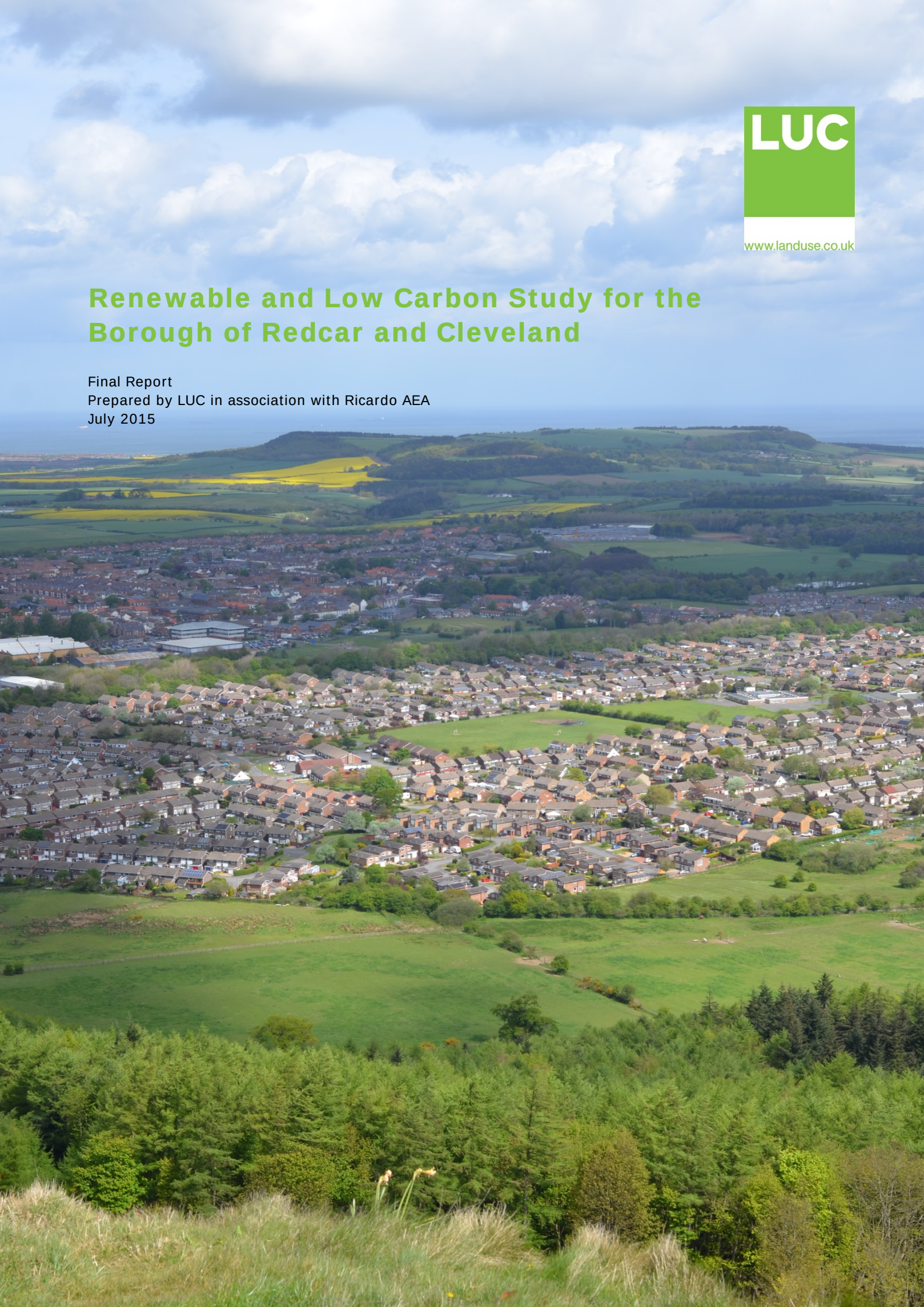

Renewable and Low Carbon Study for the Borough of Redcar and Cleveland

Final Report
Prepared by LUC in association with Ricardo AEA
July 2015

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Project Title: Renewable and Low Carbon Energy Study for Borough of Redcar and Cleveland

Client: Redcar and Cleveland Borough Council

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Introduction:

1 Introduction

1.1 LUC and Ricardo-AEA were commissioned in March 2015 by Redland and Cleveland Borough Council to undertake a Renewable and Low Carbon Energy Study. The study seeks to provide a robust evidence base to underpin planning policies within the emerging Local Plan relating to renewable and low carbon energy development. The objectives of the study were to:

- Assess the technical and deployable potential for renewable energy within the Borough.
- Review the suitability of the Council's existing approach to landscape protection in relation to renewables. This included undertaking a landscape sensitivity assessment for wind and solar energy development.
- Recommend appropriate policy options in relation to renewable and low carbon energy for the Local Plan.

1.2 This report sets out the findings of the assessment of technical and deployable potential and the landscape sensitivity assessment. It concludes with a discussion of the potential policy options that could be considered by Redcar and Cleveland Borough Council in the review of their Draft Local Plan.

Background to the study

1.3 Following the publication of the National Planning Policy Framework (NPPF), Redcar and Cleveland Borough Council decided to prepare a single Local Plan document which will set out policies, allocations and designations for the Borough (excluding that part of the Borough that falls within the North York Moors National Park) for the next 15 years. The Local Plan will replace the existing Local Development Framework Core Strategy and Development Policies DPDs (2007).

1.4 The Council began the preparation of a new Local Plan in 2012. A number of stages of plan preparation were completed including a Scoping Report (November 2012) and a Draft Local Plan (September 2013), both of which were subject to public consultation. In July 2014, the Draft Plan (Publication document) was taken to the Council for approval. However, the Council resolved not to approve the document. This decision meant that the Local Plan could not progress to the next stage of preparation in its original form. Planning officers responded to the issues raised by the Councillors by undertaking a review of their key concerns which included issues relating to the policy approach to renewable and low carbon energy. Specifically, Councillors raised concerns about the potential impacts of renewable and low carbon energy developments (and in particular wind energy) on the Borough's landscape. These concerns related to the potential impacts of wind turbines on:

- The North York Moors National Park and North Yorkshire and Cleveland Heritage coast.
- The attractive landscapes within the Borough which are unspoilt by significant development and which are currently unprotected.

1.5 Redcar and Cleveland Borough is faced with a wide range of challenges arising from a changing climate. Balancing the need to make a meaningful contribution towards reducing harmful emissions from our energy use (through cleaner energy production) with the management of the landscape is one of these key challenges. The National Planning Policy Framework makes it clear that local authorities should take a positive approach towards renewable and low carbon developments. One of the core principles that underpins the NPPF is that: "*planning should support the transition to a low carbon future in a changing climate...and encourage the use of renewable resources.*" [Para 17]

1.6 It also states that local planning authorities should "*have a positive strategy to promote energy from renewable and low carbon sources"* and "*design their policies to maximise renewable and low carbon energy development while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts)".* [Para 97].

1.7 The study was commissioned to provide an objective and independent review of the potential policy approaches that could be incorporated into the Local Plan in relation to renewable and low carbon energy. The Council recognises the need to provide a positive framework for renewable energy generation (which can have environmental, economic, social and other benefits). However, the development of wind and solar electricity generating installations within the Borough needs to be managed carefully to achieve the greatest contribution towards energy needs, while at the same time ensuring that the important characteristics of the landscape are not unacceptably harmed.

Ministerial Statement on Onshore Wind

1.8 Subsequent to the study being commissioned, on the 18th June 2015, the Secretary of State for Communities and Local Government (Greg Clark) released a Ministerial Statement on onshore wind energy. This stated that:

> *"When considering applications for wind energy development, local planning authorities should (subject to the transitional arrangement) only grant planning permission if:*
>
> - *the development site is in an area identified as suitable for wind energy development in a Local or Neighbourhood Plan; and*
> - *following consultation, it can be demonstrated that the planning impacts identified by affected local communities have been fully addressed and therefore the proposal has their backing.*
>
> *Whether the proposal has the backing of the affected local community is a planning judgement for the local planning authority."*

1.9 The Ministerial Statement was subsequently incorporated into the Planning Practice Guidance (PPG) (see Paragraph: 033 of the Renewable and Low Carbon Section).

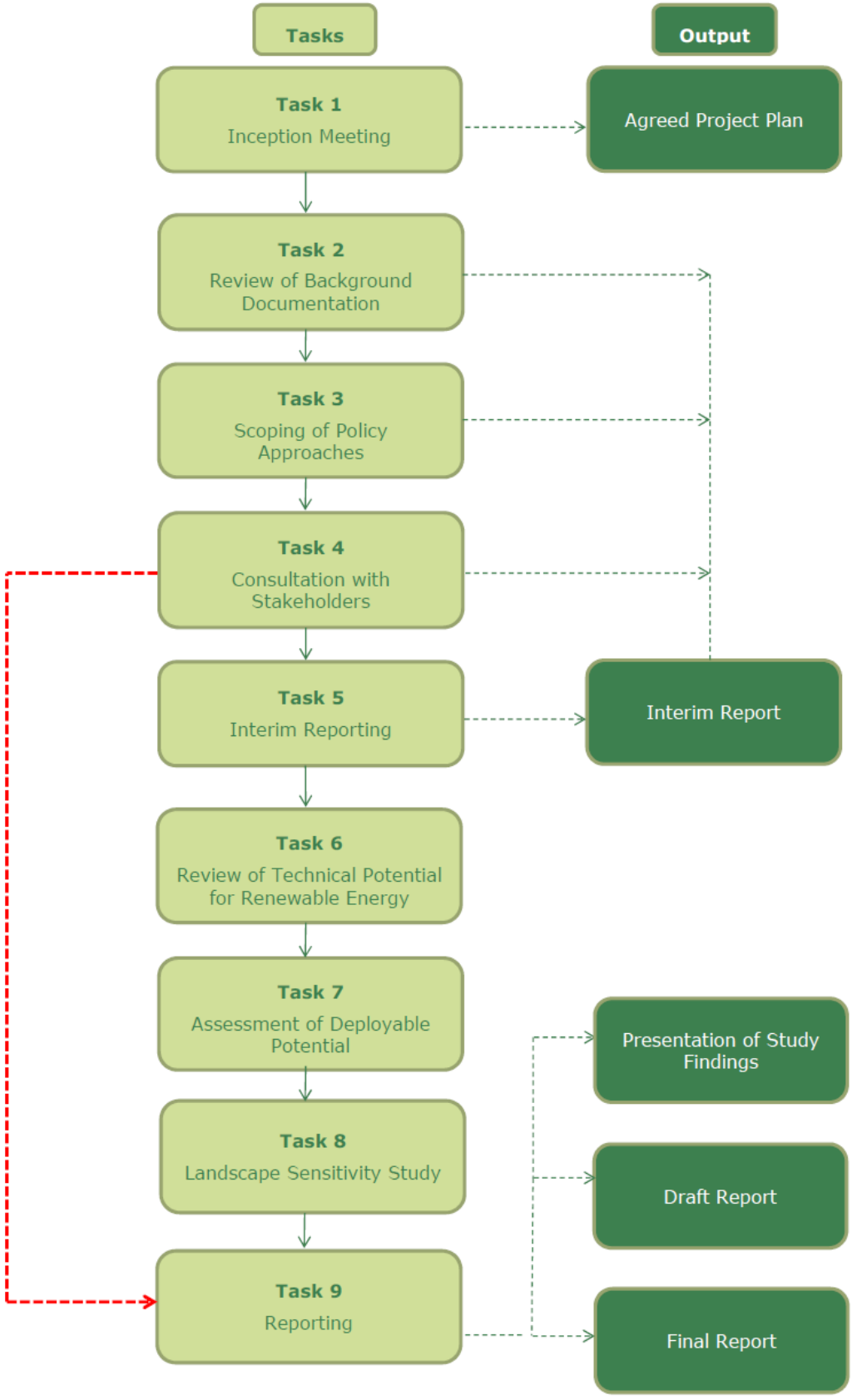
1.10 In the light of this guidance, this study provides recommendations on how the findings of this study could be used to help identify 'suitable areas for wind energy development'.

Study approach

1.11 The study involved nine main tasks, as set out in **Figure 1.1** below. It was intended that Task 4 (Consultation with Stakeholders) would be undertaken to inform the preparation of the interim report. However due to the General Election in May 2015 and the constraints of 'Purdah[1]', it was not possible to consult with the Elected Members at that stage. This consultation therefore took place once the draft assessment of technical and deployment potential and the draft landscape sensitivity assessment had been completed (as indicated by the red arrow in **Figure 1.1**).

[1] Purdah is the pre-election period in the UK, specifically the time between an announced election and the final election results. The time period prevents central and local government from making announcements about any new government initiatives which could be seen to be advantageous to any candidates or parties in the forthcoming election.

Figure 1.1: Summary of Key project tasks and outcomes



1.12 A summary of the tasks undertaken is provided in **Table 1.1** below:

Table 1.1: Summary of Key Study Tasks

Key Tasks	
1: **Inception Meeting**	An inception meeting was held with Council officers in March 2015 to agree the scope of the study.
2. Review of **Background Documentation**	A review was undertaken of the relevant background information to the study. This included: • A review of the policy context for renewable energy at the national, regional and local level. (See Chapter 2). • A review of the policy context and relevant guidance on landscape issues within the Borough. (See Chapter 2).
3. **Scoping of Policy Approaches**	An initial scoping exercise was undertaken to identify the various policy approaches that could be incorporated within the Local Plan in relation to renewable and low carbon energy. These are reviewed in Chapter 5 of this report.
4. **Consultation** with Stakeholders	Consultation was undertaken with Councillors and planning officers from Redcar and Cleveland to discuss the potential policy approaches that could be included in the Draft Local Plan.
5. **Interim Report**	An interim report was prepared setting out the initial findings of Tasks 2, and 3 above.
6. Assessment of **technical potential**	An assessment was undertaken of the technical potential (i.e. the total theoretical potential) for renewable and low carbon energy within the Borough.
7. Assessment of **deployable potential**	An assessment was undertaken of the deployable potential for renewable and low carbon energy within the Borough. This took into account factors such as current levels of deployment, planning issues, grid-connection issues and economic viability etc.
8. **Landscape Sensitivity Study**	A landscape sensitivity study was undertaking assessing the sensitivity of Redcar and Cleveland's landscape to large, medium and small scale wind energy developments and solar PV developments.
9. **Reporting**	The initial findings of the study were presented to elected members on the 9th July 2015 and the final report prepared

1.13 A more detailed explanation of the methodologies used to undertake the assessment of technical and deployable potential (Tasks 6 and 7) and the landscape sensitivity assessment (Task 8) are provided in the relevant chapters (as outlined below).

Report structure

1.14 The remainder of this report is structured as follows:

Chapter 2: provides a review of the policy context and background information.

Chapter 3: sets out the findings of the assessment of technical and deployable potential.

Chapter 4: sets out the findings of the landscape sensitivity assessment.

Chapter 5: outlines the potential planning policy options for the Draft Local Plan.

2
Review of Policy Context

2 Context

Introduction

2.1 The chapter provides a review of the general context, policy framework and background documentation of relevance to the study in relation to renewable and landscape issues.

Renewable energy

Policy Context

International and European Policy

2.2 At the Kyoto conference of the United Nations Framework Convention on Climate Change in December 1997, most industrialised countries agreed to reduce emissions of the six principal man-made greenhouse gases to 5.2% below 1990 levels over the period 2008-2012. The UK agreed to a reduction target of 12.5%. The Kyoto Protocol became a legally binding treaty on 16th February 2005. The Doha Climate Change Conference in Dec 2012 led to the adoption of an amendment to the Kyoto Protocol establishing a second round of binding greenhouse gas emission targets for Europe, Australia and a handful of other developed countries. The United Nations are currently in the process of preparing a new international climate change agreement, which will be adopted at the Paris climate conference in December 2015. The EU's contribution to the new agreement will be a binding, economy-wide, domestic greenhouse gas emissions reduction target of at least 40% by 2030.

2.3 In April 2009, the European Union adopted the Directive on Renewable Energy (2009/28/EC), which set targets for all Member States such that the EU will reach a 20% share of energy from renewable sources by 2020. The UK's binding target is to meet 15% of its energy generation from renewable sources by 2020 (this includes electricity, transport and heat). Article 22 of the Directive requires Member States to submit a report every two years to the European Commission (EC) on progress in the promotion and use of energy from renewable sources. The UK's first progress report on the Promotion and Use of Energy from Renewable Sources for the UK (DECC, 2011) was delivered in December 2011 and showed that renewable energy accounted for 54TWh (3.3%) of the UK's total energy consumption in 2010 – an increase of 27% over a two year period. The UK's second progress report (DECC, 2014) reported that at the end of 2012, 4.2% of the UK's total energy consumption came from renewable resources.

National Policy

National Planning Policy Framework (NPPF)

2.4 The Government adopted the NPPF in March 2012, which sets out the environmental, social and economic planning policies for England. The NPPF has replaced the national Planning Policy Statements and Planning Policy Guidance notes (PPSs and PPGs) and some circulars with a single, streamlined document. Central to the NPPF policies is a presumption in favour of sustainable development, that development should be planned for positively and individual proposals should be approved wherever possible. One of the core principles that underpins the NPPF is "*to support the transition to a low carbon future in a changing climate…… and encourage the reuse of existing resources, including conversion of existing buildings, and encourage the use of renewable resources* (for example, by the development of renewable energy)."

2.5 The NPPF states that:

> "*To help increase the use and supply of renewable and low carbon energy, local planning authorities should recognise the responsibility on all communities to contribute to energy generation from renewable or low carbon sources. They should:*

- *have a positive strategy to promote energy from renewable and low carbon sources;*
- *design their policies to maximise renewable and low carbon energy development while ensuring that adverse impacts are addressed satisfactorily, including cumulative landscape and visual impacts;*
- *consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure the development of such sources;*
- *support community-led initiatives for renewable and low carbon energy, including developments outside such areas being taken forward through neighbourhood planning; and*
- *identify opportunities where development can draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers."* [Para 97].

2.6 Furthermore, when determining planning applications, local planning authorities should view sustainable developments favourably. This includes not requiring applicants for energy development to demonstrate the need for renewable and low carbon energy, and approving applications if their impacts are, or can be made, acceptable [Para 98].

Planning Practice Guidance (PPG)

2.7 The Government published national Planning Practice Guidance (PPG) in 2014, as a streamlined web-based resource that accompanies the NPPF. This ensures that planning practice guidance supports national planning policy. The PPG replaced the Planning Practice Guidance for Renewable and Low Carbon Energy (2013). However, a large majority of past guidance has been included in the PPG. The guidance can be found on the Planning Portal website[2]. The key elements of the PPG that are of relevance to this Study are as follows:

2.8 Paragraph 001 states that: "*planning has an important role in the delivery of new renewable and low carbon energy infrastructure in locations where the local environmental impact is acceptable."*

2.9 Paragraph 003 states that *"all communities have a responsibility to help increase the use and supply of green energy, but this does not mean that the need for renewable energy automatically overrides environmental protections and the planning concerns of local communities. As with other types of development, it is important that the planning concerns of local communities are properly heard in matters that directly affect them."*

"Local and neighbourhood plans are the key to delivering development that has the backing of local communities. When drawing up a Local Plan local planning authorities should first consider what the local potential is for renewable and low carbon energy generation. In considering that potential, the matters local planning authorities should think about include:

- *the range of technologies that could be accommodated and the policies needed to encourage their development in the right places;*
- *the costs of many renewable energy technologies are falling, potentially increasing their attractiveness and the number of proposals;*
- *different technologies have different impacts and the impacts can vary by place;*
- *the UK has legal commitments to cut greenhouse gases and meet increased energy demand from renewable sources. Whilst local authorities should design their policies to maximise renewable and low carbon energy development, there is no quota which the Local Plan has to deliver."*

2.10 The role community led renewable energy initiatives have is outlined in paragraph 004, which states that they "*are likely to play an increasingly important role and should be encouraged as a way of providing positive local benefit from renewable energy development…Local planning authorities may wish to establish policies which give positive weight to renewable and low carbon energy initiatives which have clear evidence of local community involvement and leadership."*

[2] See: http://planningguidance.planningportal.gov.uk/blog/guidance/renewable-and-low-carbon-energy/

2.11 In June 2015, the PPG was updated (see Paragraph 033) to take account of the new Ministerial Statement on onshore wind. This states that:

> *"When considering applications for wind energy development, local planning authorities should (subject to the transitional arrangement) only grant planning permission if:*
>
> - *the development site is in an area identified as suitable for wind energy development in a Local or Neighbourhood Plan; and*
> - *following consultation, it can be demonstrated that the planning impacts identified by affected local communities have been fully addressed and therefore the proposal has their backing.*
>
> *Whether the proposal has the backing of the affected local community is a planning judgement for the local planning authority."*

2.12 In terms of identifying suitable area for wind energy development, Planning Practice Guidance, paragraph 005 (Renewable and Low Carbon Energy) states that:

> *"There are no hard and fast rules about how suitable areas for renewable energy should be identified, but in considering locations, local planning authorities will need to ensure they take into account the requirements of the technology and, critically, the potential impacts on the local environment, including from cumulative impacts."*
>
> *"There is a methodology available from the Department of Energy and Climate Change's website on assessing the capacity for renewable energy development which can be used and there may be existing local assessments. However, the impact of some types of technologies may have changed since assessments were drawn up (e.g. the size of wind turbines has been increasing). In considering impacts, assessments can use tools to identify where impacts are likely to be acceptable. For example, landscape character areas could form the basis for considering which technologies at which scale may be appropriate in different types of location."*

2.13 Paragraph 008 also explains that "*local planning authorities should not rule out otherwise acceptable renewable energy developments through inflexible rules on buffer zones or separation distances. Other than when dealing with set back distances for safety, distance of itself does not necessarily determine whether the impact of a proposal is unacceptable."*

Other National Policy, Strategies and Guidance

2.14 On 8th July 2011 the House of Commons debated and approved six **National Policy Statements** (NPSs) for Energy. The energy NPSs are designed to ensure that planning decisions are transparent and are taken against a clear policy framework, by setting out national policy against which proposals for major energy projects will be determined by the National Infrastructure Directorate (NID) (formerly the Infrastructure Planning Commission or IPC). Although the NPSs primary focus is for nationally significant projects they are also applicable to energy development that fall below 50MW. The Overarching National Policy Statement for Energy (EN-1) sets out national policy for energy infrastructure and describes the need for new national significant energy infrastructure projects. EN-3 (NPS for Renewable Energy Infrastructure) then provides the primary basis for decisions by the NID on applications it receives for nationally significant renewable energy infrastructure, providing guidance on various technologies and their potential for significant effects.

2.15 The **Planning and Energy Act (2008)** enables local planning authorities to set requirements for energy use and energy efficiency in local plans, including:

- a proportion of energy used in development in their area to be energy from renewable sources in the locality of the development;
- a proportion of energy used in development in their area to be low carbon energy from sources in the locality of the development; and
- development in their area to comply with energy efficiency standards that exceeds the energy requirements of building regulations.

2.16 The **UK Climate Change Programme 2006** updated the 2000 Climate Change Programme, building on existing commitments to achieve national targets for the reduction of carbon dioxide emissions. The Programme includes a range of measures to be implemented at both the international and national levels. The Programme also introduced a requirement for annual reports to be presented to Parliament on emissions, our future plans and progress on domestic climate change.

2.17 The **UK Energy White Paper** (HM Government, 2007) sets out UK energy policy, recognising that in order to deliver energy security and accelerate the transition to a low carbon economy, the UK must save energy, develop cleaner energy supplies and secure reliable energy supplies at prices set in competitive markets. One of the key elements of the strategy is providing more support for low carbon technologies, including by encouraging public and private sector collaboration and increased international collaboration.

2.18 At the end of 2008, the **Climate Change Act** was passed, restating the UK Government's commitment to wind and other renewables in the move towards a low carbon economy. The Act looks ahead to reductions in UK carbon dioxide emissions of 80% by 2050 and makes these legally binding on the Government. As part of the Act, the Committee on Climate Change is required to report annually to Parliament on the progress made in reducing carbon emissions. The fourth annual progress report on meeting carbon budgets (Committee on Climate Change, 2012) showed that overall progress has been good. Economy-wide emissions fell by 7% in 2011, something that is attributed to a range of factors including the mild winter weather in 2011 (relative to very cold winter weather in 2010), rising fuel prices, falling incomes and transitory factors in power generation. However, the report recognises that, in order to remain on track for a future carbon budgets, there is now an urgent need to move from policy planning to delivery, and to accelerate the pace at which measures are implemented.

2.19 The **UK Renewable Energy Strategy** (HM Government, 2009) set out how the UK will achieve its legally-binding target of obtaining 15% of all energy from renewable sources by 2020 to ensure a secure supply of energy and to tackle climate change. Whereas the Government had been working towards a UK 2020 target of 20% of electricity coming from renewable sources, the lead scenario in the Renewable Energy Strategy is that this figure has to be raised dramatically, in light of the less mature markets in renewable heat and transport fuel. The strategy suggests that the UK may need more than 30% of electricity and 12% of heat to be generated by renewable sources in order to meet the overall energy target.

2.20 In July 2010, the Coalition Government submitted the **UK Renewable Energy Action Plan** to the European Commission. This outlined the technologies that are expected to deliver 15% renewable energy in the UK by the year 2020 along with an indicative interim trajectory for the shares of energy from renewable resources in electricity, heating and cooling and transport.

2.21 In July 2011, the Government published a White Paper entitled **Planning our Electric Future: A White Paper for Secure, Affordable and Low-Carbon Electricity** (HM Government, 2011) setting out its commitment to transform the electricity market to achieve secure, affordable and low-carbon electricity. A key part of this strategy involves encouraging and facilitating the production of cleaner low-carbon energy sources, including wind energy, in order that national renewables targets can be met.

2.22 Also in July 2011, DECC produced the **UK Renewable Energy Roadmap** (DECC, 2011). This is an action plan for the deployment of renewable energy throughout the UK, and focuses on the eight technologies that are considered to have the greatest potential, one of which is onshore wind energy. The key actions in this area that are set out in the Roadmap include increasing overall capacity and upgrading transmission capacity, and co-funding the development of technical solutions to issues that can affect the viability of onshore wind farms, such as interference with aviation radar.

Local Policy

The Development Plan

2.23 The Redcar and Cleveland Core Strategy DPD was adopted in July 2007. The Core Strategy provides the vision and strategy for the future of the Borough. The Core Strategy includes objectives to support conserving, enhancing and capitalising upon the Borough's natural and built environment, these include: supporting national targets for reducing the causes of climate change and encouraging sustainable construction techniques in new development.

2.24 **Policy CS21 Renewable Energy**: sets out that renewable energy schemes will be supported and encouraged where they help to meet the Government's climate change objectives. The policy states that the scale of proposals will reflect the capacity and sensitivity of the landscape to accept the proposed renewable technology. The policy also states that the following broad areas of least constraint have the potential for onshore wind farm development:

- South Tees for medium scale development; and
- East Cleveland for small scale development.

2.25 Policy CS21 also makes reference to the Regional Spatial Strategy (which has now been abolished) and Planning Policy Statement 22, which has been superseded by the NPPF.

2.26 The Redcar and Cleveland Development Policies DPD sets the criteria against which planning applications for development and use of land and buildings in the Borough are to be considered. The policies contained in the document are split between generic policies which provide the basic requirements, standards and procedures for all development, and detailed topic related policies which are specifically related to development within Redcar and Cleveland.

2.27 Policy DP3 Sustainable Design: sets out requirements for developers to meet 10% of the predicted energy requirements from renewable energy sources (e.g. Combined Heat and Power, solar) for major developments [2500sqm or 25 dwellings (1ha) or more]. Sustainable design is also required to be incorporated into the design of new developments in terms of energy efficiency, water efficiency, water management and waste management and to minimise vulnerability to climate change.

Draft Local Plan – Published Document

2.28 As mentioned in **Chapter 1**, Redcar and Cleveland Borough Council began the preparation of a Draft Local Plan in 2012. However, the most recent report which was taken to Borough Council seeking approval of the Local Plan – Publication document, was not approved. As such the Local Plan cannot progress to the next stage of preparation in its current form, until the review to respond to issues raised by Councillors is undertaken, including a review of concerns relating to the policy approach to renewable energy. Therefore, the emerging policy in the Local Plan does not form part of the development framework. It is however useful for this study to understand the policy approach that was originally proposed in the Draft Local Plan in relation to renewables which is set out in **Box 2.1**.

Box 2.1: Policy SD 6 - Renewable Energy

Policy SD 6: Renewable Energy

Renewable energy schemes will be supported and encouraged to help meet the Government's climate change objectives and targets for electricity generation from renewable sources. Proposals will be accepted where their impact is, or can be made, acceptable.

The scale of renewable energy proposals should reflect the sensitivity of the landscape and its capacity to accept the particular renewable technology being proposed. We will strongly support schemes where they are located within our urban industrial areas. In the rural areas, renewable energy proposals should be located within designated Restoration Landscape Areas. Renewable energy developments will not be allowed within, or where they impact upon, nationally protected landscape areas or Sensitive Landscape Areas unless they meet the exceptions criteria set out in Policy N1. Particular importance will be placed on minimising the impact of renewable energy developments on the North York Moors National Park.

The incorporation of renewable energy into developments will be encouraged, particularly as part of major schemes. The retrofit of renewable energy and use of micro-renewables will also be supported in appropriate buildings and locations.

In determining applications for renewable energy and associated infrastructure, the following issues should be considered:

a. impact on residential amenity;
b. environmental impacts, including on designated sites;
c. visual impact on landscape, including cumulative impacts;
d. impact on heritage assets and their settings;
e. scale of proposal;
f. local topography and siting of proposal to minimise harm, including through reasonable mitigation;
g. aeronautical and other military considerations; and
h. operational and other relevant constraints.

2.29 The main thrust of the policy approach in relation to wind energy was to encourage developments in the less sensitive landscapes, such as Restoration Landscapes and suitable industrial areas.

2.30 The Draft Local Plan also commented on other policy options that were considered including having a policy with blanket separation distance between wind turbines and residential properties. However, this option was rejected as it was concluded that suitable separation distances would be dependent on local context, such as surrounding topography, and would also be contrary to the Planning Practice Guidance (PPG) for renewable and low carbon energy.

2.31 The Draft Local Plan also considered identifying site allocations where certain types of renewable energy development would be acceptable. However, it was concluded that there was insufficient evidence to identify specific sites and so instead broad types of areas where renewable energy projects are likely to be supported were identified in the supporting text.

2.32 The Draft Local Plan also included Policy SP4 which included a requirement in line with the adopted policy DP3 requiring major developments to reduce their predicted energy requirement by a minimum of 10%.

Local Plan Scoping Report (July 2015)

2.33 In July 2015, the Council published the Redcar and Cleland Borough Local Plan Scoping Report. This makes reference to DP3 and states that:

> "*through monitoring it has been observed that the Council has not consistently been applying the requirement for 10% of the predicted energy demands to be met through renewables. In addition, where the requirement has been applied, the Council has generally accepted that a 10% reduction on the energy demands of the building against the minimum building regulations standard for that building would meet the policy. As the Government is seeking to achieve its zero carbon target for domestic properties through Part L of the Building Regulations, it is no longer considered necessary to have a specific planning policy seeking further energy savings. However, we will continue to support and promote the use of renewable energy technologies on residential properties."*

2.34 Since the Local Plan Scoping Report was prepared however HM Treasury has published a document titled 'Fixing the foundations: Creating a more prosperous nation' (July 2015). This states that the Government is intending to reduce net regulation on house builders. The Treasury states that they do not intend to proceed with the zero carbon Allowable Solutions carbon offsetting scheme, or the proposed 2016 increase in on-site energy efficiency standards, but will keep energy efficiency standards under review, noting that existing measures to increase energy efficiency of new buildings should be allowed time to become established. This will also mean the sister policy that should have applied to all new non-residential buildings such as offices, schools and hospitals from 2019 will also not proceed.

The North York Moors National Park

2.35 The North York Moors National Park Management Plan (2012), Core Strategy and Development Policies (2008), and Renewable Energy Supplementary Planning Document (SPD) (2010) support renewable energy developments that do not compromise the National Park's statutory purposes. For example, **Core Policy D** of the Core Strategy and Development Policies Development Plan Document (2008) states:

> *"Activities in the National Park will address the causes of climate change and contribute to reducing greenhouse gas emissions, by:*
>
> - *Reducing the use of energy and the need to use energy.*
> - *Generating energy from renewable sources where these are of a location, scale and design appropriate to the locality and which contribute towards meeting domestic, community or business energy needs within the National Park.*
> - *Requiring residential developments of 5 or more houses and other uses of 200sqm or more to generate energy on-site from renewable sources to displace at least 10% of predicted CO2 emissions."*

2.36 Whilst not a planning policy document, the National Park Management Plan also seeks to ensure that new development contributes towards energy objectives: Planning and Sustainable Development Objective 4 – aims to promote the use of renewable energy sources that provide energy for communities within the National Park providing that any development involved does not significantly detract from the conservation of the landscape and built environment of the National Park.

2.37 Whilst the North York Moors National Park Authority recognises the importance of reducing the causes of climate change and is actively seeking to reduce greenhouse gas emissions; the Renewable Energy SPD outlines that large scale renewable energy developments can be particularly damaging to the landscape and environment of the National Park which is protected through the 1995 Environment Act. The SPD states that the basis for consideration of all applications will therefore be that the need for renewable energy must not override the statutory purposes. The SPD also sets out the planning issues associated with each renewable technology, providing advice on what is likely to be acceptable and the information that should be submitted with a planning application.

Landscape

Landscape Context

2.38 The Borough of Redcar and Cleveland is situated in the north east of England, to the east of and including the eastern suburbs of Middlesbrough. Redcar and Cleveland is the largest Borough in the Tees Valley, covering 96 square miles[3]. It is located to the south of the River Tees, with a total population of approximately 135,200[4].

2.39 Redcar and Cleveland is an area of immense contrasts and includes the vast industrial complexes of Wilton International, the steel industry and Teesport, as well as the attractive coastal resorts of Redcar, Marske and Saltburn, the ancient market town of Guisborough and scenic countryside edging the North York Moors National Park.

2.40 The Borough is bound to the north by the sea, and to the west by the River Tees and the urban area of Middlesbrough. The east and south of the borough is more rural in character and includes part of the North York Moors National Park. In general terms the landform of the Borough rises from north to south towards the hills and moorland in the National Park to the south. The landscape is very flat along the coastal edge and large area of coastal flats to the northeast of the Borough. This area is also heavily industrialised and includes urban areas; Eston, Redcar and Marske-by-the-sea.

[3] Available at: http://www.redcar-cleveland.gov.uk/statistics

[4] Office for National Statistics (2011), 2011 Census: Usual resident population, local authorities in the United Kingdom, Available at: http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-327143

2.41 Along the eastern coastline, east of the settlement of Saltburn-by-the-sea the coastal edge becomes more dramatic with rugged cliffs and a raised, undulating plateau behind. The coastline along this stretch is defined as the North Yorkshire and Cleveland Heritage Coast and as such is protected from any development that may harm its special character. Beyond the coastal edge Kilton Beck cuts a narrow, incised valley, draining towards the sea and there are number of larger settlements (such as Loftus, Skelton and Brotton) plus other smaller settlements in the undulating plateau farmland which gradually changes to moorland fringe farmland with proximity to the National Park.

2.42 Inland, to the south of the coastal flats a series of steep sided hills linked by low saddles form a series of outliers to the main escarpment of the Cleveland Hills, further south. The Eston Hills (242m AOD at summit cairn), characterised by open moorland and wooded hillsides, are sandwiched between the urban/ industrial flats to the north and the larger settlement of Guisborough to the south. The settlement of Guisborough has some lower lying areas of farmland and parkland to the west and east and is bordered by further rising ground in the National Park to the south.

2.43 The parts of National Park in the Borough include areas of upland fringe around the Cleveland Hills, which at the highest point reach an altitude of around 300m AOD. The western facing slopes consist of open moorland and mixed woodland and offer panoramic views over the Borough. Further east the landscape drops in elevation towards the coast and consists of undulating farmland before meeting the dramatic rocky coastal edge.

National Policy

2.44 The NPPF states within one of its 12 core planning principles that planning should *"take account of the different roles and character of different areas, promoting the vitality of our main urban areas, protecting the Green Belts around them, recognising the intrinsic character and beauty of the countryside and supporting thriving rural communities within it".*

2.45 In support of this core planning principle the NPPF requires the planning system to contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes [para 109]. Para 113 of the NPPF also requires local planning authorities to set out criteria based policies which proposals for any development on or affecting landscape areas will be judged.

2.46 Of particular relevance to Redcar and Cleveland Borough Council is the requirement for the local planning authority to maintain the character of the undeveloped coast, protecting and enhancing its distinctive landscapes, particularly in areas defined as Heritage Coast [para 114].

2.47 Para 115 of the NPPF also requires great weight to be given to conserving landscape and scenic beauty in National Parks, which have the highest status of protection in relation to landscape and scenic beauty [para 115].

2.48 The NPPF also promotes good design and suggests [para 64] that *"permission should be refused for development of poor design that fails to take the opportunities available for improving the character and quality of an area and the way it functions".*

Local Policy

The Development Plan

2.49 The Redcar and Cleveland Adopted Core Strategy (2007) includes an objective to protect and enhance the landscape quality of the Borough including the special qualities of the coast and estuary. The Core Strategy policies of relevance to landscape include:

- **Policy CS22 Protecting and Enhancing the Borough's Landscape**: the overall approach is to protect and enhance the landscape on the character areas identified through the Landscape Character Assessment, and give protection and enhancement of the landscape of the North Yorkshire and Cleveland Heritage Coast. The policy outlines in what circumstances development will and will not be allowed.
- **Policy CS23 Green Infrastructure**: outlines the green areas that will be protected, and where appropriate, enhanced to improve their quality, value, multi-functionality and accessibility. These include: strategic gaps; green wedges; open spaces in urban areas where

they benefit local communities and have been identified for retention through the Green Spaces Strategy; and strategic landscape areas.

Draft Local Plan – Published Document

2.50 The Draft Local Plan policy of most relevance includes **Policy N 1 Landscape** which aims to protect and enhance the borough's landscapes, considering development within the context of the Landscape Character Assessment and the Landscape Character SPD. The Policy outlines how developments will not be permitted where they lead to the loss of features important to the character of the landscape, its quality and distinctiveness, unless the benefits of development clearly outweigh landscape considerations. The policy provides specific direction to the protection of nationally and locally important landscapes (e.g. North Yorkshire and Cleveland Heritage Coast, North York Moors National Park and sensitive landscape areas).

Redcar and Cleveland Local Development Framework, Landscape Character SPD (March 2012)

2.51 The Redcar and Cleveland Landscape Character SPD was produced in 2012 and applies to the rural parts of the Borough outside of the National Park. It *"explains the role of landscape character areas and sets out guidance to be used in designing development and new landscape features in each area, building on the 2006 LCA*". The document includes a section on the policy context; National Planning Policy, the Local Development Framework, Biodiversity and Landscape Designations and the Hedgerow Regulations.

2.52 The document includes a section on Landscape Character and provides further information on the treatment of 'sensitive landscapes' where the emphasis is on retaining landscape elements and little intervention to change character and 'restoration landscapes' where repair and reinstatement of the landscape structure is promoted. Historic Landscape Characterisation is also introduced as "*identifying the traces of the past within the modern landscape, and recognising that essentially the landscape has its present character because of the changes it has undergone over the past millennia. The challenge, therefore, is to address how future change can sensitively respect local character and diversity*" [Para 3.13].

2.53 The document presents guidance for each of the four broad landscape areas identified in the 2006 LCA. 'Sensitive' and 'Historic' landscapes in each broad landscape tract are identified and guidance on landscape planting and habitat creation, use of plant species and building materials is provided. A final section on built form provides guidance on topics such as size and scale of development, location, colour and detailing however, this is general guidance and not specific to the four broad landscape tracts.

The North York Moors National Park

2.54 **Spatial Objective 4 of the Core Strategy** and Development Policies Development Plan Document (2008) aims to secure high quality new development that takes account of and enhances the unique landscape character, settlement pattern and building characteristics of the nine landscape character areas in the park.

2.55 **Core Policy D** supports the achievement of this by stating:

"The landscape, historic assets and cultural heritage of the North York Moors will be conserved and enhanced. High quality sustainable design will be sought which conserves or enhances the landscape setting, settlement layout and building characteristics of the landscape character areas identified in the North York Moors Landscape Character Assessment…"

Other Relevant Documentation

2.56 The following section sets out a review of other relevant background documents of relevance to this study including:

- Redcar and Cleveland Landscape Character Assessment April (2006).
- North York Moors National Park Landscape Character Assessment (2003).
- Landscape Appraisal for Onshore Wind Development, North East of England Renewable Energy Strategy (2003).
- Delivering Sustainable Energy in North Yorkshire: Recommended Planning Guidance (2005).

