

Springwell Solar Farm

Responses to First Written Questions (ExQ1)

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1. Introduction

1.1. Purpose of the Report

- 1.1.1. This report provides the Applicant's responses to the Examining Authority's written questions and requests for information (ExQ1) [\[PD-007\]](#) issued on 13 May 2025 in respect of the proposed Springwell Solar Farm (the Proposed Development).

1.2. Structure

- 1.2.1. Section 1 of this report sets out the purpose and structure of this report and explains the approach taken by the Applicant in preparing responses.
- 1.2.2. Section 2 of this report provides the Applicant's responses to the questions raised of the Applicant by the Examining Authority (ExA), including signposting to other responses and documents where appropriate. Where questions have been raised of other parties, the Applicant has not provided a response to those questions except where it considers that it would be helpful for the ExA for it to do so.

1.3. Approach

- 1.3.1. To minimise duplication, the Applicant has sought to cross-refer where appropriate to responses provided in the **Responses to Relevant Representations [EN010149/APP/8.13]**, or other relevant submissions that have been entered into the Examination.

2. Response to the Examining Authority's First Written Questions

2.1. Overview

2.1.1. The following topics were raised by the ExA in the ExQ1 [\[PD-007\]](#):

- General, Cross-topic and Need;
- Alternatives and Site Selection;
- Air Quality;
- Biodiversity;
- Climate Change;
- Compulsory Acquisition, Temporary Possession and Other Land or Rights Considerations;
- Cultural Heritage;
- Draft Development Consent Order (DCO);
- Land, Soils and Groundwater;
- Landscape and Visual Impact;
- Noise and Vibration;
- Population;
- Traffic and Transport, including Publics Right of Way;
- Water; and
- Other Matters, including Waste.

2.1.2. The tables below provide the Applicant's response to these topics arranged under the headings listed above.

2.2. Responses to First Written Questions (ExQ1)

Table 1-1: General, Cross-topic and Need Questions

ExQ1 Ref	Question	Applicant Response
Q1.1.1	<p>Grid Connection</p> <p>The Proposed Development is reliant upon National Grid constructing a new substation at Navenby to enable a point of connection to be made to the National Electricity Transmission System [APP-0160]. However, the substation does not currently have planning permission.</p> <ul style="list-style-type: none">a) Provide an update on the progress of the planning application for Navenby Substation and its delivery timescales.b) If consent cannot be gained for Navenby Substation or the required new overhead powerlines is there a fall back or would the Proposed Development be undeliverable?	Question directed to National Grid.

Table 1-2: Alternatives and Site Selection Questions

ExQ1 Ref	Question	Applicant Response
Q1.2.1	<p>Alternative Sites Many Interest Parties (IPs) [too many to list] questioned why the Proposed Development was proposed on agricultural fields rather than other types of sites, for example industrial rooftops or brownfield land. National Policy Statement (NPS) EN-3 paragraph 2.10.29 states that where possible, solar development should utilise suitable previously developed land, brownfield land, contaminated land and industrial land.</p> <ul style="list-style-type: none"> a) Explain why it is necessary to site the proposed development on agricultural land. b) The Applicant considered and discounted sites on the NKDC brownfield land register [APP- 0136, Paragraph 3.3.18]. Was a similar exercise undertaken for the wider site selection process across Lincolnshire, Rutland and Cambridgeshire? c) Did any of the other potential sites identified in paragraph 3.2.9 of the Site Selection Report consist, either partly or wholly, of previously developed land, brownfield land, contaminated land or industrial land? 	<p>a) The Planning Statement [EN010149/APP/7.2.2] [AS-018] provides a comprehensive explanation as to why it is necessary to site the Proposed Development on agricultural land, to demonstrate compliance with paragraph 2.10.29 of EN-3 (see 8.8.2-8.8.35 of the Planning Statement and 3.3.17-3.3.27 of the Site Selection Report at Appendix 1 of the Planning Statement). The Site Selection Report explains how the Applicant initially identified the Site. From initial discussions with NESO in November 2020, the Applicant identified capacity on the West Burton to Bicker Fen and Cottam to Eaton Socon OHLs, due to the decommissioning of coal plants at Cottam and West Burton.</p> <p>The Applicant then undertook an exercise to identify suitable sites on these lines to deliver a utility scale solar project, using the site selection principles now enshrined in NPS EN-3. This site search identified five landholdings which all performed sufficiently well against the criteria, except one which did not meet the distance criteria from the OHLs, which the Applicant determined should be no more than 3km. 3km was set as a reasonable distance given that the Applicant also knew from conversations with National Grid that new infrastructure would be necessary to connect any development to the electricity transmission network and a 3km distance sought to strike the right balance between viability, whilst also reducing environmental impact, disruption and delay associated with longer cable routes. The Planning Statement confirms that all five sites had a similar land type, i.e. a mixture of ALC Grade 2 and 3, and therefore there was no obvious preference for a particular site based on ALC search criteria.</p> <p>In terms of context, it is also worthy of note that the Natural England technical advice note predicts that 42% of agricultural land within England is of BMV quality. Within Lincolnshire the proportion rises to 71.2%, thereby increasing the likelihood that higher quality agricultural land will be encountered.</p> <p>Given the 'county scale' BMV soils maps available are the Provisional ALC maps which do not differentiate between Grade 3a and Grade 3b, accurately estimating the BMV land for Lincolnshire is difficult. A review of the available maps and the</p>

