a greater number of turbines and is not repeated (in the table). Any differences in relation to a larger number of turbines are noted.

| | Single Turbine | Small Group | Medium Group | | Large Group |
|--|---|---|---|-------|-------------|
| Key Characteristics of the Landscape | 1 | 2-6 | 6-12 | 12-25 | 25+ |
| Scale and Enclosure <ul style="list-style-type: none"> Transitional landscape occupying the mid ground between the upland plateaux and the main river valley landscapes providing opportunities for long and framed views. Contrasting sense of enclosure from small scale and enclosed in the wooded valleys to wider, more open areas across large arable fields on higher ground. Woodland blocks impart a semi-wooded, semi-enclosed character too much of the area. | Moderate Sensitivities are greater in the intervening tributary valleys, where the vertical scale/size would conflict with the intimate scale of the valleys. The more open, large-scale landscape on the higher ground of the tributary farmland is not sensitive to a single turbine. | Moderate Sensitivities are greater in the tributary valleys. The more open, large-scale landscape on the higher ground of the tributary farmland is not sensitive to a small group of turbines. | High A medium group of this size or larger is likely to over dominate and alter the existing balance between contrasting areas of openness and enclosure within the landscape. This landscape type is therefore sensitive to a development of > 6 turbines. | | |
| Landform and Topography <ul style="list-style-type: none"> Varied landform from flat to gently undulating, sloping towards tributary valleys, Tributary rivers cutting through the glacial till to create a landscape of restrained variety. Lies predominantly between 20m and 50m AOD. | Moderate Sensitivity is higher where landform is more undulating and particularly in relation to the valley crests where a turbine could appear awkward and visually | Moderate A small-medium group could be accommodated in relation to the flatter areas of landform. Sensitivity is greater in relation to the tributary valleys | High There is potential for multiple turbines to appear visually inconsistent in relation to the sloping topography. | | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|---|---|--|--|-------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| | dominant The open plateau areas are not sensitive to a single turbine. | and valley crests where it would be difficult to arrange a group of turbines so they appear visually consistent. | | | |
| Land Cover Pattern <ul style="list-style-type: none"> Varied pattern from small scale, intricate network of fields/hedgerows in tributary valleys and around settlements to large, open fields on higher ground. An intricate network of narrow, winding rural lanes often bounded by banks or ditches with a sense of impenetrability. Tributaries elusive – evident but usually hidden within the landscape by topography or trees. Medium to large-scale arable farmland of cereals and occasional fields of other crops with sparse and/or overgrown hedgerows and hedgerow trees. Remnant parkland, which sometimes relates to former deer parks, plus areas of common land. High proportion of important ecological assemblages protected as SSSIs including woodland and wetland habitat. | Low A single turbine could be absorbed within the landscape pattern. There are sufficient visual cues to which a single turbine could relate, e.g. small woodland blocks, hedgerow lines, and field pattern. The woodland and wetland assemblages are, however, especially sensitive. | Moderate The hedgerow network (which form boundaries to medium-large arable fields) provides a pattern of lines or edges to which a small-scale group could be related. The more intimate land cover pattern associated with the tributary valleys, plus woodland and wetland assemblages are sensitive. | High A medium to large-scale group would overwhelm and confuse the existing land cover pattern. | | |
| Settlement Pattern and Density <ul style="list-style-type: none"> Dispersed but evenly distributed settlement pattern of small, nucleated villages and farmsteads, occasionally with | Low A single turbine could form a landmark and be | Moderate The small settlements are sensitive to more | High A medium to large group would be out of scale within this landscape even if located away from settlements, as it would overwhelm the density of built form. | | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|--|--|---|---|-------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| <p>large agricultural buildings.</p> <ul style="list-style-type: none"> • Compact villages and small towns, either located sheltered in valleys or more frequently on valley sides. • Mixed architectural character comprising modern bungalow development and traditional vernacular architecture with gable ends (predominantly stepped) and other vernacular influences such as brick and flint and isolated churches. | <p>linked to agricultural buildings or edges of larger villages or small towns – providing a functional role within the landscape.</p> | <p>than one turbine, which would be over -dominant in relation to settlement scale. However, there is scope to site away from settlements.</p> | | | |
| <p>Prominent Built Structures and Landmarks</p> <ul style="list-style-type: none"> • The farmsteads often include large industrial agricultural buildings, which can disrupt the small scale. • Pylons and poles interrupt the landscape wherever they are present, notably towards the northern part of the district. • Elements of vernacular interest including round and square towered churches located at villages or isolated are visible when occurring on higher ground. • Important views to landmarks such as Wymondham Abbey and Wicklewood Windmill that provide a sense of place. | <p>Moderate Sensitive elements include the views to and setting of the distinctive churches and landmarks. However, a single turbine could be sited away from these elements or link to large agricultural buildings to provide a functional role. Care should be taken to not to create visual clutter in relation to existing poles and pylons.</p> | <p>Moderate Sensitive elements include the views to and setting of the distinctive churches and landmarks. However, a small group could be sited away from these elements or link to large agricultural buildings to provide a functional role. Care should be taken to not to create visual clutter in relation to existing poles and pylons.</p> | <p>High There are no other features to which this size group could compare or relate to in the landscape. The presence of important buildings such as isolated churches; SAMs and other features of vernacular or archaeological interest or their setting require protection from visual intrusion and disturbance.</p> | | |
| <p>Skyline</p> <ul style="list-style-type: none"> • The skyline varies across the landscape | <p>Low The skyline is</p> | <p>Low to Moderate A small group (2 –</p> | <p>High The high sensitive rating relates for the potential of</p> | | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|--|--|--|--|-------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| <p>type from clear to interrupted by woodland blocks and undulations in landform.</p> <ul style="list-style-type: none"> In the enclosed tributary valleys the skyline can include prominent valley crests. | <p>varied - a single turbine would therefore not have an adverse effect on skyline character, except in the case of some tributary valleys where the crests are visually sensitive to large-scale development.</p> | <p>3 turbines) would not dominate the skyline and could be linked to existing linear features such as woodland blocks. The valley crests are however particularly sensitive. The landscape would potentially be more sensitive to a group of more than 3 turbines.</p> | <p>medium to large groups of turbines to dominate and overwhelm the skyline.</p> | | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|--|--|--|---|-------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Views and Visual Connections with Adjacent Landscapes <ul style="list-style-type: none">Transitional landscape occupying the mid ground between the upland plateaux and the main river valley landscapes providing opportunities for long and framed views.Within these landscapes views are across arable fields to sloping valley sides and down to small scale wooded tributary valleys.Framed and open, long ranging views across the countryside and into adjacent character areas, in particular to adjoining Tributary Farmland and to important landmarks including Wymondham Abbey.Strong visual influence of the adjoining Broads, in particular in the north at character areas B3 and B5 and to Norwich character areas B1 and B3. | Low Internal views and views to and from adjacent landscapes are not considered to be sensitive to single turbine development. There are however, key sensitivities in relation to views to Norwich and views to The Broads. | Moderate A small group of turbines would begin to occupy a large proportion of the visibility zone, interrupting open, internal views. A group of turbines would conflict with sensitive views to small-scale valleys within the character area and beyond to connecting landscapes. | High This scale of development would occupy a large amount of the visibility zone, appearing dominant and overwhelming within this landscape, A medium to large group could not be located away from adjacent landscapes. It is likely that sensitive views to The Broads and to the edge of Norwich would be adversely affected. | | |
| Remoteness and Tranquillity <ul style="list-style-type: none">For the most part the landscape is peaceful, rural and tranquil.Well served by a network of secondary roads plus main A roads. The roads bring a source of movement locally. | Low This is not a remote landscape – a single turbine could relate to existing sources of movement in the landscape such as the main roads, settlements and would not effect overall rural tranquillity. | High It is likely that this scale of development could have an impact on the tranquillity of the wider landscape. The landscape is especially sensitive to larger scale developments due to its strong rural and tranquil character. | | | |

LANDSCAPE SENSITIVITY OVERVIEW

Single Turbine

Overall it is judged that the Tributary Farmland landscape type has a **low –moderate sensitivity** to location of a single turbine.

A single turbine could be accommodated providing it does not impinge on the sensitive tributary valleys or views from the adjoining Broads. The gently sloping topography and small scale enclosure within the tributary valleys makes these areas more sensitive to visual intrusion by tall and large elements. There is greater scope to locate a single turbine on the contrasting flatter, larger scale areas within this character type. Although the land cover is not as strong or apparent as other landscape types there are sufficient cues or points that would aid the integration of a single turbine. The site and setting of churches are sensitive and key views should be protected from intrusion of vertical structures.

Small Group

Overall it is judged that the Tributary Farmland landscape type has a **moderate** sensitivity to location of a small group of turbines (2-6 turbines). This landscape is sensitive to due to the strong rural and tranquil character of much of the landscape and sensitive views to and from the wider landscape. The tributary valleys, views to The Broads and the site and setting of churches are also key sensitivities. There may be some limited opportunity for the lower end of a small scale group (no more than 2 or 3) to be located on more open, flatter ground where such a development could form a landmark feature.

Medium to Large Group (> 6 turbines)

Overall it is judged that the Tributary Farmland landscape type has a **high sensitivity** to medium groups (6-12) and (12-25) and large groups (25+) of turbines. Key sensitivities are the strong rural and tranquil character, quiet enclosed tributary valleys, density and distribution of settlement, the setting of landmarks such as churches, views to and from The Broads. It is considered that any development of this scale would have an adverse effect on the key attributes of the landscape.

GUIDANCE

Single Turbine (1 turbine)

- 5.5. The Tributary Farmland landscape is considered to have a **low - moderate sensitivity** to a single turbine. In considering an appropriate location for a single turbine within this landscape type, the guidance set out below should be followed.
- Respect key views such as to The Broads or Norwich;
 - Avoid sensitive tributary valleys and valley crests which have a smaller scale and more intimate character;

- Respect the site and setting of key landmark features such as churches;
- Consider locations in relation to the flatter, less sensitive areas of landform;
- Relate or respond to existing points of focus that occur in the landscape such as the agricultural buildings, blocks of woodland;
- Consider opportunities to locate as a landmark feature, particularly in open, flatter areas which contain fewer distinguishing features;
- Relate to existing sources of movement within the landscape, e.g. along A roads.

5.6. **Cumulative Development:** There is some scope for cumulative development within this landscape type. The areas with greatest potential are the open, flatter and larger scale areas of the landscape, in particular where a single turbine could be linked to an existing feature such as agricultural buildings to provide a functional image. Single turbines should act as landmark features within this landscape and more than one turbine in any one view, and therefore in any one character area should be avoided. It is recommended that landmarks should remain as infrequent features or 'surprise views' rather than regular features in the landscape.

Small Group (2-6 turbines)

5.7. The Tributary Farmland landscape is considered to have a **moderate sensitivity** to a small-scale group of turbines. It is likely that only the lower end of this scale (2 – 3 turbines) will be appropriate. In considering an appropriate location for a small-scale group of turbines within this landscape type, the guidance for a single turbine applies. In addition, the guidance set out below should be followed.

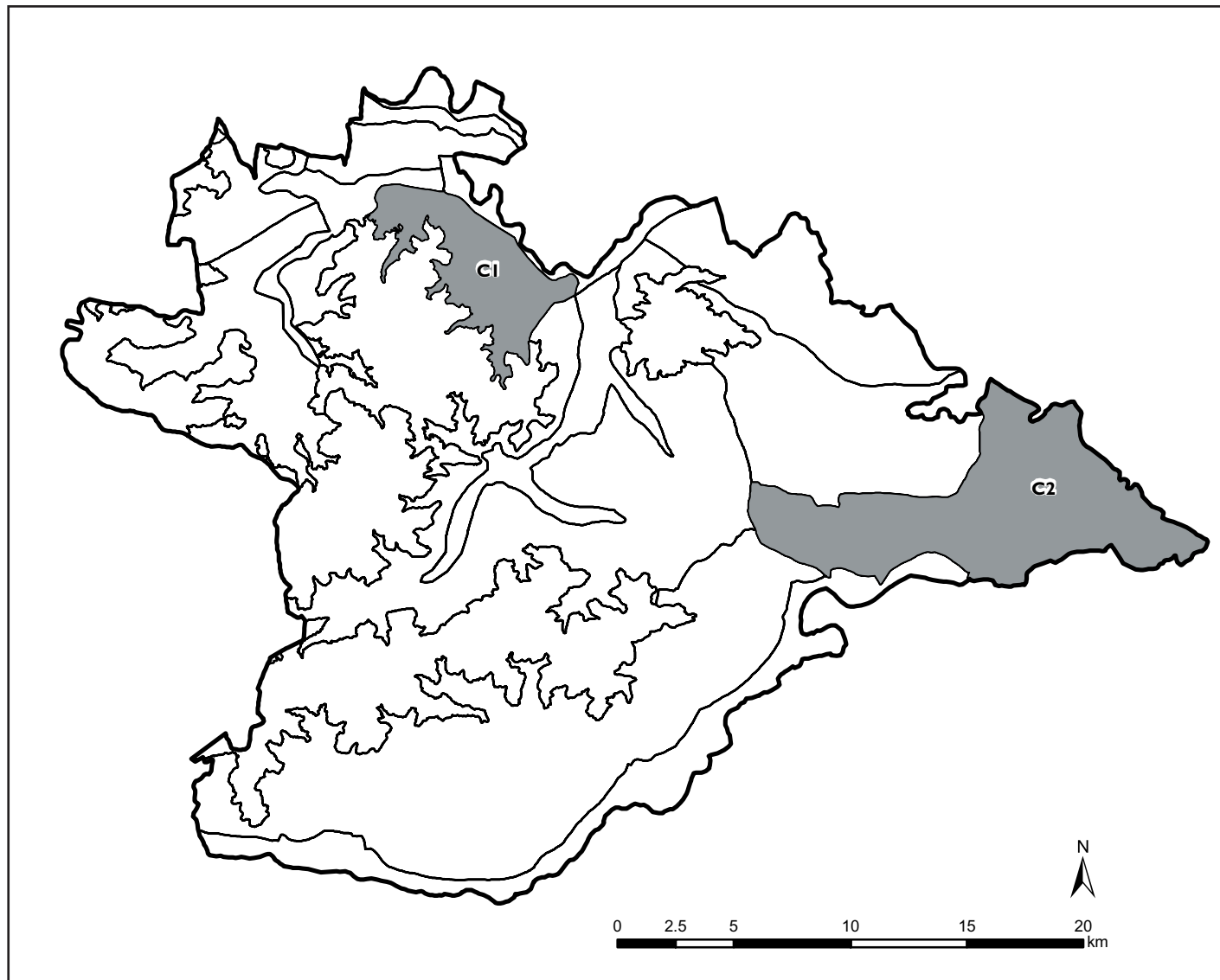
- Respect the rural and tranquil character of the tributary farmland landscape – there may be some opportunities for this scale of development in relation to existing sources of movement or on the more open flatter areas of the landscape;
- Respect the sensitive views across the landscape and into adjacent character areas, in particular to adjoining River Valleys, The Broads and Norwich and to important landmarks including Wymondham Abbey and the setting of churches.