Redcar and Cleveland Landscape Character Assessment (April 2006)

2.57 This document was produced for Redcar and Cleveland Borough Council in 2006 and *"provides background information on the variations in landscape character and draws particular attention to wildlife habitats and ancient woodland*" [Para 1.5] across "*the range of landscapes across rural parts of the Borough outside the National Park"* [Para 1.1].

2.58 The LCA identified four broad 'landscape tracts' (Eston Hills, Redcar Flats, East Cleveland Plateau and Guisborough Lowland) and for each a background description and information on biodiversity is provided. Each landscape tract has then been further sub divided into smaller named 'landscape units' (for example E1 Upland Eston Hills/ Eston Moor; E2 Escarpment Eston Hills). The broad landscape tract descriptive text identifies which of these landscape units are 'sensitive landscapes' and which are 'restoration landscapes' and provides some very brief development guidance for each. 'Sensitive landscapes' are defined as landscapes where the emphasis is on retaining landscape elements with little intervention to change character. 'Restoration landscapes' are defined as landscapes where repair and reinstatement of the landscape structure is promoted. The findings of the LCA have been developed further as a landscape design Supplementary Planning Document (SPD), discussed above, which provides information on guidance for development in 'sensitive' and 'restoration' landscapes.

2.59 For each landscape unit, a description of the landform, landuse, wildlife and a landscape analysis which identifies positive and negative attributes is provided. In terms of guiding renewable energy developments, there are certain positive and negative attributes which may provide helpful evidence in steering developers towards more appropriate locations. For example, due to their prominent location, it is unlikely that the Council would want to consent wind farm development on the escarpment of the Eston Hills given that they provide a backdrop and setting to settlements to the north. One of the positive attributes of the E2 Eston Hills Escarpment states that it is a "prominent landform presenting a sharp contrast to the adjacent lowland" (refer to page 9) and overhead power lines are identified as an existing negative attribute.

2.60 Another example can be taken from the East Cleveland Plateau Landscape which notes for the positive attributes of the Kilton Incised Wooded Valley its "natural visual quality, intimate enclosure, seclusion, sense of tranquillity and absence of visual intrusion and built elements". It is highly unlikely that these positive attributes would not be significantly affected should a solar park or biomass unit be located in this area.

North York Moors National Park Landscape Character Assessment (2003)

2.61 This document was prepared by White Young Green for the National Park Authority in 2003. "*The purpose of this landscape character assessment, as identified by the National Park Authority, is to provide an assessment that identifies landscape types and areas, their characteristics and attributes and potentially damaging and beneficial measures. The information will be used to inform the National Park Management Plan policies, conservation and grant aid scheme development and planning policy implementation*" (page 2).

2.62 The study provides background information on the landscape of the National Park and includes a section on forces for change in the landscape. Of key relevance to this study is the section on landscape change related to communications, power generation and distribution and military infrastructure. Page 19 of the report states "*large-scale wind turbine developments are unlikely to be permitted within the National Park, but proposals for individual wind turbines for isolated farmsteads, where they would not detract from the character or amenity of the area, may be allowed. Pressure may therefore arise for numerous small wind turbine developments, which, whilst being compatible with wider sustainability objectives, could have a cumulative visual impact on landscape character".*

2.63 The study goes on to identify nine landscape character types, which have been further subdivided into named landscape character areas, of which the following are partially located within the Borough of Redcar and Cleveland:

- Moorland (1c Northern Moors).
- Coast and Coastal Hinterland (4a Boulby – Whitby).
- Upland Fringe (9a Cleveland Foothills).

2.64 A detailed list of key characteristics is provided for each area which includes descriptions on perceptual aspects and views which would provide helpful evidence in steering development to the appropriate location. For example, the 9a Cleveland Foothills notes that the area forms a "*distinctive, steeply graded escarpment landscape forming an outward facing transition area between moorland of the Cleveland Hills and lowlands of the Cleveland Plain to the north*" (page 111).

2.65 Furthermore, for each landscape character area, negative pressures for change and the associated pressure and significance of that change is identified. This includes consideration of "*Large scale developments occurring beyond the National Park boundary which can exert a visual influence e.g. major roads, telecoms masts, wind farms, transmission lines, etc."*

2.66 The findings of this character assessment are valuable to this study as they provide evidence that the parts of the National Park, which fall within the Borough of Redcar and Cleveland, are highly sensitive to large scale wind energy development. Furthermore, this character assessment highlights the role that the landscape immediately outside the National Park plays. Rural landscapes in the Borough of Redcar and Cleveland which play a role in the setting of views from the National Park need to be carefully considered in terms of their sensitivity.

Landscape Appraisal for Onshore Wind Development, North East of England Renewable Energy Strategy (2003)

2.67 This Landscape Appraisal was prepared by the Landscape Research Group (Benson, Scott and Anderson) in 2003 on behalf of the Government Office for the North East. The purpose of the report was to "*assess the landscape sensitivity for onshore wind energy development in the North East Region of England. The study area is the whole of the administrative and geographical area known as the North East Region, stretching from Berwick upon Tweed in the north to Teeside in the south and encompassing the counties of Northumberland and Durham and the metropolitan areas of Tyneside, Wearside and Teeside"* [para 1.2] and as such includes the Borough of Redcar and Cleveland.

2.68 This Landscape Appraisal emphasises that it is a strategic study which considers landscape and some visual issues but it "*does not make recommendations on particular areas of search for wind farm development nor does it select potential wind farm sites*" (page 9). As part of the appraisal three main turbine typologies have been identified; small (up to 80m to blade tip), medium (up to 110m to blade tip) and large (up to 140m to blade tip). Judgements on turbine were avoided and the appraisal provides a "*series of concluding judgements on typology and locational guidance for each character type"* (page 12) within the study area.

2.69 27 landscape character types (LCT) were identified across the study area which does not consider large urban areas such as Middlesbrough. The identification of LCT draws on existing assessments and refines the LCT identified as part of the Countryside Character Initiative North East Study 1998. The following LCT are located in Redcar and Cleveland (the number in brackets identifies the sensitivity score which combines judgements on physical and perceptual aspects with 5 being high and 1 being low):

- Rolling Lowland Farms (4).
- Rolling Upland (4).
- Hard Coastline (5).
- Coastal Plateau (2).
- Outcrop Hills and Escarpment (4).
- Upland Fringe Farming (2).

2.70 Under every LCT character descriptions, a judgment on sensitivity levels is provided for each identified physical criteria (scale, landform, settlement, landscape pattern and visual composition) and each identified perceptual criteria (experience, context and remoteness/ naturalness). Findings in relation to location and typology are then presented.

Delivering Sustainable Energy in North Yorkshire: Recommended Planning Guidance (2005)

2.71 This report was prepared by Land Use Consultants in 2005 on behalf of a Partnership of Local Authorities in North Yorkshire to provide planning guidance to encourage the appropriate development of sustainable energy within the County. The guidance sets out a number of recommendations for creating a positive policy framework for sustainable energy and also includes an assessment of the sensitivity of different landscapes within North Yorkshire to sustainable energy development. It should be noted that the Borough of Redcar and Cleveland is located to the immediate north of the study area for this guidance.

2.72 The guidance includes a chapter on the Context and Policy Framework; Creating a Positive Local Planning Policy Framework for Sustainable Energy; Implementing Sustainable Energy Policy; Landscape Sensitivity Assessment; Landscape Guidance and Next Steps. The following review focuses on the scope and relevant findings of the Landscape Sensitivity Assessment and Landscape Guidance.

2.73 The landscape sensitivity assessment was undertaken to evaluate the sensitivity of the landscape in North Yorkshire to different scales of wind, biomass, hydro and solar developments. This objective baseline information allows developers and local planning officers to locate/ guide renewable energy developments to the appropriate site and plan for developments of the appropriate size.

2.74 With relevance to this study it is noted that the landscape character types which border the southern boundary of Redcar and Cleveland are all identified as being of 'High' sensitivity to wind energy developments. Within the landscape guidance section it is noted that "*the landscape of North Yorkshire and the results of the sensitivity study indicate that wind farms should be avoided in areas such as the Moors area, including the fringes of these areas which form key skylines for many other landscape areas*" [Para 6.14].

2.75 The report also notes that "*the wind sensitivity map indicates that almost the entirety of the National Park has been identified as having a landscape that is of high sensitivity to wind energy development. This reflects a number of the factors… including the importance of uninterrupted views and skylines, the lack of scale features in many of the moorland areas, and the small scale and historic patterns of settlement and landcover within the dales*" [Para 6.59]. Similar findings are included for biomass developments.

Summary on background review

2.76 The documents reviewed within this chapter provide useful background information on the context and policy framework within which renewable energy development are currently considered within the Borough. It is clear from the international, national policy context that the Council has a responsibility to plan positively for the development of renewable energy. However, it also has a responsibility to balance this against the strong local desire and need to protect the important and valued landscapes of the Borough.

2.77 To date the existing landscape policy provisions go some way to protect these landscapes, however the existing Landscape Character Assessment and SPD was not prepared to specifically consider renewable energy developments and in particular wind turbines which can have significant landscape impacts. The North East England Renewable Energy Strategy does identify the sensitivity of the landscape across the Borough to wind energy development, albeit at a strategic level and without due consideration to the 'sensitive landscapes' which have been identified in the SPD.

2.78 The landscape sensitivity assessment within **Chapter 4** of this report has been informed by the landscape characterisation work that has been carried out as part of the Redcar and Cleveland Landscape Character Assessment (2006) and takes due cognisance of the 'sensitive landscapes' as identified in the SPD to identify the sensitivity of the different landscape types across the Borough to wind and solar energy development

2.79 The Ministerial Statement released in June 2015 and the subsequent changes to Planning Practice Guidance in relation to onshore wind are particularly pertinent to this study in relation to the identification of 'areas of suitability for wind energy'. This is discussed in further detail in **Chapter 5** of this report.

3
Renewable Energy Resource Potential

3 Renewable Energy Resource Potential

Introduction

3.1 This chapter sets out the results of the assessment of the technical potential for renewables within the Borough of Redcar and Cleveland. The 'technical potential' is the total amount of renewable energy that could be delivered in the area based on a number of assumptions regarding the amount of resource and space. The chapter also includes a discussion of 'deployable potential' - i.e. what could realistically be achieved and delivered within the area. The assessment of deployable potential takes account of factors such as planning, economic viability and grid connection. It does not take into account landscape sensitivity which is considered in detail in **Chapter 4.**

Background

3.2 As outlined above, the analysis of the resource potential for renewable energy included two tasks:

- A review of technical potential for renewable and low carbon energy within the Borough.
- An assessment of the deployable potential for each of each of the renewable energy technologies.

3.3 As requested in the study brief, the assessment of technical potential focused on those technologies which may have the greatest potential impact on the landscape. Onshore wind is therefore a key focus of the work. Large-scale solar PV, hydro and industrial/commercial scale biomass were also considered. The high-level assessment of the technical potential for these renewable energy technologies was based on the use of clearly defined data sources and parameters/ assumptions, which were agreed with Redcar and Cleveland Borough Council before the analysis was carried out. The agreed parameters and methodology for each technology are outlined in the following sections.

Onshore Wind

Description of technology

3.4 On-shore wind power is an established and proven technology with thousands of installations currently deployed across many countries. The UK has the largest wind energy resource in Europe.

3.5 Wind power uses energy from the wind to turn a rotor connected to an electrical generator. Although there are no rigid categories relating to the scale of wind turbines, for the purpose of this study, three size bands have been considered as shown in **Table 3.1**. The height of wind turbines is considered as part of the landscape sensitivity analysis (see **Chapter 4**), but this does not affect technical potential.

Table 3.1: Typical scales of wind turbines

Scale	Typical Turbine Installed Capacity
Small	500kW
Medium	900kW
Large	2-2.5MW

3.6 Most large and medium developments are connected to the national grid. Medium and small scale turbines may provide electricity for a single premises (e.g. a farm) or be connected to the grid directly for export. The number of turbines used per site ranges from the deployment of single turbines up to large groups of turbines (known as wind farms) capable of generating tens of megawatts. The amount of energy that turbines generate will depend primarily on wind speed but will be limited by the maximum output (kW/ MW) of the individual turbine. Wind energy developments are usually given planning permission for 25 years.

Assessment methodology

3.7 **Table 3.2** below outlines the data sources and parameters/ assumptions that were used for the assessment of technical potential for onshore wind. These parameters are based on a refinement of the parameters set out in the DECC Methodology[5].

Table 3.2: Parameters and assumptions for the assessment of the technical potential for onshore wind

Parameter	Assumption
Opportunities	
Wind speed	All areas with wind speed of 5m/s or above at 45m above ground level (agl) (lower threshold to 2004 Tees Valley study due to the efficiency of modern turbines).
Wind turbine size	Consider three turbine sizes: • Large-scale turbines – average capacity of 2-2.5MW. • Medium-scale turbines – average capacity of 0.9MW. • Small-scale turbines[6] – average capacity of 0.5MW.
Wind turbine density	Assumes a density of approximately 9MW/km^2: • Large: 4 turbines per km^2 • Medium: 10 turbines per km^2 • Small: 18 turbines per km^2.
Constraints	
Non accessible / exclusion areas	• Roads (motorways, A and B roads) (plus 150m buffer for large turbines, 100m buffer for medium turbines and 50m buffer for small turbines) • Railways (plus 150m buffer for large turbines, 100m buffer for medium turbines and 50m buffer for small turbines) • Rivers, canals, lakes, reservoirs • Airfields and airports (plus 5km buffer) / runway approaches – out to 20km and 30km. • MOD training areas / safeguarding areas / other constraints • Major overhead transmission lines (plus 150m buffer for large turbines, 100m buffer for medium turbines and 50m buffer for small turbines) • Public Rights of Way are mapped, but no buffer applied.

[5] In March 2010, DECC published a methodology for quantifying the opportunities and constraints for deploying renewables and low carbon energy in the English Regions. The purpose of this methodology was to ensure that a consistent approach was used for the assessment of resource potential across the English regions. The methodology sets out a series of assumptions for calculating the technical potential for renewable energy within a region. It did not provide assumptions for assessing the 'deployable potential'.

[6] Smaller scale turbines are now considered more viable and are likely to have less of a visual impact than larger scale turbines.

Parameter	Assumption
	• Ancient Woodland • National, international and local conservation designations (Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), Local Nature Reserves).
	• Sites of historic interest – Scheduled Monuments, *Registered Parks and Gardens*, *World Heritage Sites* (and associated buffers), battlefields, listed buildings. A 600m buffer will be applied to listed buildings for large-scale wind turbines and a 400m buffer for medium-scale wind turbines.
	• Built-up areas (600m buffer for large-scale turbines; 400m buffer for medium-scale and small-scale turbines)* • Slope (discount areas with slope greater than 15°).

*NB if a property is financially involved in a proposed wind energy development then this buffer distance could be reduced as they may be subject to difference noise tolerance thresholds as set out in ETSU Assessment and Rating from Wind Farms (1997).

Solar Arrays

Description of technology

3.8 In addition to PV modules associated with built development, there are an increasing number of solar PV arrays or solar farms being built in the UK. As outlined in Chapter 4, Free-standing solar PV arrays consist of panels that are usually mounted around 0.7m-3m above ground level allowing the growth of vegetation beneath and between the arrays and the associated grazing of stock. Panels are arranged in groups or 'arrays' of around 20 panels. The panels are encased in an aluminium frame, supported by aluminium or steel stands, and positioned at a fixed angle between 20-40 degrees from the horizontal, facing south. These arrays usually take the form of a linear rack of panels. These arrays or linear racks are usually sited in parallel rows with gaps between the rows for access and to prevent shading of adjacent rows. They therefore do not cover a whole field.

3.9 A 1MW development would typically require a site of approximately 2-3 hectares but a number of sites over 5 hectares have been developed. The output of a typical panel used would be approximately 200 watts, so a 1MW solar farm would require 250 racks containing 20 panels in each rack. Like wind turbine schemes, solar PV developments are usually given planning permission for 25 years.

Assessment methodology

3.10 The study has reviewed the technical potential for standalone solar photovoltaic (PV) arrays. The parameters used to assess potential for solar PV are similar to those mapped for wind and are outlined in **Table 3.3.**

Table 3.3: Parameters and assumptions for the mapping of technical potential for solar arrays

Parameter	Assumption
Opportunities	
Solar insolation	Irradiance figures from the UK solar map and dataset from the Microgeneration Certification Scheme (MCS)[7]
Solar farm size	Assume minimum solar farm size of 500 kW and a maximum solar farm size of 5MW.

[7] See http://www.microgenerationcertification.org/images/PV%20Book%20ELECTRONIC.pdf and http://www.microgenerationcertification.org/images/Irradiance%20Datasets%20for%20MCS%20Website%20v2.0.xls

Solar density	Assumes a density of approximately 9MW/km^2 (approximately 0.56km^2 per 5MW scheme).
Constraints	
Non accessible / exclusion areas	• Roads (motorways, A and B roads) (plus 20m buffer) • Railways (plus 20m buffer) • Rivers, canals, lakes, reservoirs are mapped, but no buffers applied • Airfields and airports, should be taken into consideration, due to potential for glare, but no buffer applied due to site specific nature of this consideration • MOD training areas / safeguarding areas / other constraints • Major overhead transmission lines are mapped, but no buffers applied • Public Rights of Way are mapped, but no buffers applied.
	• Ancient woodland • National, international and local conservation designations (Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), Local Nature Reserves). • Agricultural grades 1, 2 and 3[8]. • Flood risk zones, as per the Environment Agency Zones - 2, 3a and 3b.
	• Sites of historic interest – Scheduled Monuments, *Registered Parks and Gardens*, *World Heritage Sites* (and associated buffers), battlefields, listed buildings. No buffers applied (buffer for listed buildings included in the built-up areas / buildings buffer).
	• Built-up areas / buildings (plus 50m buffer) • Slope (discount areas with slope greater than 15°). Aspect of sites identified will be considered at the end of the assessment of technical potential.

Biomass

Description of technology

3.11 Biomass can be generally defined as material of recent biological origin, derived from plant or animal matter. Modern biomass heating technology is well developed and can be used to provide heat to buildings of all sizes, either through individual boilers or via district heating networks. Biomass is also increasingly being used to fuel electricity plants or combined heat and power (CHP) plants due to the low carbon emissions associated with its use. There are six main types of biomass resource:

- **Woodfuel** – products from management of existing woodlands (small diameter roundwood from coppicing or branches, lop and top as forest residues). Alternately biomass may be derived from new woodlands specifically planted for the purpose (e.g. short rotation forestry (SRF). The potential for SRF has not been assessed in this study.
- **Energy crops** – these are multi-annual short rotation coppice willow and poplar (SRC) which are coppiced every 2-4 years and miscanthus and other energy grasses (e.g. reed grass and switchgrass) which are cut annually.
- **Agricultural by-products** e.g. straw.
- **Poultry Litter** e.g. the use of poultry bedding and manure.
- **Waste wood** – i.e. primary processing co-products (sawdust, slabwood, points etc.) and clean wood waste from industry (e.g. pallets, furniture manufacture). General wood waste can also be used as a renewable fuel but contains contaminants which severely constrain the type and size of plant in which it can be used.

[8] Ground Mounted Solar PV projects, over 50kWp, should ideally utilise previously developed land, brownfield land, contaminated land, industrial land or agricultural land preferably of classification 3b, 4, and 5 (see https://www.bre.co.uk/filelibrary/pdf/other_pdfs/KN5524_Planning_Guidance_reduced.pdf)

- **Wet organic waste** e.g. animal manure and slurry and commercial/ MSW, food waste, grass and silage. This is usually used to generate energy via anaerobic digestion (AD) - the process of breaking down plant or animal matter by microbial action in the absence of air, to produce a gas with high methane content.

1.1 Biomass plants can use the resources listed in above to generate electricity, thermal energy or a combination of the two:

- **Plants designed primarily for the production of electricity.** These are generally the largest schemes, in the range 10–40 MW. Excess heat from the process is not typically utilised. These plants are major multi-million pound developments and due to their large size and requirement for significant quantities of biomass.
- **Combined Heat and Power (CHP) plants** where the primary purpose is the generation of electricity but the excess heat is utilised, for instance as industrial process heat or in a district heating scheme. The typical size range for CHP is 5-30 MW thermal energy output but smaller 'packaged' schemes of a few hundred kilowatts have been built in the UK. Most UK CHP systems are sized to have a thermal output of 1.5-2.5 times the electrical output.
- **Plants designed for the production of heat.** These cover a wide range of applications from domestic wood burning stoves and biomass boilers to boilers of a scale suitable for district heating, commercial and community buildings and industrial process heat. Their size can range from a few kilowatts to above 5MW thermal (heat) energy.

1.2 As outlined above, wet organic waste is used to generate energy via anaerobic digestion.

Assessment methodology

3.12 The assessment in this study sought to identify areas with heat demand or land uses that might be suitable for larger-scale (industrial or commercial; i.e. above 1MW) biomass. The assessment was undertaken using data from DECC national or CHP heat maps, and a land use GIS layer, as provided by Redcar and Cleveland Borough Council. These maps were used to identify industrial and commercial sites within any of these areas that may have potential for the use of larger-scale biomass plants.

Small Scale Hydropower

Description of technology

3.13 Hydropower is the use of water flowing from a higher to a lower level to drive a turbine connected to an electrical generator, with the energy generated proportional to the volume of water and vertical drop or head. It is a well-developed form of renewable energy. Small scale hydropower plants in the UK generally refer to sites ranging up to a few hundred kilowatts where electricity is fed directly to the National Grid. The key elements of a hydro scheme are a water source with sufficient flow and head, an inlet pipeline (penstock) to direct water, turbine generating equipment and housing, a tailrace to return water to the watercourse, and electricity transmission equipment.

Assessment methodology

3.14 The technical potential for hydropower was assessed by reviewing the potential identified in the various UK hydro resource studies listed on the British Hydropower Association website[9]. From the studies listed, the main study that was assessed was the 2010 England and Wales Hydropower Resource Assessment study. This study, which was jointly funded by DECC and the Welsh Assembly Government, provides an assessment of the remaining hydroelectric potential in England and Wales and includes maps of potential suitable locations.

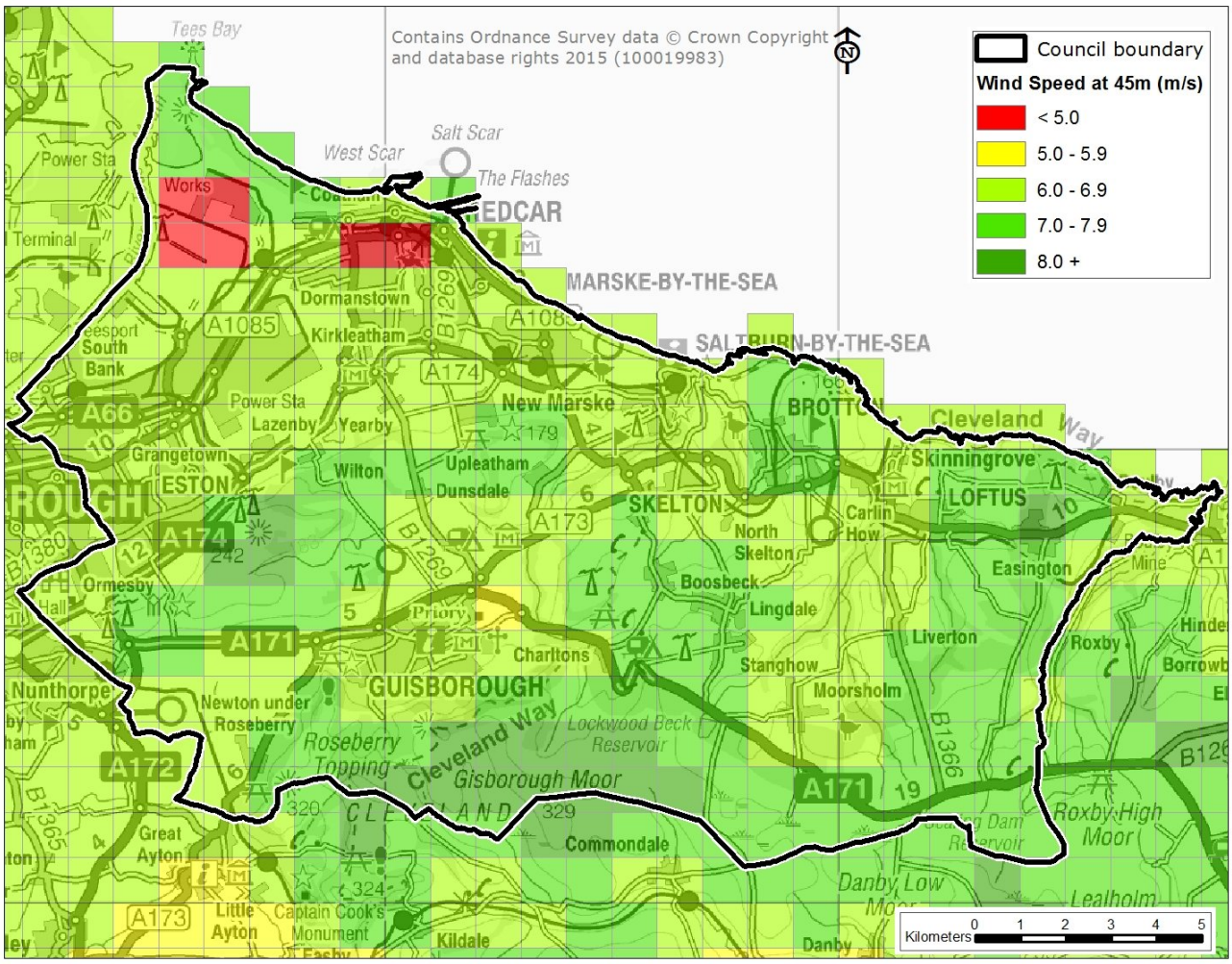
[9] http://www.british-hydro.org/hydro_in_the_uk/uk_hydro_resource

Mapping of constraints

3.15 The mapping of constraints that impact on the technical potential of wind and solar as set out in **Table 3.2** and **Table 3.3**, are shown in **Figures 3.1 to 3.12.**

3.16 **Figure 3.1** shows wind speeds in Redcar and Cleveland at 45m agl. This shows that the vast majority of the Borough, apart from a small area in the north-west, has wind speeds above 5m/s at 45m agl and could be considered viable for wind energy development.

Figure 3.1: Wind speed at 45m agl in Redcar and Cleveland



3.17 **Figure 3.2 to Figure 3.4** show roads, railways, overhead transmission lines and residential properties, with the appropriate buffers applied (as outlined in **Table 3.2)** for large, medium and small-scale wind respectively. Areas outside the shaded areas would be considered most viable for the stated scale of wind energy development.

Figure 3.2: Non-accessible areas (roads, railways, overhead transmission lines and residential properties) with safety buffers for large-scale turbines

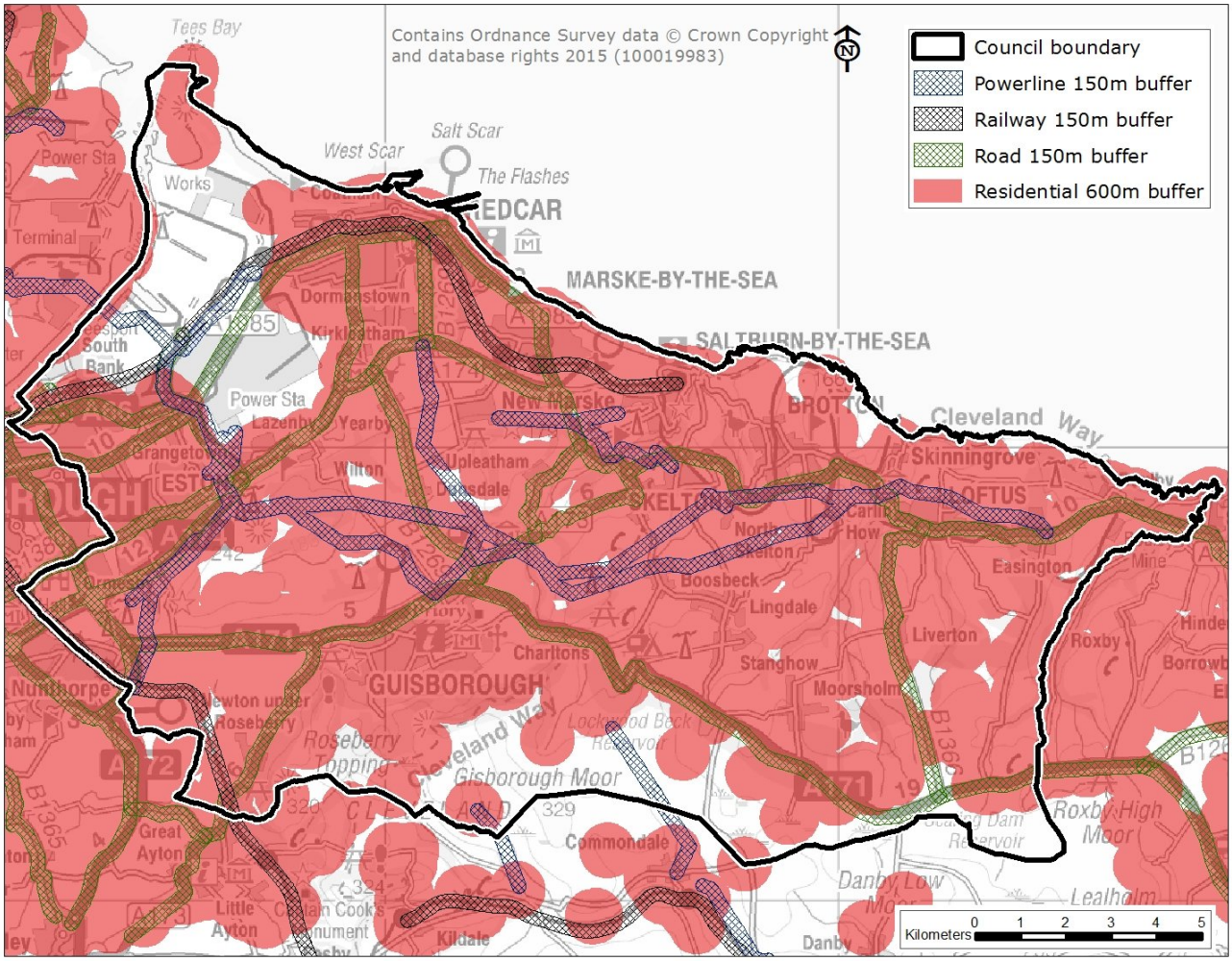


Figure 3.3: Non-accessible areas (roads, railways, overhead transmission lines and residential properties) with safety buffers for medium-scale turbines

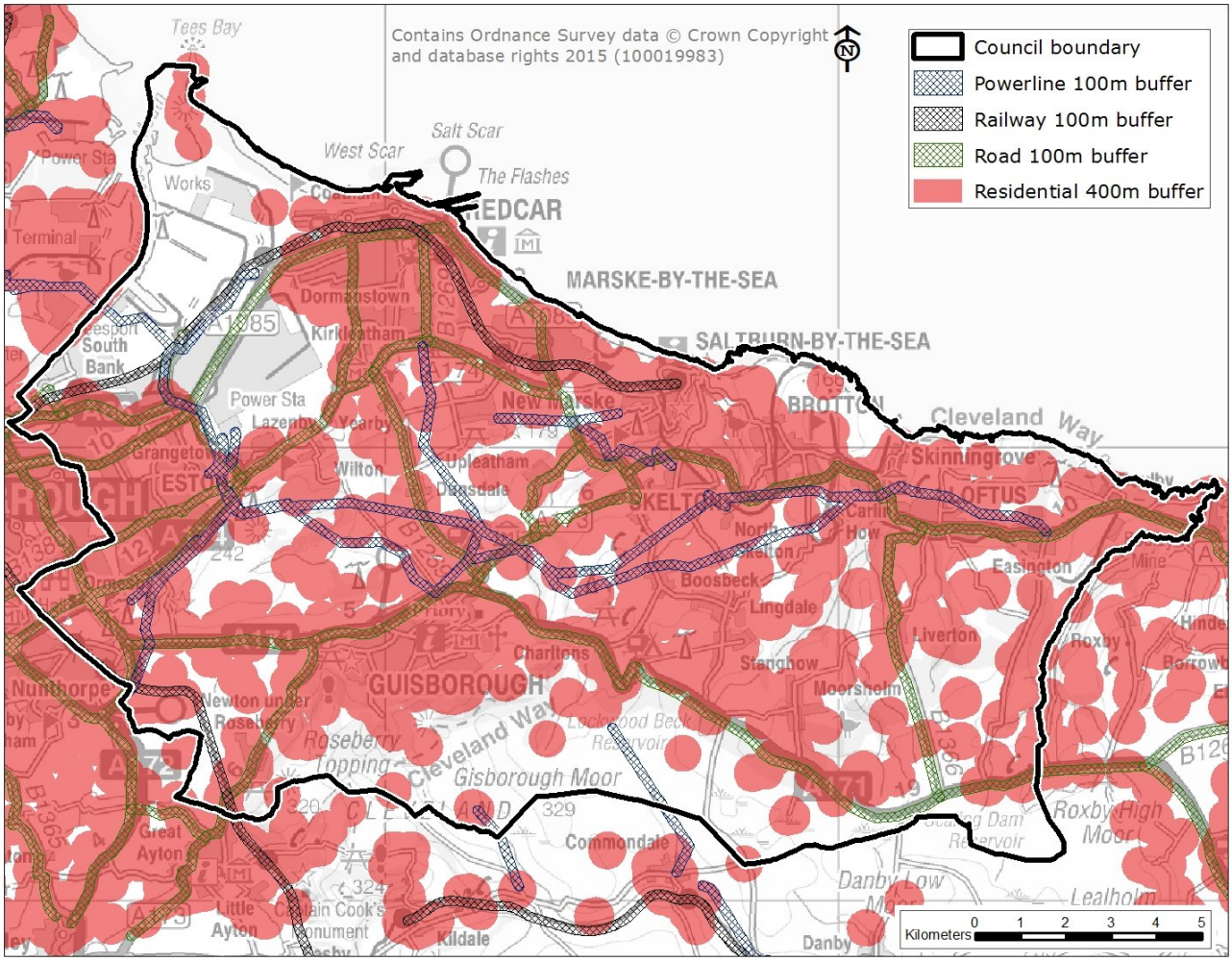
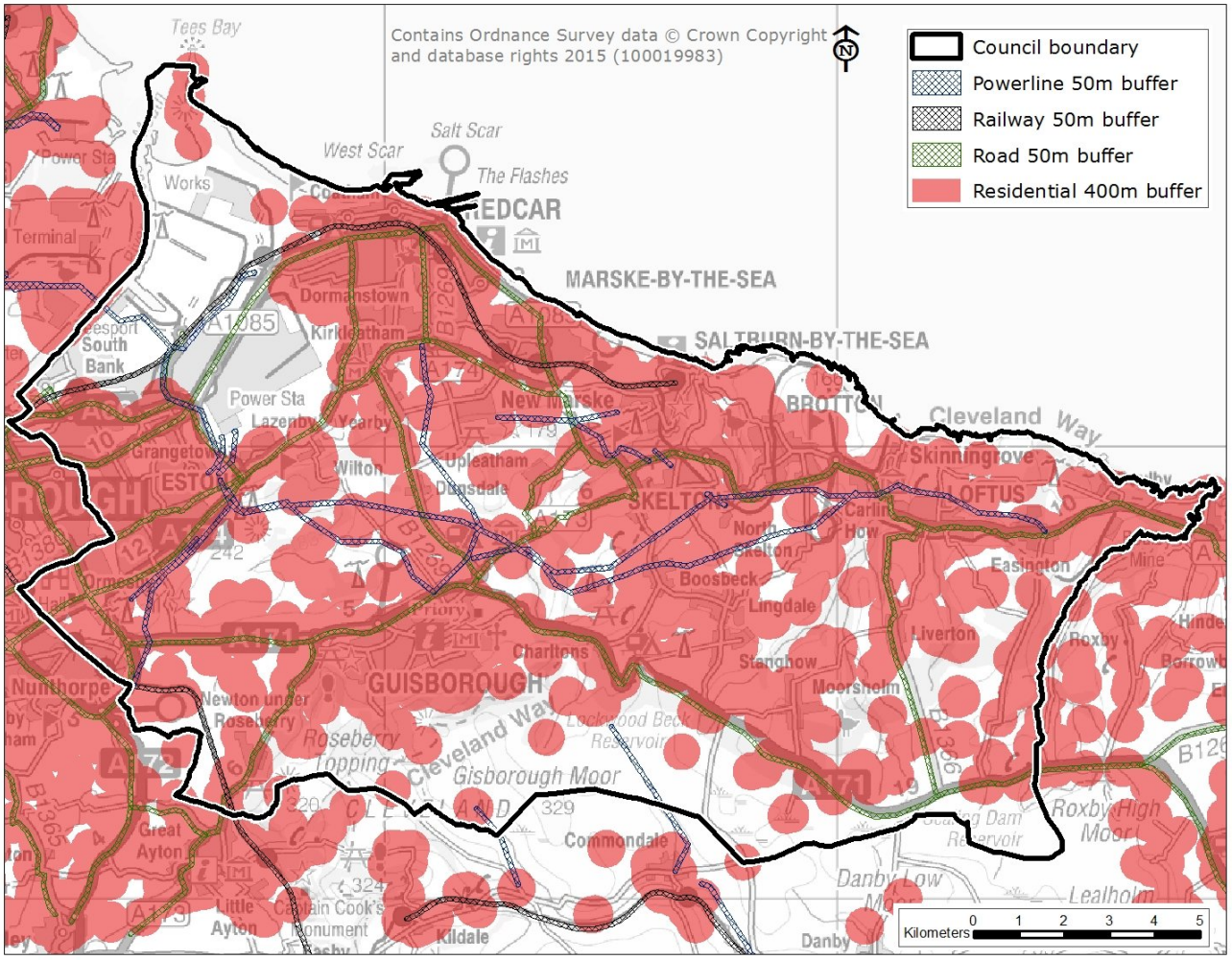


Figure 3.4: Non-accessible areas (roads, railways, overhead transmission lines and residential properties) with safety buffers for small-scale turbines



3.18 **Figures 3.5 and 3.6** show listed buildings, conservation areas, historic/heritage constraints (as outlined in **Table 3.2**). For large-scale wind, a 600m buffer has been applied to listed buildings (**Figure 3.5**), with a 400m buffer for medium-scale wind (**Figure 3.6**). Areas outside the shaded areas would be considered most viable for the stated scale of wind energy development.