ExQ1 Ref	Question	Applicant Response
		<p>other cumulative solar DCOs progressing within Lincolnshire has been undertaken to provide a consistent number against which to assess; some refer to total agricultural land (e.g. Heckington Fen Solar Park) whilst others provide an estimate of BMV from the mapping available (e.g. Beacon Fen Energy Park).</p> <p>The area of BMV agricultural land within Lincolnshire is therefore estimated to be over 410,000ha. The Proposed Development occupies approximately 0.13% of the BMV land in Lincolnshire, of which 0.002% is assessed as being permanently used as green infrastructure. In any event, the proposed use is long-term temporary and reversible.</p> <p>The Proposed Development will result in the temporary use of some higher grade (BMV) agricultural land for solar development, cabling, access tracks and green infrastructure, together with some permanent use for green infrastructure only. The amount of BMV agricultural land used has been minimised through the site selection and design development process as outlined in ES Volume 1, Chapter 4: Reasonable Alternatives Considered [EN010149/APP/6.1] [APP-044]; however, due to the nature of the land quality within the Order Limits and the general classification both locally and at a wider scale in Lincolnshire, it has not been possible to avoid it entirely.</p> <p>Paragraph 2.10.145 of NPS EN-3 advises that the SoS should “<i>take into account the economic and other benefits of the best and most versatile land</i>”. In this context, the Order Limits comprise agricultural landholdings, with a mixture of arable output used for various purposes as set out above, both on BMV and non-BMV land. The proposed extent of the solar development represents a proportion of the wider landholding. In fact, the amount of BMV which would be required to be used for hard infrastructure (231.7ha), represents just over 4% of the wider Blankney Estate’s landholding (5,665ha). No key infrastructure, such as main agricultural buildings, is impacted, and the Proposed Development has been designed to ensure that it does not conflict with the wider business functions. However, there will inevitably be changes in the day-to-day farm management and operation given the extent of the land required for the Proposed Development. The income the landholding would receive from the land rental will</p>

ExQ1 Ref	Question	Applicant Response
		<p>play an important role in securing the ongoing viability of the estate and a form of diversification which will help secure the estate's long-term future.</p> <p>b) The 3km search area, either side of the West Burton to Bicker Fen OHL, runs through the local authority areas of West Lindsey, Bassetlaw, Newark and Sherwood, Lincoln, South Holland and Boston, as well as NKDC. The Applicant considered all potentially suitable brownfield sites within the 3km search area, which is shown on Figure 1 (attached). This included brownfield land outside of NKDC. The Applicant has reviewed the brownfield registers for each of these local authority areas and there are no brownfield sites which are of a sufficient size to meet the minimum size threshold.</p> <p>In addition to the search conducted along the West Burton to Bicker Fen OHL, the Applicant conducted a search for suitable brownfield sites along the Cottam to Eaton Scoton OHL. A 3km search area either side of the Cottam to Eaton Scoton OHL runs through the local authority areas of South Kesteven, Rushcliffe, Melton, Rutland, Peterborough, North Northamptonshire (in the area of East Northamptonshire), Huntingdon, Bedford, Central Bedford, Bassetlaw, West Lindsey, Newark and Sherwood as well as NKDC. The Applicant considered all potentially suitable brownfield sites within the 3km search area, which is shown on Figure 1 (attached). The Applicant has reviewed the brownfield registers for each of these local authority areas and there are no brownfield sites which are of a sufficient size to meet the minimum size threshold.</p> <p>c) None of the other potential sites identified in paragraph 3.2.9 included brownfield land, contaminated land and industrial land. As noted above, they also had similar characteristics in terms of the Defra mapping, which was a mixture of Grade 2 and Grade 3 agricultural land.</p>
Q1.2.2	<p>Alternative Solar Panel Technologies</p> <p>The ES [APP-044, Table 4.1] sets out the reasons for discounting tracker panels and east-west fixed panels. Do either of these different technologies require less land take</p>	<p>Trackers' impact is related to the direct sunlight component of irradiance, rather than the diffused energy component; as the latitude increases, the proportion of diffused energy increases and the impact of trackers decreases. There are many considerations which must be taken into account when selecting the appropriate technology for a specific location. These considerations can significantly impact the relative benefit of one</p>