5.8. **Cumulative Development:** There is limited scope for cumulative development due to the generally rural, tranquil character of the landscape. More than one small- scale group of turbines in any one view, and therefore in any one character area should be avoided.

Medium and Large Groups (6+ turbines)

- 5.9. The Tributary Farmland has a **high sensitivity** to medium and large turbine groups and this landscape type is not considered as an appropriate location for a development of this scale. Further guidance is therefore not provided.

Landscape Type C: Tributary Farmland with Parkland



6. LANDSCAPE TYPE C: TRIBUTARY FARMLAND WITH PARKLAND

LOCATION AND BOUNDARIES

- 6.1. The Tributary Farmland with Parkland landscape type occupies two discrete areas of landscape, one in the east and one in the west towards the north of the district. It shares many of the characteristics of the Tributary Farmland Landscape Type and is therefore found in similar transitional locations, defined spatially by the plateau uplands and river valleys between 20m AOD and 50m AOD. This type differs due to the presence of different land uses, in particular parklands, which create a very distinctive character throughout much of the area.

Character Areas within the landscape type:

- Yare Tributary Farmland with Parkland (C1)
- Thurlton Tributary Farmland with Parkland (C2)

SENSITIVITY TO WIND TURBINE DEVELOPMENT

- 6.2. The following table considers the key characteristics of the landscape type under each of the eight attributes identified as being potentially sensitive to turbine development. The sensitivity of each characteristic of the landscape has been evaluated in relation to five different scales of turbine development: single (1 turbine), small (2-6 turbines), medium (6-12 turbines), medium-large (12-25 turbines) and large (25+ turbines).
- 6.3. Considering each characteristic independently results in a comprehensive, integrated assessment and provides a detailed understanding of the sensitivity of the landscape and the reasons for its sensitivity. **Note that it is the combination of key characteristics that should be considered (i.e. each column) in forming a judgement about sensitivity to turbine development. The guidance contained in any single row of the table, should not be considered in isolation.**
- 6.4. Note that where a high sensitivity is made for a single turbine this is likely to remain the same for a greater number of turbines and is not repeated (in the table). Any differences in relation to a larger number of turbines are noted.

| | Single Turbine | Small Group | Medium Group | | Large Group |
|--|--|---|---|-------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Scale and Enclosure <ul style="list-style-type: none"> Transitional landscape occupying the mid ground between the upland plateaux and the main river valley landscapes, providing varied opportunities for open and framed views. Open arable landscape is interrupted by areas of woodland enclosure. Small tributary stream valleys cut through the landscape. Larger scale fields contrast with the more intimate valleys and smaller scale, pastoral areas and villages. | Low Sensitivity is greater in relation to the smaller scale of the tributary stream valleys, the areas of pasture and the villages. Here a single turbine would overwhelm the more intimate scale of the landscape. The open areas of arable farmland are less sensitive to a single turbine. | Moderate Sensitivities are greater in relation to the smaller scale of the tributary stream valleys, the areas of pasture and the villages. The more open arable farmland is less sensitive to a small group of turbines and would not appear out of scale. | High A turbine development of this size is likely to enclose the landscape and change the balance which currently exists between open areas and enclosure provided by woodland. This landscape is therefore sensitive to a development of >6 turbines | | |
| Landform and Topography <ul style="list-style-type: none"> Gently undulating landform created by the presence of small tributary stream valleys which cut through the landscape providing a sense of restrained variety. Lies predominantly between 20 and 40m AOD. Intricate relationship between higher ground, and intervening valleys. | Moderate The areas of flatter, higher ground are not sensitive to location of a single turbine or a small group of turbines. Sensitivity is higher where landform is more undulating, here a turbine could appear visually awkward and dominant particularly in relation to the valley crests. | | High There is a potential for a medium to large group to appear visually inconsistent in relation to the variation in landform. | | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|--|---|--|--|-------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Land Cover Pattern <ul style="list-style-type: none"> • Presence of large parkland estates particularly associated directly with the tributary valleys. Estate railings, prominent gatehouses, boundary fences and tree-lined avenues and areas of pasture farmland reveal the presence of the wooded parkland in the wider arable landscape. • Context of tamed and peaceful arable farmland with scattered small farm woodlands, including ancient woodland, and medium to large-scale fields of sugarbeet and cereal surrounded by sparse hedges and hedgerow trees. • An intricate network of small rural roads often bounded by banks or ditches with a sense of impenetrability. • Tributaries visually elusive and often physically inaccessible – rarely evident because they are hidden within the landscape by topography or trees, particularly where they are associated with the parkland which limits public access. • A characteristic wooded appearance. | Moderate There are some visual cues within this landscape to which a single turbine or small group of turbines could relate, for example, field pattern, and woodland blocks. A single turbine could be sited away from the more sensitive areas of parkland and tributary valleys. | | High The pattern of tributary valleys, parkland, small grazed pockets of pasture, common land, are all highly sensitive to this scale of development. Any turbine development, larger than 6 turbines, could confuse the intricate and complex pattern of elements across this landscape type. | | |
| Settlement Pattern and Density <ul style="list-style-type: none"> • Dispersed but evenly distributed settlement with a pattern of small farmsteads and small, nucleated villages. Settlement is sparse across C2 - Thurlton Tributary Farmland with Parkland, with the larger villages associated with the Becks. | Low The smaller scale settlements are sensitive to a single turbine as there would be an apparent conflict in | Moderate A small group of turbines could relate to the edge of larger areas of urban development evoking a functional image. | High Although settlements are dispersed within this landscape, a medium to large-scale development is likely to be out of scale even if turbines are located away from settled areas. | | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|--|--|--|---|-------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| <ul style="list-style-type: none"> Mixed architectural character comprising modern development and traditional vernacular architecture, including stepped and Dutch gable ends and brick and flint. Vernacular architectural character, predominantly of rural buildings and estate dwellings. More modern dwellings are found in larger villages. | scale. A single turbine could be related to larger areas of urban development associated with the edge of Norwich or away from settlements. | Settlement is dispersed and so small groups of turbines could be located away from more sensitive small-scale settlements. | | | |
| Prominent Built Structures and Landmarks <ul style="list-style-type: none"> Characteristic large detached halls and manor houses, usually constructed of brick and of high architectural quality, associated with the parkland estates. These are frequently screened by woodland, except at close range. Isolated flint round towered churches particularly evident. Mixed architectural character comprising modern development and traditional vernacular architecture, including stepped and Dutch gable ends and brick and flint. | Moderate Sensitive elements include the views to and setting of the distinctive churches and landmarks. However, a single turbine could be sited away from these elements or link to large agricultural buildings to provide a functional role. Care should be taken to not to create visual clutter in relation to existing poles and pylons. | Moderate Sensitive elements include the views to and setting of the round towered churches and parkland estates. Located away from these elements, a small group of turbines may introduce a new landmark feature to this landscape. Towards the higher end of the group, turbines may appear too dominant and appear out of place within the historic parkland context of this landscape. | High A group of turbines of this size would distract from the characteristic views to and setting of historic estates and churches. There are no other structures within this landscape to which a medium to large group of turbines could relate or compare. | | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|---|---|--|---|-------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| | | | | | |
| Skyline <ul style="list-style-type: none"> • In places interrupted by woodland, pylons, and posts. • Views to parkland edges and woodland. • Intermittent long views to development at the City of Norwich and the Norwich Southern Bypass (from CI). | Low The skyline is varied and a single turbine would not have an adverse affect on its character. A single turbine could be related to the vertical structure of woodland blocks on the existing skyline and also to views of development on the edge of Norwich. | Moderate A small group of turbines could be seen to correspond with woodland blocks and development at the edge of Norwich. Towards the higher end of the group, turbines may appear confusing when appearing on a horizon with a number of existing vertical elements, e.g. pylons, poles, woodland. In CI care would need to be taken to conserve the rural landscape setting of the bypass. | High A large group of turbines would appear confusing and out of scale with existing elements on the skyline. | | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|---|--|---|--------------|-------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Views and Visual Connections with Adjacent Landscapes <ul style="list-style-type: none"> Views to wide open horizons and long views across denuded hedgerow boundaries and arable farmland from higher areas Prominent views to historic features such as isolated and round towered churches and their settings. Views framed and broken by woodland blocks and estate parkland with large manor buildings. Intermittent, long views into and from The Broads (C2) and to Norwich City and cathedral spire, in particular from the Southern Bypass which bisects C1. Important localised views from higher, flatter areas to the wider landscape e.g. from Bawburgh Hill down to the edge of Norwich and to areas of the adjacent plateaux and river valley landscape types. | Moderate A single or small scale group of turbines could be accommodated within existing views, providing it does not impinge on sensitive views to historic parkland, historic features and the characteristic views to The Broads and Norwich City. The views from adjacent river valley landscape types and plateaux to C1 are also sensitive. In C1 care would need to be taken to conserve the rural landscape setting of the bypass. | High A medium group or larger group would occupy a large extent of the visibility zone and would dominate the landscape. Sensitive views towards the plateau, The Broads and Norwich would be interrupted and adversely affected. Views into this landscape from adjacent landscapes would also be affected. In C1 such a development could change the perception of a rural setting of the bypass. | | | |
| Remoteness and Tranquillity <ul style="list-style-type: none"> Tamed and arable farmland. A peaceful rural landscape. A sense of impenetrability and remoteness, despite the presence of major transportation corridors. The Norwich Southern Bypass and the A11 cross the landscape and the area is also traversed by the London to Norwich railway line. Pylons align the main A road and interrupt the sense of remoteness. | Low Away from the major transportation corridors this is a peaceful rural landscape, although in these areas it is unlikely that a single turbine or small scale group of turbines would affect overall tranquillity. A single turbine could relate to existing sources of movement in the landscape such as main roads. | High This scale of turbine development is likely to appear too dominant, and although there may be scope to link it with existing sources of movement it could have an impact on the remoteness and tranquillity of the wider landscape. | | | |

LANDSCAPE SENSITIVITY OVERVIEW

Single Turbine

Overall it is judged that the Tributary Farmland with Parkland landscape type has a **low –moderate sensitivity** to location of a single turbine. This is, in parts, an open landscape with large arable fields and in relation to these a single turbine would not appear out of scale. The vertical form of a single turbine would provide a striking and simple contrast to the horizontal plane or could be linked to woodland. The gently undulating topography and small-scale enclosure of the valleys which cut through the landscape makes these areas more sensitive to visual intrusion by tall and large elements. There is more scope to locate a single turbine on the contrasting, flatter, larger scale areas within this landscape character type. The setting of and views to churches, historic estates and The Broads are sensitive and should be protected from intrusion by vertical elements.

Small Group

Overall it is judged that the Tributary Farmland with Parkland landscape type has a **moderate sensitivity** to location of a small group of turbines (2-6 turbines). This landscape is sensitive to larger scale groups due to the presence of important historic parkland estates and the sensitive visual connection that it has to The Broads (C2) and Norwich (C1) to the north. There is no scope for location of turbines within tributary valleys. There may be some limited opportunity for the lower end of a small-scale group to relate to large open arable fields, woodland blocks and development at the periphery of Norwich. Smaller groups could be located on higher, flatter areas of ground, acting as a landmark feature. Towards the higher end of the group, turbines may appear confusing within the intricate pattern of elements across this landscape, especially when appearing on a horizon with existing vertical elements such as pylons, poles, woodland and will interrupt the remote and peaceful quality of the area.

Medium to Large Group (> 6 turbines)

Overall it is judged that the Tributary Farmland with Parkland landscape type has **high sensitivity** to medium (6-12 and 12-25 groups) and large groups (25+) of turbines. This size of development would have a major effect on the attributes of the landscape, in particular on the sensitive tributary valleys, parkland and the peaceful rural landscape.

GUIDANCE

Single Turbine (1 turbine)

- 6.5. The Tributary Farmland with Parkland landscape type is considered to have a **low-moderate sensitivity** to a single turbine. In considering an appropriate location for a single turbine within this landscape type, the guidance set out should be followed:
- Avoid the sensitive tributary valleys and valley crests and ridges to safeguard their small scale, intimate character. The flatter more open areas of landform are less sensitive;

- Avoid disrupting views to and from the historic parkland landscapes and to important architectural features such as churches. Respect the settings of such features;
- Avoid interrupting and dominating sensitive views across the countryside and into adjoining character areas, in particular with regard to the adjacent plateau and river valley landscapes and sensitive views towards The Broads (in C2) and Norwich City (in C1);
- Relate or respond to existing points of focus that occur in the landscape such as woodland blocks;
- Relate to larger settlement edges;
- Relate to existing sources of movement within the landscape (e.g. along transport corridors).

6.6. **Cumulative Development:** There is some scope for cumulative development within this landscape type. The areas with greatest potential are the open, flatter and larger scale areas of the landscape, in particular where a single turbine could be linked to an existing feature such as a block of woodland. A single turbine should act as landmark features within this landscape, and avoid creating ‘visual clutter’ in association with other vertical features.