Figure 3.5: Historic / heritage and conservation constraints – large-scale wind turbines

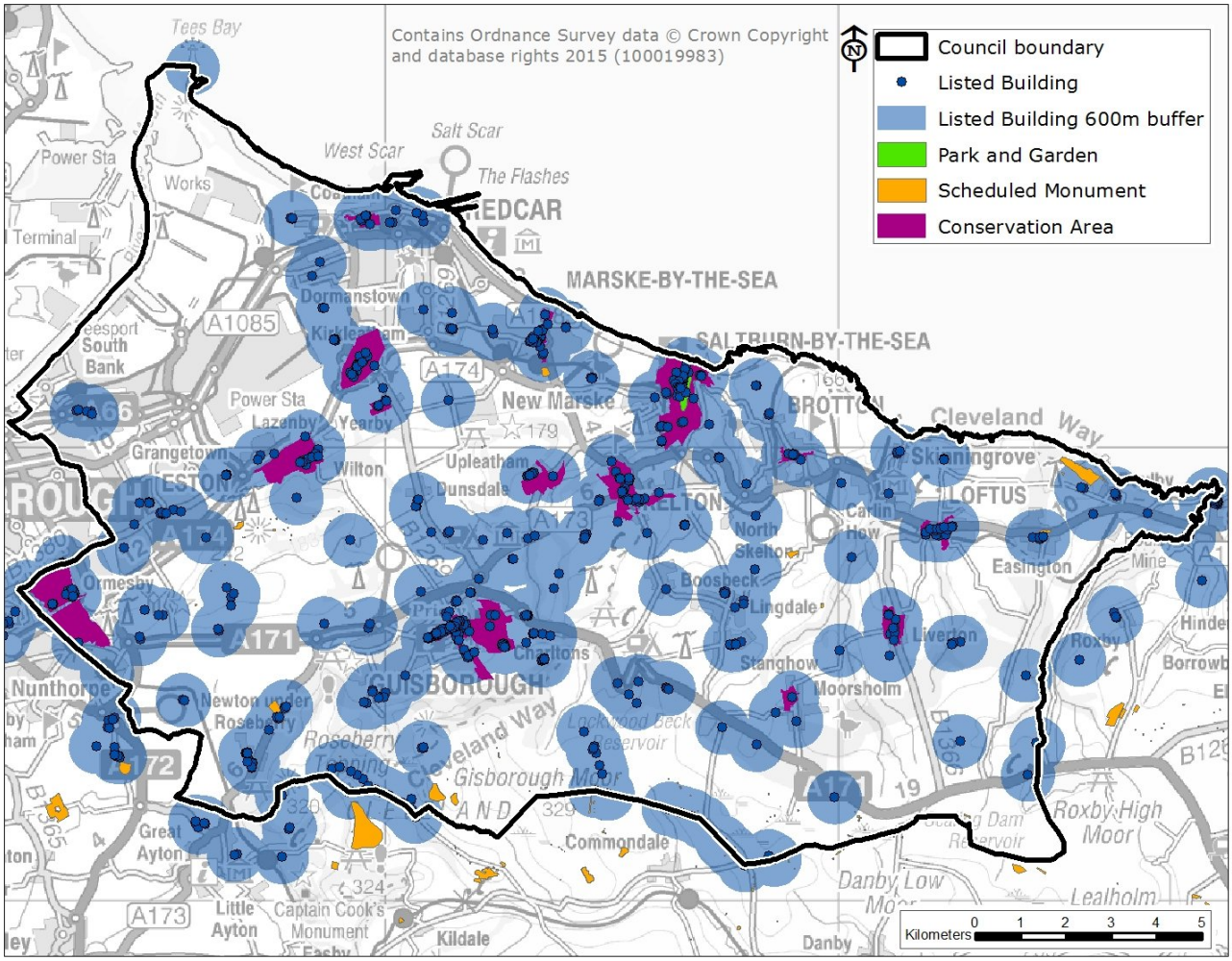
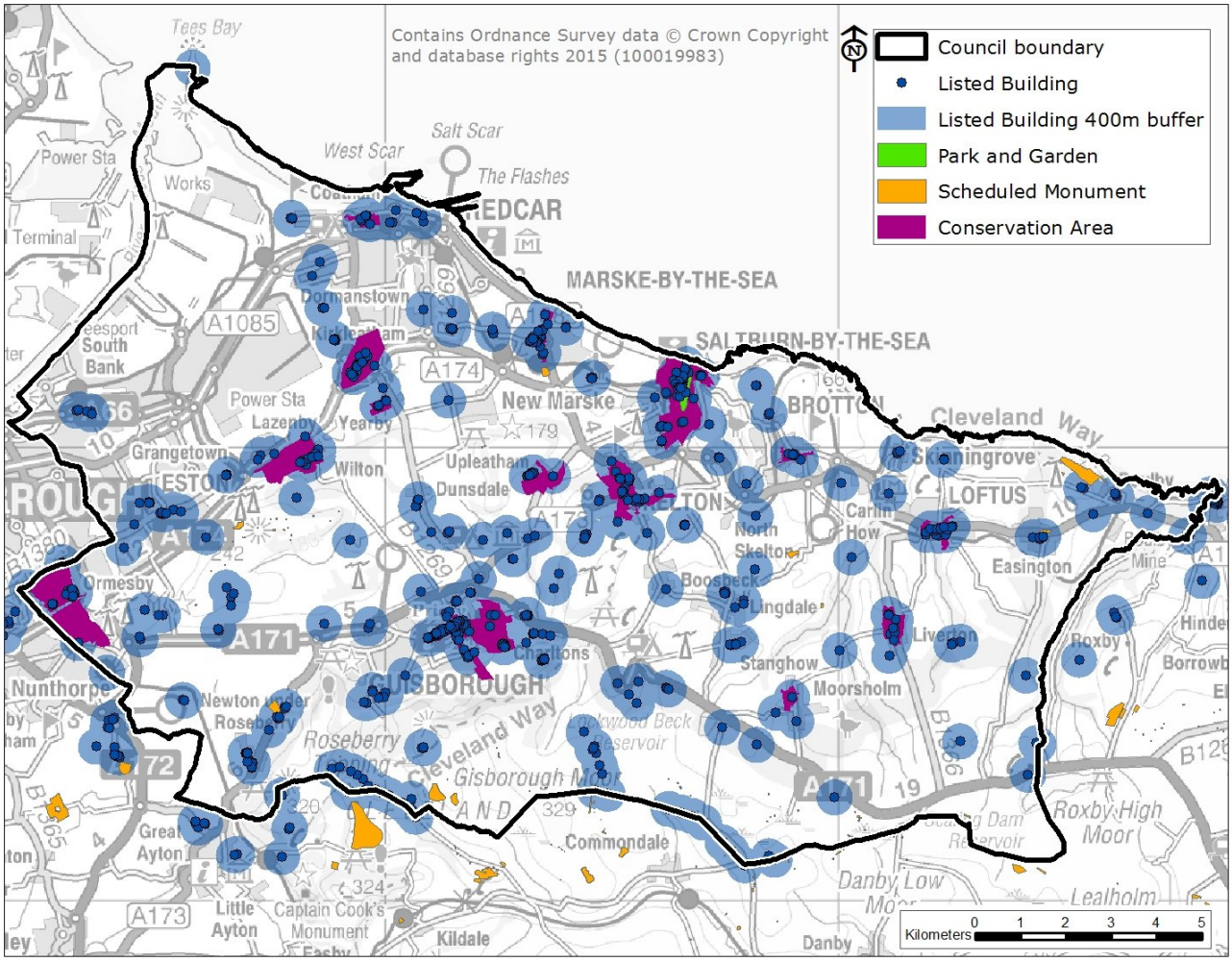
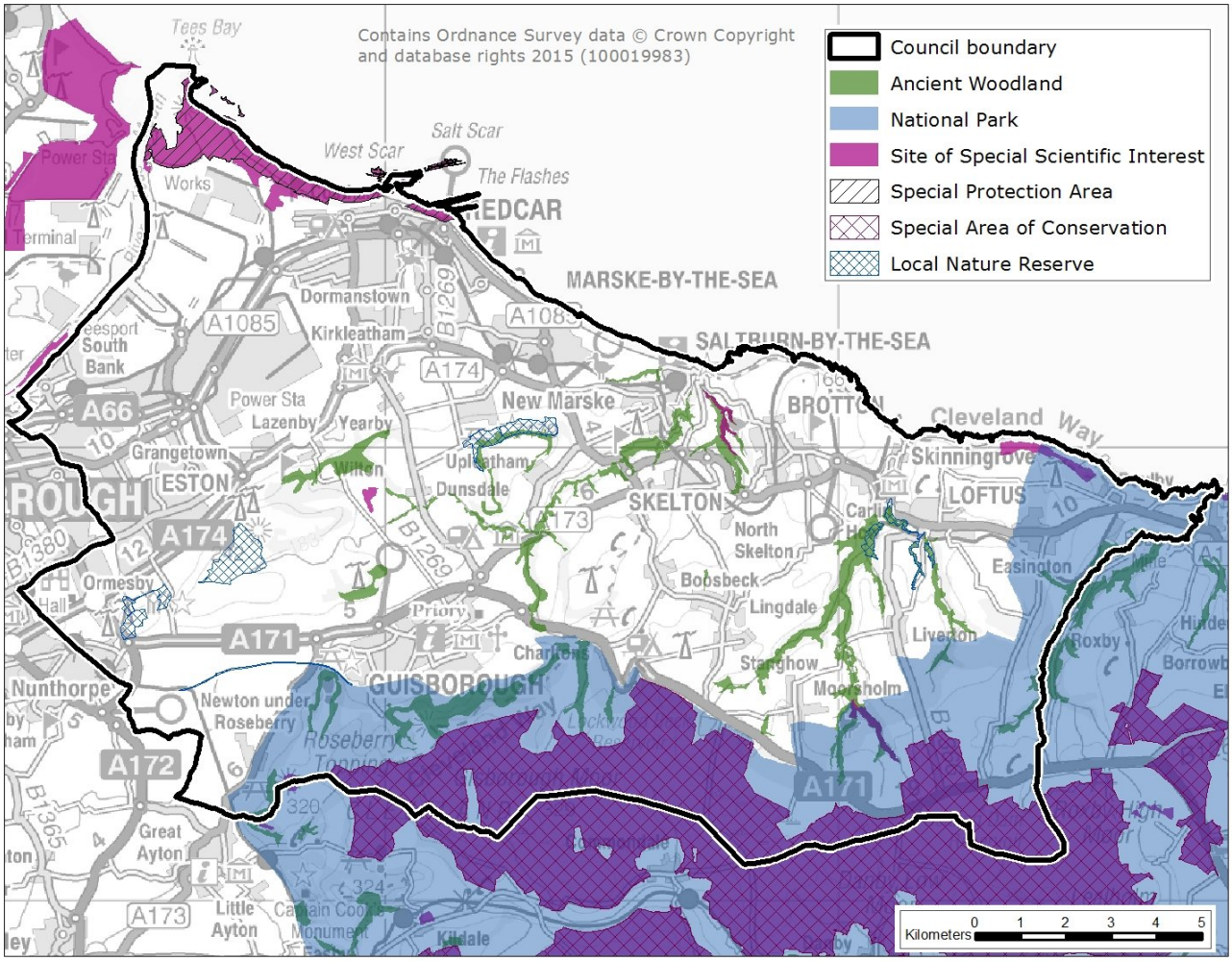


Figure 3.6: Historic / heritage and conservation constraints – medium-scale wind turbines



3.19 **Figure 3.7** shows environmental conservation designations in Redcar and Cleveland. For the purposes of this study, these areas are considered unsuitable for wind energy development. Local Wildlife Sites and Local Geological Sites are not considered to be an absolute constraint to wind energy development and therefore they have not been included in the constraints analysis.

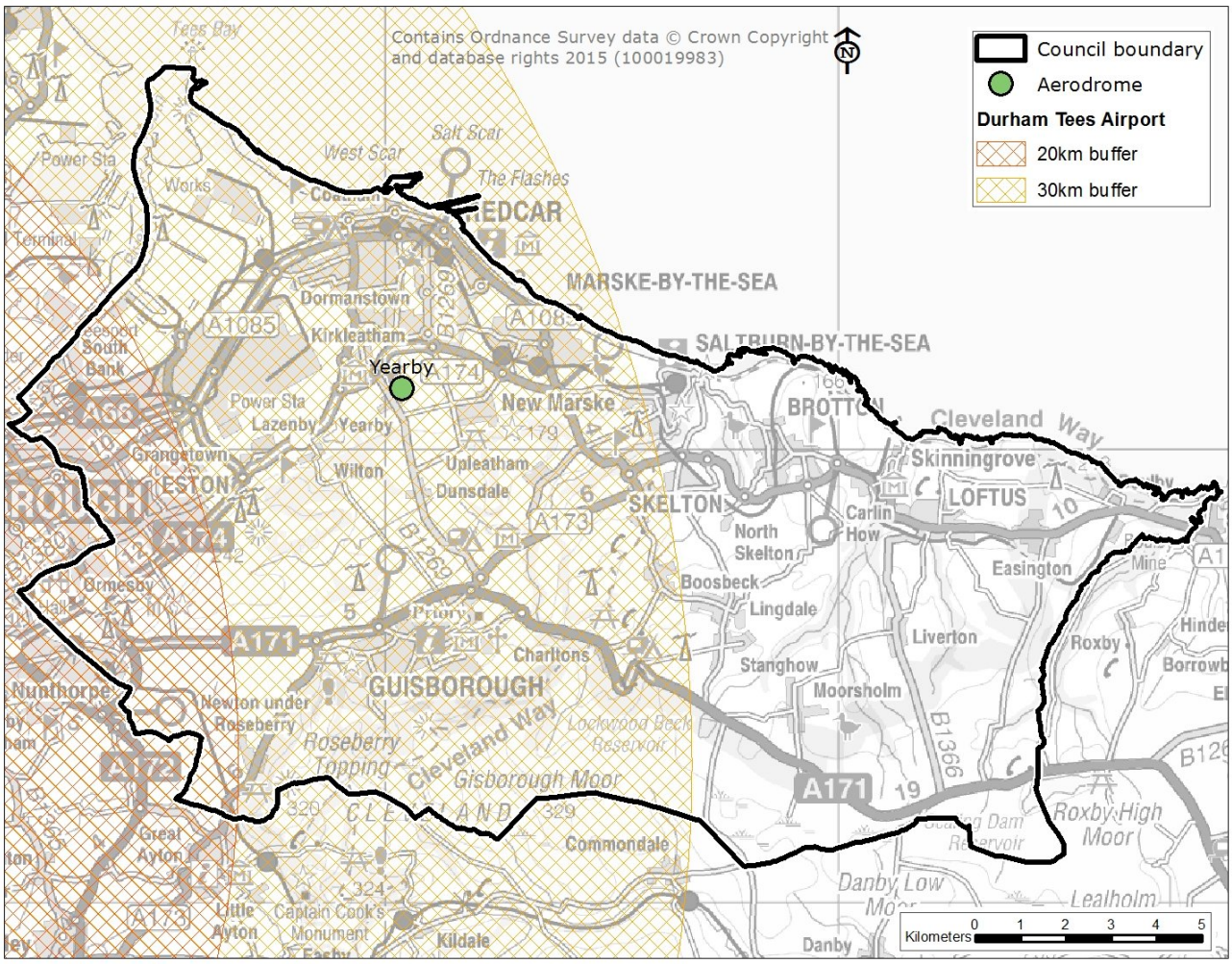
Figure 3.7: Conservation designations



3.20 Durham Tees Valley International Airport is located within 20km of the study area, with around half of the borough lying within 30km. A 20km and 30km buffer from this airport is shown in **Figure 3.8**. Consultation with the airport should be carried out for any wind energy developments being considered in this area. Airports are also a relevant consideration when siting solar developments, due to the risk of glare. For the purpose of this study however, the airport consultation zone is not considered to be a constraint to wind energy development as this would need to be reviewed on a site by site basis in consultation with the airport authorities.

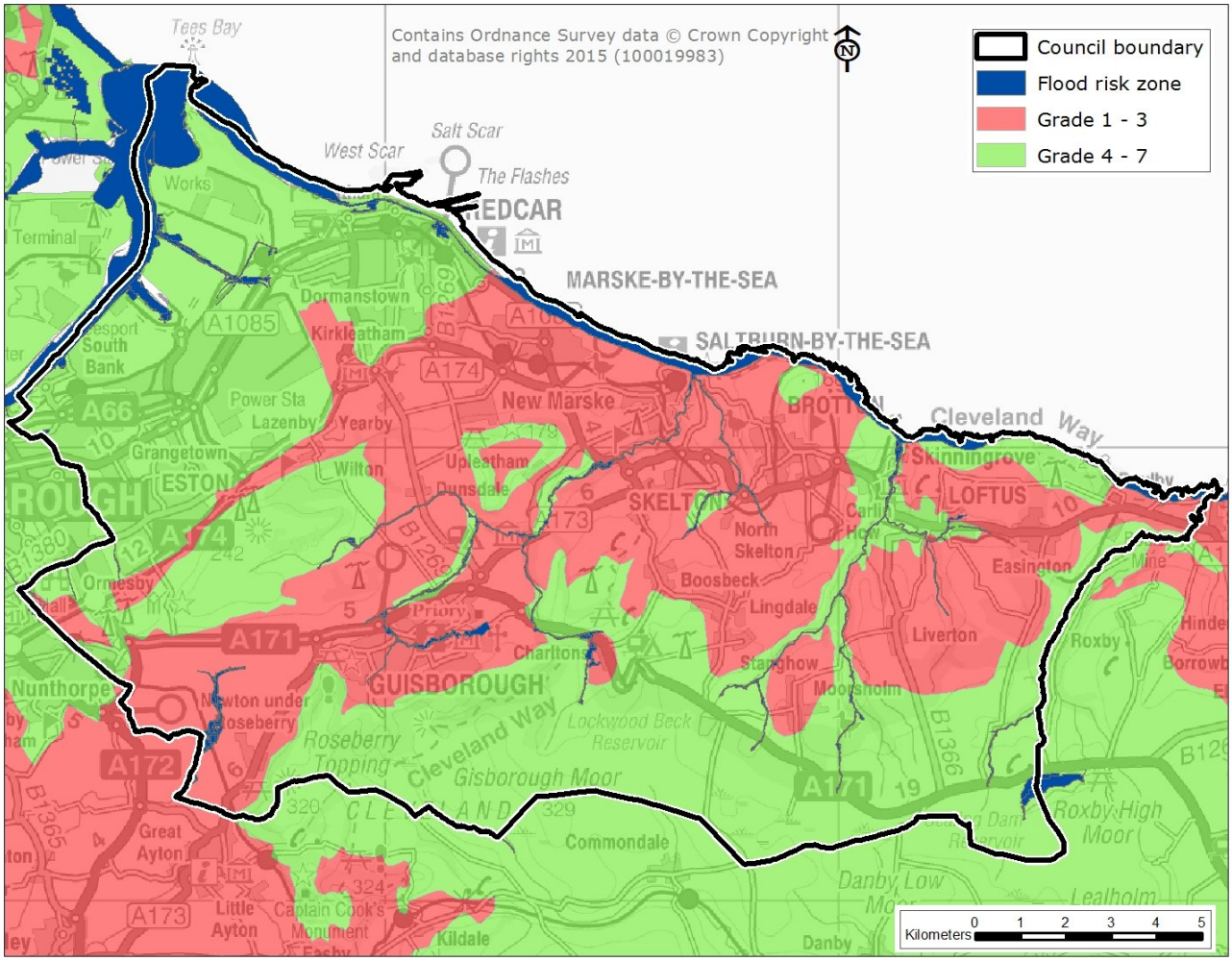
3.21 Yearby Airstrip is the only airstrip located in the project area. No buffers have been applied to this airstrip, as this is a simple grass airstrip located just off the A174. However, any wind energy development proposals in the area should take this airstrip into consideration.

Figure 3.8: Airports and airstrips



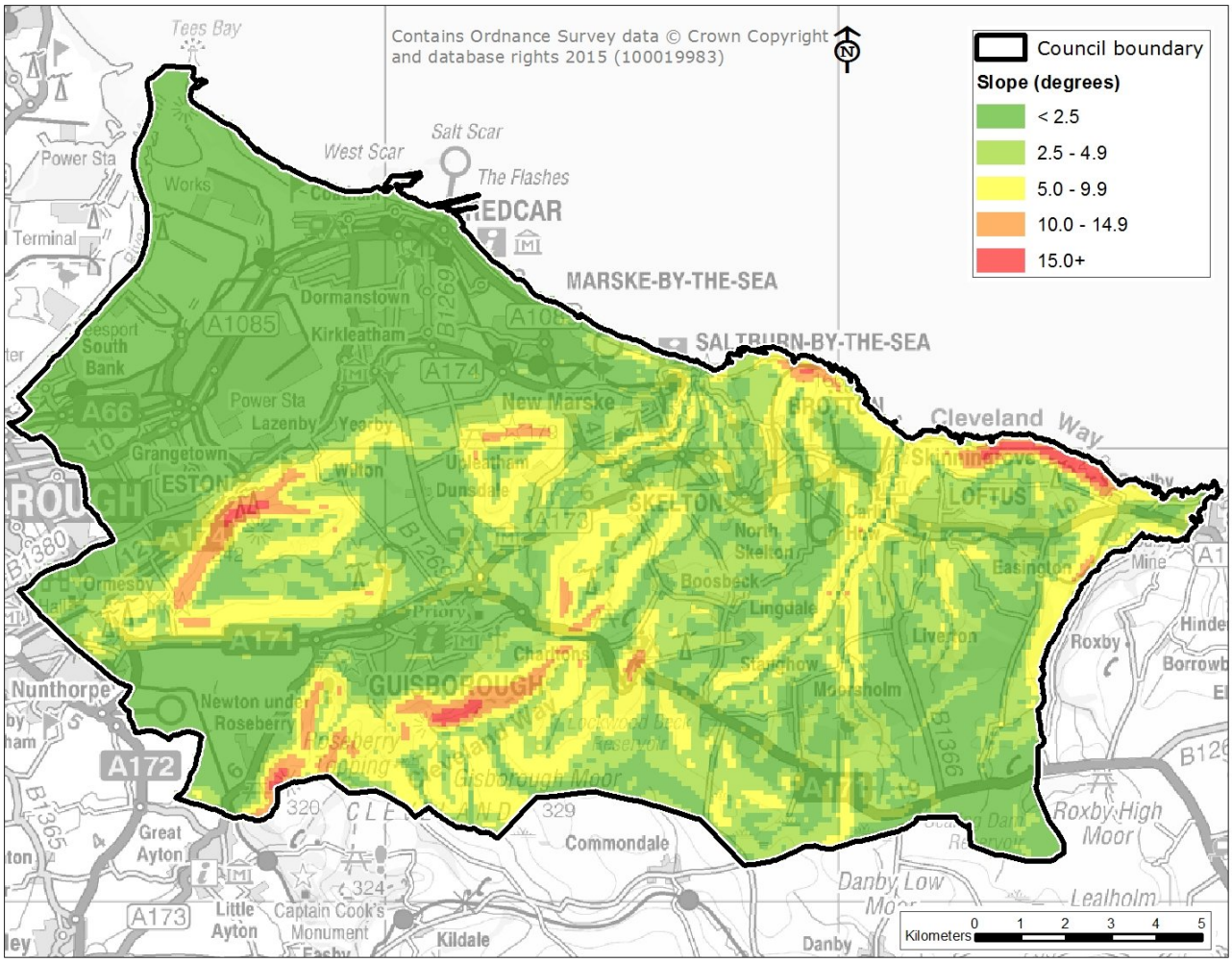
3.22 For the purpose of this study, agricultural grades 1, 2 and 3 and flood risk zones are considered unsuitable for solar energy developments (as outlined in **Table 3.3**). These areas are shown in Figure 3.9.

Figure 3.9: Agricultural land and flood risk zones



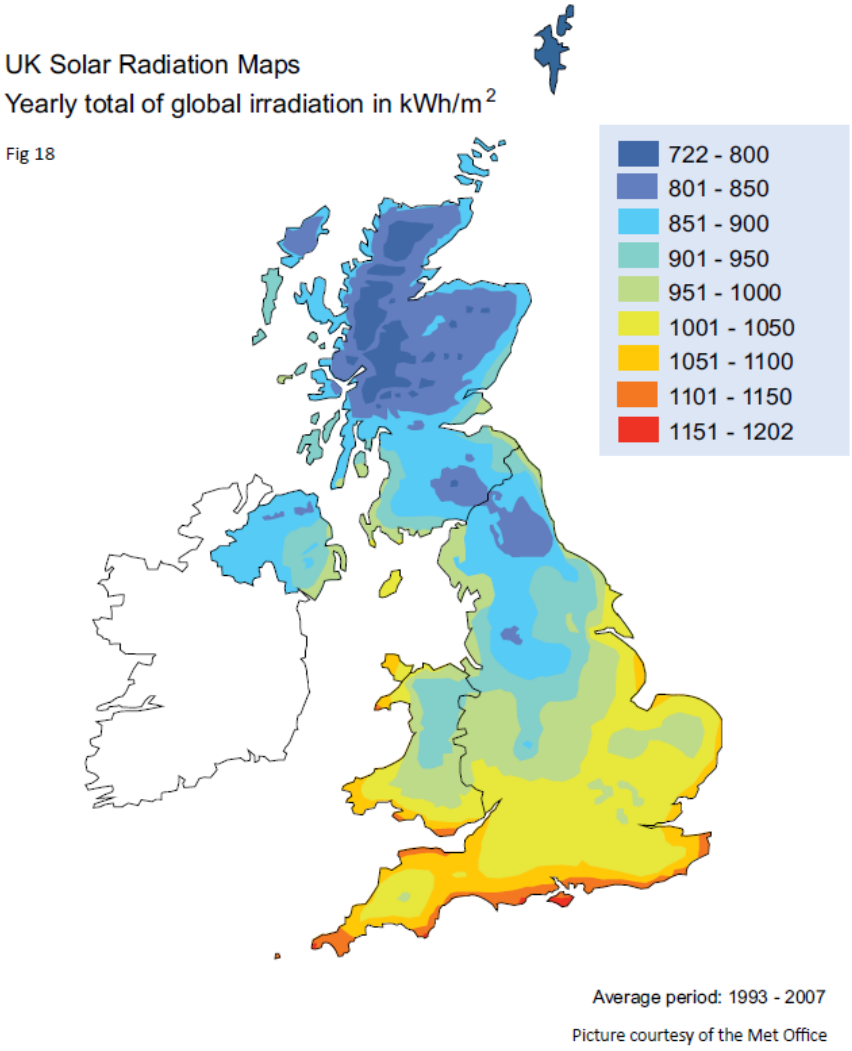
3.23 The slope of the land is shown in **Figure 3.10**. Areas with a slope above 15° are considered unsuitable for wind or solar development.

Figure 3.10: Slope of land (degrees)



3.24 **Figure 3.11** shows levels of solar radition in the UK, as per the MCS guide to the installation of solar PV systems[10]. This documents shows that Redcar and Cleveland falls into the North East England zone, which has solar radiation of 916 kWh/m^2 for a system facing due south at an inclination of 45°[11].

Figure 3.11: UK solar radiation

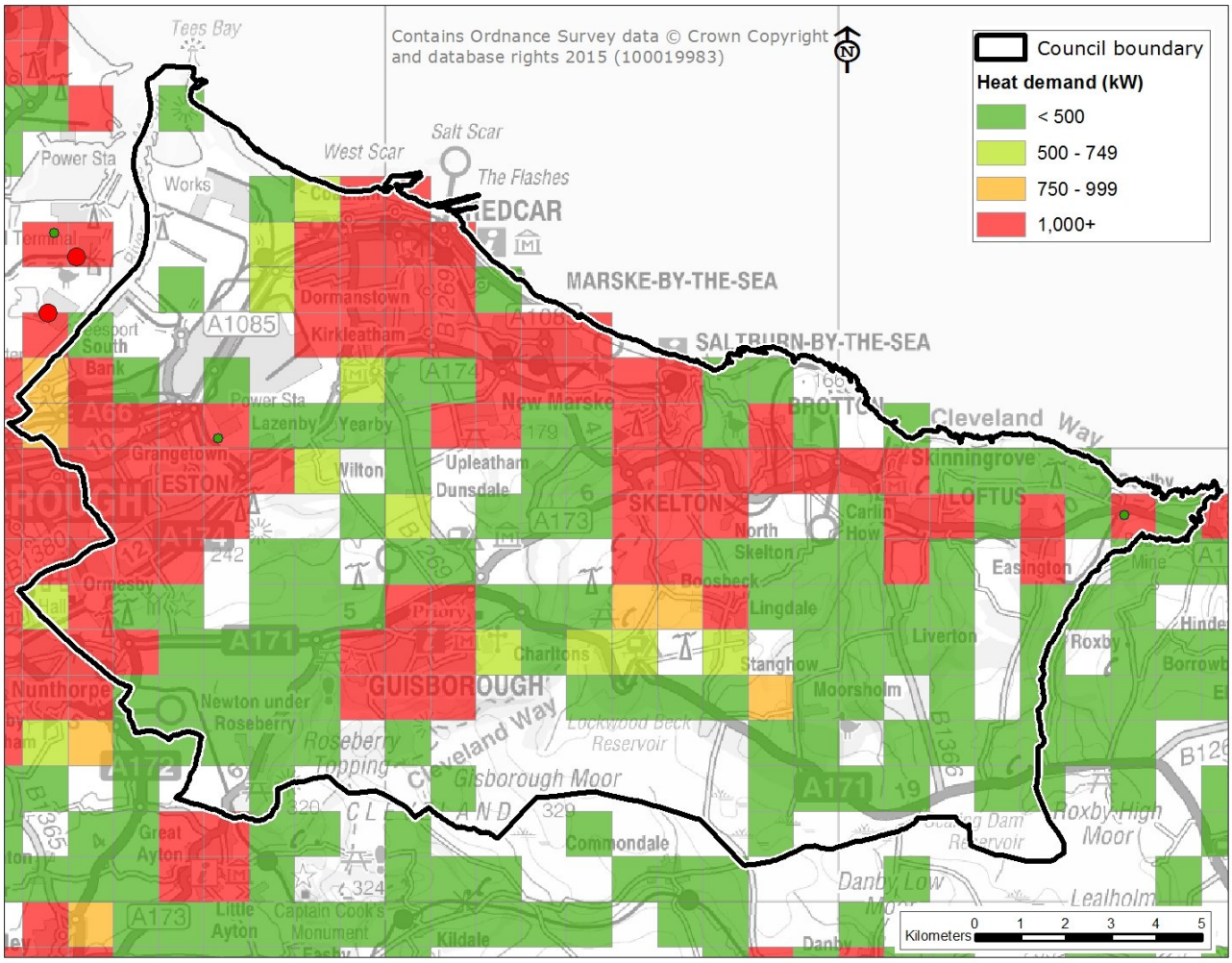


[10] http://www.microgenerationcertification.org/images/PV%20Book%20ELECTRONIC.pdf
[11] See: http://www.microgenerationcertification.org/images/Irradiance%20Datasets%20for%20MCS%20Website%20v2.0.xls

3.25 For biomass, areas with high heat demand (i.e. above 1MW) or land uses that might be suitable for larger-scale (industrial or commercial) biomass are considered in the assessment. Industrial (including steel, chemical and port) and commercial (business) areas are likely to have the greatest heat demand.

3.26 Heat demand is shown in **Figure 3.12**; areas with high heat demand are shown in red.

Figure 3.12: Heat demand



Results of Technical Potential Assessment

3.27 This section details the results of the assessment of technical potential.

Onshore Wind

3.28 Constrained areas, as outlined in **Table 3.2** and mapped in the previous section, have been deemed unsuitable for wind energy development. When these areas are discounted, the areas that remain could be considered viable for wind energy development. These are the unconstrained areas that are shown in **Figure 3.13** (large-scale wind), **Figure 3.14** (medium-scale wind) and **Figure 3.15** (small-scale wind). At all scales, the area with greatest potential for wind is in the north west of the Borough. This assessment does not however take into account landscape sensitivity which is outlined in **Chapter 4.**

Figure 3.13: Areas with technical potential for large-scale wind

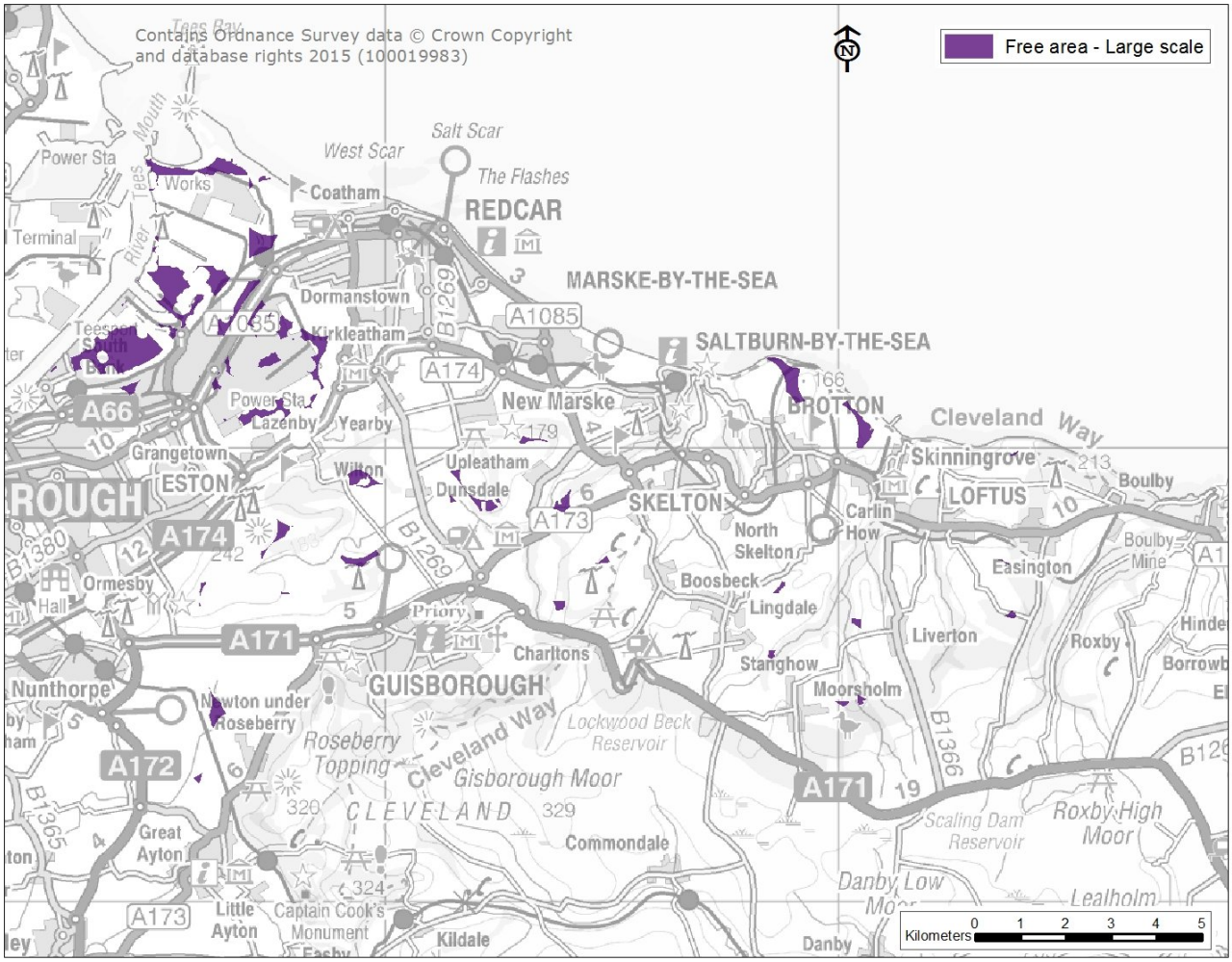


Figure 3.14: Areas with technical potential for medium-scale wind

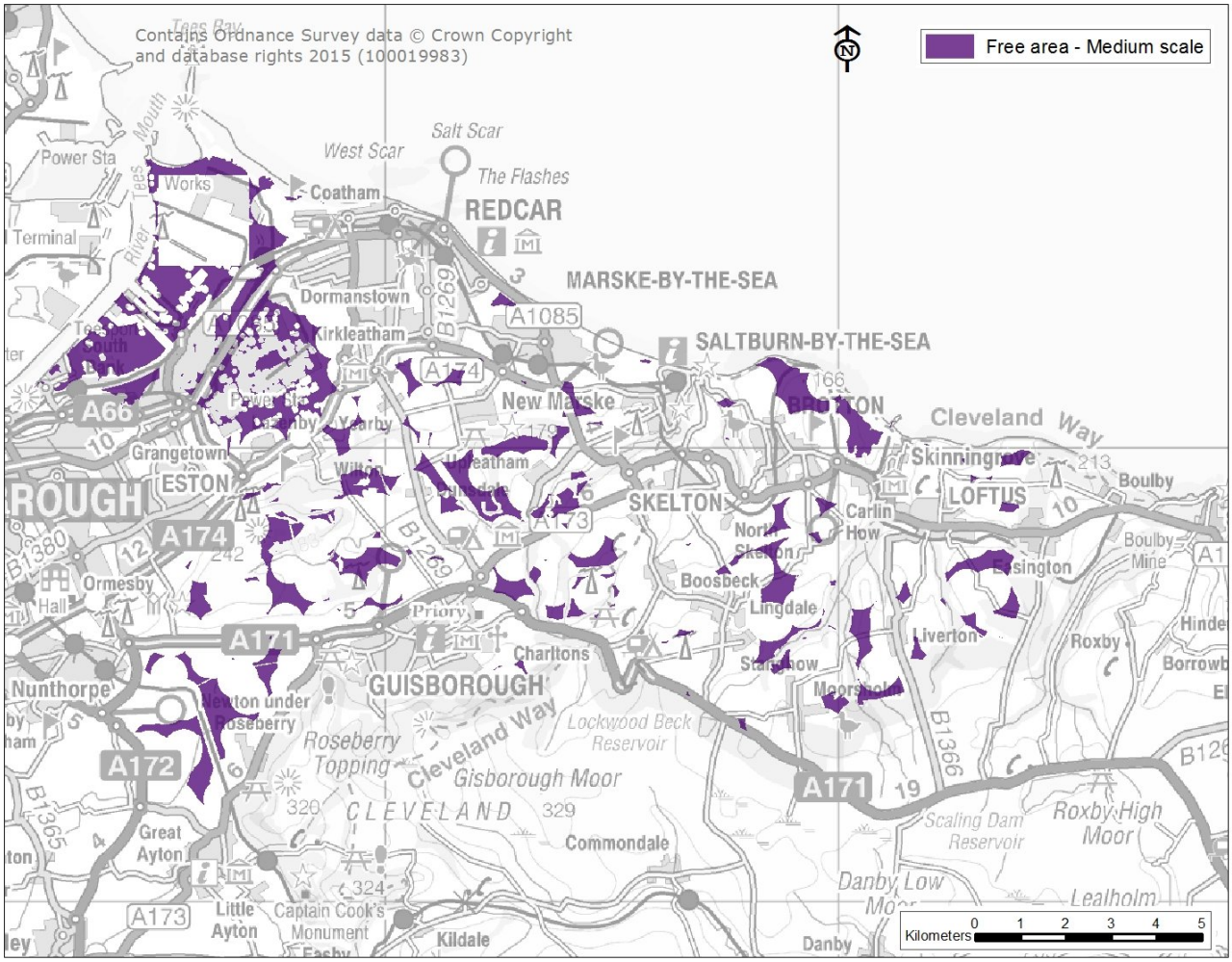
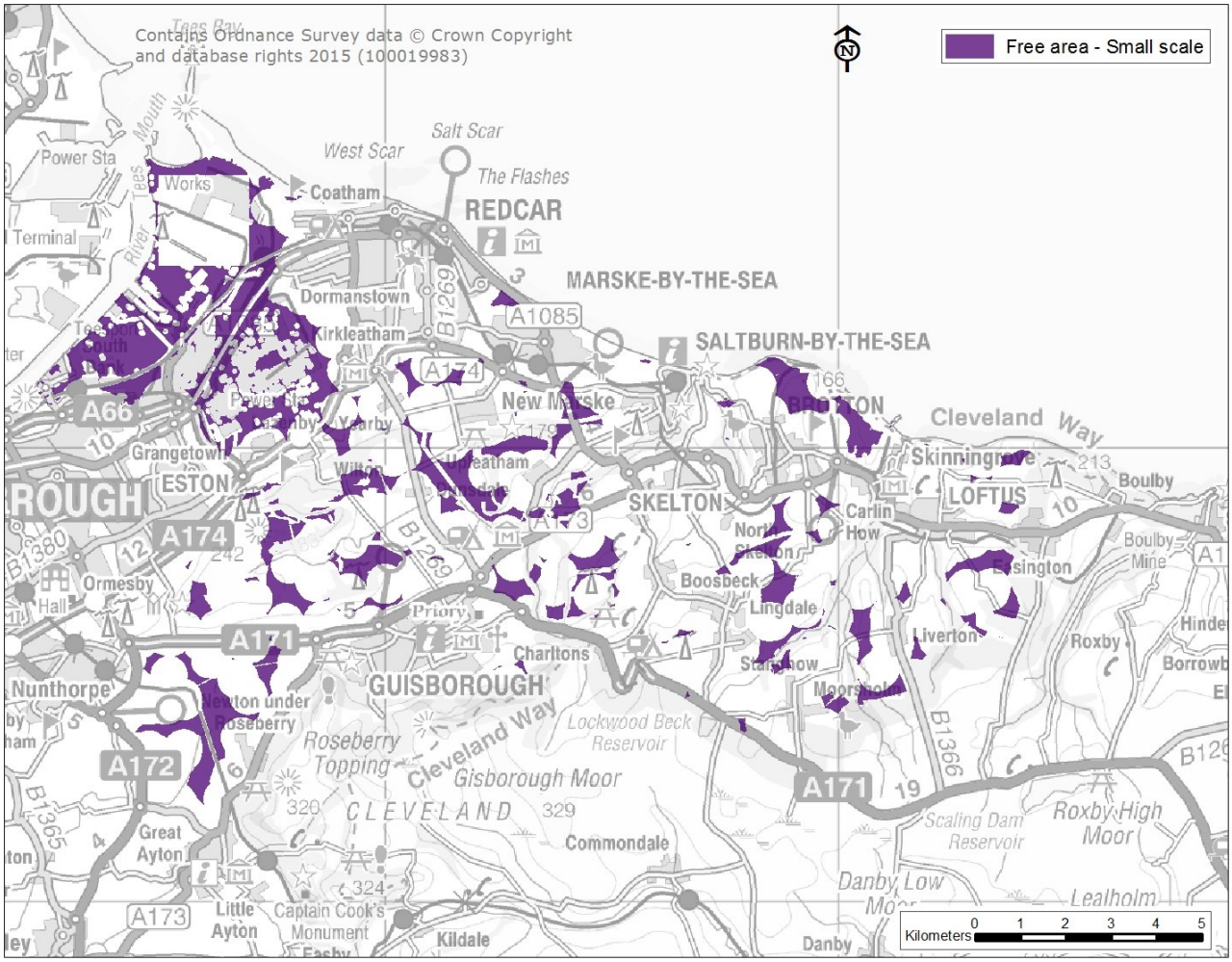


Figure 3.15: Areas with technical potential for small-scale wind



3.29 **Table 3.4** shows the maximum technical potential for wind energy development in Redcar and Cleveland. It should be noted that potential for each scale of development is exclusive of the other scales and cumulative impact would need to be considered in determining what is actually deployable.