ExQ1 Ref	Question	Applicant Response
	<p>than the proposed technology through increased efficiency or higher density of installation? If so, how was this factored into the decision to discount these technologies?</p>	<p>technology over another on a case-by-case basis.</p> <p>Aside from the availability of sufficient land to accommodate the panels, tracker panels require suitable field shapes, increased spacing to avoid shading and topography. LVIA, noise, glint and glare and maintenance regimes may also factor into the choice of whether to propose tracker panels at a specific location.</p> <p>Although East-west facing panels may be placed more densely than south facing panels, this can come with the risk of adversely impacting local drainage. At some locations, East-west panels can also experience increased shading, necessitate less optimal row and panel orientation and maintenance regimes may be less suited to existing site access routes.</p> <p>Based on the many considerations, the Applicant determined that fixed south facing PV is most suitable at the proposed location and optimises use of the scheme's contracted grid connection capacity from the land available.</p>
Q1.2.3	<p>Panel Array Efficiency</p> <p>Paragraph 2.10.55 of NPS EN-3 states "The installed generating capacity of a solar farm will decline over time in correlation with the reduction in panel array efficiency. There is a range of sources of degradation that developers need to consider when deciding on a solar panel technology to be used. Applicants may account for this by overplanting solar panel arrays."</p> <p>a) How has the reduction in panel array efficiency been considered in the decision of the solar technology to be used?</p> <p>b) Was overplanting a consideration in relation to alternative site layouts and technologies? If so, provide further</p>	<p>a) Further to the reasons provided at ExQ1.2.2 previously, the Applicant notes that solar panel efficiencies reduce similarly over time, independently of their installed orientation. Panel array efficiency reductions through the life of the Proposed Development have been considered at industry standard values in the lifetime climate change benefit calculations submitted with the application and in the Applicant's assessment that fixed south facing PV is most suitable at the proposed location and optimises use of the scheme's contracted grid connection capacity.</p> <p>b) The Applicant has considered overplanting at the proposed location. As explained in Section 7.6 of the Statement of Need [EN010149/APP/7.1.2] and in particular para 7.6.6, "<i>Overplanting is dependent on sufficient suitable land area to be available to the scheme for installing solar panels. Overplanting is commercially rational on all types of schemes subject to the availability and suitability of a sufficient area of land at the proposed location to accommodate the proposed overplanting</i>". The Planning Statement [EN010149/APP/7.2.2] [AS-018] sets out the reasoning for the Proposed Development, including its size and location. The</p>

ExQ1 Ref	Question	Applicant Response
	details.	Design Approach Document [APP-0137] describes the evolution of the design of the Proposed Development, and the overall reduction of the Order Limits, over the pre-application period to ensure that unacceptable impacts were avoided. The Application Order Limits do not allow for significant overplanting as part of the Proposed Development, however the Applicant will seek to optimise use of the scheme's contracted grid connection capacity at the detailed design stage, including any overplanting as may be achievable within the Order Limits. The other available PV technologies discussed above face similar constraints and therefore similar outcome in terms of the ability to overplant within the available Order Limits

Table 1-3: Air Quality

ExQ1 Ref	Question	Applicant Response
Q1.3.1	<p>Battery Energy Storage System Plume Assessment</p> <p>The Battery Energy Storage System (BESS) Plume Assessment [APP-0152] considers the possible impacts of the BESS Compound on the nearby receptors in an emergency situation; primarily the emergency responders and those in the surrounding area such as workers or local residents.</p> <p>The UK Health Security Agency [RR-429] has raised several concerns with regard to the contents and methodology used in the BESS Plume Assessment. It states <i>'that a plume assessment is completed using methodology such as atmospheric dispersion modelling which allows comparison of predicted concentrations of pollutants (to include PM10 and PM2.5) at the receptor location with</i></p>	Question directed to UK Health Security Agency