Small Group (2-6 turbines)

6.7. The Tributary Farmland with Parkland landscape type is considered to have a **moderate sensitivity** to a small-scale group of turbines. It is likely that only the lower end of this scale (2-3 turbines) would be appropriate. In considering an appropriate location for a small-scale group of turbines within this landscape type, the guidance for a single turbine applies. In addition the guidance set out below should be followed:

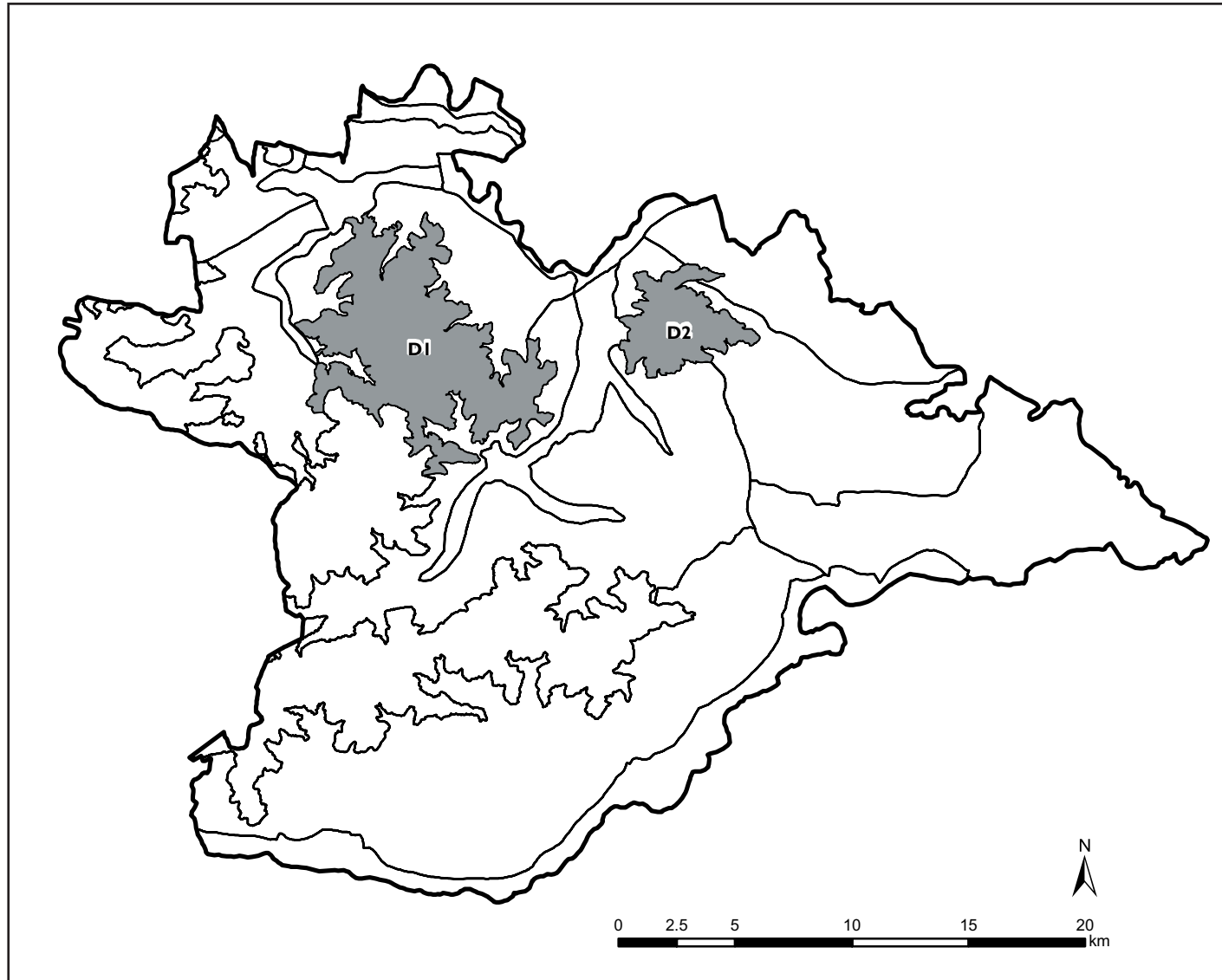
- Respect the rural and tranquil character. There may be limited opportunity for this scale of development in relation to existing sources of movement or on the open, flatter areas of the landscape;
- Respect the sensitive views across the landscape (to characteristic historic parkland estates and churches) and into adjacent character areas, in particular, adjacent plateau and river valley landscapes and sensitive views towards The Broads and Norwich City in the North.

- 6.8. **Cumulative Development:** There is limited scope for cumulative development due to the sensitive small-scale nature of the tributary valleys, the characteristic historic parkland and sensitive views. The existing sense of peacefulness is a key characteristic that would be adversely affected by cumulative development. It is judged that a small group of turbines should form landmark features within this landscape.

Medium and Large Groups (6+ turbines)

- 6.9. The Tributary Farmland with Parkland landscape type has **high sensitivity** to medium and large turbine groups and this landscape type is not considered an appropriate location for a development of this scale. Further guidance is therefore not provided.

Landscape Type D: Settled Plateau Farmland



7. LANDSCAPE TYPE D: SETTLED PLATEAU FARMLAND

LOCATION AND BOUNDARIES

- 7.1. There are two areas of Settled Plateau Farmland Landscape Type, one to the east and one to the west of the Tas Valley around the settlements of Wymondham and Poringland respectively. The Settled Plateau Farmland has been defined by virtue of its elevation, topography and settlement pattern. The boundaries of these areas are largely represented by the 40 and 50m contours.

Character Areas within the Landscape Type

- D1: Wymondham Settled Plateau Farmland
- D2: Poringland Settled Plateau Farmland

SENSITIVITY TO WIND TURBINE DEVELOPMENT

- 7.2. The following table considers the key characteristics of the landscape type under each of the eight attributes identified as being potentially sensitive to turbine development. The sensitivity of each characteristic of the landscape has been evaluated in relation to five different scales of turbine development: single (1 turbine), small (2-6 turbines), medium (6-12 turbines), medium-large (12-25 turbines) and large (25+ turbines).
- 7.3. Considering each characteristic independently results in a comprehensive, integrated assessment and provides a detailed understanding of the sensitivity of the landscape and the reasons for its sensitivity. **Note that it is the combination of key characteristics that should be considered (i.e. each column) in forming a judgement about sensitivity to turbine development. The guidance contained in any single row of the table, should not be considered in isolation.**
- 7.4. Note that where a high sensitivity is made for a single turbine this is likely to remain the same for a greater number of turbines and is not repeated (in the table). Any differences in relation to a larger number of turbines are noted.

| | Single Turbine | Small Group | Medium Group | | Large Group |
|---|---|---|--|--|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Scale and Enclosure <ul style="list-style-type: none"> Large expanse of flat landform. Generally open landscape. Poor hedgerows accentuate openness of the landscape. Variety of spatial experiences due to the elevation and contrast between the openness of the arable fields and intimacy of the settlements. Wooded character in parts provides enclosure, particularly around settlements. | Low The open areas within this landscape are less sensitive as they could accommodate a single turbine without it appearing over dominant. In areas more enclosed by woodland there is opportunity for grounding/ screening. | Moderate The open areas within this landscape could accommodate a small group of turbines. The more intimate wooded areas around settlement are more sensitive. | High A medium group of turbines (6-12) would begin to affect the sense of openness found in this landscape. The plateau top settlements are also sensitive to this scale of development. | High A group of this size would begin to enclose existing open areas altering the current balance between openness and intimacy/ enclosure. This scale of development would also be overwhelming in relation to settlements. | |
| Landform and Topography <ul style="list-style-type: none"> Distinct flat to gently rolling, elevated landform as a result of the simple underlying geology. The area centred on Poringland has the greatest variation, rising up to a gentle 'dome' at 70m AOD which is one of the most elevated areas in the district. The boundaries of these areas are largely represented by the 40 and 50m AOD contours – the plateau edges are highly visible from adjacent landscapes. | Low The vertical form of a turbine would provide a simple contrast with the horizontal plane. The area centred on Poringland has greater sensitivity due to the greater variation in landform. The high visibility of the plateau edges makes these areas more sensitive. | Low The areas of flatter land with little variation have low sensitivity to a small group and smaller end of a medium group (up to 12 turbines). The area centred on Poringland has greater sensitivity due to the greater variation in landform. The high visibility of the plateau edges also makes these areas more sensitive. | | High There are few areas where the extent of the flat landform (between settlements) is large enough to accommodate a group of turbines of this size. | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|---|--|---|--|---|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Land Cover <ul style="list-style-type: none"> Large fields of arable monoculture principally characteristic swathes of cereal, oilseed rape and sugarbeet. Mature remnant oak hedgerow trees are features in the agricultural landscape however hedgerows have been severely degraded or lost leading to fragmentation within the landscape. Illusion of wooded horizons due to the presence of significant areas of mixed woodland blocks, some intact hedgerows and the visual merging of hedgerow trees and woodlands in the landscape. Some evidence of historic landscape features including moats, historic parkland and farm ponds. Woodland blocks tend to be associated with halls/ remnant parkland | Low A single turbine could be accommodated within and also be related to the large-scale field pattern. The vertical structure of the woodland blocks could also provide a complementary setting for a single turbine. A key sensitivity relates to the need to protect the site and setting of historic features. | Low A small group of turbines could be accommodated within and also be related to the large-scale field pattern. The vertical structure of the woodland blocks would also provide an appropriate setting for a small group of turbines. A key sensitivity relates to the need to protect the site and setting of historic features. | Moderate A development of this size could be accommodated in relation to the large arable fields (particularly in the southern part of DI). However, elsewhere the pattern of fields and woodland is sensitive and would be overwhelmed by a development of > 8 – 10 turbines. | High The pattern of fields and woodland would be disrupted by a development of this size. It would change the existing balance of land cover and dominate open areas. | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|---|--|---|---|-----------------------------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Settlement Pattern and Density <ul style="list-style-type: none"> Settled landscape mostly comprising large edge-of-plateau towns/large villages (Wymondham, Poringland and Hethersett) with other smaller nucleated settlements (Mulbarton and Yelverton) dispersed across the plateau. These settlements are more nucleated than elsewhere and tend to occur at the plateau edge/transition. Some vernacular buildings particularly in historic market towns, particularly including use of bricks, timber framing and stepped gable ends, but contrasted with settlements of modern bungalow development. Wymondham and Mulbarton retain a historic character despite more recent peripheral development, whereas Poringland and Hethersett have a much more modern character (characterised by post-war bungalow development). | Low There is opportunity for a single turbine to provide a functional role, linked to the more modern peripheral development of towns. There is also opportunity to locate a single turbine away from settlements. Sensitivity is higher where settlement edge coincides with the edge of the plateau. | Moderate There is some opportunity (in D1) to locate a small group of turbines without impinging on the settlements themselves and without closing the important open gaps which occur between settlements. | High A group of turbines of this size would overwhelm the scale of settlements found in this landscape. A development located away from settlements would impinge on the open gaps which occur between settlements. | High See previous | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|--|--|--|--|-----------------------------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Prominent Built Structures and Landmarks <ul style="list-style-type: none"> • Presence of large communications masts which interrupt of the sense of openness yet provide distinct landmarks. Modern communications towers at the highest point of the Poringland plateau have high visibility in the landscape but also serve as a landmark. • Isolated churches and round tower churches are present but not highly visible. • A number of 'industrial' type farm buildings, including grain towers and silos that punctuate the horizon (particularly near Silfield). • Disused airfield on plateau top of D I | Low There are a number of existing large prominent structures and if sited sensitively a single turbine could form an additional landmark feature. There is both an opportunity to link a single turbine to existing prominent structures (e.g. 'industrial' type farm buildings) or locate away from them to avoid visual cluttering. (e.g. large communication masts). Views to historic landmark features such as churches and their setting are sensitive. | Moderate Located away from existing prominent built structures there is opportunity for a small group of turbines (particularly at the lower end of this scale) to provide a focal point in the landscape. Views to historic landmark features such as churches and their setting are sensitive. | High A large-scale turbine group would be very dominant within this landscape. There is also potential for cluttering in relation to existing vertical features. | High See previous | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|---|---|---|---|-----------------------------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Skyline <ul style="list-style-type: none"> Strong open horizons – the archetypal ‘Norfolk’ landscape Illusion of wooded horizons due to the presence of significant areas of mixed woodland blocks, some intact hedgerows and the visual merging of hedgerow trees and woodlands in the landscape. | Low The strong open horizons are sensitive to interruption. However, a single turbine could also provide a striking landmark feature and contrast to the open skylines. Plateau edges are particularly sensitive. | Moderate The strong open horizons are sensitive to interruption. However, a small group (of no more than 2-3 turbines) could also provide a striking landmark feature and contrast to the open skylines. Plateau edges are particularly sensitive. | High A larger group would dominate and overwhelm the strong open skyline. | High See previous | |
| Views and Visual Connections with Adjacent Landscapes <ul style="list-style-type: none"> Views to large communication masts, settlement on the plateau edge and areas of parkland and woodland blocks. Long views of the district from the plateau edges, including views to Norwich, and internalised plateau views. Elements of plateau interior not visible except from other plateau areas or where tall intrusive elements are present. D2 plateau is very prominent in views from the surrounding landscape. | Low Large vertical structures already exist in views. A single turbine can be sensitively located within this landscape without dominating or adversely altering views. Key sensitivities are views to historic features such as churches and views to Norwich. | Moderate A group of turbines of this size would be prominent in views within this landscape and also from adjacent plateau areas (E2). However they could form a positive landmark feature. Important views (e.g. to Norwich and historic landmark features) should be protected. | High Due to its open character, a group of turbines of this size would dominate views within the landscape. They would also form a very visible and dominant feature in views from adjacent landscapes. | High | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|---|--|---|--|--|-------------|
| Key Characteristics of the Landscape | 1 | 2-6 | 6-12 | 12-25 | 25+ |
| Remoteness and Tranquillity <ul style="list-style-type: none"> This landscape is not remote due to the large extent of settlement. All cuts across plateau of DI and introduces an element of noise and movement into the landscape. | Low This is already a landscape of movement and activity A single turbine would not affect any sense of remoteness and tranquillity | Moderate This is already a landscape of movement and activity. Located sensitively, a small group would not affect the sense of remoteness and tranquillity | Moderate There are already existing interruptions and therefore a group of this scale could be located within the landscape. | High A larger group would dominate the landscape, adding a new level of movement and development unprecedented in this landscape type. | |

LANDSCAPE SENSITIVITY OVERVIEW

Single Turbine

Overall it is judged that the Settled Plateau Farmland landscape type has a **low sensitivity** to location of a single turbine. This is generally an open landscape with large arable fields and a single turbine would not appear out of scale. The vertical form of a turbine would provide a striking and simple contrast to the open horizontal plane or could be linked and grounded to areas of woodland. In relation to the settlement, a single turbine could form a landmark feature either in close association with existing larger settlements or be located away from settlements. There are also several existing prominent built features within this landscape to which a single turbine could be connected, providing a functional role. Views are particularly sensitive within and to this landscape due to its openness; however the landscape already accommodates prominent vertical structures, and located sensitively there is opportunity for a turbine to form an additional landmark feature. Key visual sensitivities relate to views to historic features such as churches and views to Norwich.

Small Group

It is judged that this landscape type has an overall **moderate sensitivity** to a small group of turbines (2-6). Key sensitivities relate to the scale of settlements, where a group of turbines could appear over dominant and the need to maintain an undeveloped open, rural 'gap' between settlements. Other sensitivities relate to the need to avoid vertical cluttering of elements and retain key views such as to landmark churches or towards Norwich. There is a distinct transition between the intimate settled and open agricultural landscapes within this landscape type and, without careful siting, location of a group of turbines of this scale could begin to disrupt this balance. However, there is an opportunity to locate a group of turbines of this size in more the open arable areas. There are some large scale features within this landscape to which a group of turbines could be related – the woodland blocks, the airfield, A11 and the 'industrial' type farm buildings.