3.30 **Table 3.4** shows that, while scope for large-scale wind is limited within the Borough, there could be significant potential for medium and smaller-scale wind.

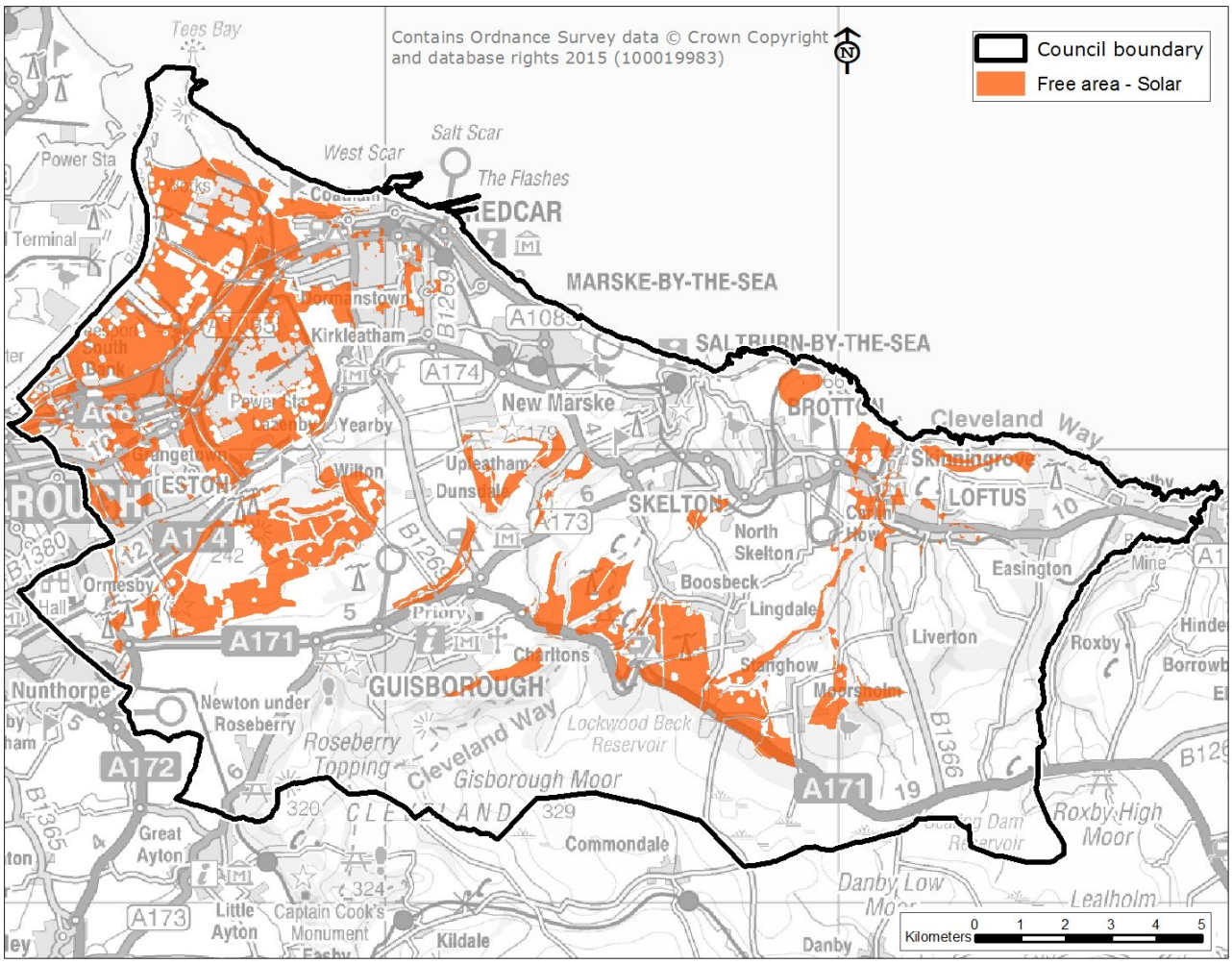
Table 3.4: Maximum technical potential for wind energy development in Redcar and Cleveland

Scale	Free area (km^2)	Maximum number of turbines	Maximum capacity (MW)	Assumptions
Large-scale wind	6.8	27	54.4	4 turbines per km^2 / 2MW each
Medium-scale wind	23.8	238	214.2	10 turbines per km^2 / 0.9MW each
Small-scale wind	25.7	462	231.3	18 turbines per km^2 / 0.5MW each

Solar Arrays

3.31 Constrained areas, as outlined in **Table 3.3** and mapped in the previous section, have been deemed unsuitable for solar PV development. When these areas are discounted, the areas that remain, could be considered viable for development of solar PV arrays. These areas are shown in **Figure 3.16.** There are large areas that are technically suitable for development in the centre and west of the Borough.

Figure 3.16: Areas with potential for solar PV arrays



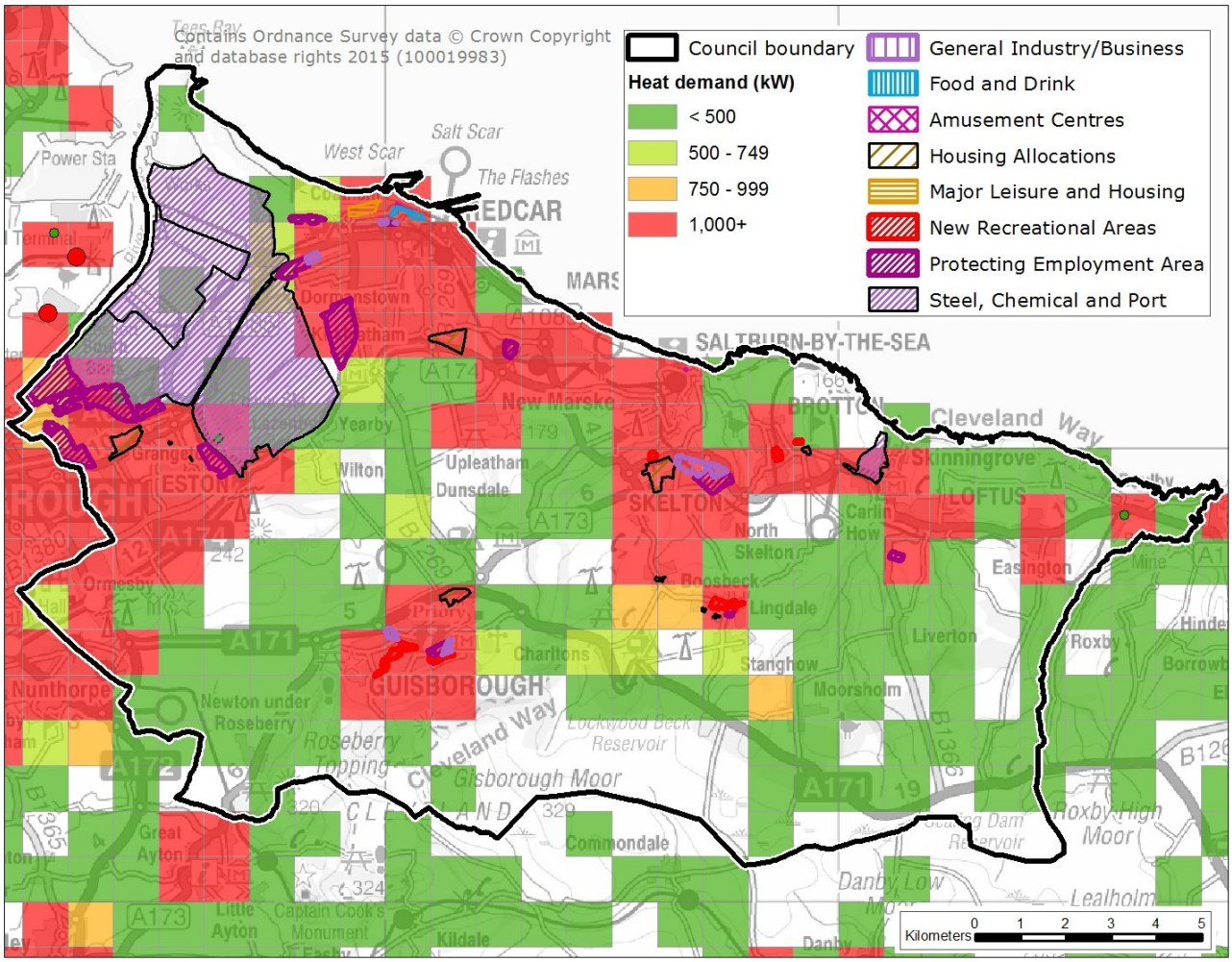
3.32 In total, there is 36.7km^2 of unconstrained land within the Borough. Discounting sites that are less than 0.1km^2 leaves 35.3km^2. Assuming a density of approximately 9MW/km^2, this would mean a maximum capacity of **317.7MW**. Sites with a slope greater than 15° have been discounted as part of the analysis. It should be noted that some of the sites that are marked as unconstrained may not have a southerly orientation and therefore may not be as suitable for development.

3.33 It should be noted that some developers are now looking at installing wind and solar on the same land in order to make better use of grid connection.

Biomass

3.34 **Figure 3.17** shows the land use map overlaid with heat demand. The purpose of this map is to show areas of where there is high heat demand and which of these areas have commercial or industrial land use where there might be potential for an industrial or commercial scale biomass scheme. This shows a number of business or industrial areas that lie in areas that have more than 1MW of heat demand. These areas are likely to have the greatest potential for industrial or commercial-scale biomass. However, actual deployable potential will depend on specific site heat use and circumstances, which are not possible to assess fully in an area based study. This would require further more detailed assessment at the site level.

Figure 3.17: Heat demand and land use in Redcar and Cleveland



Hydropower

3.35 The 2010 England and Wales Hydropower Resource Assessment study, which looked at all scales of hydropower (no upper or lower limits were set), did not identify any potential sites within the Redcar and Cleveland study area. The means that there is unlikely to be any significant scope for the development of hydropower within the Borough.

Deployable Potential

3.36 While the previous section focuses on the technical potential for wind energy, solar PV, large-scale biomass and hydropower, the amount that could actually be deployed will be significantly lower. This section provides a qualitative review of some of the factors that are likely to limit what is actually deployable from the technical potential. Factors that affect deployable potential include:

- Current levels of deployment, including cumulative impact of developments.
- Availability of suitable grid connection.
- Planning issues.
- Economic factors, such as income generation potential.

Current Levels of Deployment

3.37 To date, Redcar and Cleveland has a relatively low number of renewable energy developments within the Borough. However, with the recent European Commission's decision to give the go-ahead to government support for the construction of the new biomass plant at Teesport, the Borough may host to one of the largest biomass projects in the country/ world. Redcar & Cleveland Borough Council is also working hard installing solar panels, biomass (or wood fired) boilers, air source heat pumps and solar thermal panels on a number of Council properties and schools. This includes the installation of a containerised biomass boiler plant room at Kirkleatham Hall School. Renewable energy generation is also being installed on commercial premises, such as 208 solar panels on the grandstand at Redcar Racecourse.

3.38 Technical potential is likely to be constrained by existing developments and cumulative impact should be considered as part of any planning application process. Data provided by the Council shows six single wind turbine proposals have been refused planning permission, one of which was dismissed at appeal and the other allowed. Six micro-wind applications have also been permitted. All the wind applications that have been approved have been for single turbines, apart from one micro-wind application which included two turbines.

Grid Connection

3.39 The grid, operated by National Grid, connects electricity generators to those homes and businesses that use electricity. It is made up of high-voltage transmission lines that transport power efficiently over long distances, and lower voltage distribution lines that distribute power more locally. New renewable electricity generators will need to connect to the existing grid, or new grid infrastructure will need to be put in place. Sites suitable for renewable electricity generation, such as exposed windy areas on hilltops or by the coast, can be quite distant from existing grid infrastructure. As there may therefore be a need for additional grid infrastructure and connection costs can become a constraint for some renewable electricity projects. This section considers some of the issues around grid connection in Redcar and Cleveland.

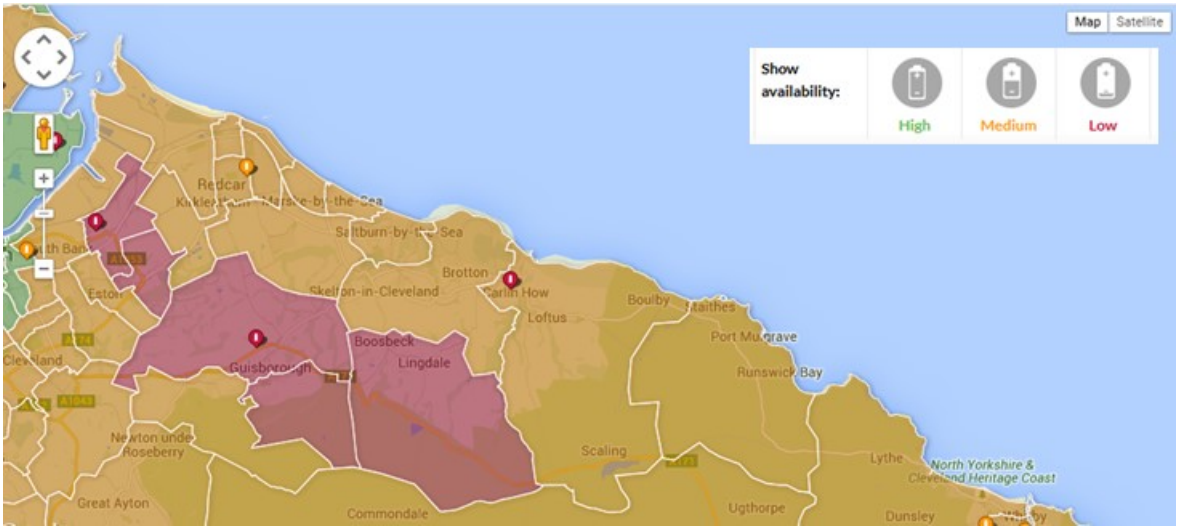
3.40 The grid connection standards vary by the capacity of generator being connected. The role of the Distribution Network Operator (DNO) and the concerns of the DNO will vary by capacity and the constraints posed by the existing distribution system substations. **Table 3.5** sets out the standards and implications.

Table 3.5: Grid connection standards and implications

Generation capacity	Standard	Implication
Up to 4kW single phase **Up to 11kW three phase**	G83/2 applies	No constraints on single small solar PV or wind turbines. Single systems can be connected without consulting the DNO If multiple systems are installed in the same street, the DNO needs to be consulted.
Up to 17kW single phase **Up to 50kW three phase**	Deemed a simple connection under G59/3	Will be connected to the low voltage network. Many will be connected on a consumer's property, so only a portion of the power will flow onto the DNO system. So the impact on voltage and current at the sub-station will be modest.
Over 50kW	Full G59/3 connection process	Will have a full assessment by the DNO, more likely to trigger constraint issues and may require reinforcement.

3.41 **Figure 18** shows the map of five substations and connection ability for Redcar and Cleveland, extracted from Northern Power Grid's web site on 3rd June 2015.

Figure 18: Substations in and connection ability Redcar and Cleveland



Source: DNO, Northern Power Grid. See: http://www.northernpowergrid.c om/generation-availability-map

3.42 **Table 3.6** shows the overall and specific constraints on each of the five substations that serve the area, from the DNO's website. It should be noted that the substations also serve some areas outside Redcar and Cleveland. The DNO is careful to state that the data is indicative and based on existing generation connected and generation that is due to connect or has accepted a connection offer. If other generations are in the process of agreeing a connection these will not be included. An overall rating of Red or Amber does not preclude connecting generation, but may mean that network reinforcement would be required. This could add costs that would deter development.

Table 3.6: Constraints on each substation

Substation	Redcar	Grangetown	Spencerbeck	Carlin How	Guisborough
Voltage (kV)	11	11	11	11	11
Firm Capacity (MVA)	45	24	29	24	24
Minimum demand (MA)	8.24	6.1	6.95	3.4	3.16
Overall Constraint					
Fault Level	98.78%	54.4%	65.76%	53.8%	86.89%
Voltage Constraint	2	2	1	1	1
Reverse Power Flow	0 MVA	12MVA	18.75MVA	0MVA	6MVA
Upstream	Fault level issue	Fault level issue	Fault level issue	Limited EHV capacity	Fault level issue
Physical constraints					
Existing generation connected (MVA)*	0	0.3	0	0.52	4

* Note: existing generation connected may be renewables, CHP or other forms of generation. It is also possible that this connection is not in the Redcar and Cleveland area.

3.43 The implications of the constraints have to be interpreted with care. This is because each connection over 50kW would need to be discussed with the DNO, which is not possible for an area based study. We have made an interpretation of the DNO information, with the following caveats and assumptions:

- The information from Northern Powergrid may not be up to date, or may change.
- The firm capacity is the capacity of the substation allowing for an outage; e.g. at Redcar there are two 45 MVA transformers in parallel and if one is out of service for maintenance or because of a fault the remaining capacity is 45 MVA.
- If the sub-station is upgraded, or generation added, the constraints will change.
- The capacity, location and type of generation will change the impact on the constraint.
- If the constraint is fault level: generators further from the substation will have less impact; generators connected using inverters (all solar PV and many wind turbines) will not contribute to this issue. Technical solutions such as fault current limiters are now being discussed by DNOs as a route to address fault level issues – without upgrading substation switchgear, transformers, or circuits;
- If the constraint is reverse power flow, this will only occur if the generation exceeds the demand on the substation. Minimum demand will generally occur at night, when solar PV systems will not be generating, so it may be possible to generate up to the minimum demand level, perhaps higher if mid-day demand is higher. Other types of generation will generate at any time of day and the minimum demand will be a key constraint;
- If the constraint is voltage: Older transformers will not have been designed with distributed generation in mind. The primary substation transformers HV/11 kV will have automatic tap

changers to enable the 11 kV voltage to be controlled. However, the transformers in 11kV/lv substations will not have the ability to change the voltage, without manual intervention at the substation. Adding generation will tend to increase voltage, the level of impact will depend on the amount of demand and the time pattern of demand vs. generation. The transformers may not be able to cater for a significant net increase in voltage. The impact of this constraint will be very specific to the substations and the demand and generation connected;

- Generators and DNOs can agree to a non-firm connection, which may restrict generation output at times when the substation is unable to handle voltage or reverse power flow.

3.44 Taking these assumptions into consideration **Table 3.7** sets out the implications of the constraints on the connection potential at each substation. The connection potential at each substation will partly determine what is deployable from the overall technical potential.

Table 3.7: Implications of constraints on substations for generation over 50kW

Substation	Redcar	Grangetown	Spencerbeck	Carlin How	Guisborough
Implications (NB generation in other boroughs may use the capacity)	Up to 8 MW - keeping below min demand. Could be higher if solar PV	Potential for more than 12 MW (min demand + reverse flow).	Potential for more than 18.75 MW (min demand + reverse flow). Voltage rise may be an issue.	Up to 3 MW - keeping below min demand. Could be higher if solar PV. Voltage rise may be an issue.	Potential for more than 6 MW (min demand + reverse flow). Voltage rise may be an issue.

Planning Issues

3.45 Onshore wind projects have historically been subject to a number of difficulties in gaining planning consent, mainly through environmental concerns such as noise and visual impact. This has had the effect of reducing the proportion of applications gaining consent and lengthening planning determination times. Consenting rates vary across local authorities due to many factors but clearly those with core strategy policies/targets conducive to renewables and wind power which have been subject to public consultation have had increased consenting rates.

3.46 As outlined in **Chapter 2**, a written Ministerial Statement, which was made on the 18th June 2015, states that local planning authorities should only grant planning permission if *the development site is in an area identified as suitable for wind energy development in a Local or Neighbourhood Plan* and if, *following consultation, it can be demonstrated that the planning impacts identified by affected local communities have been fully addressed and therefore the proposal has their backing*. In conjunction with the proposed removal of Government subsides for wind, this policy announcement will have an effect on the number of onshore wind energy applications being submitted by developers within the Borough in the future. The full implications of this policy change on deployable potential are not yet however known. Further consideration of this issue is given in **Chapter 5** of this report.

Economic factors

3.47 Finance and financial performance are crucial components for the development of renewable energy projects, as many developers invest in renewable energy projects in order to generate a financial return. The economic factors that impact on renewable energy, such as tariffs and subsidies, will influence the business case for installing and generating renewable energy. These factors can make particular technologies more or less attractive to developers. This section reviews some of the key economic factors that might influence developers and any recent changes to these.

3.48 Incentives are key to the financial case for renewable energy investments. It is therefore vital to understand the incentives available, the criteria for eligibility and the interaction between the incentives. The key incentives that developers have been utilising for renewable energy developments are the Feed-in Tariff (FIT), Renewable Heat Incentive (RHI), the Renewables

Obligation (RO) and Contracts for Difference (CfD). Recently, there have been some changes to these schemes that will impact on the attractiveness of the technologies supported:

- **Feed-in Tariff**: As of April 2010, developers in England, Scotland and Wales have been eligible to receive Feed-in Tariffs (FITs) for electricity generated from renewable sources (solar, wind, hydro, anaerobic digestion and micro-CHP). Systems up to 5MW capacity are eligible under the scheme, meaning that households and most businesses are eligible. Community groups are can also benefit under the scheme.
- The FIT consists of a generation tariff, which is a payment for each unit of electricity generated, and an export tariff, for each unit exported to the grid. Tariffs are paid for 20 years, except for solar systems which qualify for 25 years. Tariffs are index-linked to RPI (retail prices index).
- The government has announced plans to review the Feed-in Tariff system during 2015 and set new tariff rates and processes. Any changes to the scheme following this review is likely to impact on the attractiveness of technologies, such as solar and wind, and could impact on the number of applications for these technologies.
- **Renewable Heat Incentive**: The Renewable Heat Incentive (RHI) is similar to the FIT, in that it is a payment for generating heat from renewable sources. There have been no specific changes announced to this scheme. Tariffs are subject to review every quarter, and the tariff rate will reduce if the total amount of payments made is higher than the degression trigger or super-trigger. Reduction in tariff rates have the potential to impact on the uptake of certain technologies.
- **Renewables Obligation**: The Renewables Obligation (RO) was the main support mechanism for larger scale renewable electricity projects in the UK. However, in November 2014, the Government confirmed it planned to close the RO scheme to large-scale solar PV generating capacity from 1 April 2015. There is a grace period if certain criteria are met, which allows some generating stations to be accredited until 31st March 2016[12]. The scheme will be closed to all new generating capacity on 31st March 2017. The Government has however announced early closure of the RO to sub-5MW solar projects and onshore wind projects. The closure date is to be brought forward by a year to 1st April 2016.

3.49 The **Contracts for Difference (CFD)** scheme was opened to applications on 16th October 2014 to continue support for low-carbon electricity generation. This is administered by National Grid. However, it should be noted that the Government has indicated that onshore wind is likely to be excluded from the CfD scheme. This uncertainty in the future of subsidies for onshore wind will impact on the attractiveness of this technology to developers and will affect the number of applications received within the Borough.

3.50 Another key change in for renewable energy project finances is that, from the 1st August 2015, Levy Exemption Certificates (LECs) will no longer be issued to renewable generators. LECs are issued to generators for each unit produced and sold to suppliers who use them in accounting for their CCL obligation.

Summary

3.51 The technical assessment has shown that there is scope for wind, solar and biomass development in Redcar and Cleveland but no real potential for small scale hydro. As **Figures 3.13-3.15** indicate – there are greater opportunities for small and medium scale wind compared with large scale wind. The most suitable areas with technical potential for large scale wind (not taking into account landscape sensitivity issues) are within the South Tees area. There are also significant areas within South Tees, uplands and inland valley farmland areas which are technically suitable for freestanding solar PV array developments. The greatest potential for large scale biomass is within areas where there is both a significant heat demand and which have commercial or industrial land use.

[12] For further information see: https://www.ofgem.gov.uk/environmental-programmes/renewables-obligation-ro/information-generators/closure-renewables-obligation-ro

3.52 The assessment found that there are a number of businesses or industrial areas that lie in areas that have more than 1MW of heat demand.

3.53 Whilst there may be technical potential for wind, solar and biomass energy within the Borough, there are a number of factors that will affect what can actually be deployed. The key factors that will limit the potential of what is deployable within the Borough are:

- Existing levels of deployment within the areas with the most potential and the potential for cumulative impacts to occur.
- Grid connection potential at local substations. This is the main constraint that will physically limit development potential. Developers will need to liaise early with the DNO, Northern Power Grid, in order to determine the potential and costs for grid connection.
- Planning issues – including the new Ministerial Statement on wind energy and the need for developers to provide that the planning application has the backing of local communities.
- Project economics and the availability of Government subsidies for different forms of renewable energy projects. Potential cuts to subsides for wind and solar may have a significant impact on the deployable potential of these forms of renewable energy development.

4
Landscape Sensitivity Assessment

4 Landscape Sensitivity Assessment

Introduction

4.1 This chapter set out the findings of an assessment that was undertaken to evaluate the sensitivity of the landscape within the Borough to wind turbine and solar energy developments.

4.2 The assessment provides guidance on:

- the key landscape issues associated with onshore wind and solar energy developments;
- the relative landscape sensitivities of different areas within the Borough to wind energy and solar developments; and
- the siting and design of wind and solar energy schemes.

Study area

4.3 The study focuses on the rural landscape of Redcar and Cleveland Borough and the landscape units as identified in the Redcar and Cleveland Landscape Character Assessment (2006). It should be noted that rural parts of the Borough to the south are located in the North York Moors National Park. As any planning application for development in this area is made to the National Park Authority, this landscape has not been appraised in terms of its sensitivity to wind and solar development. However, issues around inter-visibility between the landscape of the Borough and the National Park are discussed where applicable. The urban areas within South Tees have also not been assessed as this is a landscape sensitivity assessment and focuses on the rural landscape character areas.

Approach to Assessment

4.4 The approach to the landscape sensitivity assessment has involved the following key stages:

1. Identification of the key characteristics of wind and solar energy development and their potential effects on the landscape, to inform the development of a methodology for the assessment of landscape sensitivity;
2. Assessment of the sensitivity of the different landscape character types[13] in Redcar and Cleveland to wind turbine and solar energy development at a range of scales; and
3. Preparation of siting and design guidelines for wind turbine and solar energy development in each landscape character type, taking account of the assessed sensitivity of the landscape, and the effect of operational/ consented development and potential effects of proposed development.

4.5 Each of these stages is discussed in more detail in the following sections.

[13] 'Units' as identified in the 2006 landscape character assessment have been grouped into similar 'types'.

1. Potential effects of wind and solar energy development on the landscape

4.6 In order to minimise effects on the landscape through siting and design, it is important to first understand the characteristics of wind and solar energy development and how they may affect the landscape. The following section describes the features of these developments and considers the potential impacts on the landscape.

4.7 In undertaking any landscape sensitivity assessments it is necessary to acknowledge that varying attitudes to wind and solar energy development are expressed by different individuals and constituencies. Aesthetic perceptions can be positive or negative depending on individual attitudes to the principle and presence of renewable energy.

General features of wind energy development

4.8 The key components of wind energy development are the wind turbines, which may be grouped together into a wind farm. The majority of wind turbines consist of horizontal-axis three-bladed turbines, mounted on a steel tower. Other turbines, including two bladed turbines and vertical axis turbines, are available but less commonly deployed. Wind turbines are generally given planning permission for 25 years, although re-powering may take place after this period has elapsed, subject to further permission.

4.9 The main visible components of a horizontal-axis wind turbine are:

- the tower, generally a tubular steel structure though lattice towers are occasionally used for smaller turbines;
- the nacelle, which contains the generating equipment; and
- the rotor blades, mounted on the hub at the front of the nacelle.

4.10 Depending on the scale and design of the turbine, the transformer may be located inside or outside the tower. If outside it will usually be contained in a small box-like structure adjacent to the tower base. The tower itself sits on a concrete foundation which is hidden from view underground.

4.11 Turbines are most commonly coloured light grey, which has been found to be less visually prominent when turbines are viewed against the sky. However, when turbines are seen against a land backdrop, which is common with smaller models, the light colour can make them appear more prominent.

4.12 Turbines are available in a wide range of sizes, from very small roof-mounted machines designed for domestic use, to large commercial structures. The tallest turbines currently operating in the UK are in the region of 150m to tip.

4.13 Besides overall size the proportions of a turbine can also vary, particularly the length of the blades in relation to the height of the tower, and the size and shape of the nacelle. Where particularly short blades are mounted on a tall tower, or where long blades are placed on a short tower, the turbine may appear unbalanced or top-heavy. Larger turbines with longer blades tend to have slower rotation speeds than smaller models.

4.14 In addition to the turbines themselves, developments involving large scale wind turbines typically require additional infrastructure as follows:

- road access to the site and on-site tracks able to accommodate the specialised heavy goods vehicles (HGVs) which are needed to transport the long turbine components and heavy construction cranes;
- a temporary construction compound and lay-down area for major components;
- construction of a buried concrete foundation and an area of hardstanding next to each turbine to act as a base for cranes during turbine erection;
- underground cables connecting the turbines (buried in trenches, often alongside tracks);

- one or more anemometer mast(s) to monitor wind direction and speed, usually a slender lattice tower of the same height as the turbine hubs; and
- a control building to enable monitoring and operation, often combined with a small substation.

4.15 For single turbines, the requirements will be less but still typically include road access, hardstanding and foundations.

4.16 Lighting requirements depend on aviation and can be required on turbines. However, aircraft warning lights can be infra-red and therefore not visible to the naked human eye. Lighting has not been considered as part of the landscape sensitivity study, although guidance advises that if lighting is required on turbines for aviation purposes, infra-red lighting should be adopted where possible to minimise visual impacts at night.

4.17 The District Network Operator (DNO) is responsible for establishing a connection between the substation and the national grid. For larger schemes this connection is usually routed via overhead cables on poles, but for smaller turbines may be routed underground. Since these are part of a separate consenting procedure, these connections have not been considered as part of the landscape sensitivity study.

Landscape effects of wind turbines

4.18 Wind turbines can be substantial vertical structures, and larger models will inevitably be highly visible within the landscape. The movement of the blades is a unique feature of wind energy developments, setting them apart from other tall structures in the landscape such as masts or pylons. Wind energy development may affect the landscape in the following ways:

- construction of large turbines and associated infrastructure may result in direct loss of landscape features;
- wind turbines are tall vertical features that may alter the perception of a landscape, potentially affecting the apparent scale of landforms;
- movement of rotor blades may affect characteristics of stillness and solitude, as well as drawing the eye to turbines which may be a relatively small feature in the landscape;
- the presence of turbines may increase the perceived human influence on the landscape, particularly in terms of overt modern development, and this can particularly affect landscapes which have a strong sense of naturalness or wild qualities, or which form a setting to heritage assets;
- wind turbines, even at relatively small sizes, can appear large in the context of human-scale features such as domestic buildings and trees – at the largest scales turbines can be perceived as ‘overwhelming’ when close to residential properties;
- turbines on skylines may compete with existing landmark features for prominence where prominent skylines or landmark features are characteristic of the landscape; and
- in order to be as efficient as possible, turbines are often placed in elevated locations, where they may affect views from wide areas.

General features of solar energy development

4.19 Free-standing solar PV developments consist of panels that are usually mounted around 0.7m-3m above ground level allowing the growth of vegetation beneath and between the arrays and the associated grazing of stock. Panels are arranged in groups or ‘arrays’ of around 20 panels. The panels are encased in an aluminium frame, supported by aluminium or steel stands, and positioned at a fixed angle between 20-40 degrees from the horizontal, facing south. Arrays usually take the form of a linear rack of panels. These arrays or linear racks are usually sited in parallel rows with gaps between the rows for access and to prevent shading of adjacent rows. They therefore do not cover a whole field. The actual arrangement of the arrays within the landscape varies from scheme-to-scheme (i.e. regular layouts versus more varied and irregular, depending on the site situation). Generally though, layouts of the solar arrays tend to be regular.

4.20 Photovoltaic technology requires absorption of sunlight to allow for the conversion of energy to take place and therefore very little light energy is lost through reflection. Glare is further minimised through the use of translucent coating materials to improve light transmittance through the glass. Nevertheless panels do change under different atmospheric conditions, tending to reflect the light and colour of the sky, and the appearance of the panels under different atmospheric conditions is an important consideration in terms of the visual effects of schemes.

4.21 Like wind turbine schemes, solar PV developments are usually given planning permission for 25 years. In addition to the panels themselves, solar developments typically require additional infrastructure as follows:

- road access to the site and on-site construction and permanent maintenance tracks;
- a substation which is often contained within a small building;
- a temporary construction compound for major components;
- permanent security fencing, CCTV and signage; and
- underground cables connecting the panels to the substation.

4.22 Lighting requirements depend on the required site security levels. However, it is unusual for permanent lighting to be proposed and developers often opt for a flood light near the substation for emergency use only.

Landscape effects of solar energy development

4.23 Solar energy developments can be substantial horizontal structures and can be highly visible and contribute to considerable change in the character of the landscape. Solar energy development may affect the landscape in the following ways:

- construction of solar panels and associated infrastructure may result in direct loss of landscape features such as hedgerows, woodland, farmland and other habitat;
- solar energy developments can cover large areas and the presence of solar panels may increase the perceived human influence on the landscape, particularly in terms of overt modern development, and this can particularly affect landscapes which have a strong sense of naturalness, or which form a setting to heritage assets; and
- at certain times of day and from certain viewing angles solar panels can reflect the sunlight, causing glint and glare which can draw the eye.

Cumulative issues

4.24 As larger numbers of wind and solar energy developments are built, it is increasingly necessary to consider their cumulative effects. Guidance on the siting and design of wind farms and wind turbines suggests that a key consideration is understanding how different developments relate to each other, their frequency as one moves through the landscape, and their visual separation, with the aim of allowing experience of the character of the landscape in-between.[14] Where appropriate, these kinds of issues have been considered in assessment.

Typologies

4.25 A range of scales of development have been considered in the sensitivity assessment. The 'size' of a wind energy development can be defined by the number of turbines, the height of turbines, or by reference to installed capacity. Capacity is less useful in landscape terms as there are many combinations of different turbines which could give the same output. The number of turbines is an important factor in determining the suitability of a proposal in its host landscape. However, it is turbine height which is most likely to be the determining factor for the assessment of landscape sensitivity, since it is the scale of the turbine which generally defines whether or not it can be accommodated in the landscape. Where a large turbine cannot be accommodated due to incompatibility of scale, then this will apply whether one or many turbines are proposed.

[14] Scottish Natural Heritage (2014) op. cit.

4.26 The size of a solar energy development can also differ greatly, in terms of power output and area covered. Schemes in the UK range in area from less than 1 hectare, up to well over 100 hectares. However, it is highly unlikely that solar energy developments at the very large end of this spectrum would be proposed in Redcar and Cleveland.

4.27 **Table 4.1** sets out the range of 'typologies' considered in the assessment.

Typology	Definition
Small solar energy development	< 5Ha in area
Medium solar energy development	5 – 10 Ha in area
Large solar energy development	>10 Ha in area up to 20 Ha – schemes larger than this unlikely to be proposed in Redcar and Cleveland
Small wind energy development	One or more wind turbines, less than 50m to tip
Medium wind energy development	One or more wind turbines, between 50 and 100m to tip
Large wind energy development	One or more wind turbines, over 100m to tip

4.28 An assessment of sensitivity has been undertaken in relation to each of the above typologies. Further information is then presented to inform design guidance in terms of these typologies, and also in terms of the appropriate extent of solar energy development (area coverage) and wind farm size (turbine numbers).

2. Assessment of landscape sensitivity

4.29 There is currently no published method for evaluating sensitivity of different types of landscape. The method therefore builds on available guidance published by the Countryside Agency and Scottish Natural Heritage including the Landscape Character Assessment: Guidance for England and Scotland[15] and Topic Paper 6 that accompanies the Guidance,[16] as well as LUC's considerable experience from previous and ongoing studies of a similar nature.

4.30 Paragraph 4.2 of Topic Paper 6 states that:

"*Judging landscape character sensitivity requires professional judgement about the degree to which the landscape in question is robust, in that it is able to accommodate change without adverse impacts on character. This involves making decisions about whether or not significant characteristic elements of the landscape will be liable to loss... and whether important aesthetic aspects of character will be liable to change.*"

4.31 For the purposes of this study, we have defined 'sensitivity' as follows:

Sensitivity is the relative extent to which the character and quality of the landscape is susceptible to change as a result of wind and solar energy development.

4.32 Wind turbine and solar energy development will affect different characteristics of the landscape in different ways. It is therefore important to understand the nature and sensitivity of different components of landscape character, and to set these out and assess them in a consistent and transparent fashion. In order to do this, a set of criteria will be used to highlight specific landscape and visual characteristics which are most likely to be affected by wind and solar energy development.

[15] Countryside Agency and Scottish Natural Heritage (2002) *Landscape Character Assessment: Guidance for England and Scotland* CAX 84. Note this guidance has been superseded by Natural England Guidance however, Topic Paper 6 remains current and useful.
[16] The Countryside Agency and Scottish Natural Heritage (2004). *Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity.*

Assessment criteria

4.33 **Table 4.2** sets out the criteria used to evaluate the sensitivity of landscape character types to wind turbine development, and the aspects of the landscape which were considered to indicate higher or lower sensitivity. **Table 4.3** sets out the alternative criteria used to evaluate the sensitivity of landscape character types to solar energy development, and the aspects considered to indicate higher or lower sensitivity. Where the criteria for solar energy developments are very similar to that identified for wind energy development, they are not repeated.

4.34 For each criterion, a short explanation is provided as to why it is indicative of sensitivity to the type of development proposed, and what key characteristics of the landscape will be considered. Information sources are given for each criterion. The examples provide more detail as to what level of sensitivity will be assessed for landscapes displaying certain characteristics: these are examples only, based on generic descriptions. The five defined levels form stages on a continuum, rather than clearly-separated categories. Any given landscape may or may not fit neatly into one category, and an element of professional judgement is therefore required.

Table 4.2 Sensitivity assessment criteria for wind turbine development

Landform and scale				
A simple, smooth, gently sloping or flat landform is more likely to be able to accommodate wind energy development than a landscape with a dramatic rugged landform, distinct landform features (including prominent headlands and cliffs) and/or pronounced undulations. Larger scale landforms are likely to be less sensitive than smaller scale landforms since, in the latter case, turbines may appear out of scale, detract from visually important landforms and/or appear visually confusing due to turbines being at varying elevations. Information sources: Landscape Character Assessment; OS maps; fieldwork.				
Examples of sensitivity ratings				
Lower sensitivity		⟷		**Higher sensitivity**
An extensive flat lowland landscape or elevated plateau, often a larger scale landscape with no distinctive landform features.	A simple, gently rolling landscape, likely to be of medium-large scale, without distinctive landform.	An undulating landscape, perhaps also incised by valleys, likely to be of medium scale.	A landscape with distinct landform features, and/or irregular in topography (which may be large in scale), or a smaller scale landform.	A landscape with a distinctive, rugged landform or dramatic topographical features (which may be large in scale), or a small scale or intimate landform.

Land cover pattern and presence of human scale features				
Simple, regular landscapes with extensive areas of consistent land cover are likely to be less sensitive to wind energy development than landscapes with more complex or irregular land cover patterns, smaller and / or irregular field sizes, and landscapes with frequent human-scale features that are traditional to the landscape, such as red-brick villages, farmsteads, small farm woodlands, trees and hedges. This is because larger wind turbines may dominate traditional human scale features within the landscape. Information sources: Landscape Character Assessment; OS maps; aerial photography; fieldwork.				
Examples of sensitivity ratings				
Lower sensitivity		⟷		**Higher sensitivity**
An open, continuous landscape with uniform land cover and lacking in human-scale features.	A landscape of large open fields, little variety in land cover, with occasional human-scale features such as trees and domestic buildings.	A landscape with medium sized fields, some variations in land cover and presence of human-scale features such as trees and domestic buildings.	A landscape with irregular or small-scale fields, variety in land cover and presence of human-scale features such as trees and domestic buildings.	A landscape with a strong variety in land cover, and complex patterns, containing numerous human-scale features.