ExQ1 Ref	Question	Applicant Response
	<p><i>applicable health-based standards or guidelines values for air.</i></p> <p><i>Where UK standards or guideline values are not available, those from the World Health Organization or other reputable international bodies (EU or OECD) should be used'.</i></p> <p>The Applicant set out at Issue Specific Hearing 1 [EV4-006 and EV4-007] that further information had been provided to the UK Health Security Agency. Confirm whether the additional information has fully address your concerns.</p>	
Q1.3.2	<p>Outline Battery Safety Management Plan</p> <p>The Outline Battery Safety Management Plan (oBSMP) [APP-0147] sets out that an Emergency Response Plan will be provided post-consent, in consultation with Lincolnshire Fire and Rescue Service and other relevant stakeholders.</p> <p>a) Justify why a draft of this cannot be provided now.</p> <p>b) Should the requirement for an Emergency Response Plan be set out in Requirement (R) 7 of the dDCO?</p>	<p>a) Paragraph 5.3.1 of the Outline Battery Safety Management Plan (oBSMP) [EN010149/APP/7.14.2] stipulates: <i>“Prior to commencement of the construction of the BESS, an emergency response plan (ERP) would be prepared by the Applicant in consultation with Lincolnshire FRS and other relevant stakeholders. This would be maintained and reviewed regularly throughout the operating life of the BESS. The plan would be developed in accordance with NFCC guidance and other guidance and best practice in place at the time.”</i> Paragraph 5.3.2 provides an indication of what the ERP would cover, by setting out general emergency response incident protocols which may be adopted.</p> <p>A draft ERP cannot be provided before the detailed design stage because the ERP content will be heavily predicated upon the selected BESS design and final BESS site layout.</p> <p>Paragraph 6.1.1 of the oBSMP [EN010149/APP/7.14.2] outlines key risk assessments which must be conducted based upon the selected BESS system and site layout, ERP content and incident response protocols are heavily informed by these risk assessments.</p> <p>The Applicant has confirmed in the oBSMP [EN010149/APP/7.14.2] that the ERP</p>

ExQ1 Ref	Question	Applicant Response
		<p>will be developed in accordance with NFCC guidance and additional guidance and best practice at the time. It is standard practice for an ERP to be developed post planning consent to facilitate a tailored, effective and safe emergency response at the particular site.</p> <p>b) The Applicant considers that the specific requirement for an ERP is not needed on the face of the dDCO [EN010149/APP/3.1.2] because, together with all matters regarding battery safety management, it is appropriately addressed in the oBSMP [EN010149/APP/7.14.2] which in turn is secured by requirement 7 of the dDCO. Requirement 7(2) provides that the BSMP must be prepared substantially in accordance with the oBSMP.</p> <p>As set out in paragraph 6.1.2 of the oBSMP and for the avoidance of doubt, the requirement for the Applicant to prepare an ERP is mandatory; an ERP must be included in the detailed BSMP covering all phases of development and as informed by assessments during the detailed design phase and in consultation with Lincolnshire FRS and other relevant stakeholders. By including it as a requirement of the oBSMP, this allows greater flexibility as regards to the appropriate content of the ERP at a later stage.</p>
Q1.3.3	<p>Outline Management Plans The Outline Construction Environmental Management Plan (oCEMP) [APP-0140]; Outline Decommissioning Environmental Management Plan (oDEMP) [APP-0146] and the Outline Construction Traffic Management Plan (oCTMP) [APP-0141] all contain measures that seek to mitigate/ minimise effects on air quality. Are you content with the measures set out in these and are they sufficient to adequately mitigate/ minimise air quality effects?</p>	Question directed to North Kesteven District Council.
Q1.3.4	<p>Cumulative Effects The ES [APP-056] includes the consideration</p>	A cumulative air quality and traffic assessment has been undertaken and is presented in Section 16.7 of ES Volume 1, Chapter 16: Cumulative Effects [EN010149/APP/6.1.2] .