Medium Group - Large Group (<6 turbines)

It is judged that this landscape has a **high sensitivity** to medium (6-12 and 12-25) groups and large groups (25+) of turbines. It is judged that most of the key characteristics of the landscape type are sensitive to, and would be adversely affected by, the location of turbine groups of this scale. A development of this scale would alter the balance of more open agricultural areas and the enclosure associated with settlements and would erode the open rural gaps between settlements. A group of turbines of this scale would appear over dominant and disrupt the long views are afforded within and to the plateau landscape.

GUIDANCE

Single Turbine (1 turbine)

- 7.5. The Settled Plateau landscape is considered to have a **low sensitivity** to a single turbine. In considering an appropriate location for a single turbine within this landscape type, the guidance set out below should be followed.

- Conserve important views to Norwich from the north of the character areas (D1 and D2);
- Avoid intrusion within views to important landmarks (e.g. Wymondham Abbey and Bixley Hall near Arminghall);
- Avoid visual confusion and vertical clutter with telecommunication towers (e.g. on plateau near Poringland which are distinct local landmarks);
- Respect the sensitive edge of plateau, which are very prominent in views from adjacent landscapes;
- Respect the setting of isolated and round towered churches and other historic landmark features such as halls;
- Consider opportunities to site a single turbine in relation to existing farm and industrial buildings to create a functional image;
- Consider locating in relation to the A11 and railway line where movement already interrupts the landscape;
- Explore opportunities to locate a single turbine on the edge of settlements while respecting the historic character of settlements such as Wymondham and Mulbarton.

Small Group (2-6 turbines)

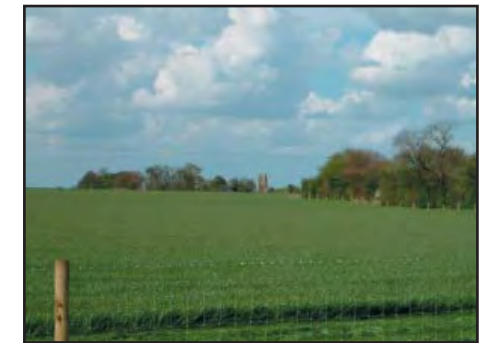
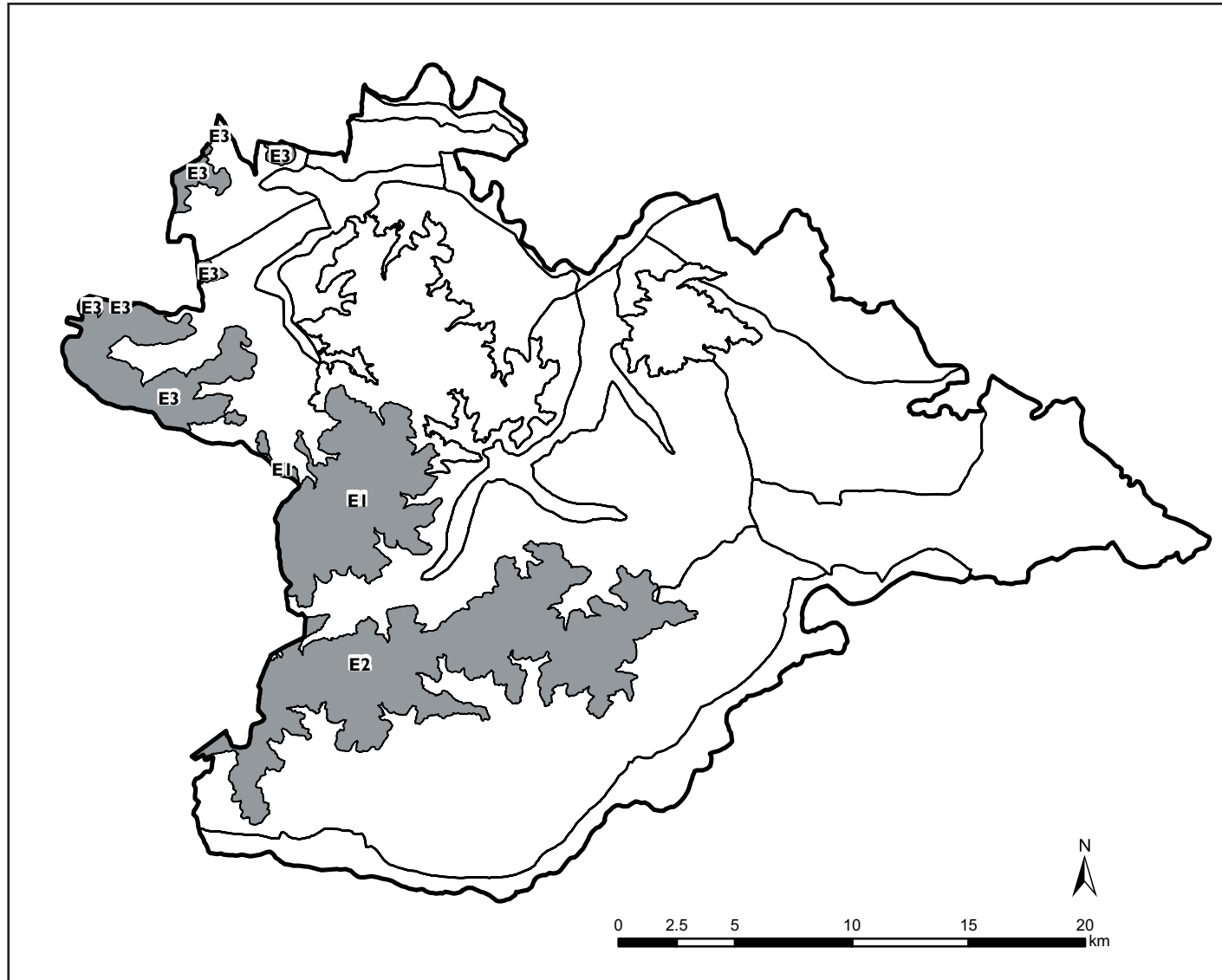
- 7.6. The Settled Plateau landscape is considered to have a **moderate sensitivity** to a small-scale group of turbines. In considering an appropriate location for a small-scale group of turbines within this landscape type, the guidance for a single turbine applies. In addition, the guidance set out below should be followed.
- Consider sensitivities associated with the settlements and the more enclosed landscape surrounding settlements – only limited parts of the area (southern part of character area D1 has lower sensitivities);
 - Consider sensitivities associated with existing landmarks and vertical features and potential to cause visual confusion and clutter in views;
 - Maintain important open rural gaps between the settlements e.g. Wymondham – Hethersett.

- 7.7. **Cumulative Development:** The openness and long range views associated with the Settled Plateau landscape, means that it is unlikely that more than one turbine development (single or small scale) could be accommodated within either character area (D1 or D2).

Medium and Large Groups (6+ turbines)

- 7.8. The Settled Plateau has a high sensitivity to medium and large turbine groups and therefore this landscape type is not considered as an appropriate location for a development of this scale. Further guidance is therefore not provided.

Landscape Type E: Plateau Farmland



8. LANDSCAPE TYPE E: PLATEAU FARMLAND

LOCATION AND BOUNDARIES

- 8.1. The Plateau Farmland Landscape Type occurs in the western part of the district in three principal areas, all of which continue beyond the South Norfolk boundary into the adjoining Breckland District. The Plateau Farmlands are defined by their elevation and all are primarily delineated by the 50m contour. However, it should be noted that not all areas above the 50m contour line have been classified as Plateau Farmland due to differing land use patterns.

Character Areas within the Landscape Type:

- Ashwellthorpe Plateau Farmland (E1)
- Great Moulton Plateau Farmland (E2)
- Hingham – Mattishall Plateau Farmland (E3)

SENSITIVITY TO WIND TURBINE DEVELOPMENT

- 8.2. The following table considers the key characteristics of the landscape type under each of the eight attributes identified as being potentially sensitive to turbine development. The sensitivity of each characteristic of the landscape has been evaluated in relation to five different scales of turbine development: single (1 turbine), small (2-6 turbines), medium (6-12 turbines), medium-large (12-25 turbines) and large (25+ turbines).
- 8.3. Considering each characteristic independently results in a comprehensive, integrated assessment and provides a detailed understanding of the sensitivity of the landscape and the reasons for its sensitivity. **Note that it is the combination of key characteristics that should be considered (i.e. each column) in forming a judgement about sensitivity to turbine development. The guidance contained in any single row of the table, should not be considered in isolation.**

- 8.4. Note that where a high sensitivity is made for a single turbine this is likely to remain the same for a greater number of turbines and is not repeated (in the table). Any differences in relation to a larger number of turbines are noted.

| | Single Turbine | Small Group | Medium Group | | Large Group |
|--|--|-------------|--|---|-------------|
| Key Characteristics of the Landscape | 1 | 2-6 | 6-12 | 12-25 | 25+ |
| Scale and Enclosure <ul style="list-style-type: none">Sense of openness and exposure due to the elevation and scarcity of enclosing elements.The flatness of the plateau creates a strong sense of openness with vast skies and dramatic horizons. | Low This is a large scale, open landscape and is therefore not sensitive to single, small and medium turbine groups. A single turbine to the lower end of a medium group would therefore not appear incongruous or over dominant. | | Moderate A group of this size could begin to change the sense of openness. | High A large-scale turbine group could change the sense of openness. | |
| Landform and Topography <ul style="list-style-type: none">Distinct flat and elevated plateau landform.Defined by the elevation and primarily delineated by the 50m contour. | Low The unvaried, flat and simple landform results in a low sensitivity for all scale of development - the vertical lines of the turbines forming a simple contrast and composition with the horizontal plane. | | | | |
| Land Cover Pattern <ul style="list-style-type: none">Large, regular, geometric fields of arable monoculture with characteristic swathes of cereal, oilseed rape and sugarbeet monoculture.Mature remnant oak hedgerow trees are features in the agricultural landscape. However, hedgerows have been severely degraded or lost leading to fragmentation within the landscape.Straight plateau-top roads characteristically lined with attractive wide grass verges and ditches.Wooded horizons as a result of visual merging of hedgerow trees and woodlands in the landscape. | Low The large, regular, geometric fields bound by drainage ditches and wide grass verges provide strong nodes or junctions making single turbine development appropriate to these fixed points in the landscape. In terms of larger groups, there are a number of lines and edges such as the pattern of hedgerows and hedgerow trees, drainage ditches and grass verges that groups of turbines could relate. The repetition and regularity of the field pattern provides scope for ordered groups of turbines to correspond with this structured geometric arrangement. There are greater sensitivities in relation to larger groups of turbines which could disrupt the pattern of fields and woodland. | | | Moderate There are greater sensitivities in relation to larger groups of turbines which could disrupt the pattern of fields and woodland. | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|--|---|-------------|--|--|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Settlement Pattern and Density <ul style="list-style-type: none"> Sparsely settled landscape mostly comprising larger edge-of-plateau settlements, small nucleated and long linear settlements. Some vernacular buildings particularly including the use of brick and Dutch gable ends, but intermixed with more modern bungalow development Linear settlements occur along roads with some vernacular buildings intermixed with more modern development. | Low This is a sparsely settled landscape and so a single turbine and a smaller group (2-6) could be sited away from sensitive areas of small-scale settlement. A smaller group of turbines could be related to linear settlements and with larger agricultural buildings to evoke a functional image. | | Moderate – High A group of turbines larger than 6 could be over-dominating in relation to small scale nucleated settlement and towns on the edge of the plateau such as Great Moulton, Forncett End and Hingham. | | |
| Prominent Built Structures and Landmarks <ul style="list-style-type: none"> Presence of tall structures including masts and poles which disturb the rural scene interrupting the sense of openness. Disused air fields. Presence of historic features within the landscape including isolated churches, moats, farm ponds and timber framed houses. Large scale farm buildings, water towers, telegraph poles exposed in this landscape and a distinct lack of churches (in E2) | Low There are existing points of focus such as the large scale farm buildings, disused airfields to which a single turbine or smaller group (2-6) could be sited in relation to. The setting of historic features are particularly sensitive and should be conserved. | | Moderate The potential for visual cluttering with existing structure results in a higher level of sensitivity for large turbine groups. | | |
| Skyline <ul style="list-style-type: none"> The flatness of the plateau creates a strong sense of openness with vast skies and dramatic horizons. Expansive skies are a defining feature with distant views and farm buildings are visible in | Low A single turbine and up to a medium group of 12 turbines would interfere with only part of the expansive skyline without affecting the overall sense of openness. There are however issues in relation to cumulative development and the retention of a simple skyline is key to local character. | | Moderate A medium to large group would begin to encroach on dramatic | High Although this is a simple skyline a large-scale group would encroach on the | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|--|---|---|--------------|---|---------------------------------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| the open landscape. <ul style="list-style-type: none">360 degree horizon in places | | | | horizons, forming a larger part of the skyline. | dramatic horizons and interrupt them. |
| Views and Visual Connections with Adjacent Landscapes <ul style="list-style-type: none">Long views of the district from the plateau edges take in a wide panorama of South Norfolk and these are some of the best in the district.Shorter internalised plateau views are to farm buildings and isolated churches. The inner areas of plateau are largely invisible from other areas outside of the character type.From higher areas of plateau and from the plateau edge there are views to adjacent landscapes including to churches in adjoining areas. | Low <p>A single to medium group of turbines would not block internalised plateau views, nor will it impede on sensitive long ranging views from the edge of the plateau. Views from external areas into the character type are restricted due to the elevation of the plateaux areas and there is sufficient scope to locate a single to medium scale group of 12 away from the sensitive edges of the plateau (although tall structures located within the plateaux would still be visible from wide areas). There is less scope in character area E3 as it is fragmented into smaller areas and therefore inner plateau areas are more restricted in size.</p> | | | Moderate <p>There is scope in areas E1 and E2 to site turbines away from the adjacent plateau edges, however a large group (12+) would still be visible from adjacent landscapes that are sensitive to this scale of development. Character area E3 is small in area and fragmented and therefore could not accommodate this scale of development.</p> | |
| Remoteness and Tranquillity <ul style="list-style-type: none">An overall peaceful rural character created by the absence of main roads and development.Quiet rural lanes dissect the landscapeThe A140 cuts north south through part of the area. | Low <p>This is a peaceful rural landscape. Although a single turbine would introduce a new element of movement within the landscape it would not be detrimental to the overall sense of tranquillity.</p> | Moderate <p>A small group of turbines up to a group of 12 would add an obvious human influence and source of movement in this landscape and would begin to alter the overall pace and tranquillity of the landscape.</p> | | High <p>A group larger than 12, would alter the pace and sense of tranquillity across this landscape. There is currently no development of this scale within this landscape type.</p> | |

LANDSCAPE SENSITIVITY OVERVIEW

Single Turbine, Small Group and Medium Group (up to 12 turbines):

Overall it is judged that the Plateau Farmland landscape type has a **low sensitivity** to location of a single turbine, a small and medium group of turbines (up to 12 turbines). This is a large scale, open landscape with a number of key characteristics such as vast skies and dramatic horizons, regular land cover pattern and flat terrain which would aid the integration and absorption of turbines into the landscape. A small-scale group of up to 6 turbines would integrate into the landscape, in particular if located within inner plateau areas. However sensitive characteristics such as the overall peaceful and rural character (a result of the absence of development) must be considered in order to retain the existing sense of place. A group of 6-12 turbines could be accommodated on the larger expanses of plateau across E1 and E2, in particular linked to disused airfields and larger farm buildings. Any larger developments located across E3 would have a detrimental effect on sensitive views to and from the plateau edge from the wider landscape as these areas of land are physically much smaller in size.