Skylines				
Prominent and distinctive and/or undeveloped skylines, or skylines with important landmark features, are likely to be more sensitive to wind energy development because turbines may detract from these skylines as features in the landscape, or draw attention away from existing landform or landmark features on skylines. Important landmark features on the skyline might include historic features or monuments as well as landforms. Where skylines are affected by development, e.g. through the presence of electricity pylons, the addition of turbines may lead to visual confusion, and as such this may not be a consistent indicator of reduced sensitivity. Information sources: Landscape Character Assessment; fieldwork.				
Examples of sensitivity ratings				
Lower sensitivity		⟷		**Higher sensitivity**
A landscape in which skylines are not prominent, and there are no important landmark features on the skyline.	A landscape in which skylines are simple, flat or gently convex and/or there are very few landmark features on the skyline – other skylines in adjacent LCTs may be more prominent.	A landscape with some prominent skylines, but these are not particularly distinctive – there may be some landmark features on the skyline.	A landscape with prominent skylines that may form an important backdrop to views from settlements or important viewpoints, and/or with important landmark features.	A landscape with prominent or distinctive undeveloped skylines, or with particularly important landmark features on skylines.

Inter-visibility				
The relative visibility of a landscape may influence its sensitivity. An elevated landscape such as a hill range or plateau, which is viewed from other landscapes, may be more sensitive than an enclosed landscape, since any turbines will be more widely seen. Landscapes which have important visual relationships with other areas, for example where one area provides a backdrop to a neighbouring area, are considered more sensitive than those with few visual relationships. The extent of inter-visibility may be modified by the importance of these views to appreciation of the landscape, and whether adjacent landscapes provide a setting for one another. Information sources: Landscape Character Assessment; fieldwork.				
Examples of sensitivity ratings				
Lower sensitivity		⟷		**Higher sensitivity**
An enclosed, self-contained landscape, or one with weak connections to neighbouring areas.	A landscape with limited connections to neighbouring areas, and/or where adjacent landscapes are not visually related.	A landscape which has some inter-visibility with neighbouring areas, and/or where relationships between adjacent landscapes are of more importance.	A landscape which is intervisible with several areas, and/or where adjacent areas are strongly interrelated.	A landscape which has important visual relationships with one or more neighbouring areas.

Perceptual qualities				
Landscapes that are relatively remote or tranquil tend to be more sensitive to wind energy development, since turbines may be perceived as intrusive. Landscapes which are relatively free from overt human activity and disturbance, and which have a perceived naturalness or a strong feel of traditional rurality, will therefore be more sensitive. Qualities such as tranquillity can be found even in settled areas, where the influence of overtly modern development is reduced. Wind turbines will generally be less intrusive in landscapes which are strongly influenced by modern development, including settlement, industrial and commercial development and infrastructure. Information sources: Landscape Character Assessment; OS maps, fieldwork.				
Examples of sensitivity ratings				
Lower sensitivity		⟷		**Higher sensitivity**
A landscape with much human activity and modern development, such as industrial areas.	A rural or semi-rural landscape with much human activity and dispersed modern development, such as settlement fringes.	A rural landscape with some modern development and human activity, such as intensive farmland.	A more naturalistic landscape and/or one with little modern human influence and development.	A tranquil landscape with little or no overt sign of modern human activity and development.

Scenic qualities				
Landscapes that have a high scenic quality will be more sensitive than landscapes of low scenic quality. Scenic qualities can include contrasts and combinations of landform and landcover which together contribute to attractive views. Scenic qualities may be recorded in the Landscape Character Assessment, or may be referenced in tourist material. Scenic viewpoints may be marked on Ordnance Survey maps. Scenic quality is also considered in the field. Information sources: Landscape Character Assessment; OS maps; tourist literature; fieldwork.				
Examples of sensitivity ratings				
Lower sensitivity		⟷		**Higher sensitivity**
A landscape without attractive character, with no pleasing combinations of features, visual contrasts and/or dramatic elements, such as industrial areas or derelict land.	A landscape of limited attractive character, with few pleasing combinations of features, visual contrasts and/or dramatic elements.	A landscape of intermittently attractive character, with occasional pleasing combinations of features, visual contrasts and/or dramatic elements.	A landscape of attractive character, with some pleasing combinations of features, visual contrasts and/or dramatic elements.	A landscape of consistently attractive character, with pleasing combinations of features, visual contrasts and/or dramatic elements.

4.35 The following alternative criteria, as outlined in **Table 4.3**, have been considered in relation to the landscape sensitivity for solar energy development. Where the criteria are very similar to that identified for wind energy development, they are not repeated here. It should also be noted that due to the horizontal nature of solar energy development, skylines are less of an important consideration when assessing landscape sensitivity.

Table 4.3 Sensitivity assessment criteria for solar energy development

Landform and scale				
A flat or gently undulating lowland landscape or extensive plateau is likely to be less sensitive to solar development than a landscape with prominent landforms and visible slopes, including coastal headlands. This is because arrays of solar panels will be less easily perceived in a flat landscape than on a slope, especially higher slopes. Larger scale landforms are also likely to be less sensitive than smaller scale landforms. Information sources: Landscape Character Assessment; OS maps; fieldwork.				
Examples of sensitivity ratings				
Lower sensitivity		⟷		**Higher sensitivity**
A lowland flat landscape or extensive plateau. Larger scale landscape.	A gently undulating lowland landscape or plateau.	An undulating landscape with hidden areas as well as some visible slopes.	A landscape with many prominent, visible slopes or an upland landscape.	Very steep landform and exposed, visible slopes. Smaller scale landscape.

Land cover pattern and presence of human scale features				
Since solar panels introduce a new land cover (of built structures) , landscapes containing existing hard surfacing or built elements (e.g. urban areas, brownfield sites or large-scale horticulture) are likely to be less sensitive to field-scale solar development than highly rural or naturalistic landscapes. Landscapes with small-scale, more irregular field patterns are likely to be more sensitive to the introduction of solar development than landscapes with large, regular scale field patterns because of the risk of diluting or masking the characteristic landscape patterns. This would be particularly apparent if development takes place across a number of adjacent fields where the field pattern is small and intricate (bearing in mind that the height of panels could exceed that of a hedge). Information sources: Landscape Character Assessment; OS Maps; aerial photography; fieldwork.				
Examples of sensitivity ratings				
Lower sensitivity		⟷		**Higher sensitivity**
Urban or 'brownfield' landscape. Large-scale, regular fields of mainly modern origin.	Area of large scale horticulture. Mainly defined by large, modern fields.	Rural landscape, perhaps with some brownfield sites or urban influences. Mixture of large-scale, modern fields and some smaller, more historic enclosure.	Rural landscape, perhaps with some areas of semi-natural land cover. Dominated by ancient, small-scale field patterns with a few isolated areas of modern enclosure.	Landscape dominated by semi-natural land cover. Where a field pattern exists this is characterised by small-scale, ancient fields.

Assessment process

4.36 The landscape sensitivity study is based on an evaluation of key aspects of landscape character assessment. The key characteristics of each landscape character type (LCT) were assessed against each of the criteria to arrive at a judgement as to their potential sensitivity to wind turbine and solar energy development. The landscape character types were informed by grouping similar landscape units, as identified in the Redcar and Cleveland Landscape Character Assessment 2006. Further detail on how the 'units' have been grouped into similar landscape 'types' are included in **Appendix 1.**

4.37 For each LCT, the assessment provides:

- a summary description of the LCT against each of the assessment criteria;
- an overall judgement on landscape sensitivity for the LCT, in relation to each of the typologies;
- a list of key landscape attributes that would be sensitive to wind and solar energy development; and
- observations on landscape sensitivity to different solar and wind energy development sizes (area and turbine numbers) and cumulative issues.

4.38 Sensitivity is judged on a five-point scale from 'high' to 'low' as set out in **Table 4.4**. The process is based on professional judgement and the relative importance of each criterion varies between LCTs; key characteristics may identify where a particular criterion is more important, and should therefore be given greater weight in the judgement of sensitivity.

Table 4.4 Sensitivity definitions

Sensitivity Level	Definition
High	Key characteristics and qualities of the landscape are highly vulnerable to change from wind and solar energy development. Such development is likely to result in a significant change in character.
High-moderate	Key characteristics and qualities of the landscape are vulnerable to change from wind and solar energy development. There may be some limited opportunity to accommodate wind turbines/ solar panels without significantly changing landscape character. Great care would be needed in siting and design.
Moderate	Some of the key characteristics and qualities of the landscape are vulnerable to change. Although the landscape may have some ability to absorb wind and solar energy development, it is likely to cause a degree of change in character. Care would be needed in siting and design.
Moderate-low	Fewer of the key characteristics and qualities of the landscape are vulnerable to change. The landscape is likely to be able to accommodate wind and solar energy development with limited change in character. Care is still needed when siting and designing to avoid adversely affecting key characteristics.
Low	Key characteristics and qualities of the landscape are robust in that they can withstand change from the introduction of wind turbines and solar panels. The landscape is likely to be able to accommodate wind and solar energy development without a significant change in character. Care is still needed when siting and designing these developments to ensure best fit with the landscape.

4.40 The assessment was carried out initially as a desk-based exercise, drawing on information in the 2006 landscape character assessment and other sources identified for each criterion. This was followed up with field work (undertaken in May 2015) to view each LCT in the field and make any additional observations. Field work was particularly important for criteria such as skylines and inter-visibility, which may not be consistently described in the available documentation, and also assists with verification of desk-based material. The field visits informed the development of the siting and design guidance.

4.41 The sensitivity assessment identifies the underlying sensitivity of the landscape, as it appears at the time of the survey. It therefore will consider operational development but not potential cumulative change, which is examined separately.

3. Guidance for development

4.42 Siting and design guidelines have been developed for application across the Borough (see below), and for each LCT. The former are 'generic' guidelines which can apply to any proposal in the Borough, while the LCT guidelines provide more detail at a level specific to local landscape character.

4.43 The LCT specific guidelines draw on a series of key issues identified from the sensitivity assessment. The siting and design guidelines include consideration of potential cumulative effects. This is set out in the assessment finding tables for each LCT.

Wind Energy General Design Guidance

4.44 The following provides some generic guidance on siting wind energy development in Redcar and Cleveland, focussing on minimising landscape and visual effects. It is recognised that technologies need to be sited and designed to ensure a reasonable output. In all cases the findings of the sensitivity assessment for the relevant LCT should be considered when looking at potential sites for wind energy development. This is not an exhaustive list of factors for consideration, but focuses on the points of most relevance to Redcar and Cleveland.

4.45 The following guidance in relation to landscape should be followed for siting any wind energy development, whether it comprises one small turbine or multiple large turbines.

- Ensure that wind energy development does not override or subsume the key characteristics of the landscape as recorded in the Redcar and Cleveland Landscape Character Assessment 2006;
- Ensure that wind energy developments avoid unacceptable effects on the setting/ views to and from the North York Moors National Park;
- Site wind energy developments away from dramatic landforms or valued distinct landform features (including prominent steep slopes and escarpments);
- Seek to avoid siting wind turbines where they would detract from the character of undeveloped areas of semi-natural land cover, which in this Borough are primarily represented by broadleaf and riparian woodland, undeveloped coastal edges and moorland fringes;
- Seek to avoid impacts on areas which are free from overt human influence and modern development, and which are valued for their perceived rural tranquillity. These may be of particular value in a generally settled area such as Redcar and Cleveland;
- When siting larger wind energy developments (i.e. those with multiple turbines over 50 m tip height), prefer sites in simple, regular landscapes with extensive areas of consistent ground cover over landscapes with more complex or irregular land cover patterns, smaller field sizes and landscapes with frequent human scale features (where other landscape sensitivities are not compromised); and

- Consider locating turbines on reclaimed, industrial and man-made landscapes, particularly where this can be linked to landscape restoration, or in association with business parks or industrial estates, where other landscape sensitivities are not compromised.

4.46 The following points relate to siting and design of all scales of wind energy development in relation to views and visual amenity.

- Significant effects on views from important viewpoints should be avoided where possible or minimised through careful siting. This will include designed views in registered historic parks, and views from popular tourist locations, scenic routes, and settlements;
- It is generally less distracting to see a substantial part of a turbine rather than blade tips only – this may be a particular consideration for views from sensitive viewpoints or those frequented by a larger number of viewers;
- It is preferable to site turbines where they do not distract from views of, or prevent the appreciation of, historic landmarks features such as church towers;
- It is preferable to site turbines in locations where they do not conflict with other man-made skyline features, such as pylons and industrial chimneys. This is particularly relevant where converging power lines and other features are present on skylines, and where the addition of turbines could create visual confusion;
- Consider sites where areas of existing vegetation could screen ground-level features of wind energy developments (such as fencing, tracks and transformers); and
- With particular reference to medium or large-scale turbines (i.e. those over 50m tip height), avoid selecting sites on important undeveloped or distinctive skylines, or skylines with important cultural or historic landmark features.

4.47 As well as the wind turbines themselves, it will be necessary to consider the landscape and visual effects of transmission infrastructure, which can be substantial for larger developments, when siting development. Potential sites that minimise the need for above-ground transmission infrastructure, particularly where this could affect landscapes of higher sensitivity, should be favoured.

4.48 When siting single turbines the following guidance may be of particular relevance.

- Consider siting turbines so they are perceived as part of other built development, or are seen in association with a building group where effects on amenity allow. For example, there may be some opportunity to site smaller single turbines in relation to farm buildings or community buildings, with larger scale single turbines sited in relation to larger businesses or industrial sites. Development should be commensurate with (or reflect) the scale of the associated buildings.

4.49 When siting multiple turbines the following guidance should be considered.

- Locate turbines on the most level part of a site or following contours to avoid a discordant variation of apparent turbine heights;
- Ensure the size and grouping of turbines responds to landscape character, reinforcing the difference between distinct landscape character types; and
- Seek to keep a turbine group within one landscape character type (particularly as perceived in sensitive views) so that turbines do not span across marked changes in character on the ground, such as changes in topography.

4.50 When considering small turbines (i.e. turbines of 50 m or less in overall height), the following guidelines should be considered.

- Aim to site smaller turbines in locations where existing woodland can screen views;
- Site turbines in proximity to existing development where possible, to ensure the association between generation and consumption, for example on farms;
- Avoid siting smaller turbines in close proximity to existing large turbines where contrasts of scale could occur. This may also affect longer views where smaller turbines appear in the foreground, and may lead to a confusing visual image;

- Avoid siting smaller turbines of different design in close proximity, which could lead to unattractive visual contrasts. Design elements including height, rotor diameter, number of blades, tower construction and nacelle shape should all be considered; and
- Colour smaller turbines appropriately: pale grey may be less suitable for turbines which will be primarily viewed against a background of trees, as opposed to the sky.

Solar Energy General Design Guidance

4.51 The following provides some generic guidance on siting solar energy development in Redcar and Cleveland, focussing on minimising landscape and visual effects. It is recognised that technologies need to be sited and designed to ensure a reasonable output. In all cases the findings of the sensitivity assessment for the relevant LCT should be considered when considering potential sites for solar energy development. This is not an exhaustive list of landscape factors for consideration, but focuses on the points of most relevance to Redcar and Cleveland.

4.52 The following guidance in relation to landscape should be followed for solar energy developments of various sizes.

- Ensure that solar energy development does not override or subsume the key characteristics of the landscape as recorded in the Redcar and Cleveland Landscape Character Assessment 2006;
- Site solar energy developments so that they respect and maintain the field pattern/ scale and vegetation cover such as hedgerows, trees, shelter belts and woodland;
- Seek to avoid siting solar panels where they would detract from the character of undeveloped areas of semi-natural land cover, which in this Borough are primarily represented by broadleaf/ riparian woodland, undeveloped coastal edges and moorland fringe;
- Seek to avoid impacts on areas which are free from overt human influence and modern development, and which are valued for their perceived rural tranquillity. These may be of particular value in a generally settled area such as Redcar and Cleveland;
- When siting larger-scale solar energy developments, prefer sites in simple, regular landscapes with extensive areas of consistent ground cover over landscapes with more complex or irregular land cover patterns, smaller field sizes and landscapes with frequent human scale features (subject to satisfying other sensitivities); and
- Consider locating solar panels on reclaimed, industrial and man-made landscapes, particularly where this can be linked to landscape restoration, or in association with business parks or industrial estates, where other landscape sensitivities are not compromised.

4.53 The following points relate to siting and design of all scales of solar energy development in relation to views and visual amenity.

- Significant effects on views from important viewpoints should be avoided where possible or minimised through careful siting. This will include designed views in registered historic parks, and views from popular tourist locations, scenic routes, and settlements; and
- Consider sites where areas of existing vegetation and/ or the landform help to minimise visibility and screen views of solar energy developments (for example, flatter landforms with hedgerows and woodland or containing solar energy developments within a hidden bowl/ depression in the landscape).

4.54 In all cases, the key aims should be to ensure compatibility between the proposed development and the receiving landscape, and to minimise the extent and likely significance of effects on views and landscape character.

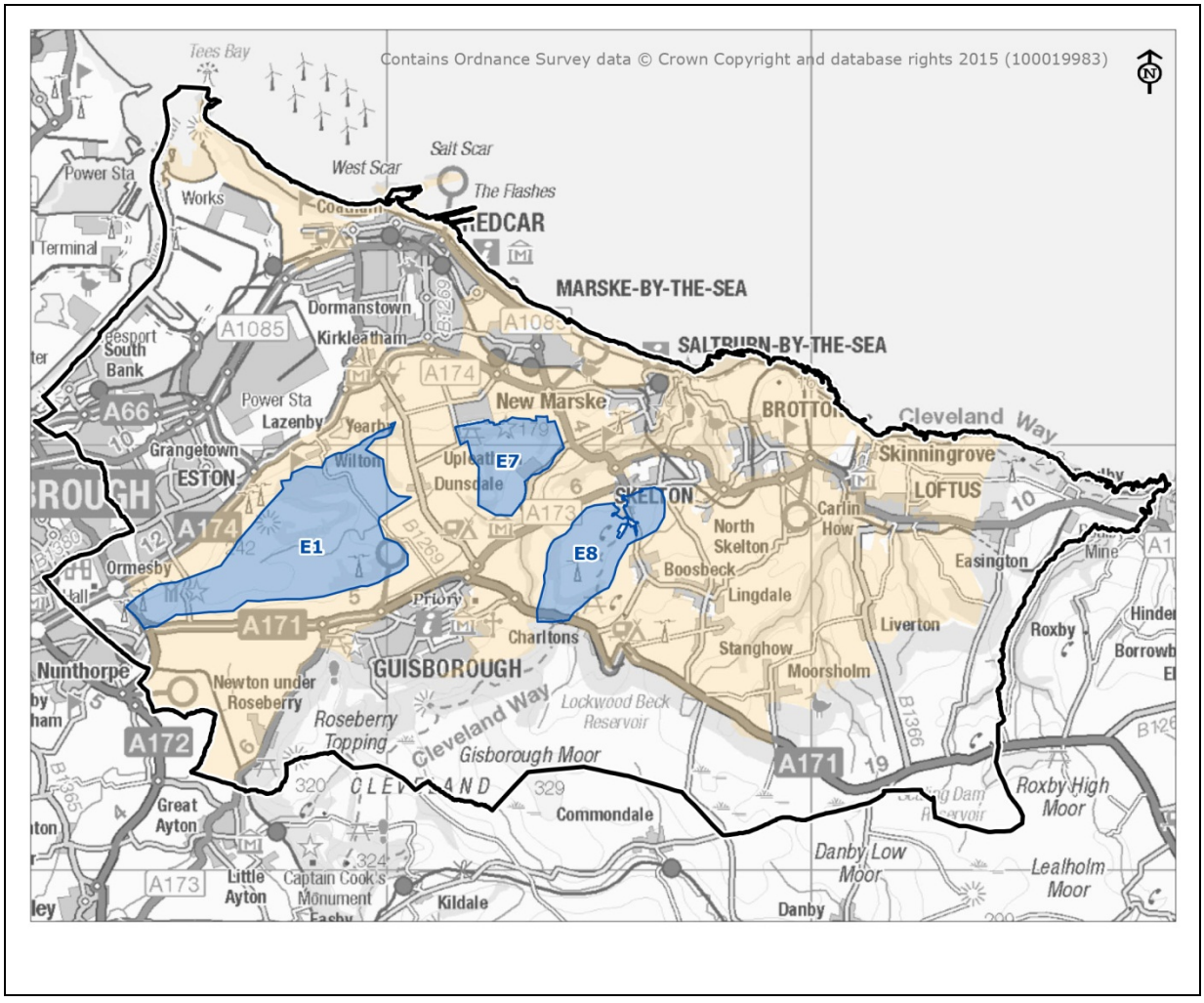
The Assessment Findings

4.55 The following section sets out the findings of the assessment for each LCT as follows:

- A summary of the location and extent of the LCT;
- A summary of Landscape Designations and Heritage aspects;
- The findings of the sensitivity assessment including a summary description of the LCT against each of the assessment criteria; and an overall judgement on landscape sensitivity for the LCT, in relation to each of the typologies; and
- Guidance for development - including a list of key landscape attributes that could be sensitive to wind and solar energy development; and observations on landscape sensitivity to different solar and wind energy development sizes (area and turbine numbers) and cumulative issues.

Uplands

Figure 4.1: Location of the Uplands LCT within Redcar and Cleveland



Location and extent

4.56 This landscape unit occurs in three areas within the Eston Hills landscape tract to the west (E1 - Eston Hills/ Eston Moor) to the northeast (E7 - Upleatham) and to the southeast (E8 - Skelton). These landscape units are shown in **Figure 4.1.**

Landscape Designations and Heritage aspects

4.57 A wide area covering much of the Eston Hills/ Eston Moors, the LCT comprises the Eston Hills Historic Landscape, a designation which reflects the areas archaeological value. Upleatham Village, located in the Upleatham landscape unit (E7) is a Conservation Area.

Sensitivity assessment

4.58 The following table sets out commentary on the sensitivity of this landscape type to the assessment criteria. Where relevant, the key landscape characteristics as identified in the Redcar and Cleveland Landscape Character Assessment (2006) have been used to inform the character descriptions. Refer to **Table 4.2 and 4.3** for full details of the evaluation criteria.

Criteria	Description
Landform and Scale	Larger scale landscape which forms an elevated, discontinuous series of topographic outliers to the north of the Cleveland Hills. A well-defined upland, the Eston Hills attain and altitude of 242m (Eston Nab) and are bounded by steep/ scarp slopes to the north and gentler slopes to the south. In the Skelton Uplands (219m AOD) slopes are steeper to the west and southeast and fall more gently to the northeast.
Land cover pattern and presence of human scale features	Mixed farming, wood pasture and mixed woodland with many of the steep slopes wooded in character. E1 includes Eston Moor, an area of predominantly heathy grassland with areas of gorse frequently occurring. Some fields also have a parkland character on land associated with the former Upleatham Hall to the west of this village. A number of footpaths provide access through the area and the Cleveland Way follows the Airy Hill Lane through the Skelton landscape unit. Whilst these areas are relatively free of vertical elements overhead electricity transmission lines cross landscape units E1 and E8 and there is a small cluster of communication towers at Eston Nab.
Skylines and Inter-visibility	This is a prominent and highly visible landform from the western half of the Borough and often contributes to the horizon and contains views from many of the surrounding landscapes. The scarp slope to the north of landscape unit E1 and E7 also presents a marked contrast to the Tees lowlands and offers extensive views over a variety of landscapes including the highly urbanised and industrialised areas to the northwest. Eston Beacon is also a recognised viewpoint offering 360 degree panoramic views over the Borough.
Perceptual qualities	The strong woodland pattern, largely undeveloped upland nature, variety of habitats and archaeological features provide visual interest and contribute to a sense of remoteness and timelessness. However, these qualities are somewhat eroded by the collection of masts on Eston Nab and overhead electricity infrastructure which crosses this landscape. Landscape units E8 and E7 are also more strongly influenced by farming.
Scenic and special qualities	None of these landscape units fall within a nationally designated landscape. However, all three landscape units are identified as 'sensitive landscapes' within the Redcar and Cleveland Landscape Character SPD (2010). Due to its proximity to Eston/ large industrialised areas to the north and its accessibility this area is also highly valued as an escape from urban living.

4.59 The following table summarises the underlying sensitivity of this LCT to the development typologies outlined in **Table 4.1**.

Typology	Sensitivity				
	Lower	<	Medium	>	Higher
1 – Small Solar Parks				x	
2 – Medium Solar Parks					x
3 – Large Solar Parks					x
4 - Small wind turbines (< 50m)					x
5 - Medium wind turbines (50 to 100m)					x
6 - Large wind turbines (> 100m)					x

Guidance for Development

4.60 The following guidance has been developed to ensure that the most sensitive features of this landscape are protected, and that development of renewable energy within this LCT occurs in the most appropriate locations, where impacts on the landscape may be reduced or mitigated.

Key sensitive features and characteristics

Key issues for the siting and design of renewable energy development in this landscape include:

- Valued naturalistic habitats including woodland and a mosaic of grassland, heathland and scrub;
- The lack of roads and relatively undeveloped character which contribute to a sense of remoteness, tranquillity and escape from urban life;
- Open prospects with long ranging and often panoramic views looking over this landscape and wider surrounding landscapes including the coast and North York Moors National Park to the south;
- High visual quality of the landscape, with elevated and relatively undeveloped skylines which can often contribute to the backdrop in views from surrounding and wider landscapes; and
- The role this area plays in the landscape setting and views from Eston, Redcar, Marske-by-the-Sea, New Marske, Saltburn-by-the-Sea, New Skelton and Guisborough.

Guidance for development

When considering the siting and designing of renewable energy development, the generic guidance provided in **Section 3** of this chapter should be followed.

Wind energy

The landscape sensitivity assessment indicates that this LCT is highly sensitive to all sizes and scales of wind turbine development, and therefore is unlikely to be able to accommodate any turbines without introducing a significant change to landscape character.

Solar energy

Key sensitive features and characteristics

The landscape sensitivity assessment indicates that this prominent and largely undeveloped LCT would be highly sensitive to any solar energy developments greater than 5 hectares in scale. Any developments should avoid the most visually prominent steep and open slopes, and be associated with sheltered, enclosed locations or locations with existing human influence such as farmsteads. Due to the relatively limited areas of open, south facing landform multiple solar developments within each landscape unit are unlikely to be accommodated without significant effects on landscape character.

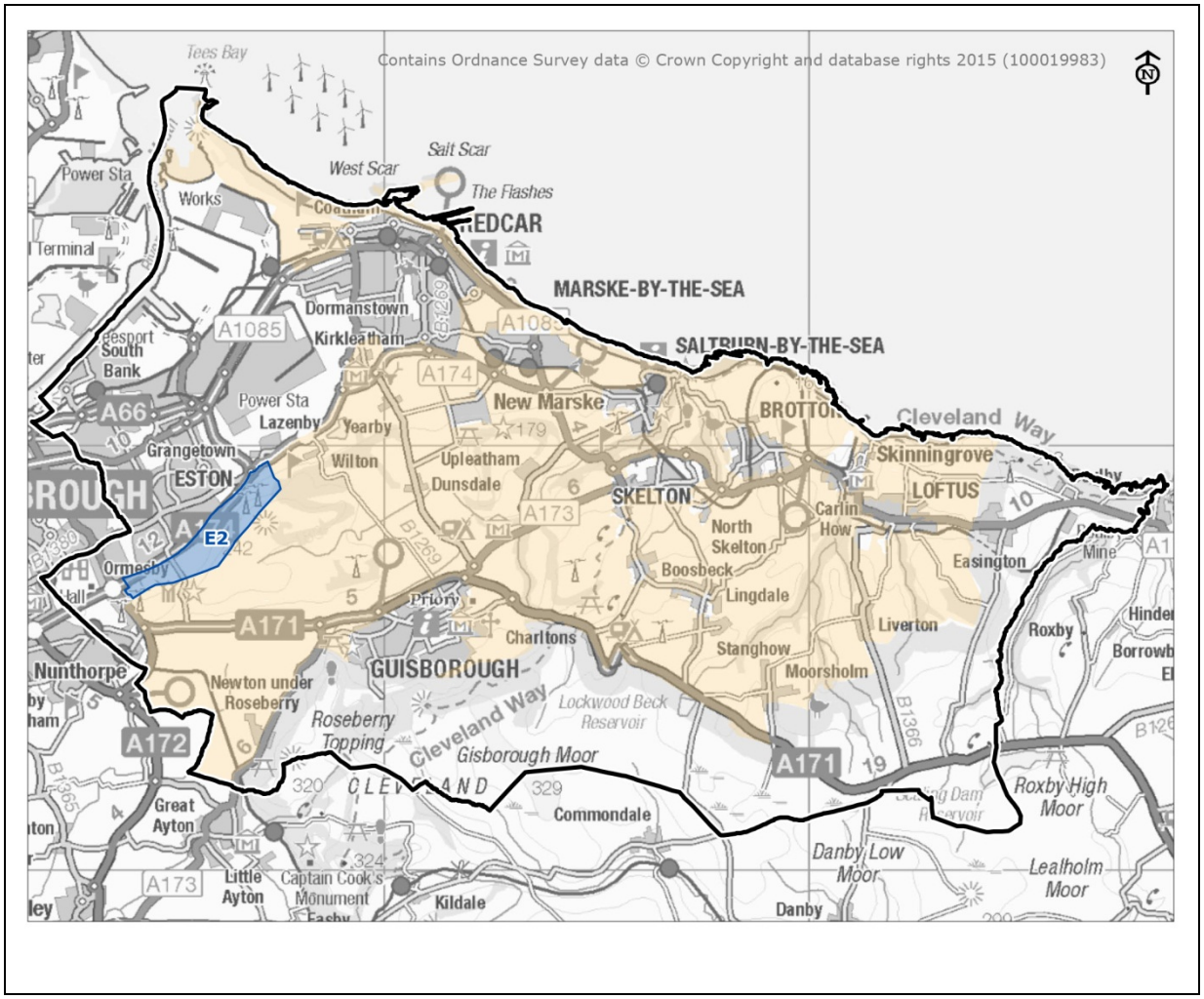
General guidance for this LCT

Within this landscape particular care will need to be taken in regard to the following guidelines:

- Solar development does not adversely affect areas of valued semi-natural habitat, including woodland and moorland;
- Make use but do not remove the area's tree/woodland cover to help screen developments;
- Locate solar development near existing settlement/ development so that the most remote areas remain free of development and retain their key characteristics;
- Consider the most important views from the Eston Hills such as summits (including Eston Nab) and key long distance footpaths (including the Cleveland Way) so that the remote and tranquil character of the hills is retained for the majority of visitors; and
- Consider the most important views towards the Eston Hills such as the surrounding larger settlements and key vistas from the edge of the National Park (such as Roseburry Topping and Highcliff Nab) so that the relatively undeveloped character and skyline of the hills remains.

Escarpment

Figure 4.2 Location of the Escarpment LCT within Redcar and Cleveland



Location and extent

4.62 This landscape unit occurs in one place (E2) located on the northwest facing edge of the Eston Hills landscape tract. This landscape unit is shown in **Figure 4.2.**

Landscape Designations and Heritage aspects

4.63 The eastern part of this landscape unit falls within the Eston Hills Historic Landscape, a designation which reflects the area's archaeological value.

Sensitivity assessment

4.64 The following table sets out commentary on the sensitivity of this landscape type to the assessment criteria. Where relevant, the key landscape characteristics as identified in the Redcar and Cleveland Landscape Character Assessment (2006) have been used to inform the character descriptions. Refer to **Table 4.2 and 4.3** for full details of the evaluation criteria.

Criteria	Description
Landform and Scale	An undulating scarp slope on the northern edge of the Eston Hills, steeper on its higher levels, becoming gentler as altitude falls, and interrupted near its western end by the valley followed by Flatts Lane, beyond which gradients are shallower. A small scale but highly visible landscape.
Land cover pattern and presence of human scale features	Varied land cover ranging from dense woodland (largely deciduous) to agricultural fields of mainly pasture on the lower lying slopes along its northern edge. There are also some notable areas of open ground consisting of rough grass, bracken and heath. A double row of overhead electricity towers cross the northern edge of this landscape and the A174 and settlement of Eston form a definitive boundary to the north of this LCT.
Skylines and Inter-visibility	A prominent landform presenting a sharp contrast to the adjacent lowlands. From open areas of high ground extensive views over the densely urbanised and industrialised banks of the Tees are available. The escarpment also forms a backdrop and setting in views from this area.
Perceptual qualities	This area is accessible to the public and the variety of habitats combine to create a natural/ rural landscape character. However, overhead power lines, degraded farmland and the visually intrusive A174 detract from this and emphasise the area's proximity to a densely populated urban centre.
Scenic and special qualities	This landscape unit does not fall within a nationally designated landscape. Within the Redcar and Cleveland Landscape Character SPD (2010) this landscape unit is identified as a 'restoration landscape'. Due to its proximity to Eston/ large industrialised areas to the north and its accessibility this area is also highly valued as an escape from urban living and an undeveloped, natural setting in views to the south.

4.66 The following table summarises the underlying sensitivity of this LCT to the development typologies outlined in **Table 4.1**.

Typology	Sensitivity				
	Lower	<	Medium	>	Higher
1 – Small Solar Parks				x	
2 – Medium Solar Parks					x
3 – Large Solar Parks					x
4 - Small wind turbines (< 50m)					x
5 - Medium wind turbines (50 to 100m)					x
6 - Large wind turbines (> 100m)					x

Guidance for Development

4.67 The following guidance has been developed to ensure that the most sensitive features of this landscape are protected, and that development of renewable energy within this LCT occurs in the most appropriate locations, where impacts on the landscape may be reduced or mitigated.

Key sensitive features and characteristics

Key issues for the siting and design of renewable energy development in this landscape include:

- The small scale and distinct prominent escarpment slopes;
- Valued naturalistic habitats including woodland and heath;
- The lack of roads and relatively undeveloped character which contribute to a sense of remoteness, tranquillity and escape from urban life;
- Open prospects with long ranging views looking towards the Tees Estuary and the coast; and
- High visual quality of the landscape, which contribute to skylines and form the relatively undeveloped backdrop and landscape setting in views from urban/ industrialised areas to the north (Eston).

Guidance for development

When considering the siting and designing of renewable energy development, the generic guidance provided in **Section 3** of this chapter should be followed.

Wind energy

The landscape sensitivity assessment indicates that this LCT is highly sensitive to all sizes and scales of wind turbine development, and therefore is unlikely to be able to accommodate any turbines without introducing a significant change to landscape character.

Solar energy

The landscape sensitivity assessment indicates that this prominent LCT with its largely undeveloped skyline would be highly sensitive to any solar energy developments greater than 5 hectares in scale. Any developments should avoid the most visually prominent steep and open slopes, and be associated with sheltered, enclosed and lower lying locations to the north of this landscape where existing human influence in the form of roads, overhead electricity towers and urbanisation has already altered the character of the landscape. Given the relatively limited extent of this LCT, multiple solar energy development are unlikely to be accommodated without significant effects on landscape character. It is also recognised that this is a north facing slope which is unlikely to be favourable with solar energy developers.

General guidance for this LCT

Should any applications come forward particular care will need to be taken in regard to the following guidelines:

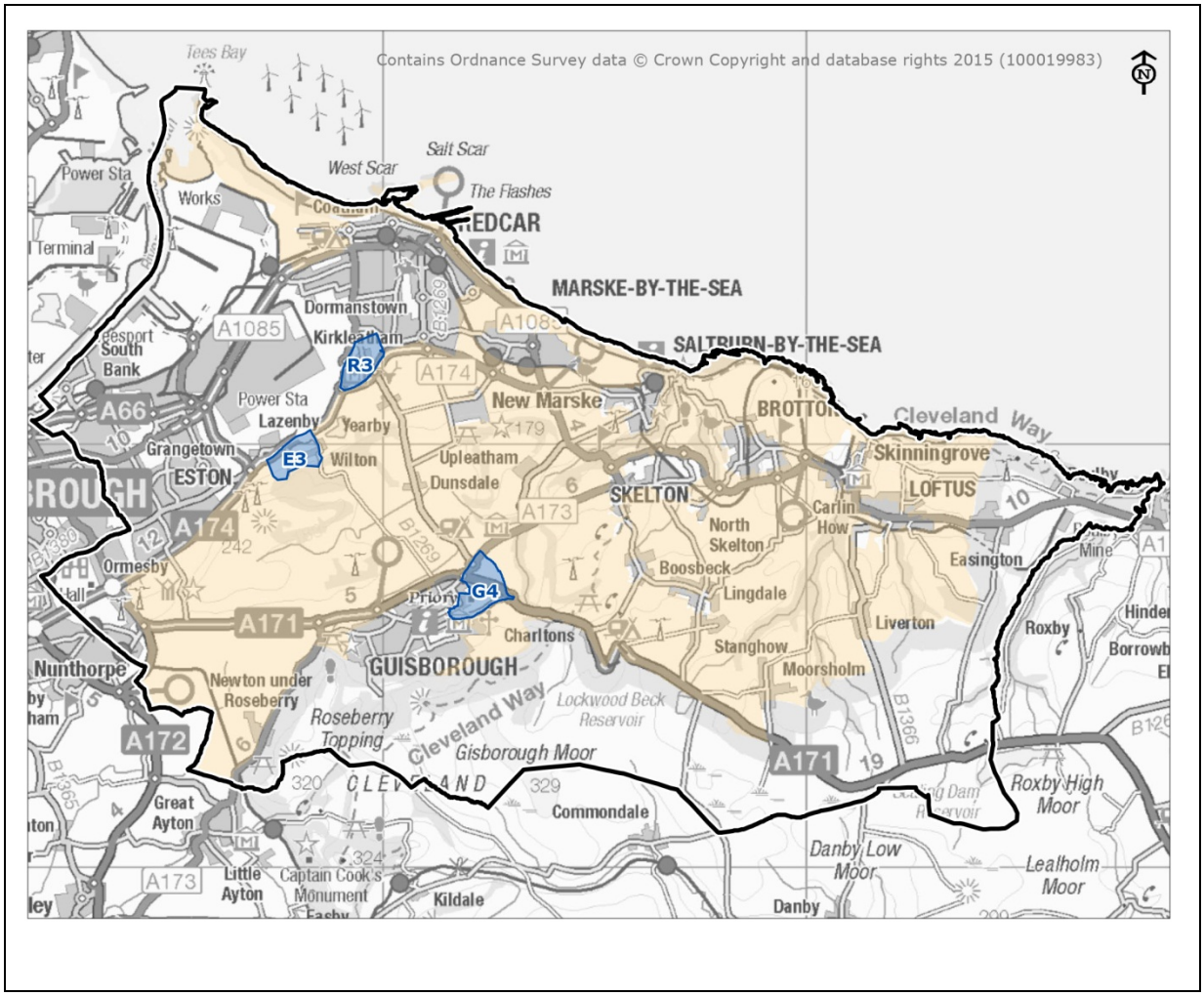
- Solar development does not adversely affect areas of valued semi-natural habitat, including woodland and heathland;
- Make use but do not remove the area's tree/ woodland cover to help screen developments;
- Locate solar development near existing settlement/ development to the north so that the most remote areas remain free of development and retain their key characteristics;
- Consider the most important views from the Escarpment such as ridgelines and summits (including Eston Nab) so that their remote character is retained for the majority of visitors;

Key sensitive features and characteristics

- Consider the most important views towards the Escarpment mainly from within and on the southern edge of Eston so that the relatively undeveloped skyline and character of the LCT remains; and
- Opportunities are sought to enhance the landscape along the northern edge of this area in association with any development. These include expanding broadleaf woodland cover and upgrading the existing footpath network.

Park/ Estate Land

Figure 4.3 Location of the Park/ Estate Land LCT within Redcar and Cleveland



Location and extent

4.68 This landscape unit occurs in three places: E3 Parkland (Wilton Castle) forms a small area located on the northern edge of the Eston Hills landscape tract; R3 - Park and Estate Land (Kirkleatham) forms a small area located to the west of the Redcar Flats landscape tract; and G4 - Parkland (Gisborough Hall) also forms a small area to the east of Guisborough, located within the Guisborough Lowland landscape tract. These landscape units are shown in **Figure 4.3.**

Landscape Designations and Heritage aspects

4.69 All three landscape units include Conservation Areas.

Sensitivity assessment

4.70 The following table sets out commentary on the sensitivity of this landscape type to the assessment criteria. Where relevant, the key landscape characteristics as identified in the Redcar and Cleveland Landscape Character Assessment (2006) have been used to inform the character descriptions. Refer to **Table 4.2 and 4.3** for full details of the evaluation criteria.