ExQ1 Ref	Question	Applicant Response
	<p>of air quality effects, alongside those from the proposed Navenby Substation. Further, the Air Quality Assessment [APP-081, Paragraph 9.1.2.] states: <i>'All permitted developments are expected to agree and follow site-specific CEMP and CTMP that will adequately control dust emissions, construction plant exhaust emissions and road traffic exhaust emissions from construction'</i>. This indicates that a detailed cumulative assessment that considers the total traffic movements for all relevant developments in the area has not been undertaken. Explain fully why a detailed cumulative assessment has not been undertaken and whether the projects cumulatively would exceed the screening criteria.</p>	<p>The assessment considered cumulative traffic generation during the construction, early decommissioning and decommissioning phases, including both Light Duty Vehicles (LDVs) and Heavy Duty Vehicles (HDVs). The predicted vehicle numbers slightly exceeds the Environmental Protection UK and Institute of Air Quality Management (IAQM) 2017 guidance screening criteria on certain roads. However, they do not exceed the Design Manual for Roads and Bridges LA 105 Air Quality screening criteria. Despite these slight exceedances and based on the review of baseline conditions, the annual mean NO₂, PM₁₀ and PM_{2.5} concentrations at the Site are well below the Air Quality Standards. Furthermore, there is a minimal number of high sensitive receptors located close to the affected roads.</p> <p>The traffic associated with both Proposed Development and the relevant cumulative developments would be temporary and limited in duration. Construction and decommissioning traffic will follow agreed haulage routes and are expected to result in minimal additional impacts. Importantly, these projects are not predicted to generate traffic in excess of 500 Annual Average Daily Traffic (AADT) for LDVs or 100 AADT for HDVs on any other roads.</p> <p>Appropriate mitigation measures are secured in the Outline Construction Environmental Management Plan (oCEMP) [EN010149/APP/7.7.2], the Outline Construction Traffic Management Plan (oCTMP) [EN010149/APP/7.8.2] and the appended Travel Plan and the Outline Decommissioning Environmental Management Plan (oDEMP) [EN010149/APP/7.13.2]. The construction and decommissioning phases inter-project cumulative effect is considered to be not significant.</p> <p>The Proposed Development and all of the short-listed developments are not expected to generate traffic exceeding the Environmental Protection UK-IAQM 2017 guidance and Design Manual for Roads and Bridges LA 105 Air Quality screening criteria once operational. Site-specific Outline Operational Environmental Management Plan (oOEMP) [EN010149/APP/7.10.2] will minimise road traffic exhaust emissions to air. Therefore, the cumulative operational phase effect is considered not significant.</p>

Table 1-4: Biodiversity Questions

ExQ1 Ref	Question	Applicant Response
Q1.4.1	<p>Extent of Biodiversity Net Gain Secured</p> <p>The dDCO [APP-012, Requirement 8] secures a minimum of 10% Biodiversity Net Gain (BNG), whereas the BNG Assessment [APP-095] demonstrates 31.66% BNG in respect of habitat units and 20.68% in respect of hedgerow units and 13% for water course units. NKDC [RR-305] note that the Examining Authority assigned ‘great weight’ (positive) in the overall planning balance in relation to EN010123 (Heckington Fen solar park) where a minimum of 65% BNG was committed to by Requirement.</p> <ul style="list-style-type: none"> a) Explain the reason for the difference between the % figure in R8 and the BNG assessment. b) Which of the above figures are relied upon in the assessment of beneficial effects in ES chapter 7 [APP-047] and the wider planning balance within the Planning Statement [AS- 018]? c) What weight should the ExA afford to the delivery of a minimum of 10% BNG if that is all that is secured in R8? d) What is the highest % BNG that the Applicant is willing to commit to within R8 of the dDCO? 	<ul style="list-style-type: none"> a) The Applicant has committed to a minimum 10% net gain in biodiversity, but as indicated in ES Volume 3, Appendix 7.14: Biodiversity Net Gain Assessment [EN010149/APP/6.3.2] the Applicant anticipates being able to deliver significantly more than this: 31.66% BNG in respect of habitat units and 20.68% in respect of hedgerow units and 13% for water course units. The Applicant cannot commit to exact figures as they may change slightly during detailed design. The habitat creation and enhancement proposals as outlined in the Outline Landscape and Ecology Management Plan (oLEMP) [EN010149/APP/7.9.2] indicate how the BNG uplift would be delivered. b) The Applicant’s commitment to deliver a significant gain in biodiversity can be relied on. The assessment in ES Volume 1, Chapter 7: Biodiversity [EN010149/APP/6.1.2] and ES Volume 3, Appendix 7.14: Biodiversity Net Gain Assessment [EN010149/APP/6.3.2] has relied upon a package of mitigation measures plus enhancement measures underneath solar PV modules to provide beneficial effects. When combined these mitigation and enhancement measures will deliver the uplift in the biodiversity net gain as indicated in the ES Volume 1, Chapter 7: Biodiversity [EN010149/APP/6.1.2] and ES Volume 3, Appendix 7.14: Biodiversity Net Gain Assessment [EN010149/APP/6.3.2]. The planning balance, as outlined in Section 9 of the Planning Statement [EN010149/APP/7.2.2] [AS-018] and paragraph 9.1.19 set out the additional benefits that will be delivered by the Proposed Development should consent be granted. This includes the delivery of ecological enhancement measures that will result in a minimum of 10% in Biodiversity Net Gain which contributes positive weight to the planning balance. The BNG figures (31.66% BNG in respect of habitat units and 20.68% in respect of hedgerow units and 13% for water course units) as outlined in ES Volume 3, Appendix 7.14: Biodiversity Net Gain Assessment [EN010149/APP/6.3.2] can be broadly relied upon but may be subject to minor change at detailed design. c) Overarching National Policy Statement for Energy (NPS EN-1) (2023) states that the ‘Secretary of State should give appropriate weight to environmental and