Medium Group

Overall it is judged that the Plateau Farmland landscape type has a **moderate - high sensitivity** to location of a medium and large group of turbines (12-25 turbines). There are a number of key characteristics that suggest suitability to a medium to large-scale group such as the flat terrain, simple land cover pattern, sparse settlement pattern and the lack of landmarks and prominent built structures. However there are other factors such as the sense of peacefulness, absence of main roads and development, and sensitive views (to and from the plateau edge from a wide, expansive area) that makes this scale group more sensitive than single to small to medium scale groups. A group larger than 12 would begin to change the characteristic sense of openness and may encroach on dramatic horizons forming a larger part of the skyline. However, there is some scope to locate these larger groups within large expanses of land internal to the plateau areas, however this would need to be balanced with effect on views from adjacent lower lying landscapes.

Large Group

Overall it is judged that the Plateau Farmland has a **high sensitivity** to a large group of turbines (25+turbines). Even at this scale there are a number of key characteristics with a low sensitivity to development of this nature including the flat terrain, simple land cover, sparse settlement pattern and the lack of landmarks and prominent built structures. However, some of the fundamental characteristics of this landscape type such as the dramatic horizons and skyline and definitive sense of openness together with the sense of peacefulness and rural quality would be adversely affected by such a large-scale development. As such, it is considered there is no scope across this landscape type for a group of this scale.

GUIDANCE

Single turbine (1 turbine)

8.5. The Plateau Farmland landscape type is considered to have a **low sensitivity** to a single turbine. In considering an appropriate location for a single turbine within this landscape type the guidance set out should be followed:

- Locate at sufficient distance from settlements to prevent over dominance of the small-scale settlements or locate in relation to larger plateau edge settlement or main roads;
- Locate away from the more sensitive plateau edges where development could be widely visible from surrounding lower-lying landscape types;
- Respect the site and setting of key historic features such as the isolated churches;
- Link to other points of focus such as clusters of agricultural buildings and to evoke a functional role in the landscape.

8.6. **Cumulative Development:** There are three separate character areas within this landscape type. As such it is judged that there is some scope for cumulative development. A single turbine plateau located within the far north of South Norfolk at E3 would not for example be visible from a plateau within the south at E2, where another turbine might occur. There is however considerably less scope for cumulative development on an individual plateau where internal views are clear and where more than one turbine in any one view would be inappropriate. In particular area E3: Hingham - Marshall Plateau Farmland is fragmented and occurs in much smaller physical therefore cumulative development would be less appropriate here as the development would be visible from the edge of the plateau and would have a larger impact on the wider landscape.

Small and Medium Group (2 to 12 turbines)

8.7. The Plateau Farmland landscape type is considered to have a **low sensitivity** to a small and medium group of turbines. In considering an appropriate location for this scale of development the guidance for a single turbine applies. In addition the guidance set out below should be followed:

- Consider the geometric patterning of the landscape and existing lines within the landscape such as field boundaries, in determining arrangement of turbines;

- Locate away from points of focus in the landscape such as isolated churches to avoid visual conflict, and protect their setting;
- Consider opportunities in relation to existing features such as disused airfields, or in relation to larger settlement or clusters of farm buildings.

8.8. **Cumulative Development:** There are three separate character areas within this landscape type. It is judged that there is some scope for cumulative development. There is however considerably less scope for cumulative development on an individual plateau where internal views are clear and where more than one group of turbines in any one view would be inappropriate.

Medium and Large Group (12-25 turbines)

8.9. The Plateau Farmland landscape type is considered to have a **moderate-high sensitivity** to a medium and large group of turbines (12-25 turbines). In considering an appropriate location for this scale of development the guidance for a single turbine and small to medium group of turbine applies. In addition the guidance set out below should be followed:

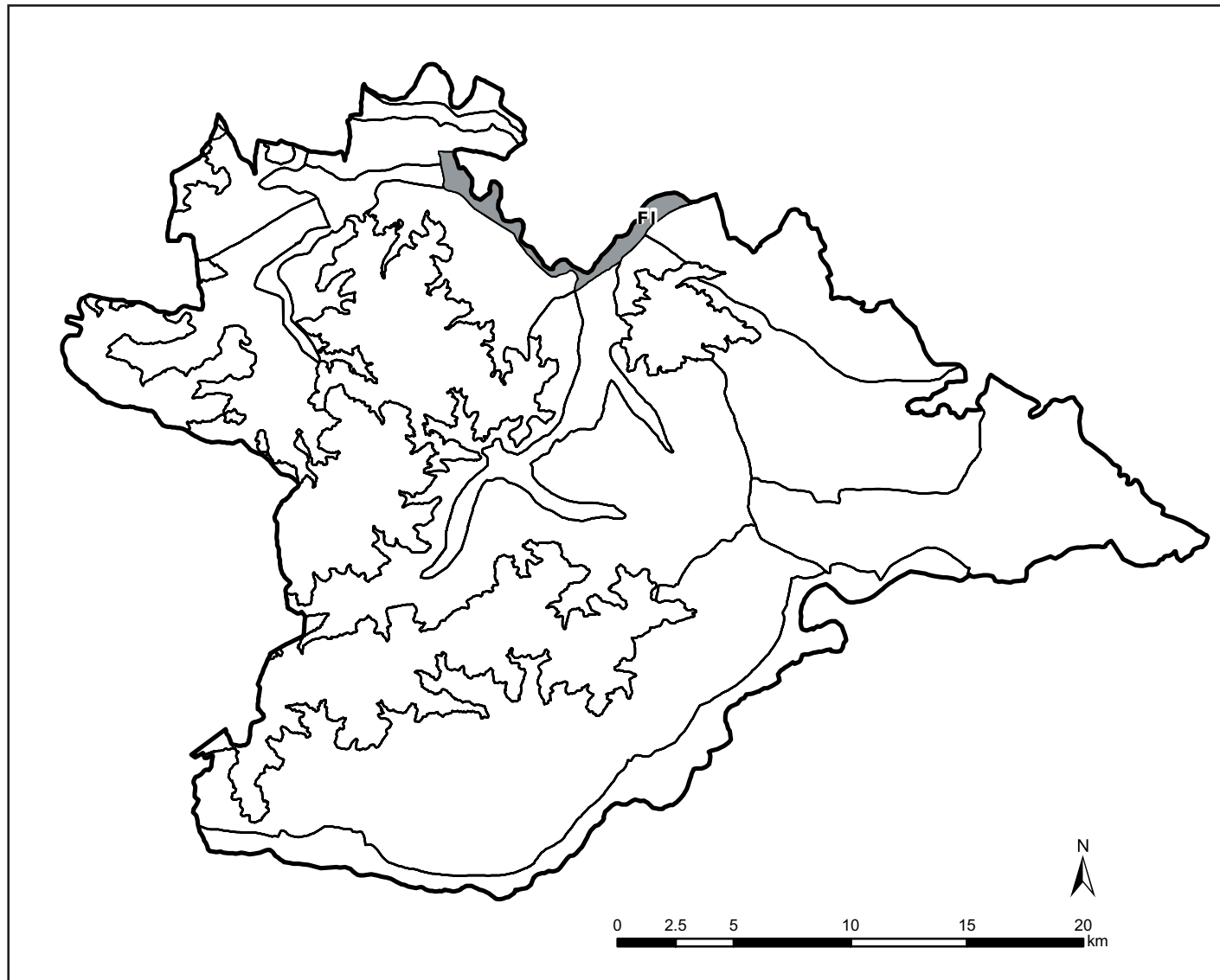
- Locate within large expanses of land internal to the plateau areas to minimise effect of views from adjacent landscapes into this landscape;
- Character area E3 does not have sufficient physical space to accommodate this scale of development.

8.10. **Cumulative Development:** There is limited scope for cumulative development across this landscape type. At the smaller end of the scale, 12-15 turbines, there may be some opportunities to site more than one on separate plateau areas across the character type on large scale, elevated, internal areas. There is no scope for cumulative development of more than one medium to large groups on any individual plateau as the scale of the development would have a significant impact on the key characteristics of the landscape type, enclosing views, cluttering the skyline and adversely affecting the sense of tranquillity and peacefulness.

Large Group (25+ turbines)

8.11. The Plateau Farmland landscape type has **high sensitivity** to a large turbine group. This landscape type is not considered as an appropriate location for this scale of development. Further guidance is therefore not provided.

Landscape Type F: Valley Urban Fringe



9. LANDSCAPE TYPE F: VALLEY URBAN FRINGE

LOCATION AND BOUNDARIES

- 9.1. The Valley Urban Fringe landscape type is found in only one area, the Yare Valley, which occurs in a narrow band at the perimeter of the City of Norwich. A large proportion of the landscape type extends beyond the district boundary into the area within the jurisdiction of Norwich City Council. The boundaries are marked by the transition of the valley form into the surrounding landscape at around 30m AOD.

Character Areas within the Landscape Type

- Yare Valley Urban Fringe (F1)

SENSITIVITY TO WIND TURBINE DEVELOPMENT

- 9.2. The following table considers the key characteristics of the landscape type under each of the eight attributes identified as being potentially sensitive to turbine development. The sensitivity of each characteristic of the landscape has been evaluated in relation to five different scales of turbine development: single (1 turbine), small (2-6 turbines), medium (6-12 turbines), medium-large (12-25 turbines) and large (25+ turbines).
- 9.3. Considering each characteristic independently results in a comprehensive, integrated assessment and provides a detailed understanding of the sensitivity of the landscape and the reasons for its sensitivity. **Note that it is the combination of key characteristics that should be considered (i.e. each column) in forming a judgement about sensitivity to turbine development. The guidance contained in any single row of the table, should not be considered in isolation.**
- 9.4. Note that where a high sensitivity is made for a single turbine this is likely to remain the same for a greater number of turbines and is not repeated (in the table). Any differences in relation to a larger number of turbines are noted.

| Key Characteristics of the Landscape | Single Turbine | Small Group | Medium Group | | Large Group |
|--|---|---|--------------|-------|-------------|
| | I | 2-6 | 6-12 | 12-25 | 25+ |
| Scale and Enclosure <ul style="list-style-type: none"> Distinctive broad meandering valley form with wide flat floodplain and enclosing valley sides, occasionally opening up where tributary valleys such as the Tas valley link to the Yare valley. The boundaries are marked by the transition of the valley form into the surrounding landscape at around 30m AOD. A sense of containment and unity. | Moderate This is a relatively small scale, semi enclosed and contained landscape however with careful siting a single turbine could be located without appearing over dominant in the valley setting. | High This is a relatively small scale, semi enclosed and contained landscape – a small group of turbines is likely to appear out of scale and overwhelming in this setting. This size development would appear over dominant in relation to the valley sides, providing an uneasy sense of enclosure. | | | |
| Landform and Topography <ul style="list-style-type: none"> Wide, fairly flat floodplain with enclosing valley sides. The crest of the slope at about 30m AOD represents the boundary of this landscape type, defining the valley landform. The sides of the valley are fairly steep in places | Moderate The floodplain is wide and fairly flat and a single turbine could physically be located here. However in relation to the valley sides a turbine could appear awkward and overwhelming. | High A small group of turbines would be over dominant in relation to the enclosing valley sides and crests which are important in defining the valley landform. A small group of turbines would therefore change the existing relationship between the flat floodplain and sloping valley sides. | | | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|---|---|--|--------------|-------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Land Cover <ul style="list-style-type: none"> • Large river flanked by characteristic wetland vegetation, including reeds and fringing alder/willow woodland. Mixed woodland blocks and shelter blocks occur on the valley sides creating a well-wooded appearance. • Glacial gravel deposits, which have been and continue to be exploited resulting in remnant flooded gravel workings along the valley floor. • Presence of recreational landscapes including the country park at Whitlingham, the presence of playing fields, golf courses and a number of rights of way. • Inaccessible valley floor with relatively few river crossings. • Natural character with absence of arable farmland. | Moderate The land cover is varied with both natural and recreational features. There is opportunity to locate a turbine as a landmark feature in connection to the restored gravel workings or in the recreational landscapes. The wetland habitats are sensitive to change or any form of development particularly as this type of land cover is uncommon in the district. | High The varied nature of the land cover pattern means it would be difficult to relate a small group of turbines to features within the landscape. | | | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|--|--|--|---|-------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Settlement Pattern and Density <ul style="list-style-type: none"> Sparsely settled with settlement restricted to a few locations primarily related to Yare crossing points. Highly influenced by Norwich urban fringe along parts of the upper valley sides. A number of large institutional buildings in or adjacent to the valley Green buffer and comprehensible development edge to the City of Norwich | Moderate Settlement is sparse and where it does occur relates directly to the Yare, a setting which would be over dominated by a single turbine. However there are a number of large institutional buildings to which a single turbine could be linked. There is also opportunity to locate a single turbine as a gateway feature, defining the edge of Norwich. | Moderate The lower end of a small group of turbines could be related to the large institutional buildings which occur in this landscape complementing their size and prominence. However a small group of turbines would also increase the level of development in the valley and weaken the perception of the Yare as a green buffer. | High A turbine group of this size would be out of scale with the settlement pattern and significantly alter the perception of the level of development in this landscape. | | |
| Landmarks and Prominent Built Structures <ul style="list-style-type: none"> Strongly influenced by modern transportation corridors, in particular the Norwich Southern Bypass. Modern road and railway bridges cross the river. High number of pylons particularly around the area of Trowse. Evidence of early human activity, for example the henge at Arminghall and presence of numerous Scheduled Ancient Monuments. | Moderate Pylons already interrupt the landscape. The addition of another prominent vertical feature would not appear alien in this landscape if located appropriately to avoid visual cluttering and away from the sensitive sites. Although the Norwich Southern Bypass influences this landscape, only a small proportion lies within its boundaries. | Moderate It would be possible to locate the lower end of this scale (2 – 3 turbines) without causing cluttering with existing built structures and landmarks within the landscape (although see note above re. increasing the level of development in the valley and weakening of role as a green buffer). | High The relatively small scale of this landscape could not accommodate a large number of additional prominent built structures. The visual impact of this many turbines in this landscape would override all other aspects of the landscape. | | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|---|--|--|--|-------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Skyline <ul style="list-style-type: none"> The valley crests form a skyline in views from the valley floor. Mixed woodland blocks and shelter blocks occur on the valley sides creating a well-wooded skyline. | High Any form of large-scale development on the valley crest could appear over dominant and disrupt the scale of the valley. | | | | |
| Views and Visual Connections with Adjacent Landscapes <ul style="list-style-type: none"> Views are variable with open and enclosed views within the valley with large institutional buildings occasionally visible. Views across the valley towards the City of Norwich and the cathedral. | Moderate A single turbine would appear prominent in views from the higher land of adjacent landscapes and could disrupt views out of the valley to landmark features (e.g. Norwich Cathedral). | High A small group of turbines would be highly visible and dominant in views. Views to landmark features within and outside of the landscape would be disrupted. | | | |
| Remoteness and Tranquillity <ul style="list-style-type: none"> Impenetrability resulting in a sense of remoteness and solitude – remarkable given the closeness of the city. Noise of traffic on the Norwich Southern Bypass disturbs the tranquillity of the valley. Overall despite these urban influences, the valley is mostly quiet and secluded. | Moderate In areas of limited access where there is a sense of remoteness, location of a single turbine could impinge on the sense of remoteness and change the pace of the landscape by adding movement. However, located carefully a turbine could relate to the existing urban influences in the valley. | Moderate The quiet and secluded areas of the valley are sensitive to a development of this scale. However, a small group of turbines at the lower end of this range could be accommodated if related to the existing urban influences. | High It would be difficult to site a group of turbines of this size without altering the existing sense of quietness and seclusion found in parts of this landscape. | | |

LANDSCAPE SENSITIVITY OVERVIEW

Single Turbine

Overall it is judged that the Valley Urban Fringe has a **moderate** sensitivity to location of a single turbine. Although it is a relatively small scale landscape defined and contained by the valley crests there is opportunity for a single turbine to appear positively in this landscape. The presence of large institutional buildings provides an opportunity to link a single turbine giving it a functional role. The location of this landscape type, on the edge of Norwich, means there is a fine balance between its level of development and its important natural qualities, remote secluded character and role as a green buffer. However location of a single turbine could provide a gateway link to Norwich without intruding on the natural qualities or the remote, secluded character.