Criteria	Description
Landform and Scale	All areas are designed landscapes with a small, intimate scale. The landform of Kirkleatham is relatively flat. Gisborough Hall and Wilton Castle are both more

Criteria	Description
	varied in terms of landform with the ground rising in elevation towards high ground to the south (in Wilton Castle) and north (in Gisborough Hall).
Land cover pattern and presence of human scale features	Mix of historic built form including planned estate villages, castles/ large houses/ halls and churches set in parkland with woodland often forming a dominant landscape element. Open space consists of farmland, formal planting (tree avenues and walled gardens), recreational land (including golf courses), priory grounds and ponds.
Skylines and Inter-visibility	Built form and formal planting/ areas of designed woodland often combine to define localised skylines and contain views. Inter-visibility with surrounding landscapes from within these areas is therefore often limited, however some areas of open ground (notably to the east of Gisborough Hall) offer views into surrounding landscapes. The key vista from Wilton Castle is orientated to the north and presents a contrasting view of designed landscape/ parkland in the foreground with a heavily industrialised horizon looking towards the chemical works and power station to the north. The key vista from Guisborough looks over rural farmland (unit G3) and is contained by the Cleveland Hills and the wooded scarp slope to the south.
Perceptual qualities	Historic buildings, parkland, woodland and open space form an attractive combination of landscape elements with a historic, parkland character. These landscapes are generally well maintained, however some areas of woodland would benefit from improved management and the A714 to the north of Wilton Castle forms a visually intrusive, detracting feature.
Scenic and special qualities	These landscape units do not fall within a nationally designated landscape. All three units are identified as 'sensitive landscapes' within the Redcar and Cleveland Landscape Character SPD (2010). Due to their limited geographical extents within the context of the Borough and their historic parkland character, these areas form a rare and valued landscape.

4.71 The following table summarises the underlying sensitivity of this LCT to the development typologies outlined in **Table 4.1**.

Typology	Sensitivity				
	Lower	<	Medium	>	Higher
1 – Small Solar Parks					x
2 – Medium Solar Parks					x
3 – Large Solar Parks					x
4 - Small wind turbines (< 50m)					x
5 - Medium wind turbines (50 to 100m)					x

Typology	Sensitivity				
6 - Large wind turbines (> 100m)					x

Guidance for Development

4.72 The following guidance has been developed to ensure that the most sensitive features of this landscape are protected, and that development of renewable energy within this LCT occurs in the most appropriate locations, where impacts on the landscape may be reduced or mitigated.

Key sensitive features and characteristics

Key issues for the siting and design of renewable energy development in this landscape include:

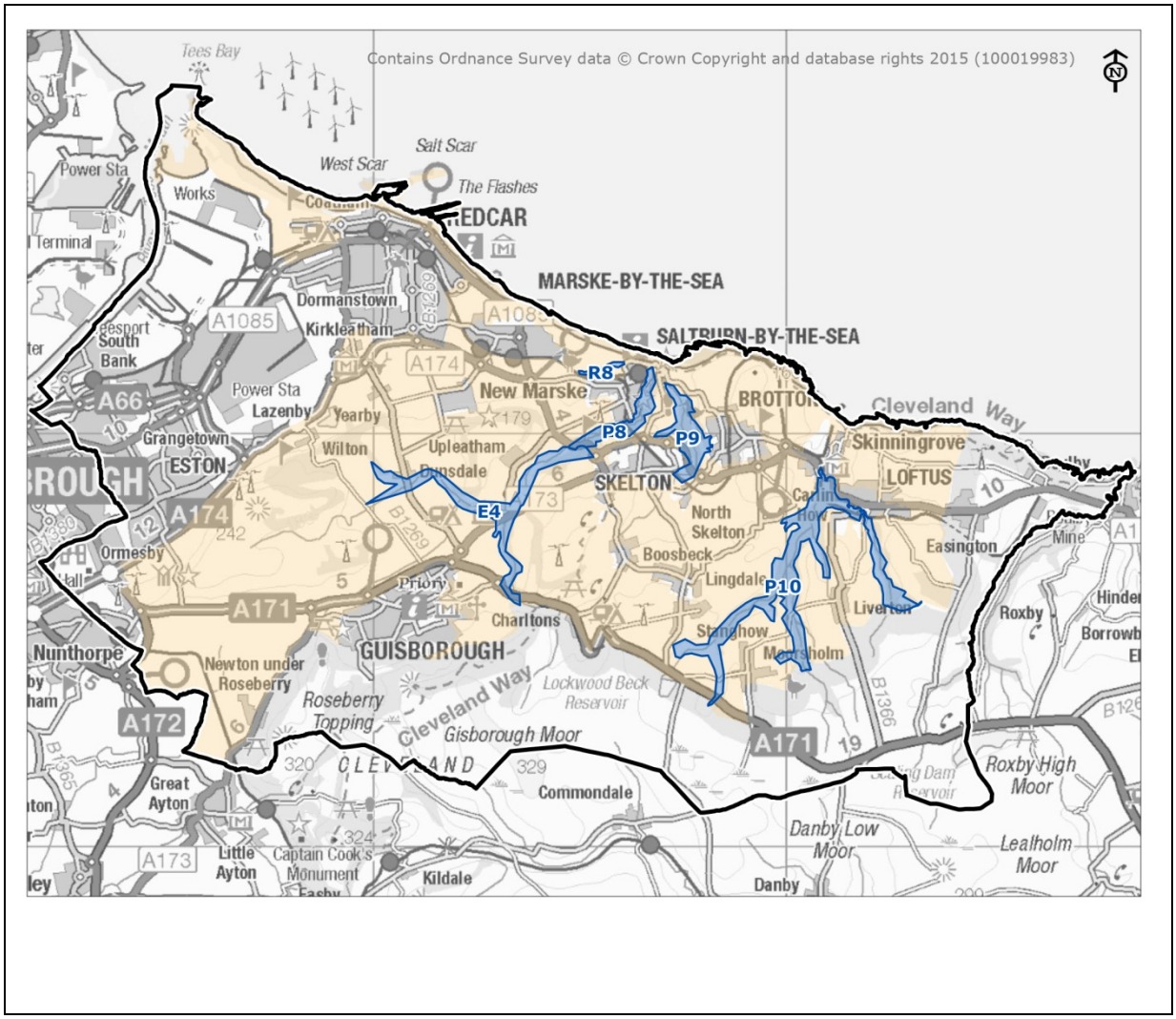
- Small scale, intimate landscape and presence of human scale features including traditional farmsteads, cottages and estate buildings;
- Strongly rural and historic character with sensitive land cover types including policy woodlands and water bodies which provided valued wildlife and recreational habitat;
- Important tracts of planned and designed landscapes including formal planting (avenues of tree and individual mature specimens), recreational land/ priory grounds/ walled gardens and ponds;
- Designed vistas including key views from principal buildings which have a strong parkland character and sense of composition; and
- The often secluded and intimate nature of general views which include woodland and glimpses of traditional buildings and have a timeless character.

Guidance for development

The landscape sensitivity assessment indicates that this small scale intimate landscape with a strong parkland character and sense of history is highly sensitive to all sizes and scales of renewable energy development, and therefore is unlikely to be able to accommodate any wind turbines/ solar developments without introducing a significant change to landscape character.

Narrow Wooded Valley

Figure 4.4 Location of the Narrow Wooded Valley LCT within Redcar and Cleveland



Location and extent

4.73 This landscape unit occurs in five places: E4 - Wooded Valley (Dunsdale Wood/ Tocketts Beck) located in the eastern half of the Eston Hills landscape tract; R8 – Incised Wooded Valley (Hazel Grove) which forms a small area located to the far east of the Redcar Flats landscape tract; P8 – Incised Wooded Valley (Skelton Beck) and P9 - Incised Wooded Valley (Saltburn Gill/ Millholme Beck) which both form small areas located to the northwest of the East Cleveland Plateau landscape tract; and P10 – Incised Wooded Valley (Kilton, Waytail and Handale Becks) which forms a larger valley located to the southeast of the East Cleveland Plateau landscape tract. These landscape units are shown in **Figure 4.4.**

Landscape Designations and Heritage aspects

4.74 Most areas, with the exception of Hazel Grove, are designated as Ancient Woodland of semi-natural and replanted origin.

Sensitivity assessment

4.75 The following table sets out commentary on the sensitivity of this landscape type to the assessment criteria. Where relevant, the key landscape characteristics as identified in the Redcar and Cleveland Landscape Character Assessment (2006) have been used to inform the character descriptions. Refer to **Table 4.2 and 4.3** for full details of the evaluation criteria.

Criteria	Description
Landform and Scale	Small scale, intimate landscapes consisting of narrow, steep sided valleys.
Land cover pattern and presence of human scale features	Dense mixed woodland is the predominate land cover, however there are some breaks in the woodland, most notably at Dunsdale (within the Dunsdale/ Tocketts Beck valley) and Marske Mill (within the Skelton Beck valley). With the exception of the small village of Dunsdale, within all the valleys there is a general lack of built form.
Skylines and Inter-visibility	Intimate, enclosed and secluded landscapes, views from within this area are typically foreshortened by woodland. However, the woodland often forms a strong visual element and landscape feature in the surrounding local landscape which emphasises the topography of the river valley.
Perceptual qualities	Absence of development, secluded nature, influence of running water and an abundance of habitat/ wildlife creates a natural landscape with its own sense of tranquillity. For many of these areas public access is somewhat limited, however a short section of the Cleveland Way follows the northern extents of the Skelton Beck. The road network also occasionally crosses these landscapes offering a glimpse into their secluded character.
Scenic and special qualities	These landscape units do not fall within a nationally designated landscape. All five units are identified as 'sensitive landscapes' within the Redcar and Cleveland Landscape Character SPD (2010). These landscapes are valued for their natural, undeveloped character and wildlife value. They also make an important contribution to landscape setting and views from the edge of settlements including Upleatham, Saltburn-by-the Sea, Loftus and from Skelton Castle.

4.76 The following table summarises the underlying sensitivity of this LCT to the development typologies outlined in **Table 4.1**.

Typology	Sensitivity				
	Lower	<	Medium	>	Higher
1 – Small Solar Parks					x
2 – Medium Solar Parks					x
3 – Large Solar Parks					x
4 - Small wind turbines (< 50m)					x
5 - Medium wind turbines (50 to 100m)					x
6 - Large wind turbines					x

Typology	Sensitivity				
(> 100m)					

Guidance for Development

4.77 The following guidance has been developed to ensure that the most sensitive features of this landscape are protected, and that development of renewable energy within this LCT occurs in the most appropriate locations, where impacts on the landscape may be reduced or mitigated.

Key sensitive features and characteristics

Key issues for the siting and design of renewable energy development in this landscape include:

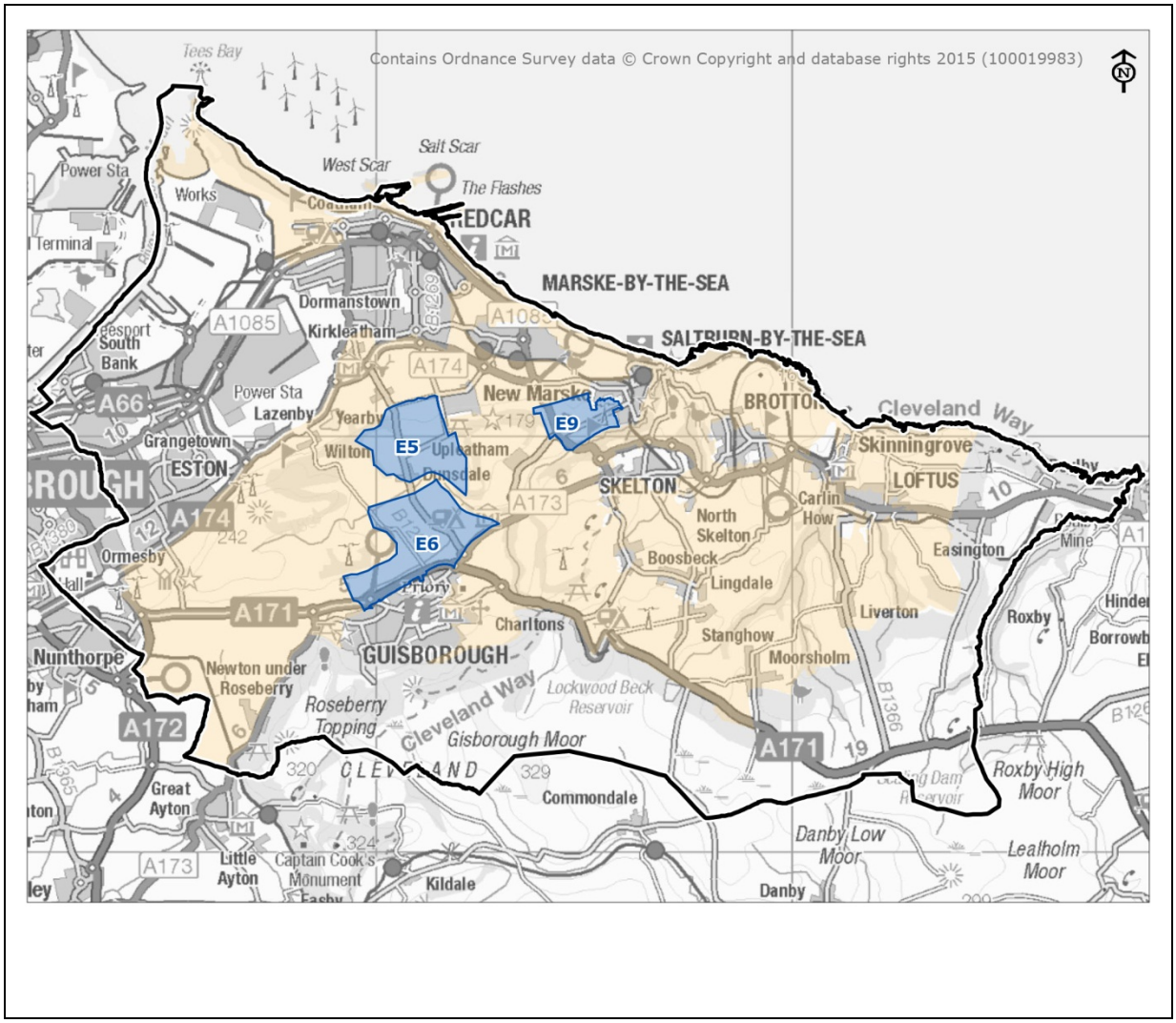
- The small-scale, secluded and intricate nature of the valleys;
- Naturalistic and valued land cover including natural and semi-natural riparian woodlands;
- High levels of tranquillity and perceived naturalness with a general lack of modern development;
- The valleys' role as a strong visual element and landscape feature in surrounding landscapes; and
- The contribution the valleys make to landscape setting and views from the edge of settlements including Upleatham, Saltburn-by-the Sea, Loftus and from Skelton Castle.

Guidance for development

The landscape sensitivity assessment indicates that this small scale, secluded, naturalistic landscape, is highly sensitive to all sizes and scales of renewable energy development, and therefore is unlikely to be able to accommodate any wind turbines/ solar developments without introducing a significant change to landscape character.

Eston Hill Lower Slopes

Figure 4.5 Location of the Eston Hill Lower Slopes LCT within Redcar and Cleveland



Location and extent

4.78 These landscape units occur in three places, focused to the centre of the Eston Hills landscape tract: E5 – North East Slopes; and E6 – South East Slopes, and focused to the far east of the Eston Hills landscape tract: E9 – Eastern Slopes (Upleatham). These landscape units are shown in **Figure 4.5.**

Landscape Designations and Heritage aspects

4.79 No landscape designations or heritage aspects of note.

Sensitivity assessment

4.80 The following table sets out commentary on the sensitivity of this landscape type to the assessment criteria. Where relevant, the key landscape characteristics as identified in the Redcar and Cleveland Landscape Character Assessment (2006) have been used to inform the character descriptions. Refer to **Table 4.2 and 4.3** for full details of the evaluation criteria.

Criteria	Description
Landform and Scale	This is quite an open, medium scale landscape which consist of sloping, lower lying ground located centrally and to the east of the Eston Hills. E5 and E6 combine to form a lower lying saddled of land between higher ground in the Eston Hills to the west and east. The north east slopes (E5) unit has a high point at Park Farm and forms a broad saddle which gently slopes away to the north towards the Lowland Farmland. The south east slopes (E6) have gentle slopes to the south with flatter land around a plateau to the south of Dunsdale. The eastern slopes (E9) form a broad shoulder, which extends the high ground of the Eston Hills to the northeast, dropping in elevation towards the coast and the coastal settlement of Saltburn-by-the-Sea.
Land cover pattern and presence of human scale features	Farmland and woodland form the typical land cover. Medium to large sized fields with blocks and strips of mixed woodland. Scattered farmstead linked by single track lanes, mature hawthorn hedgerows and post and wire field boundaries provide further evidence of man's influence over the landscape. In terms of vertical elements electricity transmission towers cross both landscape units E5 and E6, and landscape unit E9 includes a small mobile phone mast.
Skylines and Inter-visibility	From more elevated, open areas within these landscapes extensive views over the landscape type and surrounding area are available. This includes coastal views within landscape units E5 and E9 and views of the dramatic skyline in the North York Moor National Park to the south of landscape unit E6. However, the higher ground in the Eston Hills to the west and east contains views in these directions.
Perceptual qualities	This landscape has a number of positive attributes including extensive and scenic views of the coast and National Park, a relatively sparse settlement pattern and some areas of good habitat value, which contribute to this being quite a pleasant, rural landscape. However landscape elements such as overhead electricity transmission towers, neglected hedgerows and former landfill sites somewhat erode this character.
Scenic and special qualities	These landscape units do not fall within a nationally designated landscape. All three units are identified as 'restoration landscapes' within the Redcar and Cleveland Landscape Character SPD (2010).

4.82 The following table summarises the underlying sensitivity of this LCT to the development typologies outlined in **Table 4.1**.

Typology	Sensitivity				
	Lower	<	Medium	>	Higher
1 – Small Solar Parks			x		
2 – Medium Solar Parks				x	
3 – Large Solar Parks					x
4 - Small wind turbines (< 50m)				x	
5 - Medium wind turbines (50 to 100m)					x
6 - Large wind turbines (> 100m)					x

Guidance for Development

4.84 The following guidance has been developed to ensure that the most sensitive features of this landscape are protected, and that development of renewable energy within this LCT occurs in the most appropriate locations, where impacts on the landscape may be reduced or mitigated.

Key sensitive features and characteristics

Key issues for the siting and design of renewable energy development in this landscape include:

- Sensitive land cover types including woodland and mature hawthorn hedgerows;
- The presence of human scale features including traditional farmsteads and single track, hedgerow lines roads;
- The rural character of the landscape;
- The role this landscape plays in relation to higher ground within the Eston Hills: landscape unit E5 and E6 form a saddle of largely undeveloped lower lying ground between the high ground to the east and west and landscape unit E9 forms the lower foot slopes to the far east of the Eston Hill range;
- Open prospects with long ranging views looking towards the coast to the north and high ground to the south which includes Airy Hill and land within the North York Moors National Park; and
- The contribution this landscape makes to the relatively undeveloped skyline associated with the Eston Hills which can often inform the backdrop in views from surrounding/ wider landscapes and settlements.

Guidance for development

When considering the siting and designing of renewable energy development, the generic guidance provided in **Section 3** of this chapter should be followed.

Wind energy

The landscape sensitivity assessment indicates that this LCT has medium/high sensitivity to 'small' turbines and a higher sensitivity to 'medium' and 'large' turbines. This indicates that the landscape will be particularly sensitive to turbines higher than 50m and is unlikely to be able to accommodate groups of turbines, without introducing a significant change to landscape

Key sensitive features and characteristics

character.

Turbines should be located on the higher plateaux, not the outward facing highly visible slopes, and utilise the landform so that they are not visible/ do not notably alter the skyline of the Eston Hills in views from the wider surrounding landscape and larger settlements. A clear visual relationship should be maintained between 'small' scale turbines which should be associated with buildings (e.g. single turbines on/ near farm buildings) to maintain a simple image and reinforce links between landscape character and design response. A proliferation of varying heights and styles of turbine should be avoided. Due to the relatively limited areas of higher plateaux multiple single turbines within each landscape unit are unlikely to be accommodated without significant effects on landscape character.

Solar energy

The landscape sensitivity assessment indicates that this LCT has a medium sensitivity to 'small' developments (>5ha), a medium/ high sensitivity to 'medium' developments and a higher sensitivity to developments greater than 10ha. Any proposals should be located in more enclosed areas and on lower slopes, avoiding highly visible slopes and valued areas of woodland. As with wind turbines, there may also be opportunities to sensitively locate solar energy developments on the higher plateaux, within depression in the landscape. Due to the relatively limited areas of open, south facing landform multiple solar developments within each landscape unit are unlikely to be accommodated without significant effects on landscape character.

General guidance for this LCT

The overall aim should be to make sure that renewable energy developments do not become a key characteristic of the landscape (i.e. developments would not result in a significant cumulative impact on the LCT or overall change of landscape character). In addition, within this LCT particular care will need to be taken to ensure:

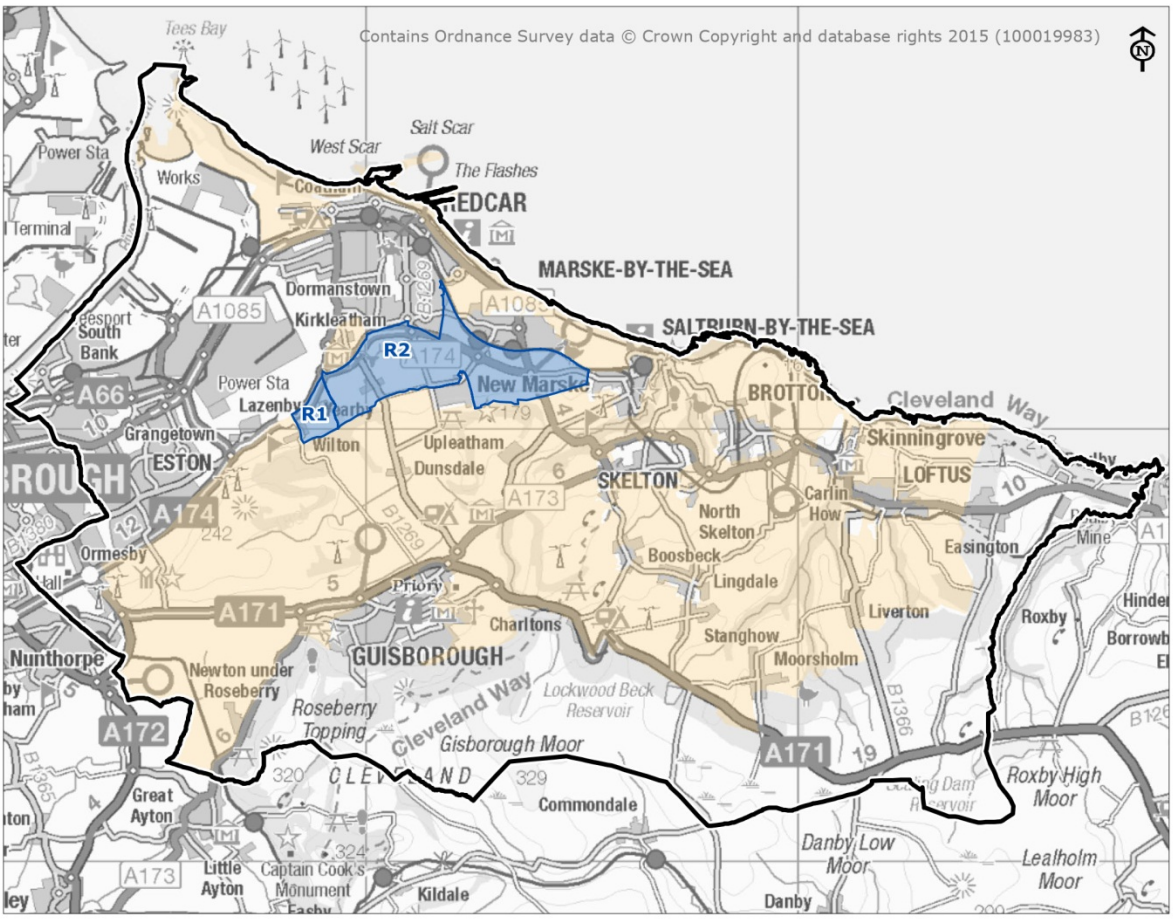
- Valued naturalistic habitats are retained – including woodland and hedgerows;
- Make use but do not remove the area's tree/woodland cover to help screen developments;
- Wind/ solar energy development does not overwhelm the human scale of the landscape and landscape features such as traditional farmsteads and single track roads;
- The rural character of the landscape with locally important levels of tranquillity is retained;
- Wind turbines do not prevent the appreciation and understanding of views towards the relatively undeveloped skyline of the Eston Hills;
- Wind turbines/ solar energy developments do not detract from the countryside backdrop provided by the LCT to settlements including Guisborough, Skelton, Saltburn/ Marske-by-the- Sea and Redcar; and
- Opportunities are sought to enhance the landscape in association with any development. These include expanding broadleaf woodland cover; upgrading the existing footpath network; and strengthening the network of hedgerows.

Additional Guidance Specific to Particular Landscape Unit(s)

In landscape unit E9 particular care will need to be taken when siting any wind turbines as the area of upland plateau is much more limited in geographical extent than the area between landscape E5 and E6 and the landform does not offer the same screening potential. Landscape unit E9 is also located in close proximity to the settlement of Saltburn-by-the-Sea and views towards the Eston Hills from this settlement will need to be carefully considered.

Lowland Farmland

Figure 4.6 Location of the Lowland Farmland LCT within Redcar and Cleveland



Location and extent

4.85 These landscape units occur in two places and form a continuation to each other focused to the south of the Redcar Flats landscape tract: R1 – Urbanised farmland (east of Wilton) and R2 – Lowland Farmland (South of Redcar and Marske). These landscape units are shown in **Figure 4.6.**

Landscape Designations and Heritage aspects

4.86 No landscape designations or heritage aspects of note.

Sensitivity assessment

4.87 The following table sets out commentary on the sensitivity of this landscape type to the assessment criteria. Where relevant, the key landscape characteristics as identified in the Redcar and Cleveland Landscape Character Assessment (2006) have been used to inform the character descriptions. Refer to **Table 4.2 and 4.3** for full details of the evaluation criteria.

Criteria	Description
Landform and Scale	Medium scale landscape of flat to gently sloping land which drops in elevation towards the coast to the north.
Land cover pattern and presence of human scale features	Mainly high quality farmland with a large field pattern defined by mature hawthorn hedgerows with occasional scattered trees. The more urbanised farmland east of Wilton also includes reservoirs and peripheral woodland strips. Scattered farmsteads, small villages, minor roads and two major A roads provide further evidence of man's influence over the landscape.
Skylines and Inter-visibility	The open nature and sloping aspect of the landscape often offers extensive views to the north which include the coast and the offshore wind farm at Teesside. Given this landscapes position to the north of the Eston Hills this area does not contribute to any distinctive skylines.
Perceptual qualities	This is an open, rural landscape, however it is heavily influence by the surrounding large urbanised areas which can create hard edges and whose rooftops and large scale vertical elements, including smoke stack's and chimneys to the northwest, are ever present in views. The settlement of New Marske, which sits on higher ground at the foot of the escarpment south of the Upleatham landscape unit (E7), is particularly intrusive in views. The larger fields, major road network, fragmented hedgerows and absence of woodland also contribute to the somewhat degraded character in places.
Scenic and special qualities	These landscape units do not fall within a nationally designated landscape and are both identified as 'restoration landscapes' within the Redcar and Cleveland Landscape Character SPD (2010). This area provides a transition between the heavily urbanised and industrialised areas to the north and the relatively undeveloped Eston Hills to the south.

4.89 The following table summarises the underlying sensitivity of this LCT to the development typologies outlined in **Table 4.1**.

Typology	Sensitivity				
	Lower	<	Medium	>	Higher
1 – Small Solar Parks			x		
2 – Medium Solar Parks				x	
3 – Large Solar Parks					x
4 - Small wind turbines (< 50m)				x	
5 - Medium wind turbines (50 to 100m)					x
6 - Large wind turbines (> 100m)					x

Guidance for Development

4.91 The following guidance has been developed to ensure that the most sensitive features of this landscape are protected, and that development of renewable energy within this LCT occurs in the most appropriate locations, where impacts on the landscape may be reduced or mitigated.

Key sensitive features and characteristics

Key issues for the siting and design of renewable energy development in this landscape include:

- Sensitive land cover types including mature hawthorn hedgerows and scattered mature trees;
- The presence of human scale features including traditional farmsteads;
- Proximity to large urban areas exerts an influence over the landscape character, however these landscapes are rural in character and provide an important transition and lower lying rural landscape setting between the highly urbanised areas to the north and the relatively undeveloped Eston Hills to the south;
- Open nature and sloping aspect often offers extensive views to the north which include the coast; and
- Eston Hills form a relatively undeveloped skyline and enclosing ridge in views to the south.

Guidance for development

When considering the siting and designing of renewable energy development, the generic guidance provided in **Section 3** of this chapter should be followed.

Wind energy

The landscape sensitivity assessment indicates that this sloping, open, rural LCT which lies in close proximity to large urban areas has medium/high sensitivity to 'small' turbines and a higher sensitivity to 'medium' and 'large' turbines. This indicates that the landscape will be particularly sensitive to turbines higher than 50m and is unlikely to be able to accommodate groups of turbines, without introducing a change to landscape character.

Turbines should be located on the lower lying ground, with suitable offset from residential areas, so that they do not notably alter the skyline of the Eston Hills in views from urban areas to the north. A clear visual relationship should be maintained between 'small' scale turbines which should be associated with buildings (e.g. single turbines on/ near farm buildings) to maintain a

Key sensitive features and characteristics

simple image and reinforce links between landscape character and design response. A proliferation of varying heights and styles of turbine should be avoided. Within the context of the Borough this landscape types represents quite a large area and should be able to accommodate a small number of sensitively sited single turbine developments, without resulting in significant effects on landscape character.

Solar energy

The landscape sensitivity assessment indicates that this LCT has a medium sensitivity to 'small' developments (>5ha), a medium/ high sensitivity to 'medium' developments and a higher sensitivity to developments greater than 10ha. Any proposals should be located on lower slopes and utilise the hedgerow network to maximise screening potential. However, it is recognised that this is a north facing slope which is unlikely to be favourable with solar energy developers.

General guidance for this LCT

The overall aim should be to make sure that renewable energy developments do not become a key characteristic of the landscape (i.e. developments would not result in a significant cumulative impact on the LCT or overall change of landscape character). In addition, within this LCT particular care will need to be taken to ensure:

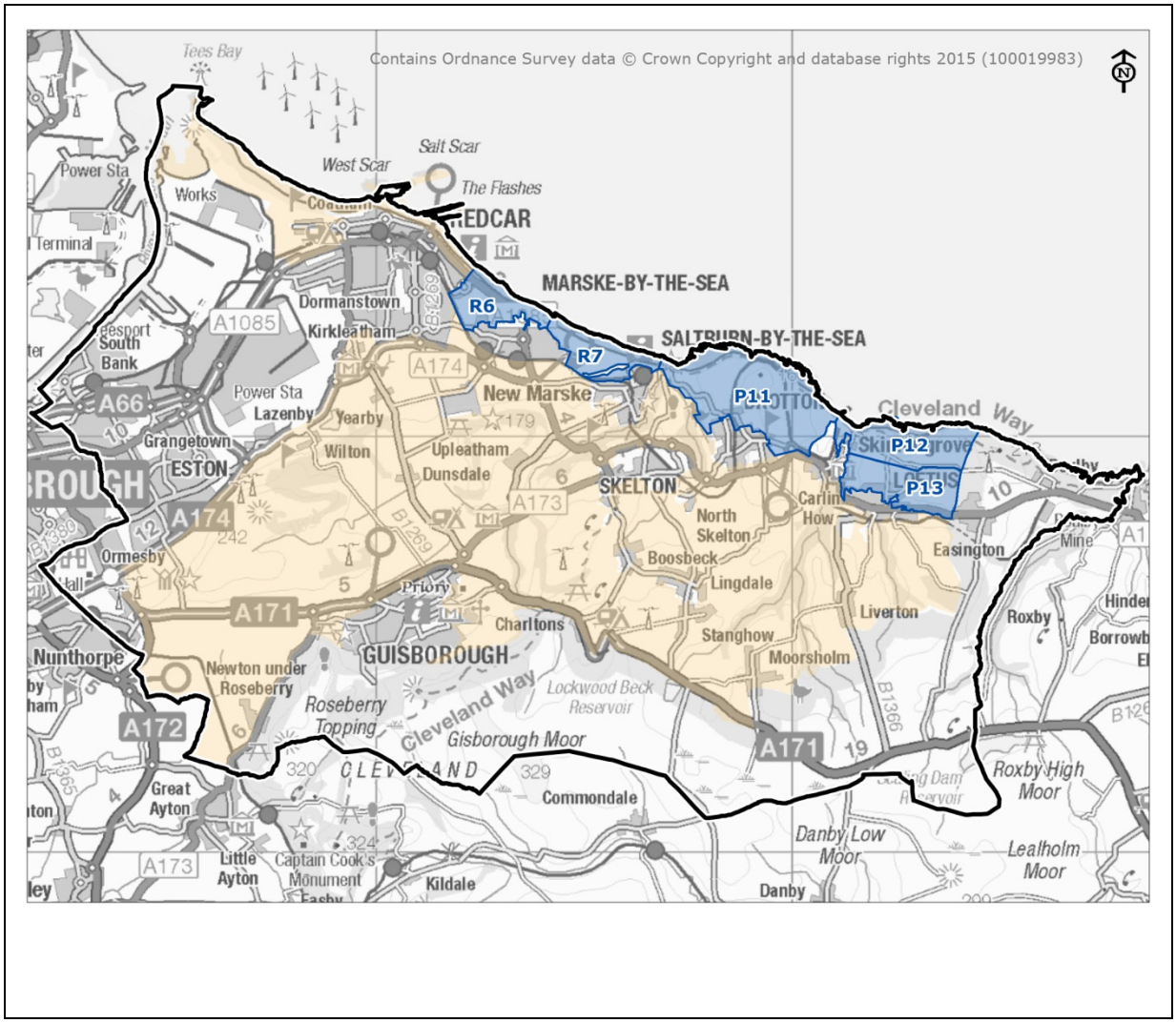
- Valued naturalistic habitats are retained – including hedgerows and scattered mature trees;
- Make use but do not remove the area's limited tree/woodland cover to help screen developments;
- Wind/ solar energy development does not overwhelm the human scale of the landscape and landscape features such as traditional farmsteads;
- The rural character of the landscape which provides an important setting and transition between the highly urbanised areas to the north and the relatively undeveloped Eston Hills to the south is retained;
- Wind turbines do not prevent the appreciation and understanding of views towards the relatively undeveloped skyline of the Eston Hills; and
- Opportunities are sought to enhance the landscape in association with any development. These include expanding broadleaf woodland cover; upgrading the existing footpath network; and strengthening the network of hedgerows.

Additional Guidance Specific to Particular Landscape Unit(s)

Due to the limited geographical extent of landscape unit R1, this is unlikely to be able to accommodate any more than one single turbine or a small solar energy development, without resulting in significant effects on landscape character.

Coastal Farmland

Figure 4.7 Location of the Coastal Farmland LCT within Redcar and Cleveland



Location and extent

4.92 These landscape units occur in five places. R6 – (Redcar to Marske) and R7 – (Marske to Saltburn) are both located on the north eastern edge of the Redcar Flats landscape tract. P11 – (north of Brotton), P12 – (East of Skinningrove) and P13 – (north of Loftus) are all located on the northern edge of the East Cleveland Plateau landscape tract. These landscape units are shown in **Figure 4.7.**

Landscape Designations and Heritage aspects

4.93 The coastal edges in the East Cleveland landscape tract with their dramatic sea cliffs (P11 and P12) lie within the Heritage Coast.

Sensitivity assessment

4.94 The following table sets out commentary on the sensitivity of this landscape type to the assessment criteria. Where relevant, the key landscape characteristics as identified in the Redcar and Cleveland Landscape Character Assessment (2006) have been used to inform the character descriptions. Refer to **Table 4.2 and 4.3** for full details of the evaluation criteria.

Criteria	Description
Landform and Scale	Sandy beaches with intricate, low cliffs backed by an essentially flat area of land behind. The sea cliffs are more defined in the East Cleveland Plateau landscape tract and the landform behind is more varied. In P11 a north south ridge culminates in the dome of Warsett Hill, with gently sloping land to the east and west but with the landform truncated by sea cliffs to the north. In P12 and 13 the landform is also more undulating and increases in steepness near the coastal edge above the sea cliffs. The scale of the landform is quite small, which contrast with the long distance and large scale coastal views.
Land cover pattern and presence of human scale features	Farmland forms the predominant land cover. The coastal edge consists of sandy foreshores backed by steeply sloping vegetated sand banks to the west (R6 and R7) which turn into rugged sea cliffs to the east (P11 and P12). Settlement is quite sparse and characterised by scattered farmsteads. A golf resort and railway line which travels to Middlesbrough provides further evidence of man's influence over the landscape in P11. The offshore wind farm at Teesside is also a prominent man-made feature in seaward views. The area is highly accessible as the coastal edge and Cleveland Way provide public access.
Skylines and Inter-visibility	This is an open, highly visible landscape with, long distance, wide angle seaward views available. The sea cliffs and hills contribute to dramatic skylines in sea based views near the coastal edge and these areas also provide a rural, largely undeveloped landscape setting to picturesque coastal settlements such as Saltburn-by-the-Sea.
Perceptual qualities	Open, exposed with a rural coastal character. The surrounding large urban/ industrial areas can be visually intrusive and form hard edges which can erode this character. The steelworks at Skinningrove and views of industry along the banks of the Tees are both notable examples.
Scenic and special qualities	These landscape units do not fall within a nationally designated landscape. All the landscape units, with the exception of P13, are identified as 'sensitive landscapes' within the Redcar and Cleveland Landscape Character SPD (2010). These coastal landscapes are highly valued within the Borough and provide an open, prominent, largely undeveloped and often quite dramatic setting enjoyed during outdoor recreational pursuits along the coastal edge.

4.96 The following table summarises the underlying sensitivity of this LCT to the development typologies outlined in **Table 4.1**.

Typology	Sensitivity				
	Lower	<	Medium	>	Higher
1 – Small Solar Parks					x
2 – Medium Solar Parks					x
3 – Large Solar Parks					x
4 - Small wind turbines (< 50m)					x
5 - Medium wind turbines (50 to 100m)					x
6 - Large wind turbines (> 100m)					x

Guidance for Development

4.98 The following guidance has been developed to ensure that the most sensitive features of this landscape are protected, and that development of renewable energy within this LCT occurs in the most appropriate locations, where impacts on the landscape may be reduced or mitigated.

Key sensitive features and characteristics

Key issues for the siting and design of renewable energy development in this landscape include:

- Valued naturalistic habitats including important semi-natural coastal and maritime habitats and mature hedgerows;
- The small scale, intricate cliffs and vegetated sand banks which present a dramatic and prominent feature in coastal edge based views;
- The recreational draw of the area for coastal walks and access to water based activities;
- The scenic qualities of the landscape - the open undeveloped cliff tops, expanses of open sand, views of the ocean which can provide a sense of awe and rejuvenation;
- Open prospects with long ranging and wide angle sea based views; and
- The role this area plays in the landscape setting and views from Redcar, Marske-by-the-Sea, Saltburn-by-the-Sea and Skinningrove.