ExQ1 Ref	Question	Applicant Response
		<p>biodiversity net gain, although any weight given to gains provided to meet a legal requirement (for example under the Environment Act 2021) is likely to be limited'. The mandatory requirement for 10% BNG in the Environment Act 2021 does not yet apply to NSIPs like the Proposed Development, however, although not mandatory the Applicant is committing to delivering substantially above this minimum level of BNG so positive weight can be given to this commitment. The ExA and SoS can have confidence and therefore place weight on the fact that we'll deliver BNG well in excess of the 10% minimum and in the region of what is shown in the BNG assessment. The reason for this is that the BNG assessment, whilst an indication of what we expect to achieve in terms of BNG, is based on the proposed planting included in the oLEMP. The Applicant is required to implement an approved LEMP which is based on the oLEMP, and in this way we are required to deliver the planting in the oLEMP, upon which the BNG assessment is based. Significant positive weight can therefore be attributed to the anticipated delivery of BNG.</p> <p>d) For reasons stated above, the highest % BNG the Applicant will commit to in Requirement 8 is 10% but we anticipate being able to deliver significantly more than this as indicated above. .</p>
Q1.4.2	<p>Biodiversity Net Gain Trading Rules</p> <p>LCC [RR-233] raised concern that the trading rules set out in the Statutory BNG metric user guide are not currently being met in relation to the loss of native hedgerow with trees – associated with bank or ditch' habitat. The BNG Assessment [APP-095] explains that this could be overcome by creating some of the proposed new hedgerows on a bank or creating a ditch along an existing hedgerow. Will the Green Infrastructure Parameters and the BNG Assessment be updated to ensure that the proposals do meet the trading rules?</p>	<p>The 'trading rules' for hedgerows were not met in the original submission, as per the Statutory Metric guidelines, because some of the hedgerow sections to be removed are associated with a bank or ditch adding to their distinctiveness score and the amount of new hedgerows to be created with ditches and/ or banks was not specified within the BNG calculations in ES Volume 3, Appendix 7.14: Biodiversity Net Gain Assessment [EN010149/APP/6.3.2].</p> <p>For the baseline, the total length of hedgerows within the Order Limits of high distinctiveness is c. 1.66km. To satisfy the trading rules, the final green infrastructure will deliver as a minimum:</p> <ul style="list-style-type: none"> - Create 0.03km (30m) of native hedgerow with trees - associated with a bank or ditch (moderate condition). - Enhance 0.02km (20m) of existing native hedgerows with trees - associated with a bank or ditch from moderate to good condition.

ExQ1 Ref	Question	Applicant Response
		<p>The oLEMP [EN010149/APP/7.9.2] and the final detailed LEMP has been updated to document and thereby secure commitment to ensure that the above length of hedgerow is delivered, and the trading rules are met. The final BNG calculations have also been updated to reflect the change. With this change the trading rules are now met.</p>
Q1.4.3	<p>Monitoring of Biodiversity Net Gain, Ecology and Landscape Mitigation</p> <p>NKDC [RR-305] state that it will seek to ensure that an appropriate fee is set for monitoring BNG, ecology and landscape mitigation works in respect of Springwell solar farm as the responsibility for this duty is likely to fall upon the Council. Will this be included in a s106 agreement. If not, how will such works be monitored?</p>	<p>The Applicant has a legal obligation to deliver and comply with the DCO requirements. Section 7.2 of the oLEMP [EN010149/APP/7.9.2] outlines a clear monitoring strategy to not only monitor the efficacy of mitigation but also that habitat condition is being met to deliver the minimum 10% BNG uplift that the Applicant has committed to, and if additional BNG uplift over and above 10% is being achieved as indicated above in Q1.4.2.</p> <p>The Applicant would agree the final monitoring strategy with both LCC and NKDC and to ensure the results of the monitoring undertaken by the Applicant feed into Ecological Steering Group meetings and actions. Engagement is ongoing with LCC and NKDC to agree the securing mechanism for the Ecological Steering Group.</p>
Q1.4.4	<p>Green Infrastructure Parameters</p> <p>Should the Green Infrastructure Parameter Plans [APP-060, Figure 3.3A-F] and the Green Infrastructure BNG Parameters [APP-095, Figure 2, Appendix A] be included in Schedule 13 of the dDCO? If not, explain how the green infrastructure parameters would be secured?</p>	<p>ES Volume 2, Figures 3.3A – 3.3F: Green Infrastructure Parameters [EN010149/APP/6.2.2] and the Green Infrastructure BNG Parameters in ES Volume 3, Appendix 7.14: Biodiversity Net Gain Assessment [EN010149/APP/6.3.2] illustrate the same information as shown on the Green Infrastructure Plans presented in Appendix 1 of the oLEMP [EN010149/APP/7.9.2]</p> <p>Requirement 8 of the draft DCO[EN010149/APP/3.1.2] requires that the landscape and ecology management plan must be substantially in accordance with the oLEMP [EN010149/APP/7.9.2] and for that part of the authorised development to which it relates must include details of how the plan proposals will contribute to the achievement of a minimum 10% biodiversity net gain in habitat units and hedgerow units for all of the authorised development, during the operation of the authorised development and the metric that has been used to calculate the biodiversity net gain.</p> <p>The Green Infrastructure Plans are therefore secured through the oLEMP [EN010149/APP/7.9.2] and the Applicant therefore does not feel it is necessary to also include ES Volume 2, Figures 3.3A – 3.3F: Green Infrastructure Parameters [EN010149/APP/6.2.2] [APP-060]</p>