Small Group, Medium Group and Large Group

Overall it is judged that the Valley Urban Fringe landscape type has a **high** sensitivity to any development containing more than one turbine. This landscape forms a green buffer to the edge of Norwich. It is a relatively small scale and contained landscape with a varied land cover and inaccessible areas of quietness and seclusion. A development of more than one turbine would change the character, and be over dominant in relation to views and the valley crest skyline.

GUIDANCE

Single Turbine (1 turbine)

- 9.5. The Valley Urban Fringe landscape is considered to have a **moderate sensitivity** to a single turbine. In considering an appropriate location for a single turbine within this landscape type, the guidance set out below should be followed.
- Conserve views to Norwich Cathedral;
 - Avoid visual confusion in relation to existing vertical features (pylons);
 - Conserve the natural character of the landscape and important areas of wetland habitat;
 - Respect the inaccessible, remote and secluded areas of the valley which are valued for the absence of development and role as a green buffer to the edge of Norwich;

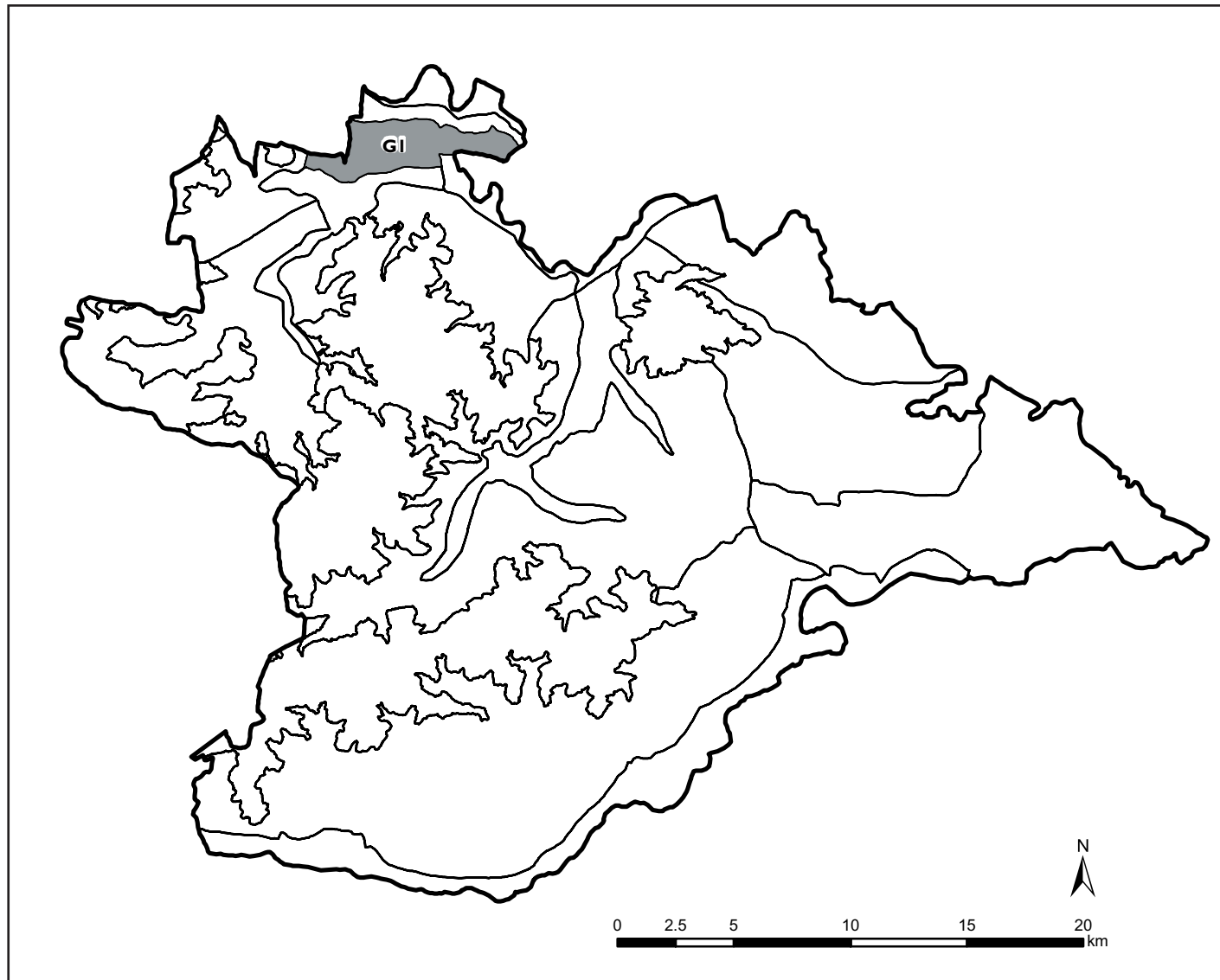
- Consider opportunities to link a single turbine to existing institutional buildings (associated with the university, research park and new hospital) within the landscape therefore providing a functional role within the landscape;
- Consider opportunities to link to recreational features and buildings within the landscape to provide a landmark feature in relation to restored gravel workings (in such areas a lower height turbine may be more appropriate than a commercial 100m + structure).

9.6. **Cumulative Development:** The Valley Urban Fringe landscape type occurs in only one area, it is a relatively small-scale landscape covering a small geographic area. This suggests that there would not be scope to locate more than one single turbine in this landscape type.

Small, Medium and Large Turbine Groups (2+ turbines)

9.7. The Valley Urban Fringe landscape has a **high sensitivity** to small, medium and large turbine groups and therefore this landscape type is not considered as an appropriate location for a development of this scale. Further guidance is not therefore provided.

Landscape Type G: Fringe Farmland



10. LANDSCAPE TYPE G: FRINGE FARMLAND

LOCATION AND BOUNDARIES

- 10.1. The Fringe Farmland landscape type is located in one area to the west of Norwich. It occurs as a broad linear strip adjacent to the Norwich Southern Bypass occupying a ridge of land from about 30m to over 50m AOD between the Tud and Yare River Valleys. It is defined as a distinctive landscape as a result of its relatively developed character and context of relatively degraded farmland.

Character Areas within the Landscape Type

- Easton Fringe Farmland (G1)

SENSITIVITY TO WIND TURBINE DEVELOPMENT

- 10.2. The following table considers the key characteristics of the landscape type under each of the eight attributes identified as being potentially sensitive to turbine development. The sensitivity of each characteristic of the landscape has been evaluated in relation to five different scales of turbine development: single (1 turbine), small (2-6 turbines), medium (6-12 turbines), medium-large (12-25 turbines) and large (25+ turbines).
- 10.3. Considering each characteristic independently results in a comprehensive, integrated assessment and provides a detailed understanding of the sensitivity of the landscape and the reasons for its sensitivity. **Note that it is the combination of key characteristics that should be considered (i.e. each column) in forming a judgement about sensitivity to turbine development. The guidance contained in any single row of the table, should not be considered in isolation.**
- 10.4. Note that where a high sensitivity is made for a single turbine this is likely to remain the same for a greater number of turbines and is not repeated (in the table). Any differences in relation to a larger number of turbines are noted.

| Key Characteristics of the Landscape | Single Turbine | Small Group | Medium Group | | Large Group |
|--|---|--|--|-------|-------------|
| | I | 2-6 | 6-12 | 12-25 | 25+ |
| Scale and Enclosure <ul style="list-style-type: none"> This landscape can feel exposed in places as a consequence of the elevated ridge topography and relatively low-level of woodland. The scale of this landscape varies according to the land cover pattern and level of built development. | Low The scale of the landscape varies, as does the degree of openness and enclosure. A single turbine could be accommodated without adversely altering this. The more open and exposed areas where the landform is elevated and there is a low level of woodland are less sensitive to a single turbine. Similarly where the landscape is 'enclosed' by built development there is opportunity to relate a single turbine to large-scale buildings. | Moderate In relation to the existing built-up areas, a group at the higher end of this range could appear overwhelming and enclosing. However the more open and exposed areas where the landform is elevated and there is a low level of woodland are less sensitive to a small group of turbines. | High In terms of the scale and physical extent of this landscape, it is judged that a group of >6 turbines would be over dominant – overwhelming and enclosing the landscape with built development. | | |
| Landform and Topography <ul style="list-style-type: none"> Gentle ridge of land marking the dividing line between two valley landscapes and creating an impression of exposure along the ridgeline. Undulating landscape with a distinct ridge top. Elevation of above 30m AOD and up to 50m AOD | Moderate The ridgeline is prominent and a turbine located on this higher land would be visible from adjacent valley landscapes. It is highly sensitive. Away from the ridgeline the landscape is less sensitive. | Moderate The ridgeline is prominent and a group of turbines located on this higher land would be visible from adjacent valley landscapes. However, the area is less sensitive away from the ridgeline and where built development reduces views. | High The ridgeline and undulating landscape is sensitive - a group of turbines would sit awkwardly and irregularly in relation to the topography and be over dominant in views. | | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|--|---|--|---|-------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Land Cover Pattern <ul style="list-style-type: none"> Defined predominantly by farmland with urban and urban fringe development. A degraded farmland context. History of mineral extraction, particularly sand and gravel workings, resulting in scarred and reclaimed areas. Use of the area for urban fringe uses including a park and ride scheme, retail warehouses, a golf course and the Royal Norfolk Showground. Rural farmland origins and context including both arable and pastoral farmland and retaining a peaceful rural quality. Absence of large wooded areas. | Low This is an interrupted and fragmented landscape with a varied land cover pattern. A single turbine could provide a focal point and take on a functional role if linked to existing features/ buildings on the urban fringe or former gravel workings. | Moderate This is a fragmented landscape in terms of its land cover and turbines could serve as a unifying feature. The intact areas of arable and pastoral farmland are more sensitive to change. Linked to former gravel workings and features on the urban fringe a small group of turbines could provide a functional role and form a gateway to the City of Norwich. | High The land cover pattern is fragmented and varied. A group of turbines of this size would overwhelm the existing land cover pattern. | | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|---|--|--|--|-------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Settlement Pattern and Density <ul style="list-style-type: none"> Significant level of settlement including the Norwich suburb of New Costessey and the smaller linear settlement of Easton. Relatively developed character. Large linear block of out of town shops along the Norwich southern bypass in the form of retail warehouses and supermarkets. | Low This landscape type has a relatively developed character and is not sensitive to location of a single turbine. Linked to the urban edge and modern development along the Norwich Southern Bypass, a single turbine could provide a functional role and form a gateway feature. | Moderate This landscape type has a relatively developed character and the areas of remaining undeveloped farmland are therefore sensitive. Linked to the urban edge and modern development along the Norwich Southern Bypass, a small group of turbines could provide a functional role and form a gateway feature, although >3 turbines could be over dominant as a gateway in relation to Norwich. In addition, the open gap between Costessey and Easton is sensitive and should be retained as an undeveloped landscape. | High A medium group of turbines would begin to impinge on the open areas that remain in this landscape type, increasing the perceived level of development. A development of this scale would be over dominant in relation to the edge of Norwich. | | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|---|--|--|--|-------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Prominent Built Structures and Landmarks <ul style="list-style-type: none"> Norwich Southern Bypass is a major feature of the area. This is the route by which most people experience the landscape. Pylons cross the landscape at intervals. Large buildings, totally unprecedented elsewhere in South Norfolk, are visible effectively creating an extension to the city and a new 'gateway' to Norwich. Distinctive water tower at Easton acts as a local landmark. | Low There are already a number of prominent built structures in this landscape. Linked to the buildings which have begun to form a gateway to Norwich, a single turbine could provide an impressive landmark feature. Care should be taken to site a single turbine away from the pylons which cross the landscape to avoid cluttering and visual confusion. | Low This landscape, in parts, feels fragmented by piecemeal development and a small group of turbines could provide unity. A small group of turbines appropriately sites and arranged could provide a gateway feature to the City. Care should be taken to avoid visual clutter and confusion with existing vertical elements. | High A group of turbines of this size could be visually confusing and over dominant in this already interrupted landscape. It would not function as a landmark or gateway to the city as it would form an overwhelming built development in its own right. | | |
| Skyline <ul style="list-style-type: none"> Skyline varies, sometimes formed by distant views to adjacent landscapes but often interrupted by development and shelterbelts. | Low The skyline of this landscape often appears visually interrupted and irregular. A single turbine could form a landmark feature and focal point without adversely affecting the appearance of the existing skyline. | Moderate A small group of turbines could form a landmark feature, unifying the often interrupted and irregular skyline. However at the upper end of this group size, turbines may add to the visual confusion of an already interrupted skyline. | High A group of turbines of this size would dominate and confuse the existing skyline. | | |

| | Single Turbine | Small Group | Medium Group | | Large Group |
|--|--|--|--|-------|-------------|
| Key Characteristics of the Landscape | I | 2-6 | 6-12 | 12-25 | 25+ |
| Views and Visual Connections with Adjacent Landscapes <ul style="list-style-type: none"> There are views from the ridge into the adjacent valley landscapes of the Tud and the valley of the rural Yare with its flooded gravel workings. The ridge is a locally prominent feature of the landscape and is visible from the valleys of the Yare and Tud and the surrounding tributary valley landscape. | Moderate Large vertical structures already exist in views. A single turbine could form a landmark feature in views within this landscape without appearing over dominant. Views to the ridge from adjacent landscapes are sensitive. | High Location of more than one turbine would alter views within this landscape and be dominant in views to this landscape from the adjacent river valleys. | | | |
| Remoteness and Tranquillity <ul style="list-style-type: none"> Not a remote or tranquil landscape. Recent construction and land use activities have had significant effect upon the rural character. The Norwich Southern Bypass introduces a corridor of noise and movement. Other roads of the area retain a strong rural character. | Low The rural character of the area has already undergone considerable change and includes large-scale development and movement. It is therefore not sensitive in terms of this characteristic. There is an opportunity to locate a single turbine/small turbine group in association with the urban fringe and the Norwich Southern Bypass to provide a unifying, landmark feature. | Moderate A medium scale group would reinforce the image of a 'developed' landscape and be over dominant in relation to the edge of Norwich. | High This number of turbines would impinge on the rural character which is retained in some parts of the landscape | | |

LANDSCAPE SENSITIVITY OVERVIEW

Single Turbine

Overall it is judged that the Fringe Farmland landscape type has a **low sensitivity** to location of a single turbine. This landscape type has a relatively developed character, a degraded farmland context and forms an important gateway to the west of Norwich. There are therefore opportunities for a single turbine to be located as a landmark feature marking the edge of the city or to provide a functional role in relation to the large buildings and areas of former gravel working. A single turbine could be located without adversely affecting key characteristics of the landscape such as skyline, scale, enclosure and tranquillity.