Guidance for development

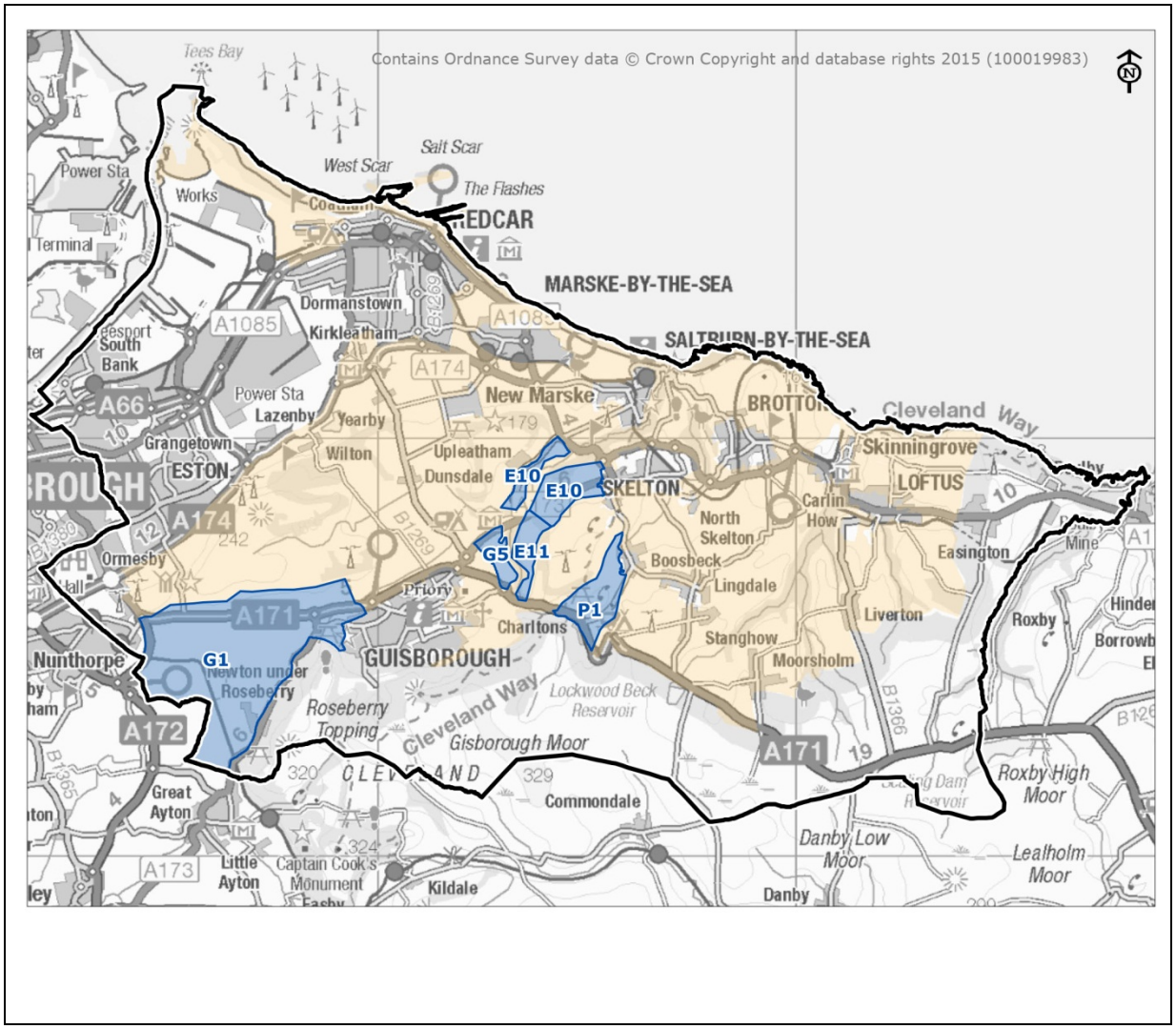
The landscape sensitivity assessment indicates that this highly prominent and largely undeveloped coastal landscape is highly sensitive to all sizes and scales of renewable energy development, and therefore is unlikely to be able to accommodate any wind turbines/ solar developments without introducing a significant change to landscape character.

Additional Guidance Specific to Particular Landscape Unit(s)

It may be possible to sensitively site some small scale solar energy development on south facing slopes within landscape unit P13. Any proposals should be located on lower lying ground and utilise existing woodland and vegetation to screen the development as far as possible. Opportunities should also be sought to enhance the landscape in association with any development. These include upgrading the existing footpath network and strengthening the network of hedgerows.

Inland Valley Farmland

Figure 4.8 Location of the Inland Valley Farmland LCT within Redcar and Cleveland



Location and extent

4.99 These landscape units occur in six places. P1 - Inland Valley (Margrove) which forms a small area located on the south western edge of the East Cleveland Plateau landscape tract and G1 - Broad Inland Valley (Nunthorpe to Guisborough) which is located to the west of Guisborough within the Guisborough Lowland landscape tract. G5 Undulating Farmland (East of Guisborough), two areas of E10 Valley Sides Upleatham and E11 Hillfoot Farmland (Skelton) combine to form the valley sides around the western end of the Tocketts/ Skelton Beck to the northeast of Guisborough. These landscape units are shown in **Figure 4.8.**

Landscape Designations and Heritage aspects

4.100 Woodland within the Upleatham Valley Side (E10) landscape unit is designated as Ancient Woodland of both semi-natural and replanted origin.

Sensitivity assessment

4.101 The following table sets out commentary on the sensitivity of this landscape type to the assessment criteria. Where relevant, the key landscape characteristics as identified in the Redcar and Cleveland Landscape Character Assessment (2006) have been used to inform the character descriptions. Refer to **Table 4.2 and 4.3** for full details of the evaluation criteria.

Criteria	Description
Landform and Scale	Landscape unit P1 and G1 both consist of broad valleys with flat bottoms. PI generally slopes from northeast down to the southwest and is contained by Airy Hill to the northwest and high ground around Stanghow Moor to the southeast. G1 forms a larger valley and slopes downwards in a similar direction and is contained by the Eston Hills to the north and rising ground on the edge of the North York Moors National Park to the southeast. Landscape units G5, E10 (two areas) and E11 all combine to form the valley sides around the western end of the Tocketts/ Skelton Beck which drops in elevation from the southwest to northeast. The wooded valley around the watercourse (landscape unit E4 - which is considered under a different sensitivity assessment) is very narrow, however the valley sides considered here have a shallower gradient. This valley is contained by Airy Hill to the southeast and the high ground to the east of the Eston Hills to the north.
Land cover pattern and presence of human scale features	Mixed land use including arable farmland, rough and improved grazing and a network of scattered farmsteads. Medium sized fields punctuated with small woodland blocks are characteristic of landscape unit G1. The A171 also passes along the northern edge of G1 and forms a notable horizontal visual intrusion. Landscape unit PI includes the small settlement of Margrove Park and associated allotments on the edge of this settlement. There is also a nature reserve with ponds. The valley sides around Tocketts/ Skleton Beck are somewhat less accessible beyond the A173 which passes through this area and are mainly characterised by pastoral farmland. Within all three valleys there is a notable lack of vertical elements. However, a line of overhead electricity transmission towers skirt the western end of G1. There is also a small scale single turbine visible on the northern edge of G1, which is visible from the valley floor back dropped by the Eston Hills behind.
Skylines and Inter-visibility	All these landscapes represent enclosed valleys and the surrounding undeveloped hills and areas of elevated land contribute to the skyline and setting of views. The skyline to the south of landscape unit G1, on the edge of the North York Moors National Park, is quite varied and includes the dramatic profile of Roseberry Topping, caused by a combination of geology and a mining collapse. In terms of internal visibility the A171 which crosses the northern edge of G1 offers elevated views over the valley landscape. Views across these landscapes are also available from the higher valley sides in landscape unit P1 and the Tocketts/ Skelton Beck Valley.
Perceptual qualities	These areas have a somewhat secluded, rural character which is generally free of intrusive vertical development. However, the roads bordering/ passing through these landscapes and abrupt interfaces between rural and surrounding urban/ industrial areas can erode this character in places.
Scenic and special qualities	These landscape units do not fall within a nationally designated landscape. The majority of these landscapes (with the notable exception of a small area to the east of E10 around Skelton Castle) are identified as 'restoration landscapes' within the Redcar and Cleveland Landscape Character SPD (2010).

4.102 The following table summarises the underlying sensitivity of this LCT to the development typologies outlined in **Table 4.1**.

Typology	Sensitivity				
	Lower	<	Medium	>	Higher
1 – Small Solar Parks			x		
2 – Medium Solar Parks				x	
3 – Large Solar Parks					x
4 - Small wind turbines (< 50m)				x	
5 - Medium wind turbines (50 to 100m)					x
6 - Large wind turbines (> 100m)					x

Guidance for Development

4.103 The following guidance has been developed to ensure that the most sensitive features of this landscape are protected, and that development of renewable energy within this LCT occurs in the most appropriate locations, where impacts on the landscape may be reduced or mitigated.

Key sensitive features and characteristics

Key issues for the siting and design of renewable energy development in this landscape include:

- Sensitive land cover types including woodland, hedgerows and mixed habitat within Margrove Nature Reserve;
- The presence of human scale features including traditional farmsteads and small rural settlements;
- The rural character of the valleys which is relatively free of vertical intrusions;
- The enclosed and overlooked nature of the valleys, with the surrounding high ground forming a relatively undeveloped skyline and setting in views; and
- Due to their proximity to the North York Moors National Park and sensitive viewpoints on the edge of the National Park (Roseberry Topping and Highcliff Nab) the role these landscapes play as a setting to the National Park, whose special qualities include a sense of remoteness and tranquillity.

Guidance for development

When considering the siting and designing of renewable energy development, the generic guidance provided in **Section 3** of this chapter should be followed.

Wind energy

The landscape sensitivity assessment indicates that this LCT has medium/high sensitivity to 'small' turbines and a higher sensitivity to 'medium' and 'large' turbines. This indicates that the landscape will be particularly sensitive to turbines higher than 50m and is unlikely to be able to accommodate groups of turbines, without introducing a change to landscape character.

Key sensitive features and characteristics

Turbines should be located on lower lying ground, with suitable offset from residential areas, so that they do not notably alter the appreciation of skylines informed by the enclosing ridge in views looking over the valleys. A clear visual relationship should be maintained between 'small' scale turbines which should be associated with buildings (e.g. single turbines on/ near farm buildings) to maintain a simple image and reinforce links between landscape character and design response. A proliferation of varying heights and styles of turbine should be avoided. Due to its larger geographical extent landscape unit G1 may be able to accommodate a small number of turbines without resulting in significant effects on landscape character. However, it is unlikely that landscape unit P1 or the valley around Tockett's/ Skelton Beck could accommodate more than one small scale turbine, without triggering significant landscape or cumulative effects.

Solar energy

The landscape sensitivity assessment indicates that this LCT has a medium sensitivity to 'small' developments (>5ha), a medium/ high sensitivity to 'medium' developments and a higher sensitivity to developments greater than 10ha. Any proposals should be located on lower slopes/ in the valley floor and utilise the hedgerow network and existing woodland cover to maximise screening potential. A small number of solar developments may be accommodated in G1 but in landscape unit P1 and the Tockett's/ Skelton Beck Valley it is unlikely that multiple developments could be accommodated without resulting in significant landscape and cumulative effects.

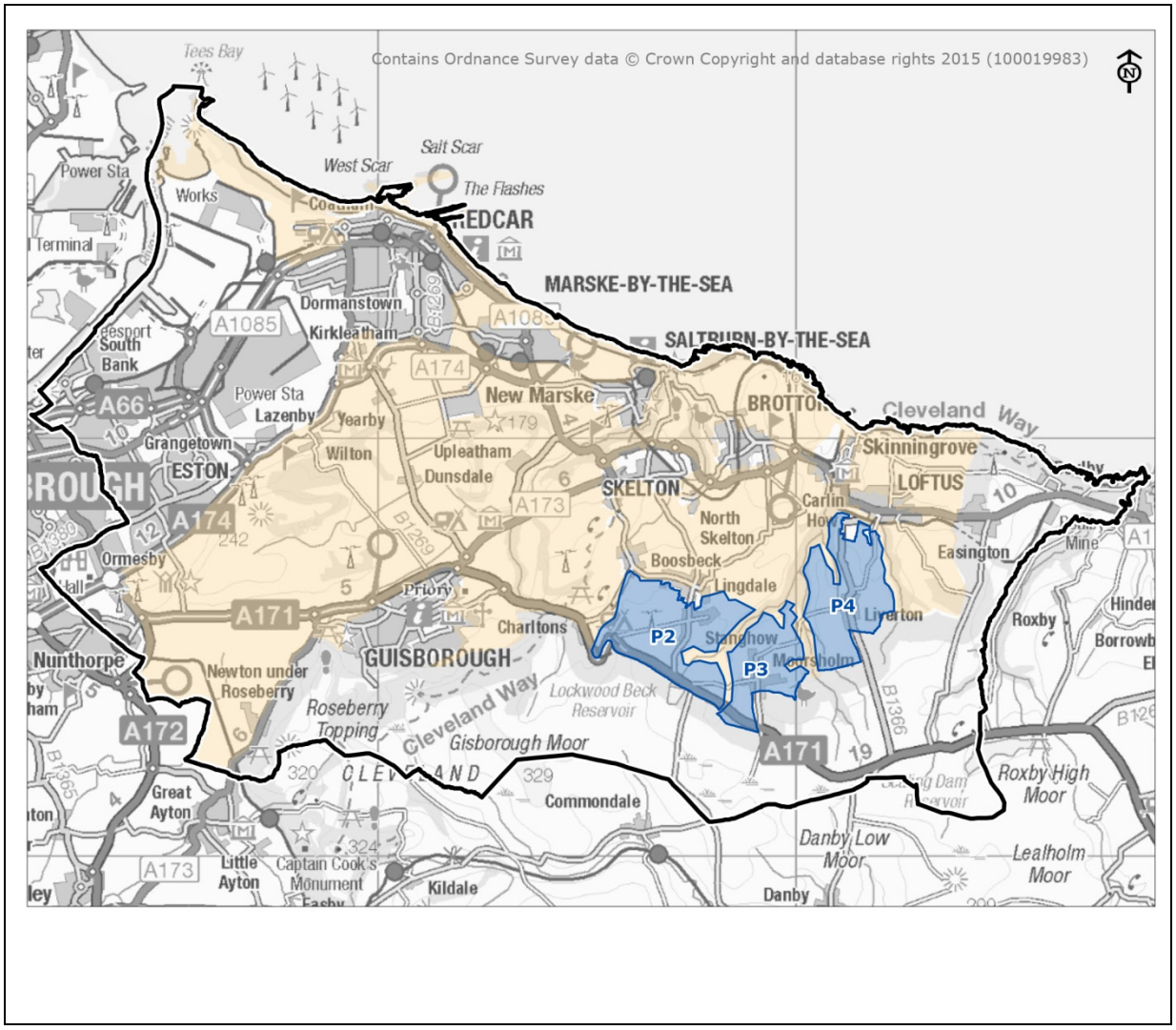
General guidance for this LCT

The overall aim should be to make sure that renewable energy developments do not become a key characteristic of the landscape (i.e. developments would not result in a significant cumulative impact on the LCT or overall change of landscape character). In addition, within this LCT particular care will need to be taken to ensure:

- Valued naturalistic habitats are retained – including hedgerows, woodland and natural habitats such as those displayed in the Margrove Nature Reserve;
- Make use but do not remove the area's tree/ woodland cover to help screen developments;
- Wind/ solar energy development does not overwhelm the human scale of the landscape and landscape features such as traditional farmsteads and small rural settlements;
- The lower lying, rural character of the landscape which provides an important setting and foreground context in views from the edge of the North York Moors National Park to the south is retained;
- Wind turbines do not prevent the appreciation and understanding of views towards the surrounding, relatively undeveloped skylines which include the Eston Hills, Airy Hill and the Cleveland Hills; and
- Opportunities are sought to enhance the landscape in association with any development. These include expanding broadleaf woodland cover and wildlife habitat around existing nature reserves; upgrading the existing footpath network; and strengthening the network of hedgerows.

Moorland Fringe Farmland

Figure 4.9 Location of the Moorland Fringe Farmland LCT within Redcar and Cleveland



Location and extent

4.104 These landscape units occur in three places focused along the southern edge of the East Cleveland Plateau landscape tract: P2 – (South Lingdale); P3 – (Moorsholm) and P4 – (Liverton). These landscape units are shown in **Figure 4.9.**

Landscape Designations and Heritage aspects

4.105 Woodland on the periphery of the Liverton landscape unit is designated as Ancient Woodland.

Sensitivity assessment

4.106 The following table sets out commentary on the sensitivity of this landscape type to the assessment criteria. Where relevant, the key landscape characteristics as identified in the Redcar and Cleveland Landscape Character Assessment (2006) have been used to inform the character descriptions. Refer to **Table 4.2 and 4.3** for full details of the evaluation criteria.

Criteria	Description
Landform and Scale	Larger scale, undulating broad plateaux of land found between valleys to the east of the Borough. The landform generally rises from north to south towards the coastal hinterland and higher ground within the North York Moors National Park to the south.
Land cover pattern and presence of human scale features	The main land cover is mixed arable farmland with areas of pasture. Field sizes are generally larger to the south becoming smaller to the north nearer settlements. Small woodland belts and areas of mixed woodland which follow the river valleys border these landscapes to the north. To the south the landscape turns into moorland and the A171 provides a fairly definitive boundary between the farmland to the north and the moorland to the south, which extends into the National Park further south. Scattered farmsteads and small, remote and exposed settlements characterised by York Stone provide further evidence of man's influence over the landscape. There is also a small operational turbine in landscape unit P3 to the north of North Lane Farm.
Skylines and Inter-visibility	From more elevated, open areas within this landscape long distance views to the north, including the coast are available. The moors to the south form an undeveloped, natural and gently undulating skyline in views in this direction.
Perceptual qualities	Open and exposed with views of moorland to the south which contribute to the moorland fringe character. General absence of hedgerow trees and rising landform can create quite an open, exposed character. However, parts of this landscape are quite neglected (hedges and stone walls) and areas of untidy land on the edge of villages can contribute to a sense of this landscape being somewhat degraded in places.
Scenic and special qualities	These landscape units do not fall within a nationally designated landscape and all three areas are identified as 'restoration landscapes' within the Redcar and Cleveland Landscape Character SPD (2010). The open, remote and exposed moorland fringe character is quite rare in the context of the Borough, however these areas cover quite a large area and the difference between them and the neighbouring Plateau Farmland to the north is quite subtle.

4.108 The following table summarises the underlying sensitivity of this LCT to the development typologies outlined in **Table 4.1**.

Typology	Sensitivity				
	Lower	<	Medium	>	Higher
1 – Small Solar Parks			x		
2 – Medium Solar Parks				x	
3 – Large Solar Parks					x
4 - Small wind turbines (< 50m)				x	
5 - Medium wind turbines (50 to 100m)					x
6 - Large wind turbines (> 100m)					x

Guidance for Development

4.110 The following guidance has been developed to ensure that the most sensitive features of this landscape are protected, and that development of renewable energy within this LCT occurs in the most appropriate locations, where impacts on the landscape may be reduced or mitigated.

Key sensitive features and characteristics

Key issues for the siting and design of renewable energy development in this landscape include:

- Sensitive land cover types including hedgerows and mixed woodland;
- The minor road network with surrounding fields bounded by dry stone walls;
- The presence of human scale features including traditional farmsteads and small settlements which have a character closely aligned with those in the National Park due to their elevated and exposed nature and use of York Stone;
- The moorland influence on the open and exposed rural quality of the landscape, including its tranquil and more isolated character in places;
- The distinctive, unspoilt and exposed skylines looking towards the North York Moors National Park to the south, these skylines are gentle and undulating in the eastern half of the Borough; and
- Due to their proximity to the North York Moors National Park the role these landscapes play as a setting to the National Park (whose special qualities include a sense of remoteness and tranquillity) and as a transition between moorland and more intensively managed farmland.

Guidance for development

When considering the siting and designing of renewable energy development, the generic guidance provided in **Section 3** of this chapter should be followed.

Wind energy

The landscape sensitivity assessment indicates that this LCT has medium/high sensitivity to 'small' turbines and a higher sensitivity to 'medium' and 'large' turbines. This indicates that the landscape will be particularly sensitive to turbines higher than 50m and is unlikely to be able to accommodate groups of turbines, without introducing a change to landscape character.

Key sensitive features and characteristics

Turbines should be sensitively sited with suitable offset from residential areas and take due consideration of the sense of remoteness and tranquillity associated with the North York Moor National Park to the south. For this reason it is unlikely that multiple turbines developments could be accommodated without significant effects on landscape character. A clear visual relationship should be maintained between 'small' scale turbines which should be associated with buildings (e.g. single turbines on/ near farm buildings) to maintain a simple image and reinforce links between landscape character and design response. A proliferation of varying heights and styles of turbine should be avoided. Due to its open and exposed nature cumulative effects and separation distances between proposed developments and the existing single turbines visible within and surrounding these landscapes will also need to be carefully considered.

Solar energy

The landscape sensitivity assessment indicates that this LCT has a medium sensitivity to 'small' developments (>5ha), a medium/ high sensitivity to 'medium' developments and a higher sensitivity to developments greater than 10ha. Any proposals should be located on lower slopes/ depressions in the landscape and utilise the limited hedgerow and woodland pattern to maximise screening potential. Across the three landscape units a small number of solar developments could be accommodated without resulting in significant landscape and cumulative effects. However, it is recognised that this landform is mainly north facing so it is unlikely to be favourable with solar energy developers.

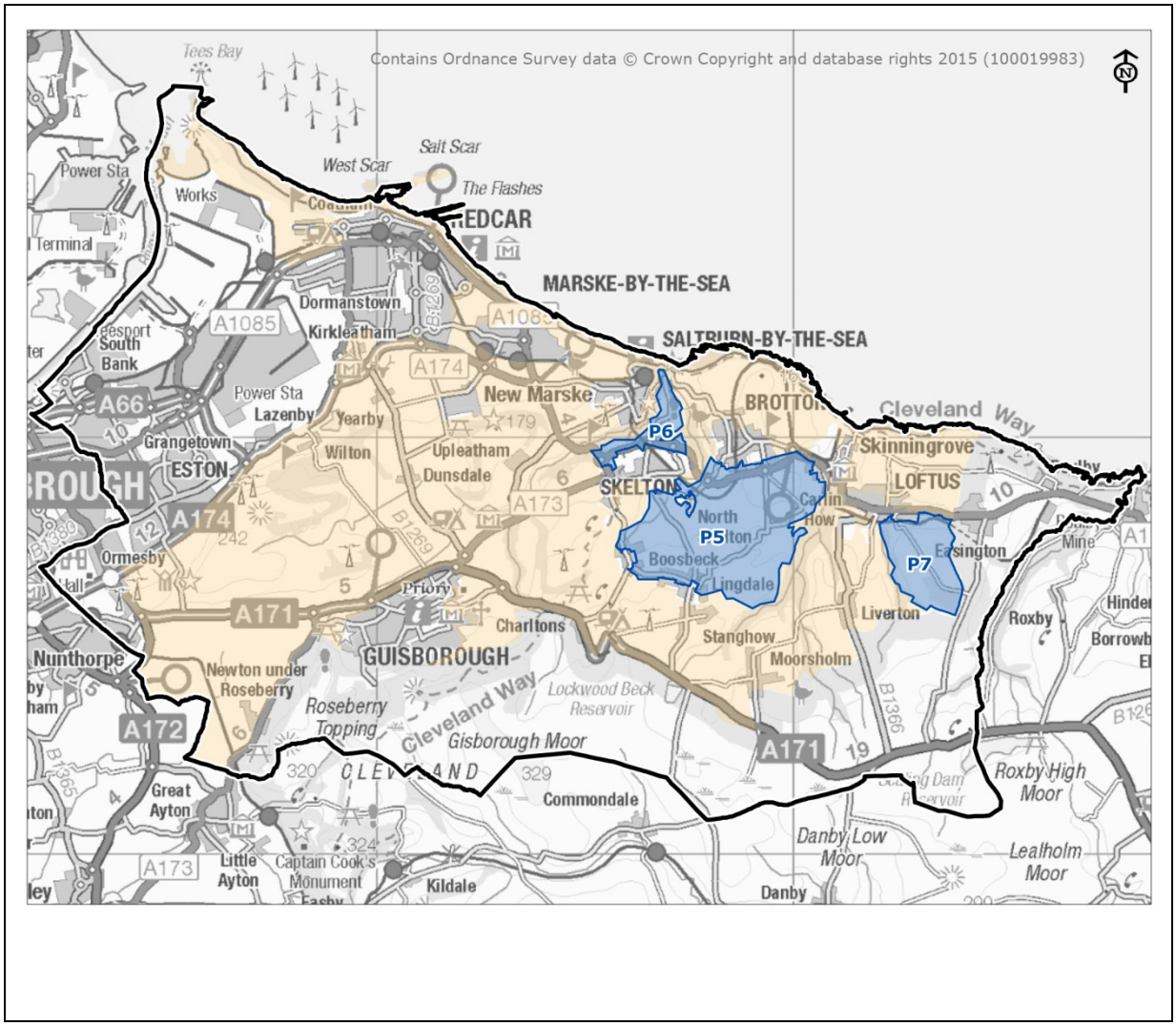
General guidance for this LCT

The overall aim should be to make sure that renewable energy developments do not become a key characteristic of the landscape (i.e. developments would not result in a significant cumulative impact on the LCT or overall change of landscape character). In addition, within this LCT particular care will need to be taken to ensure:

- Valued naturalistic habitats are retained – including limited areas of woodland and hedgerows;
- Make use but do not remove the area's tree/ woodland cover to help screen developments;
- Wind/ solar energy development does not overwhelm the human scale of the landscape and landscape features such as traditional farmsteads and small exposed, settlements;
- The moorland fringe character which provides an important transition between open moorland in the National Park to the south and the more intensively managed farmland within the Borough to the north is retained;
- Wind turbines do not prevent the appreciation and understanding of views towards the North York Moor National Park which is open, unspoilt and forms a gently undulating moorland horizon in the eastern half of the Borough;
- Wind turbines/ solar energy developments do not detract from the rural backdrop provided by this landscape type to the settlements of Lingdale, Moorsholm and Liverton;
- Wind turbines/ solar energy developments do not adversely affect the sense of remoteness and tranquillity associated with the North York Moor National Park; and
- Opportunities are sought to enhance the landscape in association with any development. These include upgrading the existing footpath network and repairing damaged and poorly maintained stone walls and hedges.

Plateau Farmland

Figure 4.10 Location of the Plateau Farmland LCT within Redcar and Cleveland



Location and extent

4.111 These landscape units occur in three places including: P5 – (Lingdale to Brotton), P6 – (Skelton to Saltburn) and P7 – (South of Loftus) which are all located in the East Cleaveland Plateau landscape tract to the centre and northwest. These landscape units are shown in **Figure 4.10.**

Landscape Designations and Heritage aspects

4.112 No landscape designations or heritage aspects of note.

Sensitivity assessment

4.113 The following table sets out commentary on the sensitivity of this landscape type to the assessment criteria. Where relevant, the key landscape characteristics as identified in the Redcar and Cleveland Landscape Character Assessment (2006) have been used to inform the character descriptions. Refer to **Table 4.2 and 4.3** for full details of the evaluation criteria.

Criteria	Description
Landform and Scale	The landscape units are generally formed by medium scale, broad, undulating plateaux. P5 covers a large area within the context of the Borough and consists of undulating ground which gently rises in a southward direction. The landform in P6 and P7 is slightly more varied; P6 forms a ridged landform which separates Skelton Beck and Saltburn Gill and P7 is broadly domed.
Land cover pattern and presence of human scale features	These units are typically characterised by farmland with mature hawthorn hedgerows and dispersed woodland blocks and copses. Larger urban areas and wooded river valleys typically define the boundaries. Scattered farmsteads linked by minor roads form the typical settlement pattern. Major roads and railways also pass through certain areas of this landscape and a single, medium scale turbine near Greenhills Farm in landscape unit P5 and a single, small scale turbine near Highfields Farm in landscape unit P7 form provide further evidence of man's influence over the landscape.
Skylines and Inter-visibility	From open, more elevated parts of this landscape views of the coast are available. However, due to the flatter undulating landform and frequency of woodland/ urban edges views are often enclosed and shorter distance. This is most notable to the south of P5.
Perceptual qualities	Rural in character with more elevated open areas even displaying a coastal feel due to views of the sea. Landscape unit P6 also plays an important role in providing a rural and relatively undeveloped setting to the east of the coastal settlement of Saltburn-by-the-Sea. However, elsewhere hard urban edges, the intensively farmed nature and decline in hedgerow trees contribute to a somewhat degraded landscape.
Scenic and special qualities	These landscape units do not fall within a nationally designated landscape and the majority are identified as 'restoration landscapes' within the Redcar and Cleveland Landscape Character SPD (2010) with the exception of an area to the north of landscape unit P6, near the coastal edge, which is identified as a 'sensitive landscape'.

4.115 The following table summarises the underlying sensitivity of this LCT to the development typologies outlined in **Table 4.1**.

Typology	Sensitivity				
	Lower	<	Medium	>	Higher
1 – Small Solar Parks		x			
2 – Medium Solar Parks			x		
3 – Large Solar Parks				x	
4 - Small wind turbines (< 50m)			x		

Typology	Sensitivity				
5 - Medium wind turbines (50 to 100m)				x	
6 - Large wind turbines (> 100m)					x

Guidance for Development

4.116 The following guidance has been developed to ensure that the most sensitive features of this landscape are protected, and that development of renewable energy within this LCT occurs in the most appropriate locations, where impacts on the landscape may be reduced or mitigated.

Key sensitive features and characteristics

Key issues for the siting and design of renewable energy development in this landscape include:

- Sensitive land cover types including hedgerows and mixed woodland;
- The minor road network with boundaries defined by mature hawthorn hedgerows;
- The presence of human scale features including traditional farmsteads and small rural settlements;
- The rural quality of the landscape, including its tranquil and more isolated character in places;
- The rural setting landscape unit P6 plays to the coastal settlement of Saltburn-by-the-Sea; and
- Open nature and sloping aspect often offers extensive views to the north which include the coast.

Guidance for development

When considering the siting and designing of renewable energy development, the generic guidance provided in **Section 3** of this chapter should be followed.

Wind energy

The landscape sensitivity assessment indicates that this LCT has medium sensitivity to 'small' turbines, a medium/ high sensitivity to 'medium' turbines and a high sensitivity to 'large' turbines. This indicates that the landscape will be particularly sensitive to turbines higher than 100m and is unlikely to be able to accommodate groups of more than 5 turbines, without introducing a significant change to landscape character. A clear visual relationship should be maintained with 'small' scale turbines being associated with buildings (e.g. single turbines on/ near farm buildings) and single/ small groups (no more than 3) of 'medium' scale turbines with sufficient separation from residential properties/ settlement edges. A wide proliferation of varying heights and styles of turbine should be avoided.

With regard to cumulative effects there is currently a 'medium' scale operational turbine located in landscape unit P5 near Greenhills Farm and a single 'small' scale operational turbine in landscape unit 'P7' near Highfields Farm. From, open more elevated positions within this landscape it is also sometimes possible to see the single operational turbine in landscape unit P3 and/ or the offshore wind farm at Teesside. Careful consideration of cumulative effects will therefore be required when siting further turbines within this area. Further developments may be best sited in association with the operational turbines, rather than introducing turbines into new locations, and should be visually compatible with them.

Key sensitive features and characteristics

Solar energy

The landscape sensitivity assessment indicates that this LCT has a low/ medium sensitivity to 'small' developments (>5ha), a medium sensitivity to 'medium' developments and a medium/ high sensitivity to developments greater than 10ha. Any proposals should be located in depressions in the landscape and utilise existing woodland and hedgerows to screen the development as far as possible. Multiple developments within the LCT should be of a similar scale and design (in terms of siting, layout, scale, form and relationship to key characteristics) to maintain a simple image and reinforce links between landscape characteristics and design response within the LCT. However, it is recognised that this landscape is mainly north facing and unlikely to be favourable with solar energy developers.

General guidance for this LCT

The overall aim for this LCT is to accept some level of change. However, wind turbines/ solar developments should not become a widespread key characteristic of the landscape (i.e. developments would not result in a significant cumulative impact on the LCT or overall change of landscape character). In addition, within this LCT particular care will need to be taken to ensure:

- Wind/ solar energy development does not overwhelm the human scale of the landscape and its landscape features including farmsteads and traditional small rural settlements such as Kilton Thorpe;
- Wind turbines do not prevent the appreciation and understanding of open, coastal views;
- Valued naturalistic habitats are retained – including woodland and hedgerows;
- Make use of but do not remove the area's tree/ woodland cover to help screen developments;
- The rural character and localised areas with a more remote and tranquil character are retained;
- Wind turbines/ solar energy developments do not detract from the rural backdrop provided by this landscape type to the settlements of Saltburn-by-the Sea, New Skelton, Brotton, North Skelton and Loftus; and
- Opportunities are sought to enhance the landscape in association with any development. These include expanding broadleaf woodland cover; upgrading the existing footpath network; and strengthening the network of hedgerows.

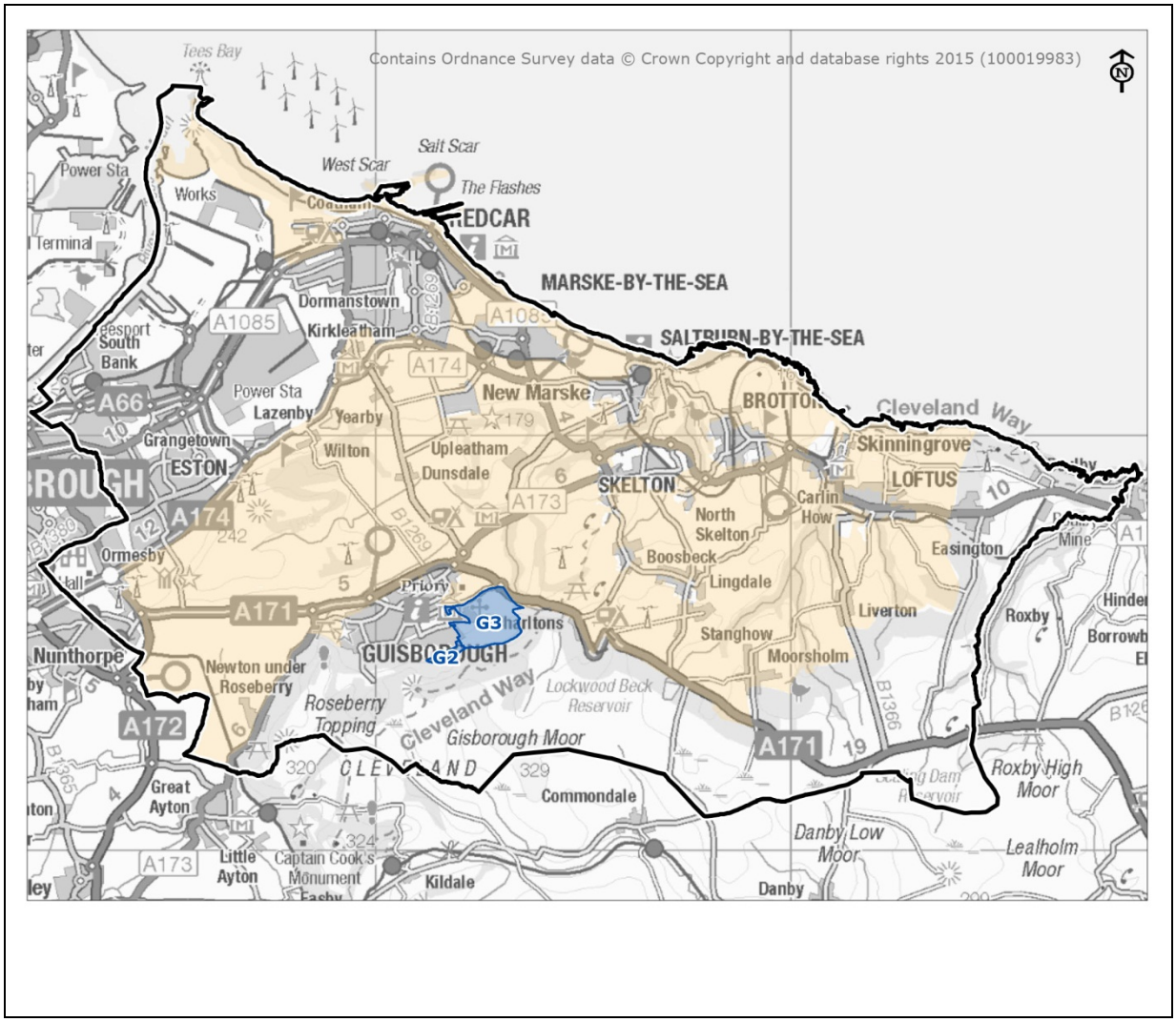
Additional Guidance Specific to Particular Landscape Unit(s)

Due to its smaller geographical extent and relationship with the coastal settlement of Saltburn-by-the-Sea, landscape unit P6 is unlikely to be able to accommodate any wind turbines or solar energy developments without incurring significant effects on landscape character.

Furthermore, and due to its proximity, any wind turbine development in landscape unit P7 should take due consideration of the sense of remoteness and tranquillity associated with the North York Moor National Park to the south.

Undulating Farmland on Edge of Guisborough

Figure 4.11 Location of the Undulating Farmland on the edge of Guisborough LCT within Redcar and Cleveland



Location and extent

4.117 These adjoining landscape units occur in two places: G2 – Urban Edge (South of Guisborough) and G3 – Undulating Farmland (SE of Guisborough) which are both focused to the east of the Guisborough Lowland landscape tract. These landscape units are shown in **Figure 4.11.**

Landscape Designations and Heritage aspects

4.118 Woodland on the periphery of the undulating farmland to the east of Guisborough is designated as Ancient Woodland.

Sensitivity assessment

4.119 The following table sets out commentary on the sensitivity of this landscape type to the assessment criteria. Where relevant, the key landscape characteristics as identified in the Redcar and Cleveland Landscape Character Assessment (2006) have been used to inform the character descriptions. Refer to **Table 4.2 and 4.3** for full details of the evaluation criteria.

Criteria	Description
Landform and Scale	These small scale landscape units are formed by gently undulating landform which rises in a southward direction. Both units are enclosed by steeply rising ground to the immediate south, formed by an escarpment on the northern edge of Guisborough Moor.
Land cover pattern and presence of human scale features	These landscape units are characterised by farmland with areas of woodland outwith the units defining the edges. A disused railway line bisects area G3. The very small area of urban edge (G2) consists of farmland, allotments, horse grazing pasture and a disused railway. Scattered farmsteads linked by rough single tracks form the typical settlement pattern. The proximity of the settlement of Guisborough also has an influence on landscape character.
Skylines and Inter-visibility	The undulating landform, surrounding woodland and urban edges means that views are often enclosed and shorter distance. The escarpment to the south forms an enclosing ridge and backdrop in views in this direction. Landscape unit G3 also provides the relatively undeveloped rural setting in front of the escarpment in key views from Gisborough Hall (landscape unit G4) to the north, which has been transformed into a luxury hotel.
Perceptual qualities	Rural in character with parts of the undulating farmland to the southeast of Guisborough displaying a parkland character due to strong hedgerow pattern and nature of woodland/ tree cover. However, elsewhere hard urban edges, intensively farmed nature and decline in hedgerow trees contribute to a somewhat degraded landscape.
Scenic and special qualities	These landscape units do not fall within a nationally designated landscape and are identified as 'restoration landscapes' within the Redcar and Cleveland Landscape Character SPD (2010).

4.120 The following table summarises the underlying sensitivity of this LCT to the development typologies outlined in **Table 4.1**.

Typology	Sensitivity				
	Lower	<	Medium	>	Higher
1 – Small Solar Parks				x	
2 – Medium Solar Parks					x
3 – Large Solar Parks					x
4 - Small wind turbines (< 50m)					x
5 - Medium wind turbines (50 to 100m)					x
6 - Large wind turbines (> 100m)					x

Guidance for Development

4.121 The following guidance has been developed to ensure that the most sensitive features of this landscape are protected, and that development of renewable energy within this LCT occurs in the most appropriate locations, where impacts on the landscape may be reduced or mitigated.

Key sensitive features and characteristics

Key issues for the siting and design of renewable energy development in this landscape include:

- The rising landform and undeveloped, rural character of the landscape which provides a setting to views from the southern edge of Guisborough and from the designed landscape at Gisborough Hall;
- The prominent wooded escarpment slopes which enclose views and create the defining ridge in views to the south;
- Valued naturalistic habitats including woodland, mature trees and hedgerows; and
- Due to their proximity to the North York Moors National Park and sensitive viewpoints on the edge of the National Park (Highcliff Nab) the role these landscapes play as a setting and rural foreground context to the National Park, whose special qualities include a sense of remoteness and tranquillity.

Guidance for development

When considering the siting and designing of renewable energy development, the generic guidance provided in **Section 3** of this chapter should be followed.

Wind energy

The landscape sensitivity assessment indicates that this LCT is highly sensitive to all sizes and scales of wind turbine development, and therefore is unlikely to be able to accommodate any turbines without introducing a significant change to landscape character.

Solar energy

In terms of solar energy development the landscape sensitivity assessment indicates that this LCT, which covers quite a small geographical extent and plays an important role in the setting of views from Guisborough and Gisborough Hall, would be highly sensitive to any solar energy developments greater than 5 hectares in scale. Any developments should be associated with sheltered, enclosed locations or locations with existing human influence such as farmsteads. Due to the relatively limited areas of open, south facing landform multiple solar developments within each landscape unit are unlikely to be accommodated without significant effects on landscape character.