ExQ1 Ref	Question	Applicant Response
Q1.4.5	<p>Monitoring of Bat Species</p> <p>The Applicant states in the ES [APP-047, Paragraph 7.11.1] that the effect of bats' use of solar farms is uncertain due to lack of research and therefore it is proposing to monitor bat species activity for the first 10 yrs post construction.</p> <ul style="list-style-type: none"> a) How are any actions determined necessary by the monitoring secured or controlled? b) Is there monitoring and learning from other solar developments in the wider area that can be undertaken to inform action sooner? 	<p>a) Monitoring would be secured through the oLEMP [EN010149/APP/7.9.2]. Monitoring of bat activity across the site is proposed to be undertaken at various stages throughout the first 10-year period i.e. proposed to be carried out repeatedly in years 1, 3, 5 and 10 (in spring, summer and autumn). The monitoring methods would be in-line with the baseline bat activity surveys so the results could be compared to determine if there are any significant differences in bat activity during the operation phase as opposed to the baseline. Subject to the results of the monitoring programme further investigation, monitoring and appropriate remedial measures would be undertaken.</p> <p>b) As part of the Longfield Solar Farm a detailed review of the available literature with regards potential impacts of solar development on bats was undertaken. This information has helped inform the potential impacts that solar can have on species, in particular bats, and has influenced the scheme design and mitigation at Springwell to minimise potential impacts, for example the retention of woodland habitat and the extensive planting of new hedgerows to facilitate bat foraging.</p> <p>There is limited research with robust empirical long-term data available on the impact of solar farms on bats. Some recent studies (e.g. Tinsley <i>et al</i> 2023) found that different bat species were affected differently by solar farms and the results varied depending on land use types on different sites. Published research by Szabadi <i>et al.</i> (2023) in Hungary found that bat species detected at solar farms also frequently occur in arable land and settlement areas, such as noctule and <i>Pipistrellus</i> species. This suggests that bats adapted to anthropogenic environments (such as arable land) will exploit solar farms. Much of the research shows that effects of solar farms on bats appears to vary depending on bat species, land use, land management and possibly other variables depending on different sites. As there are insufficient published studies on the effects of solar farms on bats, there is therefore insufficient empirical research data to inform specific guidance or actions. Many of the recommendations available in published guidance for enhancing biodiversity on solar farms are based on well-established general principles of habitat creation and restoration, rather than on evidence derived from in-situ studies. The proposals for monitoring of bats (and birds) over at least a 10-year period at Springwell would provide further evidence to support</p>