Small Group

Overall it is judged that the Fringe Farmland landscape type has a **moderate sensitivity** to location of a small group of turbines (2-6). This is, in places, an interrupted and fragmented landscape. A small group of turbines (particularly at the lower end of this scale) could provide a positive unifying feature in this landscape and also act as a landmark feature, highlighting the gateway to Norwich without adversely affecting most of the key characteristics. Views to the ridgeline from adjacent landscapes are sensitive and development here would be highly visible.

Medium and Large Group (< 6 turbines)

It is judged that this landscape has an overall **high sensitivity** to location of a medium (6-12 and 12-25) and large group of turbines (25+). It is judged that all key characteristics of this landscape type are sensitive to and would be adversely affected by this scale of development. The physical extent of this landscape is not large enough to accommodate this scale of development without over dominating it. The remaining areas of arable and pastoral farmland are sensitive and views from other adjacent landscapes would be adversely altered. Such a scale of development would be inappropriate as a gateway, as rather than being subservient to the city, it would become feature in its own right.

GUIDANCE

Single Turbine (1 turbine)

10.5. The Fringe Farmland landscape type is considered to have a **low sensitivity** to a single turbine. In considering an appropriate location for a single turbine within this landscape type, the guidance set out below should be followed.

- Conserve remaining pockets of open arable and pastoral farmland;
- Avoid visual confusion and cluttering in relation to the lines of pylons which cut across the landscape;

- Avoid the sensitive ridgeline where development could be highly visible; in particular avoid inappropriate siting of turbine with regards to views from the adjacent river valleys.
- Consider opportunities in relation to major transport corridors (A1074 and Norwich Southern Bypass) to provide a landmark gateway feature;
- Consider associating with existing large buildings and former gravel workings to provide a functional role. Note that in recreational a turbine of <100m height will be more appropriate.

10.6. **Cumulative Development:** This a relatively small landscape type, of just one character area. There is no potential for more than one individual siting of a single turbine in the landscape. To locate a mix of scales of development (i.e. one single turbine plus a small scale group) would also be inappropriate adding to the already fragmented appearance of the landscape.

Small Group (2-6 turbines)

10.7. The Fringe Farmland landscape type is considered to have a **moderate sensitivity** to a small-scale group of turbines. In considering an appropriate location for a small group of turbines within this landscape type, the guidance for a single turbine applies. In addition, the guidance set out below should be followed:

- Maintain undeveloped character of the strategic gap between Costessey and Easton;
- Prevent further fragmentation and interruption of this landscape and seek to use location of turbines to unify the area.

10.8. **Cumulative Development:** This a relatively small landscape type, of just one character area. There is no potential for more than one small group of turbines (2 – 6). They should form a distinct and unique landmark feature. To locate a mix of scales of development (i.e. one single turbine plus a small scale group) would also be inappropriate adding to the already fragmented appearance of the landscape.

Medium and Large Groups (6+ turbines)

10.9. The Fringe Farmland landscape has a **high sensitivity** to medium and large turbine groups and this landscape type is not considered to be an appropriate location for a development of this scale. Further guidance is therefore not provided.

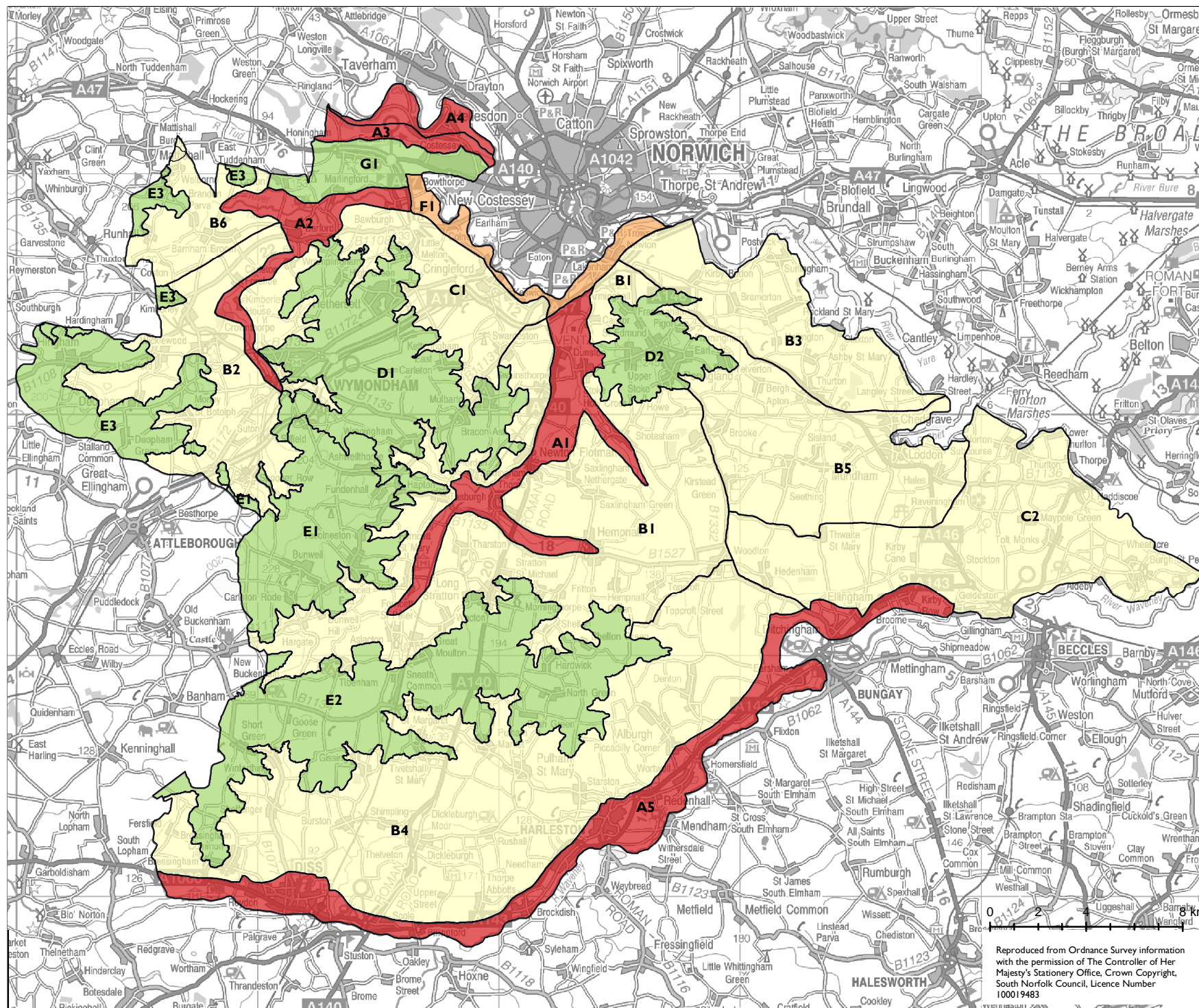
II. SUMMARY OF WIND TURBINE SENSITIVITY

II.1. This chapter provides a summary of overall wind turbine sensitivity in South Norfolk District. Note this table refers to the sensitivity of **one** development of each wind turbine typology and separate guidance is given in relation to cumulative development. The following table consolidates sensitivity judgements for each of the landscape types. **The information in this table provides a 'quick guide' and should not be used in isolation. It must be read in conjunction with the judgements, guidance and information provided on cumulative development in the main body of the report.**

| | Overall Sensitivity of Landscape Types | | | | | | |
|-------------------------|--|-----------------------|-------------------------------------|-----------------------------|---------------------|------------------------|--------------------|
| Turbine Groupings | A: Rural River Valley | B: Tributary Farmland | C: Tributary Farmland with Parkland | D: Settled Plateau Farmland | E: Plateau Farmland | F: Valley Urban Fringe | G: Fringe Farmland |
| Single Turbine | High | Low | Low | Low | Low | Moderate | Low |
| Small Group (2-6) | High | Moderate - High | Moderate- High | Moderate | Low | High | Moderate |
| Medium (6-12) | High | High | High | High | Low | High | High |
| Medium Group (12-25) | High | High | High | High | Moderate | High | High |
| Large Scale Group (25+) | High | High | High | High | | High | |

High

High



South Norfolk Wind Turbine Sensitivity Study

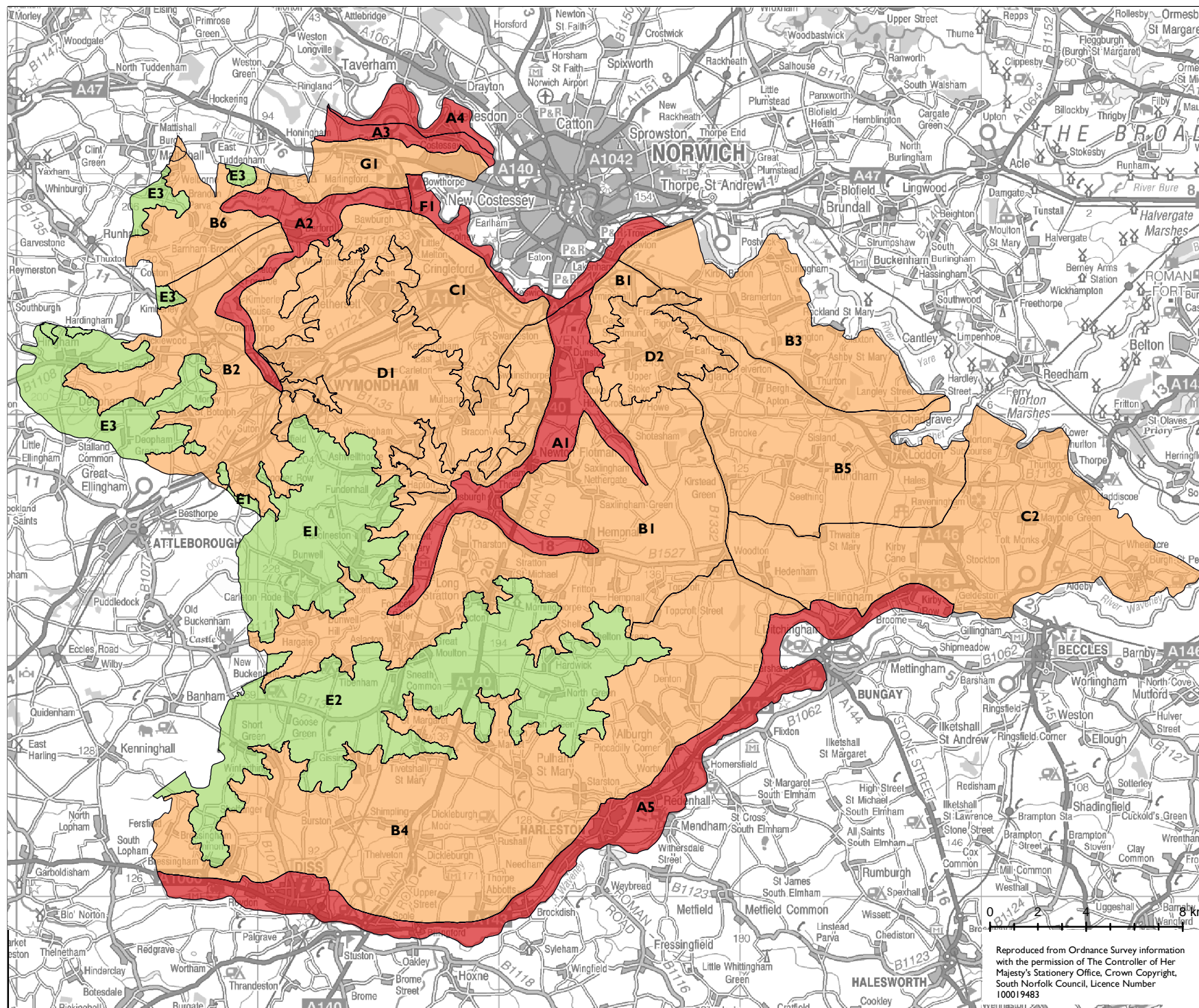
Overall Sensitivity of Landscape Types to Location of a Single Turbine

Key

- High Sensitivity
 - Moderate Sensitivity
 - Low - Moderate Sensitivity
 - Low Sensitivity
- A:** Rural River Valley
F: Valley Urban Fringe
B: Tributary Farmland
C: Tributary Farmland with Parkland
D: Settled Plateau Farmland
E: Plateau Farmland
G: Fringe Farmland

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South Norfolk Wind Turbine Sensitivity Study