General guidance for this LCT

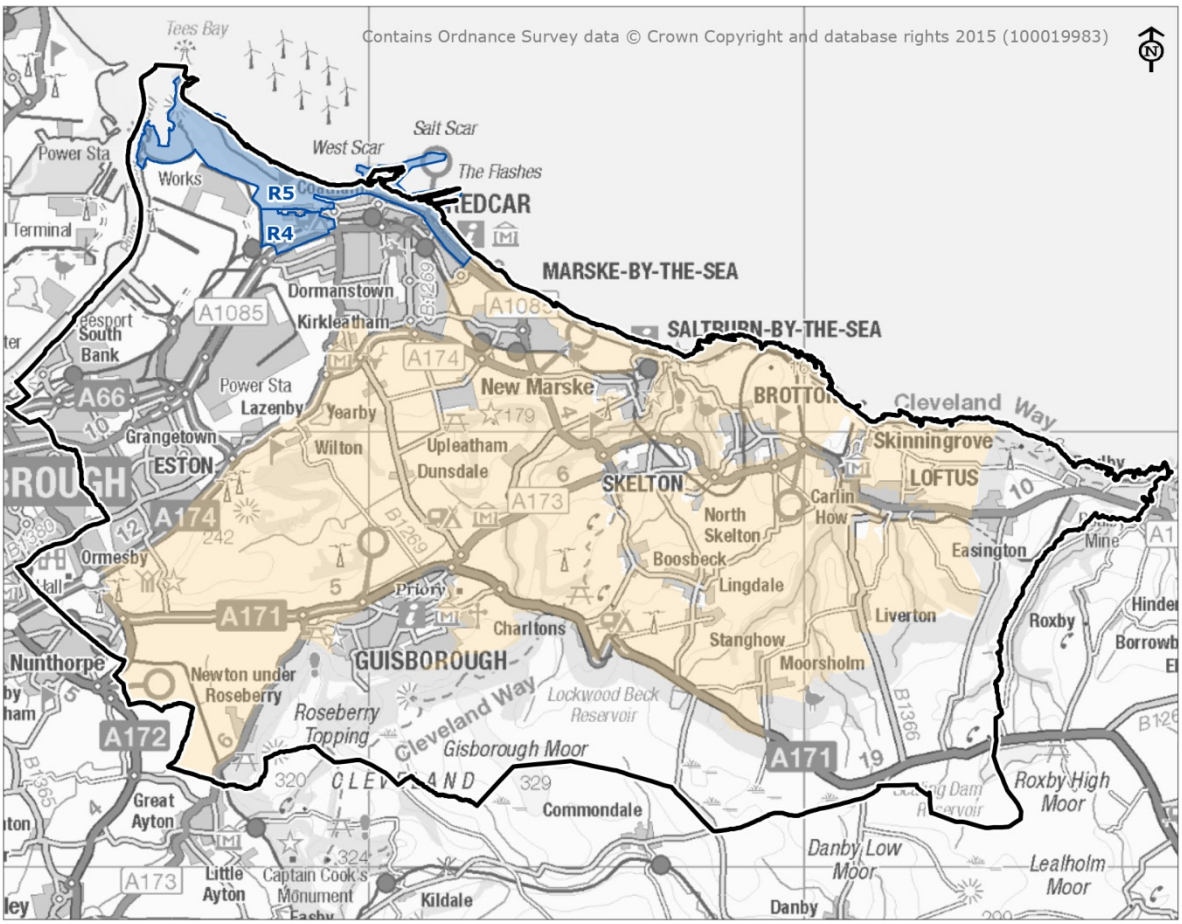
Particular care will need to be taken in regard to the following guidelines:

- Solar development does not adversely affect areas of valued semi-natural habitat, including woodland, mature trees and hedgerows;
- Make use but do not remove the area's tree/ woodland cover to help screen developments;
- Locate solar development near existing settlement/ development so that the most remote areas remain free of development and retain their key characteristics; and
- Consider the most important views from the edge of Guisborough and designed vistas from Gisborough Hall so that the rural character of the view is retained from these sensitive receptors.

Key sensitive features and characteristics
Additional Guidance Specific to Particular Landscape Unit(s) As landscape unit G2 is small, it is unlikely to be able to accommodate solar energy development except very small schemes without resulting in significant effects on landscape character.

Coastal Marsh and Sandy Shoreline

Figure 4.12 Location of the Coastal Marsh and Sandy Shoreline LCT within Redcar and Cleveland



Location and extent

4.122 These adjoining landscape units are both located to the northwest of the Redcar Flats landscape tract: R5 Sandy Shoreline and R4 Coastal Marsh. These landscape units are shown in **Figure 4.12.**

Landscape Designations and Heritage aspects

4.123 No landscape designations or heritage aspects of note.

Sensitivity assessment

4.124 The following table sets out commentary on the sensitivity of this landscape type to the assessment criteria. Where relevant, the key landscape characteristics as identified in the Redcar and Cleveland Landscape Character Assessment (2006) have been used to inform the character descriptions. Refer to **Table 4.2 and 4.3** for full details of the evaluation criteria.

Criteria	Description
Landform and Scale	Essentially a flat landscape, however the coastal marsh and dunes which are located behind the sandy shoreline form an area of low relief with some local hillocks. The scale of the landscape features and landform is small, however this contrasts with the open coastal views which are long distance and large scale.
Land cover pattern and presence of human scale features	Open stretch of sandy shoreline subject to tidal changes and backed by a dune landscape. A golf course and fishing huts are found in lower lying areas within the dunes. South of the minor road which provides access to the lighthouse the dunes merge into an area of coastal marsh with fresh water ponds and areas of grassland. Fishing boats and other small scale human feature such as the harbour wall are dwarfed by the neighbouring steelworks to the south and the highly prominent offshore wind farm at Teesside.
Skylines and Inter-visibility	Open, flat, highly visible landscape located on the coastal edge which offers long distance, wide-angle seaward views. Long distance views to the east along the coastal edge of the Borough reveal the sea cliffs and hills. View to the west are characterised by the highly industrialised banks of the River Tees. Views to the south are mainly contained by the steel works/ residential development in Redcar, however the Eston Hills further south can be seen from certain locations and form a relatively undeveloped skyline and enclosing ridge in views in this direction.
Perceptual qualities	Within the LCT the area has an undeveloped coastal character and is a popular draw for recreational pursuits and people going to appreciate wildlife. However, the imposing presence of the Teesside Steelworks to the immediate south of this landscape detracts from this character. The rusting and historic industrial character of the steelworks also contrasts with the modern and futuristic look of the offshore wind farm.
Scenic and special qualities	These landscape units do not fall within a nationally designated landscape. The sandy shoreline is identified as a sensitive landscape and the coastal marsh as a 'restoration landscape' within the Redcar and Cleveland Landscape Character SPD (2010). This landscape is highly valued as a recreational resource and an escape from the surrounding urban and industrial areas. This landscape also plays an important role in providing a relatively undeveloped and natural coastal buffer between the heavy industry to the south and the offshore wind farm.

4.125 The following table summarises the underlying sensitivity of this LCT to the development typologies outlined in **Table 4.1**.

Typology	Sensitivity				
	Lower	<	Medium	>	Higher
1 – Small Solar Parks					x
2 – Medium Solar Parks					x
3 – Large Solar Parks					x
4 - Small wind turbines (< 50m)					x
5 - Medium wind turbines (50 to 100m)					x
6 - Large wind turbines (> 100m)					x

Guidance for Development

4.126 The following guidance has been developed to ensure that the most sensitive features of this landscape are protected, and that development of renewable energy within this LCT occurs in the most appropriate locations, where impacts on the landscape may be reduced or mitigated.

Key sensitive features and characteristics

Key issues for the siting and design of renewable energy development in this landscape include:

- Valued naturalistic habitats including important semi-natural coastal and maritime habitats including mash, dune grasslands and wetlands;
- The small scale and intricate features of the dune and marsh landscape which display an undeveloped 'wild' and natural character;
- The recreational draw of the area for coastal walks, golf and access to water based activities;
- The scenic qualities of the landscape - the open undeveloped beaches, views of the ocean, smaller scale human interventions such as the harbour wall and fishing huts and the juxtaposition between this more natural coastal landscape and the highly developed and imposing steelworks;
- The undeveloped and natural buffer this area provides between the modern (the offshore wind farm at Teesside) and more historic industrial land uses;
- Open prospects with long ranging and wide angle sea based views; and
- The role this landscape plays in providing a scenic backdrop to views from the urban edge to the south (which includes the settlement of Redcar and the Steel works).

Guidance for development

The landscape sensitivity assessment indicates that this highly visible, largely undeveloped coastal landscape which includes valued tracts of natural habitat is highly sensitive to all sizes and scales of renewable energy development, and therefore is unlikely to be able to accommodate any wind turbines/ solar developments without introducing a significant change to landscape character.

Limitations

4.127 While this Landscape Sensitivity Assessment will provide a strategic-level assessment of the relative landscape sensitivities of different areas to wind turbine and solar energy development and guidance for accommodating such developments in Redcar and Cleveland's landscape, it should not be interpreted as a definitive statement on the suitability of a certain location for a particular development. All developments will need to be assessed, and planning decisions made, on their individual merits, including with reference to Guidelines for Landscape and Visual Impact Assessment, 3rd edition (GLVIA 3).

Key Conclusions

4.128 The following table summarises the findings of the sensitivity study for each LCT and in relation to each of the typologies, as described in detail above. **Figures 4.13 a, b and c** set out the findings of the landscape sensitivity assessment for solar and **Figures 4.14 a, b and c** for wind turbine developments.

Table 4.5: Summary of Landscape Sensitivity Assessment Findings

LCT	'Small' Solar	'Medium' Solar	'Large' Solar	'Small' Turbine	'Medium' Turbine	'Large' Turbine
Upland	Med/High	High	High	High	High	High
Escarpment	Med/High	High	High	High	High	High
Park/ Estate Land	High	High	High	High	High	High
Narrow Wooded Valley	High	High	High	High	High	High
Eston Hill Lower Slopes	Med	Med/High	High	Med/High	High	High
Lowland Farmland	Med	Med/High	High	Med/High	High	High
Coastal Farmland	High	High	High	High	High	High
Inland Valley Farmland	Med	Med/High	High	Med/High	High	High
Moorland Fringe Farmland	Med	Med/High	High	Med/High	High	High
Plateau Farmland	Low/Med	Med	Med/High	Med	Med/High	High
Undulating Farmland on edge of Guisborough	Med/High	High	High	High	High	High
Coastal Marshland and Sandy Shoreline	High	High	High	High	High	High

4.129 The sensitivity study indicates that mainly due to:

- the relatively settled nature of the landscape;
- varied landscape character with relatively geographically small areas of distinct landscape;
- important contribution that less settled upland areas such as the Eston Hills make to the setting and backdrop of views; and
- proximity and contribution landscapes to the south of the Borough make in the setting of views from the National Park…

that large scale wind turbines and solar energy developments could not be accommodated within the Borough without resulting in potentially significant landscape effects.

4.130 The study also indicates that there are a number of more natural/ historic and highly valued LCT such as those along the coastal edge (Coastal Farmland and Coastal Marshland/ Sandy Shoreline); Narrow Wooded River Valleys; and Park/ Estate land that could not accommodate any scale of wind or solar energy development without resulting in significant effects on landscape character.

4.131 The areas with the most potential for wind and solar energy development are the Plateau Farmlands and other lower lying/ plateau areas of less densely populated farmland such as the Eston Hill Lower Slopes, Lowland Farmland, Inland Valley Farmland and Moorland Fringe Farmland. It should be possible to sensitively site small numbers of 'small' typology turbines and 'small' to 'medium' typology solar energy development within these landscapes without resulting in undue significant and geographically widespread effects on landscape character. Within the Plateau Farmlands and due to the character and larger geographical spread of landscape unit P5 it may also be possible to sensitively site 'medium' typology turbines.

RENEWABLE AND LOW CARBON ENERGY STUDY

Figure 4.13a: Sensitivity to Small Scale Solar Development

Council boundary
Landscape area

Sensitivity level

High
High/Moderate
Moderate
Low/Moderate

CF - Coastal Farmland
CM - Coastal Marshland
EHL - Easton Hill Lower Slopes
ESC - Escarpment
IVF - Inland Valley Farmland
LLF - Lowland Farmland
MRF - Moorland Fringe Farmland
PEL - Park / Estate Land
PLF - Plateau Farmland
UFG - Undulating Farmland on edge of Guisborough
UPL - Upland
WDV - Wooded Valley

Council area within the North York Moors National Park (not assessed)

LUC

REDCAR & CLEVELAND BOROUGH COUNCIL

Map Scale @ A3: 1:75,000

Source: Redcar and Cleveland Council, LUC

0 2.5 5 km

N

RENEWABLE AND LOW CARBON ENERGY STUDY

Figure 4.13b: Sensitivity to Medium Scale Solar Development

Council boundary
Landscape area

Sensitivity level

High
High/Moderate
Moderate

CF - Coastal Farmland
CM - Coastal Marshland
EHL - Easton Hill Lower Slopes
ESC - Escarpment
IVF - Inland Valley Farmland
LLF - Lowland Farmland
MRF - Moorland Fringe Farmland
PEL - Park / Estate Land
PLF - Plateau Farmland
UFG - Undulating Farmland on edge of Guisborough
UPL - Upland
WDV - Wooded Valley

Council area within the North York Moors National Park (not assessed)

LUC

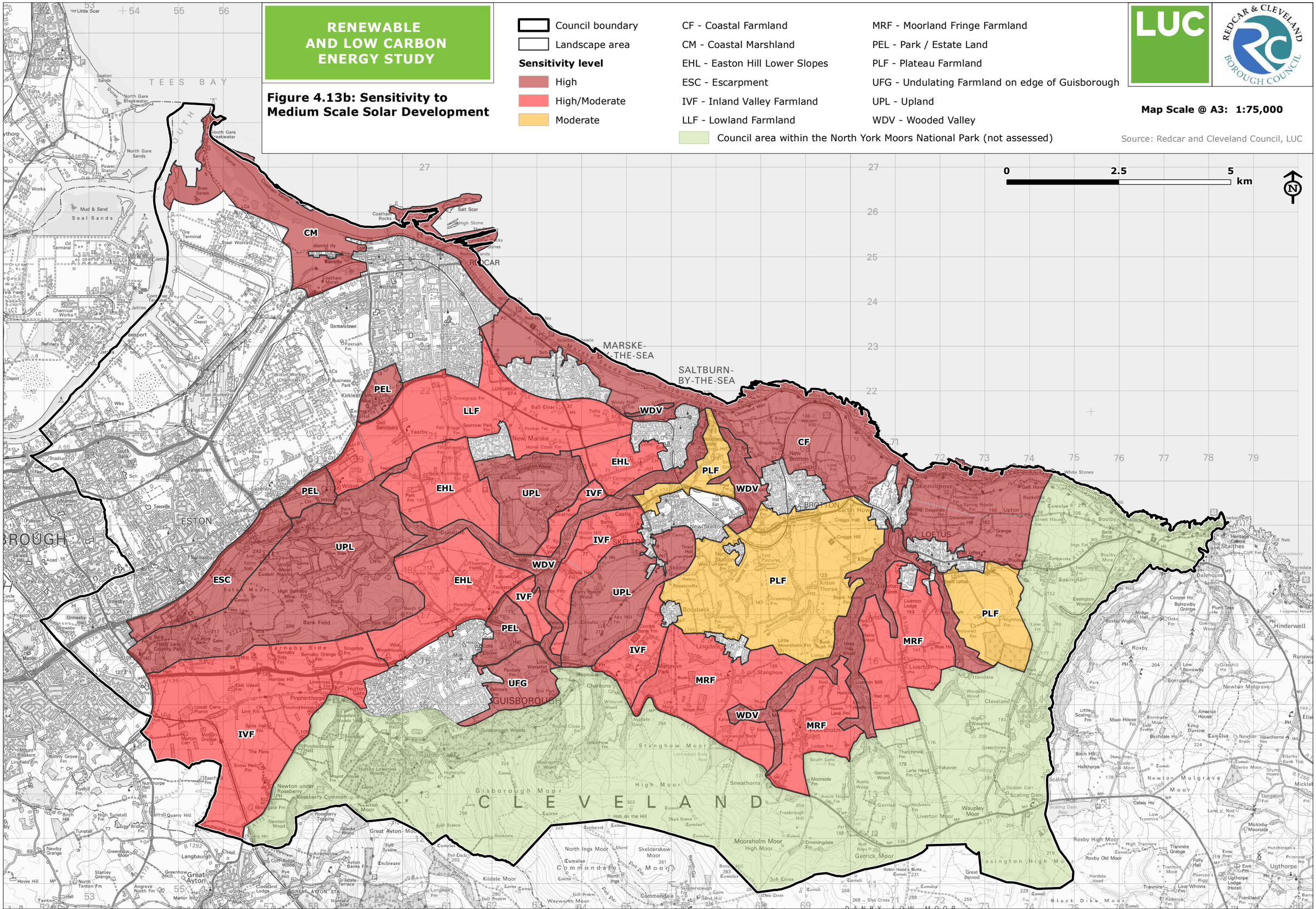
REDCAR & CLEVELAND BOROUGH COUNCIL

Map Scale @ A3: 1:75,000

Source: Redcar and Cleveland Council, LUC

0 2.5 5 km

N



RENEWABLE AND LOW CARBON ENERGY STUDY

Figure 4.13c: Sensitivity to Large Scale Solar Development

Council boundary
Landscape area

Sensitivity level

High
High/Moderate

CF - Coastal Farmland
CM - Coastal Marshland
EHL - Easton Hill Lower Slopes
ESC - Escarpment
IVF - Inland Valley Farmland
LLF - Lowland Farmland
MRF - Moorland Fringe Farmland
PEL - Park / Estate Land
PLF - Plateau Farmland
UFG - Undulating Farmland on edge of Guisborough
UPL - Upland
WDV - Wooded Valley

Council area within the North York Moors National Park (not assessed)

LUC

REDCAR & CLEVELAND BOROUGH COUNCIL

Map Scale @ A3: 1:75,000

Source: Redcar and Cleveland Council, LUC

0 2.5 5 km

N

CM
PEL
LLF
WDV
EHL
PLF
UPL
IVF
ESC
MRF
UFG
CF

REDCAR
MARSKE-BY-THE-SEA
SALTBURN-BY-THE-SEA
GUISBOROUGH
SKELTON
BROTTON
LOFTUS
CLEVELAND

RENEWABLE AND LOW CARBON ENERGY STUDY

Figure 4.14a: Sensitivity to Small Scale Wind Turbine

Council boundary
Landscape area

Sensitivity level

High
High/Moderate
Moderate

CF - Coastal Farmland
CM - Coastal Marshland
EHL - Easton Hill Lower Slopes
ESC - Escarpment
IVF - Inland Valley Farmland
LLF - Lowland Farmland
MRF - Moorland Fringe Farmland
PEL - Park / Estate Land
PLF - Plateau Farmland
UFG - Undulating Farmland on edge of Guisborough
UPL - Upland
WDV - Wooded Valley

Council area within the North York Moors National Park (not assessed)

LUC

REDCAR & CLEVELAND BOROUGH COUNCIL

Map Scale @ A3: 1:75,000

Source: Redcar and Cleveland Council, LUC

0 2.5 5 km

N

CM
PEL
LLF
WDV
EHL
PLF
CF
UPL
IVF
ESC
MRF
UFG

REDCAR
MARSKE-BY-THE-SEA
SALTBURN-BY-THE-SEA
GUISBOROUGH
LOFTUS
CLEVELAND

RENEWABLE AND LOW CARBON ENERGY STUDY

Figure 4.14b: Sensitivity to Medium Scale Wind Turbine

Council boundary

Landscape area

Sensitivity level

High

High/Moderate

CF - Coastal Farmland

CM - Coastal Marshland

EHL - Easton Hill Lower Slopes

ESC - Escarpment

IVF - Inland Valley Farmland

LLF - Lowland Farmland

MRF - Moorland Fringe Farmland

PEL - Park / Estate Land

PLF - Plateau Farmland

UFG - Undulating Farmland on edge of Guisborough

UPL - Upland

WDV - Wooded Valley

Council area within the North York Moors National Park (not assessed)

LUC

REDCAR & CLEVELAND BOROUGH COUNCIL

Map Scale @ A3: 1:75,000

Source: Redcar and Cleveland Council, LUC

0 2.5 5 km

N

CM

PEL

LLF

WDV

EHL

PLF

UPL

IVF

ESC

MRF

UFG

CF

REDCAR

MARSKE-BY-THE-SEA

SALTBURN-BY-THE-SEA

GUISBOROUGH

LOFTUS

CLEVELAND

RENEWABLE AND LOW CARBON ENERGY STUDY

Figure 4.14c: Sensitivity to Large Scale Wind Turbine

Council boundary

Landscape area

Sensitivity level

High

CF - Coastal Farmland
CM - Coastal Marshland
EHL - Easton Hill Lower Slopes
ESC - Escarpment
IVF - Inland Valley Farmland
LLF - Lowland Farmland
MRF - Moorland Fringe Farmland
PEL - Park / Estate Land
PLF - Plateau Farmland
UFG - Undulating Farmland on edge of Guisborough
UPL - Upland
WDV - Wooded Valley

Council area within the North York Moors National Park (not assessed)

LUC

REDCAR & CLEVELAND BOROUGH COUNCIL

Map Scale @ A3: 1:75,000

Source: Redcar and Cleveland Council, LUC

0 2.5 5 km

N

CB:EL EB:lendak_e LUCEDI FIG4_14c_6392_r2_TurbineL_A3L 03/07/2015

5
Review of Planning Policy Approaches

5 Review of Planning Policy Approaches

5.1 This section reviews the various planning policy approaches that could be incorporated within the emerging Local Plan in relation to renewable and low carbon energy. This includes a consideration of:

- Separation distances.
- Criteria base policies.
- Areas of suitability for wind.
- Energy opportunity maps.
- Allocation of sites.
- Community renewables.
- Local development orders

5.2 These are discussed in turn, with a summary provided of the advantages and disadvantages of each policy approach.

Separation distances

5.3 The proximity of large wind turbines to residential properties has become an important consideration in planning decisions for wind energy developments. Several councils in England have recently sought to impose separation distances between proposed turbines and residential properties. However, developers and climate change groups are concerned that this effectively represents an "anti-wind farm policy" that is not based on evidence.

5.4 It is important to note that there are no minimum separation distances required in English planning law or guidance. The Planning Practice Guidance which accompanies the NPPF [17] clearly states that:

> "*Local planning authorities should not rule out otherwise acceptable renewable energy developments through inflexible rules on buffer zones or separation distances. Other than when dealing with set back distances for safety, distance of itself does not necessarily determine whether the impact of a proposal is unacceptable. Distance plays a part, but so does the local context including factors such as topography, the local environment and near-by land uses. This is why it is important to think about in what circumstances proposals are likely to be acceptable and plan on this basis.*"

5.5 A number of local authorities have however sought to introduce separation distances. For example Wiltshire Council amended its Core Strategy Pre-Submission Document to impose minimum separation distances of 1 kilometre for turbines over 25 metres, 1.5 kilometres for turbines over 50 metres, 2 kilometre for turbines over 100 metres and 3 kilometres for wind turbines over 150 metres high. In that case, the Inspector ruled that it was contrary to the Planning Practice Guidance (PPG) and the policy was removed.

5.6 Allerdale Borough Council has however successfully managed to include a separation distance policy (of 800m between wind turbines and residential properties) within their Local Plan. The policy does however include a caveat that:

[17] Available at: http://planningguidance.planningportal.gov.uk/blog/guidance/renewable-and-low-carbon-energy/developing-a-strategy-for-renewable-and-low-carbon-energy/

"*it is recognised that in some cases due to site-specific factors such as orientation of views, landcover, other buildings and topography it may be appropriate to vary this threshold, where it can be demonstrated through evidence that there is no unacceptable impact on residential amenity".*

5.7 Allerdale Borough Council published its Local Plan prior to the publication of the PPG. However, the Inspectors report, which was published after the publication of the PPG (in July 2014), did not refer to the PPG in consideration of this policy and it is not clear why this was so. It would appear that the Inspector was perhaps not aware of the guidance within the PPG as she states – "*There is nothing in prevailing planning policy, or in up to- date guidance to exclude, as a matter of principle, a minimum separation distance".*

5.8 From discussions with planning officers at Allerdale Borough Council, it is understood that the separation distance policy was included at the request of Members, and that since its adoption the caveat included in the policy has been predominantly used in the determination of applications, rather than adherence to the 800m separation distance.

5.9 Reviews of appeal decisions have also shown that large scale wind turbines have been built with a wide range of separation distances and that they do not show any general rule, but rather judgements have been made according to the specifics of the case and local circumstances. This reflects the fact that the size of the turbines, orientation of views, local topography, buildings and vegetation and trees can all have a significant impact on what may be deemed an acceptable distance between a wind farm development and a residential property/ settlement.

5.10 As outlined in paragraph 2.7.6 of the national policy statement for Renewable Energy Infrastructure (EN-3), the two main issues that determine the acceptable separation distance between residential properties and wind energy developments are visual amenity and noise. Shadow flicker can also potentially determine the minimum acceptable separation distance. Commercial-scale wind turbines are large structures and can have an effect on visual amenity from residential properties. All wind turbines also generate sound during their operation. As such, appropriate distances should be maintained between wind turbines and sensitive receptors to protect residential amenity. The key questions however is whether these safeguards are best achieved through the application of blanket Borough wide separation distances or through robust criteria based policies and appropriate guidance. The provision of guidance by the Council on how residential amenity and noise issues should be assessed arguably provides a much more robust framework which can be used to assess potential wind farm applications.

5.11 If a separation distance policy is included with the emerging Local Plan, there is a high risk that this will be rejected by the Inspector as it is contrary to the guidance provided in the PPG. Any such potential policy would also need to be accompanied by a caveat recognising that site specific factors also need to be taken into consideration. With the inclusion of such a caveat, as the experience in Allerdale Borough Council has shown, it is doubtful what purpose the policy is serving. Arguably, only by considering the factors affecting residential amenity and noise on a site by site basis can a fair and transparent decision be reached on what is an acceptable distance between a wind farm development and a residential property.

Strengths:

- Puts the onus on the developer to set out why the distance between the wind turbine(s) and residential property is acceptable (if the proposed development is closer than the required distance). However, an Environmental Impact Assessment (EIA) for a wind energy development should already cover these issues.

Weaknesses:

- Contrary to National Practice Guidance.
- Would require the inclusion of caveat to take account of local circumstances which makes the purpose of the policy questionable.
- Aim of policy could be better served through the provision of guidance on how developers should consider residential amenity and noise issues in their planning applications/ EIAs.

Development of robust criteria based policies

5.12 The NPPF states that local authorities should design their policies to maximise renewable and low carbon energy development while ensuring that adverse impacts are addressed satisfactorily. No guidance is currently provided within the Adopted Core Strategy on the criteria that will be applied in assessing applications for renewable energy projects within the Borough and therefore this is a policy approach which should be considered seriously by the Council.

5.13 The PPG provides helpful guidance for local authorities on how to develop robust criteria based policies in relation to renewable and low carbon energy projects. Key points include:

- The criteria should be expressed positively (i.e. that proposals will be accepted where the impact is or can be made acceptable).
- Should consider the criteria in the National Policy Statements (published by the Department of Energy and Climate Change) as these set out the impacts particular technologies can give rise to and how these should be addressed.
- Cumulative impacts require particular attention, especially the increasing impact that wind turbines and large scale solar farms can have on landscape and local amenity as the number of turbines and solar arrays in an area increases.
- Local topography is an important factor in assessing whether wind turbines and large scale solar farms could have a damaging effect on landscape and recognise that the impact can be as great in predominately flat landscapes as in hilly areas.
- Care should be taken to ensure heritage assets are conserved in a manner appropriate to their significance, including the impact of proposals on views important to their setting.
- Proposals in National Parks and Areas of Outstanding Natural Beauty, and in areas close to them where there could be an adverse impact on the protected area, will need careful consideration.
- Protecting local amenity is an important consideration which should be given proper weight in planning decisions.

5.14 Drawing on the guidance outlined in the PPG, after expressing positive support in principle for renewable and low carbon energy development, the emerging Local Plan should list the issues that will be taken into account in considering specific applications. This should not be a long negative list of constraints but it should set out the range of safeguards that seek to protect the environment – including landscape. Other key considerations may include residential amenity, aviation, heritage etc. It is important that policy does not purely repeat national policy but is relevant to the process of decision-making at the local level and focuses on locally distinctive criteria. In the context of Redcar this could specifically relate to the findings of the landscape sensitivity assessment etc. It may also be appropriate for more detailed issues and guidance to be included in a Supplementary Planning Document (SPD) on renewables.

Strengths:

- Creates greater policy certainty for developers.
- Allows the Council to clearly set out the circumstances in which renewable energy proposals will and will not be permitted.

Weaknesses:

- Maybe perceived to be overly restrictive by certain stakeholders.

Identification of 'suitable areas for wind energy'

5.15 In light of the new ministerial statement and updates to the PPG, when considering applications for wind energy development, local planning authorities should (subject to the transitional arrangement) only grant planning permission if the development site is in an area identified as suitable for wind energy development in a Local or Neighbourhood Plan.

5.16 When identifying suitable areas for wind, as outlined in Chapter 2, the PPG states (paragraph 005 (Renewable and Low Carbon Energy) that are no hard and fast rules about how suitable areas for renewable energy should be identified, but in considering locations, local planning authorities will need to ensure they take into account the requirements of the technology and, critically, the potential impacts on the local environment, including from cumulative impacts. It also makes reference to the Department of Energy and Climate Change's methodology on assessing the capacity for renewable energy development.

5.17 The assessment of technical potential outlined in Chapter 3 is based on a refinement of the DECC methodology and **Figures 3.13, 3.14 and 3.15** identify those area which are technically viable for wind energy – i.e. they are not constrained by infrastructure, environmental or heritage constraints.

5.18 One of the key factors determining the acceptability or otherwise of wind turbines however is their potential impacts on the local landscape – this is due to their height and the movement they introduce into the landscape (i.e. rotating blades). Different landscapes present different opportunities for renewable energy, and landscape sensitivity studies can assist both planners and developers identifying what scale of development may be appropriate in which areas. This approach is endorsed by the PPG which states that *"landscape character areas could form the basis for considering which technologies at which scale may be appropriate in different types of location."*

5.19 These technical maps provided in **Chapter 3** could therefore be overlaid with the findings of the landscape sensitivity assessment in **Chapter 4** to identify the areas which are most 'suitable for wind'. A judgement would need to be made regarding the level of sensitivity that is considered to be acceptable – i.e. this could potentially include all areas of less than moderate sensitivity.

5.20 It is important to note that if areas were identified in Local Plan or Neighbourhood Plan, it would not provide a definitive statement of the suitability of particular location for wind energy. Site specific assessment and design would still be required and all applications would still be assessed on their individual merits. It is also not possible at a strategic level, to take into account cumulative effects. Residential amenity, the setting of heritage assets, telecommunications, ecology and air traffic safety etc., would also need to be carefully considered at a site level.

5.21 All applications would also have to meet second test set out in the PPG i.e. that it can be demonstrated that the planning impacts identified by affected local communities have been fully addressed and therefore the proposal has their backing.

5.22 Redcar and Cleveland may also want to give consideration to including a policy stating where proposals for wind energy development outside of the identified areas will be considered. For example where it can be demonstrated that:

- projects are community-led and supported schemes that meet the identified needs of local communities to offset their energy and heat demand; and
- projects are appropriately scaled and sited to meet the demands of local utilities, commercial facilities, agricultural holdings, etc.

Strengths:

- Enables planners to have informed discussions with developers and communities about potential opportunities for wind– i.e. proactive rather than reactive planning
- Meets NPPF, PPG and Ministerial statement that LPAs should consider identifying suitable areas for renewable and low carbon energy sources and supporting infrastructure.

Weaknesses:

- There may be concern that it will lead to multiple wind energy applications with the areas identified as being suitable for wind. However all applications would still need to be assessed on their own merits and it would not be a replacement for detailed site studies.

Development of 'Energy Opportunities Map'

5.23 Redcar and Cleveland Borough Council could consider identifying suitable areas for other forms of renewable and low carbon energy sources, and supporting infrastructure, where this would help secure the development of such sources.

5.24 An energy opportunities map would provide a spatial summary of the key opportunity areas (in terms of their technical potential) for various forms of renewable energy within the Borough. This can be used to inform development decision and discussions and guide development towards the most suitable areas. As outlined above, if the energy opportunities map is informed by a landscape sensitivity study, it could also be used to guide solar developments away from the most sensitive landscapes.

5.25 It would be important, however, that any locational policies are framed such that they do not preclude projects in other (constrained and currently considered suboptimal) areas; for example if better solar data becomes available or if the factors determining optimal sites for solar PV arrays change.

5.26 With the introduction of neighbourhood planning, the energy opportunities map could also provide a useful tool for communities and other stakeholders to identify the key opportunities for renewables within their area. It is important to note however that it is not possible to identify locations for all types of renewable energy, as many technologies such as building integrated solar, heat pumps, farm-scale AD, and small-scale biomass can be located in nearly all areas.

Strengths:

- Sets a positive policy context encouraging the development of renewables.
- Helps to identify what areas may be more suitable for certain types of renewable energy technology.
- Can act as a useful tool for neighbourhood planning.

Weaknesses:

- Not possible to identify locations for all types of renewable energy technologies.
- It does not provide a definitive statement on the suitability of a certain location for a particular development – each application must be assessed on its own merits. It is not a replacement for detailed site studies.
- May identify potential areas for renewable energy development which are unpopular.

Allocating sites for standalone renewable and low carbon energy schemes

5.27 The local plan could allocate sites specifically for standalone renewable developments. This could provide more strategic direction to the siting of renewables for developers, investors, the local authority, statutory stakeholders and communities. It may be possible to allocate sites which have the greatest potential for sustainable energy and carbon reduction or sites that could potentially be developed for other purposes (e.g. resulting in the sterilisation of potential sites).

5.28 If sites exist that have potential for standalone renewable or low carbon energy use but are constrained in a way that would make them less attractive to commercial developers, then allocating the site is a way of promoting that site for renewable/low carbon development to a wider audience such as land owners or co-operatives.

5.29 The Tees Valley Wind Capacity Study (2004), included the identification of Wind Energy Resource Areas which are suitable for wind energy development and highlighted sites within these areas considered most suitable for wind energy development including indicative layouts. To our knowledge none of these sites have been developed to date.

5.30 We are aware that this option (Option Sd6b) was discounted in the Draft Local Plan (2013) on the grounds that there was insufficient evidence to identify specific sites. Feedback from local planning officers also indicates that it may be difficult within the context of this study to secure the agreement of landowners to allocate sites.

Strengths:

- Provide strategic direction to the siting of renewables.
- Ensure sites with the greatest potential are identified.
- May promote sites to a wider audience such as co-operatives.

Weaknesses:

- Resource intensive to gather necessary evidence to justify allocation.
- Would be desirable to secure agreement of landowner which may be resource intensive.

Encouraging community renewables

5.31 The NPPF states that local authorities should support community-led initiatives for renewable and low carbon energy, including developments being taken forward through neighbourhood planning. Community-led renewable energy projects are increasingly being seen as an attractive option for local communities wishing to contribute to local/national climate change targets and as a way to generate local revenue to directly benefit the community. A number of wind power projects have now been developed by community co-operatives within the UK and there are also notable examples of community solar PV, biomass heating and hydro schemes.

5.32 Such groups can face considerable challenges in the pre-planning stage and there are a number of opportunities for local authorities to provide advice and guidance throughout this stage, including the provision of early advice on planning requirements and lending support to consultation activities within the community.

5.33 The Redcar and Cleveland Draft Local Plan outlined support for community based renewable energy schemes which can help to deliver cheap energy sources to local communities through a local supply network. The Draft Local Plan also supported the potential for waste heat from industrial processes being used to heat homes, businesses and community services.

5.34 The emerging Local Plan could broaden its support for community renewable schemes by stating that the Council would actively support community renewable energy schemes which are led by or meet the needs of local communities. Such developments would normally be conceived by and/or promoted within the community within which the renewable development will be undertaken and have as their primary purpose local term economic, social and/or environmental benefits for the community. The Draft Local Plan for Cornwall has adopted such an approach.

Strengths:

- Provides support to local communities to develop renewables and low carbon energy.
- Generates local revenue to directly benefit the local community.
- Can secure a broad base of local support for renewable energy schemes.

Weaknesses:

- Care may need to be taken not to prescribe the process of community ownership (i.e. shared ownership etc.) as some would argue it is not the role of the planning system to do this.

Preparation of Local Development Orders (LDO)

5.35 LDOs[18] can be made by local planning authorities and give a grant of planning permission to specific types of development within a defined area. They streamline the planning process by removing the need for developers to make a planning application to a local planning authority, and create certainty and save time and money for those involved in the planning process.

5.36 LDOs are very flexible tools, and can be either permanent or time limited, depending on their aim and local circumstances. For example, an LDO in fast-developing areas such as the South Tees may be time limited so that it can be revised and updated in the future. Another key point is that LDOs can be revoked and modified by a local planning authority at any time, however, modifications may require re-consultation.

[18] Planning practice guidance on LDOs can be found at Paragraph 076 – 085 at: http://planningguidance.planningportal.gov.uk/blog/guidance/when-is-permission-required/what-types-of-area-wide-local-planning-permission-are-there/

5.37 It is important to bear in mind that LDOs only grant planning permission, and do not remove the need to comply with other relevant legislation and regulations. Similarly, conditions can be imposed in a LDO, which may be similar to conditions imposed on a normal grant of planning permission. However, a local planning authority should try to avoid imposing excessive numbers of conditions on LDOs, as their purpose is to simplify and speed up local planning.

5.38 There are also restrictions on the use of LDOs, for example, an LDO cannot grant planning permission for development which is likely to have a significant effect on a European Site.

5.39 Some renewable energy developments such as small solar PV already fall within permitted development rights. However it may be possible for example for an LDO to be created allowing the installation, alteration or replacement of small scale renewable energy systems on any industrial, warehouse, business and commercial buildings within a defined area – i.e. the industrial complexes of Wilton International or Teesport etc.

Strengths:

- LDOs can streamline and simplify the planning process for specific development.
- They can create certainty and save time and money for all those involved in the planning process.
- They can be flexible tools and can be revised and updated as circumstances and policy change.

Weaknesses:

- As technologies change, LDOs may need to be revised and updated to reflect any key changes.
- There may not be enough demand for an LDO to warrant its creation.
- Potential for impact of Teesmouth SPA?
- EIA may need to be undertaken by the Local Authority

Appendix 1

Landscape Unit groupings into Landscape Types

Landscape Type (as identified in this sensitivity study)	Landscape Unit(s) (as identified in Redcar and Cleveland LCA 2006
Upland	E1, E7 and E8
Escarpment	E2
Parkland/ Estate Land	E3, G4 and R3
Narrow Wooded Valley	E4, R8, P8, P9 and P10
Eston Hills Lower Slopes	E5, E6 and E9
Lowland Farmland	R1 and R2
Coastal Farmland	R6, R7, P11, P12 and P13
Inland Valley Farmland	P1, G1, G5, E10 (both) and E11
Moorland Fringe Farmland	P2, P3 and P4
Plateau Farmland	P5, P6 and P7
Undulating Farmland on edge of Guisborough	G2 and G3
Coastal Marsh and Sandy Shoreline	R4 and R5

The Redcar and Cleveland Landscape Character Assessment 2006 has split the borough into four broad landscape 'tracts' (Eston Hill, Redcar Flats, East Cleveland Plateau and Guisborough Lowland), within which there are a number of detailed landscape 'units'. For the purposes of this sensitivity study the key landscape 'units' have been grouped into similar landscape 'types' where they display similar characteristics. In some instances, and to avoid an overly complex study, very small landscape 'units' have been subsumed into neighbouring landscape 'units' to form one landscape 'type' (for example coastal marsh/ sandy shoreline and undulating farmland/urban edge).

In some instances all the grouped landscape 'units' within a particular landscape 'type' fall within the same landscape 'tract' and are in close proximity to each other (for example slopes/ valley sides/ hillfoot farmland). In some other instances the landscape 'types' fall within different landscape 'tracts' and can be found in different locations across the Borough (for example parkland/ estate land). The key sensitive features and guidance for development as identified in this study remain relevant to each landscape 'type' wherever it falls. However, in some certain instances development guidance specific to a certain landscape 'unit' has been identified.