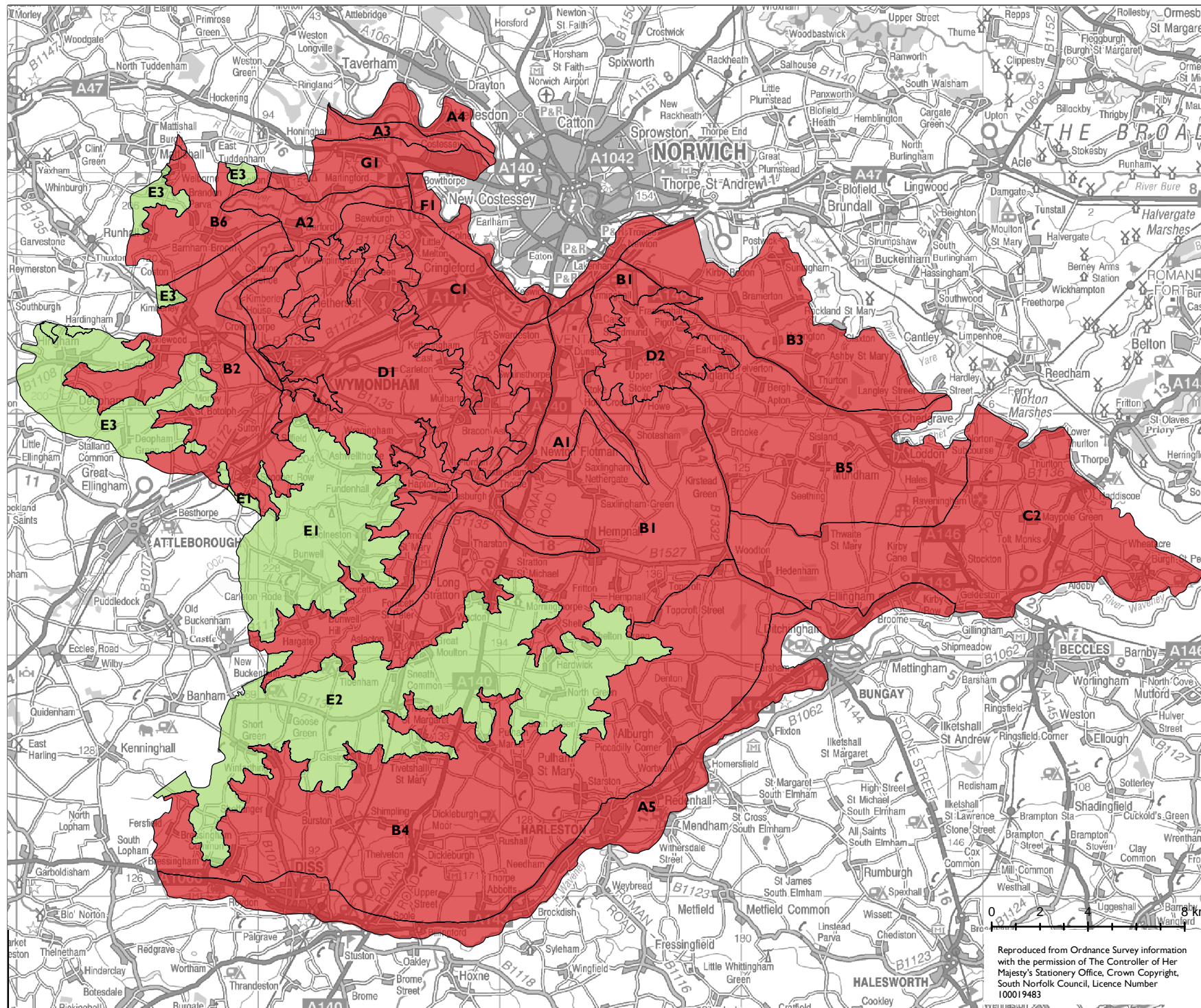
Overall Sensitivity of Landscape Types to Location of a Small Group (2 - 6) of Turbines

Key

- High Sensitivity
 - A: Rural River Valley
 - F: Valley Urban Fringe
- Moderate Sensitivity
 - B: Tributary Farmland
 - C: Tributary Farmland with Parkland
 - D: Settled Plateau Farmland
 - G: Fringe Farmland
- Low Sensitivity
 - E: Plateau Farmland

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South Norfolk Wind Turbine Sensitivity Study

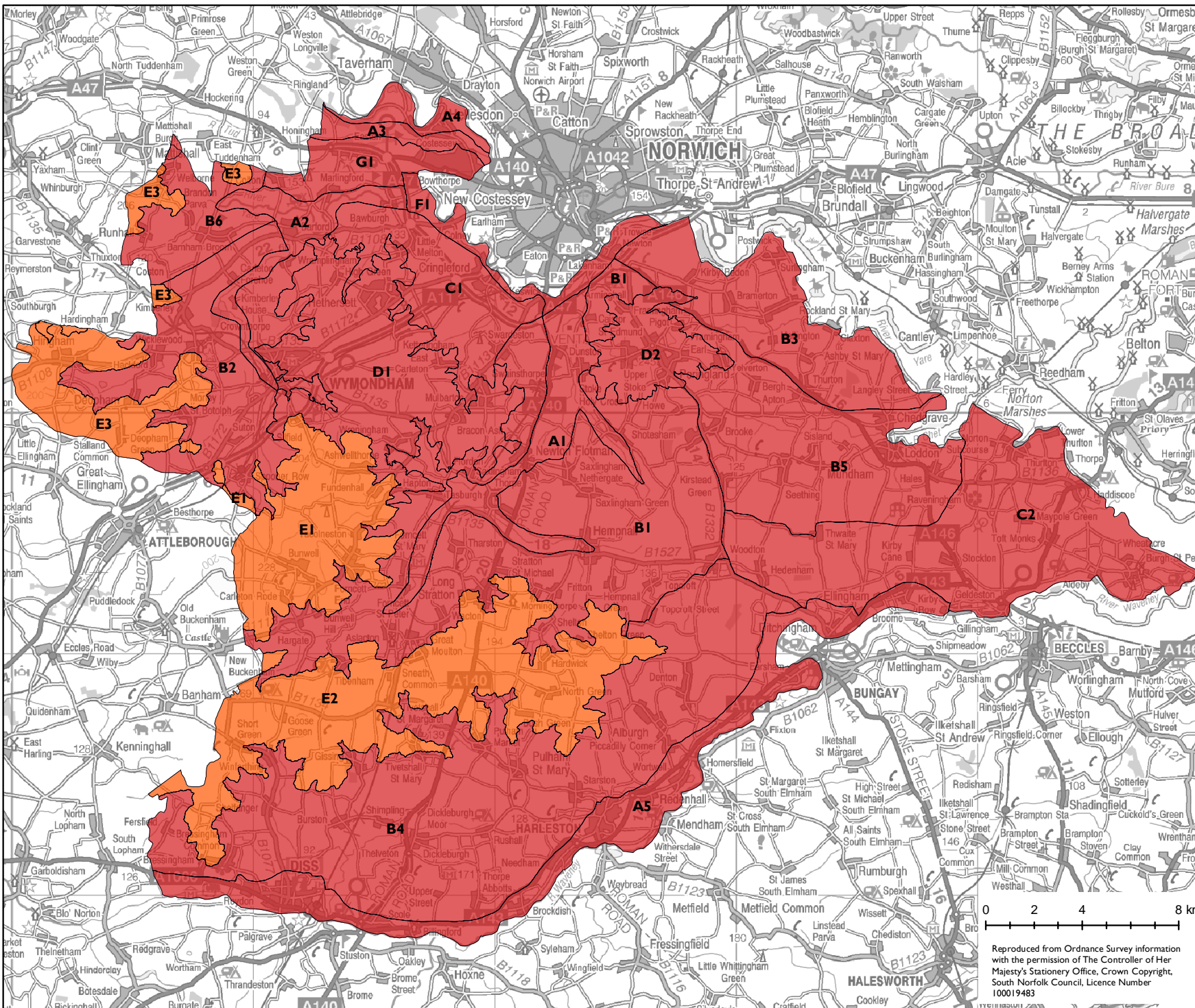
Overall Sensitivity of Landscape Types to Location of a Medium Group (6 - 12) of Turbines

Key

- High Sensitivity
- A: Rural River Valley
- B: Tributary Farmland
- C: Tributary Farmland with Parkland
- D: Settled Plateau Farmland
- F: Valley Urban Fringe
- G: Fringe Farmland
- Low Sensitivity
- E: Plateau Farmland

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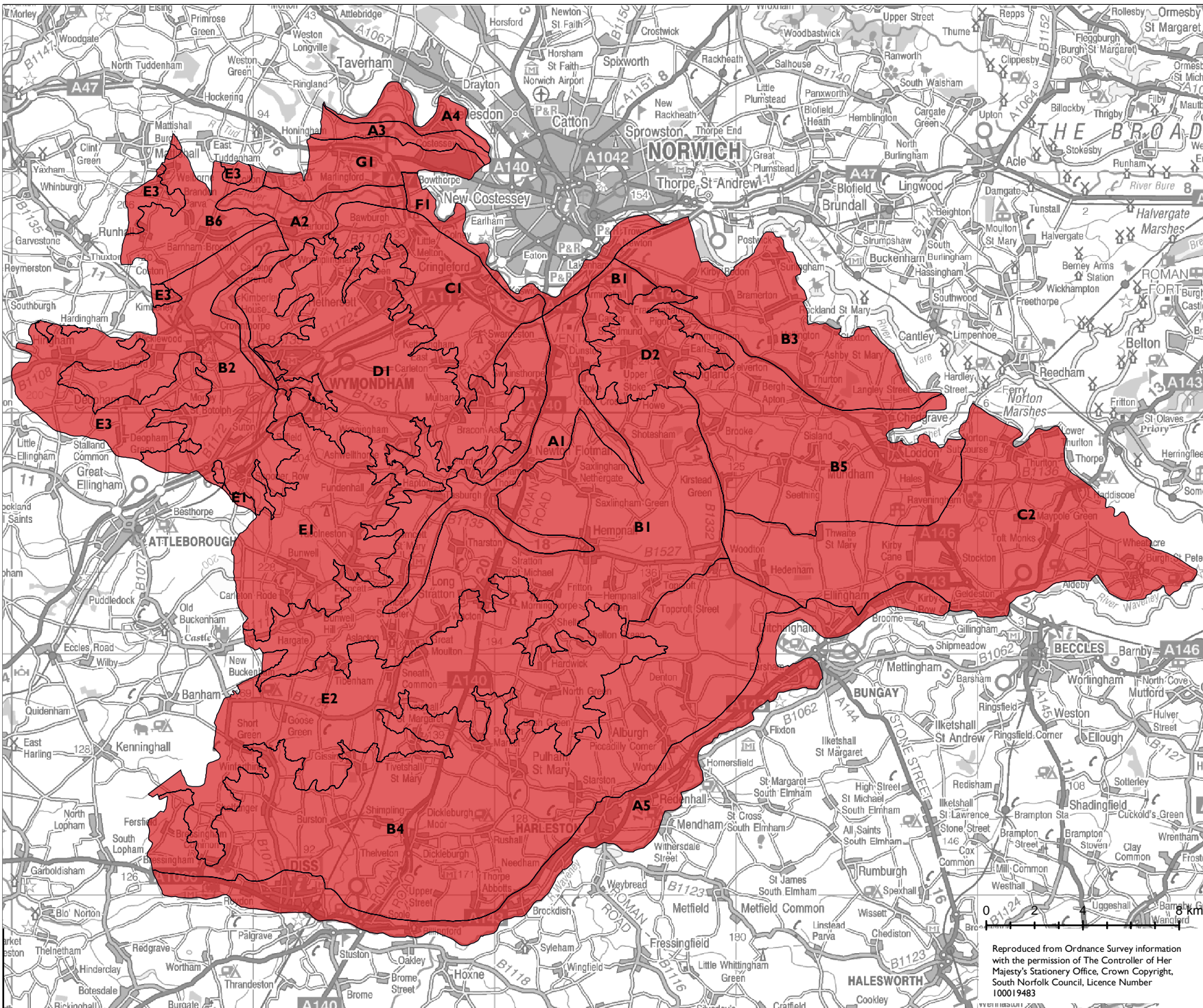
South Norfolk Wind Turbine Sensitivity Study

Overall Sensitivity of Landscape Types to Location of a Medium Group (12 - 25) of Turbines

- Key**
- High Sensitivity
 - Moderate - High Sensitivity
- A: Rural River Valley
B: Tributary Farmland
C: Tributary Farmland with Parkland
D: Settled Plateau Farmland
F: Valley Urban Fringe
G: Fringe Farmland
- E: Plateau Farmland

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Appendix I:
Field Survey Form

SOUTH NORFOLK

Wind Turbine Sensitivity Study

DRAFT LANDSCAPE CHARACTER AREAS:

DATE:WEATHER:

SURVEYORS:LOCATION ON FIELD MAP:

PHOTOGRAPH NUMBERS:

KEY ISSUES / VISIBLE FORCES FOR CHANGE

Scale and enclosure of landscape

Large scale

Medium scale

Small scale

Description of scale and enclosure

Landform & Topography

Simple landform

Varied landform

Complex landform

Description of landform

Land Cover pattern

Settlement Pattern & Density

| | Description of settlement pattern |
|-------------------------|-----------------------------------|
| Unsettled | <div></div> |
| Scattered dwellings | <div></div> |
| Small scale settlement | <div></div> |
| Medium scale settlement | <div></div> |
| Large scale settlement | <div></div> |

Pattern.....

Density.....

Age, style and materials.....

Relationship to the landscape.....

Settlement edge
character.....

.....

Landmarks and Prominent Built Structures.

Skyline

| | Description of skyline |
|---|--------------------------|
| Prominent / undeveloped / uninterrupted | <input type="checkbox"/> |
| Prominent / developed / interrupted | <input type="checkbox"/> |
| Not prominent | <input type="checkbox"/> |
| | <input type="checkbox"/> |

Views

Views & Connections with the adjacent Landscape

Remoteness & Tranquillity

| | Description of remoteness |
|-------------------------|---------------------------|
| Physically remote | <input type="checkbox"/> |
| Perceptually remote | <input type="checkbox"/> |
| Tranquil | <input type="checkbox"/> |
| Physically not remote | <input type="checkbox"/> |
| Perceptually not remote | <input type="checkbox"/> |
| Not tranquil | <input type="checkbox"/> |

Overview of Wind Turbine Sensitivity

| | Single Turbine | Small cluster | Medium group | | Large group |
|--|----------------|---------------|--------------|-------|-------------|
| | I | 2-6 | 6-12 | 12-25 | 25+ |
| Scale/enclosure | | | | | |
| Landform and Topography | | | | | |
| Land Cover Pattern | | | | | |
| Settlement Pattern and Density | | | | | |
| Landmarks and Prominent Built Structures | | | | | |
| Skyline | | | | | |
| Views | | | | | |
| Views & Connections with adjacent Landscapes | | | | | |
| Remoteness and Tranquillity | | | | | |

Overview of Sensitivities

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Potential Sensitivities to CUMULATIVE effects

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**Notes for
Guidance.....**

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