ExQ1 Ref	Question	Applicant Response
		research on the impact of solar farms on bats.
Q1.4.6	<p>Use of Large-Scale Solar Farms by Birds and Insects</p> <p>Numerous IPs [too many to list] have raised concerns regarding various species mistaking areas of solar panels for large expanses of water. For example, Metheringham Parish Council [RR-264] raised concern that the panels can kill insects and other small creatures as a result of the solar radiation and that migrating wading birds have been known to crash into the panels. An IP [RR-417] also raised concern that populations of bats, owls, red kites and other raptors would be deterred from using the land to hunt, that aquatic insects would lay their eggs on the panels rather than in the local watercourses.</p> <ul style="list-style-type: none"> a) Provide a response to the specific concerns raised by IPs. b) What research and evidence is available on the use of large-scale solar farms by the species that are present within the Order limits? c) Provide extracts of relevant evidence for consideration in the examination. 	<p>To answer part C first as indicated above in Q1.4.5 a literature review was undertaken as part of the Longfield Solar Farm. A large number of the papers reviewed are not in the public domain being available only for academic institutions or students, therefore we have not provided extracts, but a summary is given below in the answer to the question.</p> <p>The full assessment of the impacts on habitats and wildlife, including bats, birds and invertebrates is detailed in ES Volume 1, Chapter 7: Biodiversity [EN10149/APP/6.1.2] which outlines the survey work and assessment carried out. With embedded design and mitigation, as discussed in Chapter 7, no significant adverse effects are considered likely.</p> <p>A response to specific concerns, the research and evidence available are detailed below, whilst impacts on bats are summarised above in the response to Q1.4.5.</p> <p>With regards to aquatic invertebrates, the limited research available suggests there may be an attraction from Solar PV modules to aquatic invertebrates due to the reflection of polarised light. However modern Solar PV modules are designed to absorb as much light as possible and are typically coated with an anti-reflective film to help reduce this type of effect. For the Proposed Development there are no extensive aquatic habitats likely to support a diverse assemblage of aquatic insects within or adjacent to the site and no designated sites identified for their aquatic invertebrates located nearby – as detailed in ES Volume 1, Chapter 7: Biodiversity [EN10149/APP/6.1.2] which outlines the survey work and assessment carried out. In addition, 6m buffers would be maintained from existing watercourses and an appropriate buffer from the ponds present to help reduce any such effect, as secured in the Design Commitments [EN10149/APP/7.4] [APP-0138]. Also, as stated above, modern Solar PV modules are now designed to absorb as much light as possible and are typically coated with an anti-reflective film to reduce polarized reflected light that may affect insects and other animals such as birds.</p> <p>Collision with infrastructure on solar farms has been reported as a cause of mortality in birds, including endangered species (Penniman & Duffy, 2021), although the frequency of such incidents varies amongst sites (e.g. Kagan et al., 2014; Visser et al., 2019; Kosciuth et al., 2020), with one UK study finding no evidence of bird mortalities from solar panels</p>

ExQ1 Ref	Question	Applicant Response
		<p>(Feltwell, 2013).</p> <p>The majority of reports of bird mortality on solar farms suggest that collisions with infrastructure such as transmission lines may be more important than direct collisions with solar panels (e.g. Harrison et al., 2016; Kagan et al., 2014). Walston et al. (2016) concluded that passerine species were most at risk but using empirical data on bird collisions from a range of studies they estimated that overall mortality related to solar installations was likely to be negligible compared to other anthropogenic causes of death (e.g. wind turbines, power plants, other infrastructure and collision with road traffic).</p> <p>An evidence review of the impact of solar farms on birds in the UK suggests that the collision risk presented by Solar PV Modules to birds is low (Hanson et al 2017).</p> <p>The greatest impact on birds is considered likely to be through land use change and potential habitat loss for breeding and foraging, as shown in the wider land use change research (Wilson et al. 2009, Rigal et al. 2023). However, a recent study (Copping et al, February 2025) found that solar farms in the south of England can host up to three times as many birds as arable land, with appropriate management.</p> <p>Some concern has expressed that birds might collide with solar panels if they were to mistake them for waterbodies, a phenomenon sometimes referred to as the 'lake effect'</p> <p>For the Proposed Development, there are no significant waterbodies on or adjacent to the site. Wintering and breeding bird surveys carried out within the Order Limits and surrounding area did not find significant numbers of waders or wildfowl birds using the site, nor does the site sit on a migratory route or flight path between wetland sites. Therefore, no significant risk to waterbirds is anticipated. Details of breeding and wintering bird surveys undertaken are provided in ES Volume 3, Appendix 7.2: Breeding Bird Survey [EN10149/APP/6.3] [APP-083] and ES Volume 3, Appendix 7.3: Wintering Bird Survey [EN10149/APP/6.3] [APP-084].</p> <p>Monitoring is proposed of the bird populations within the Order Limits throughout the operational phase in response to the Proposed Development and biodiversity enhancement provided, which will add to the evidence research base.</p>

ExQ1 Ref	Question	Applicant Response
		<p>In the assessment of impacts in ES Volume 1, Chapter 7: Biodiversity [EN10149/APP/6.1.2] it is acknowledged that the farmland breeding bird assemblage within the Order Limits is of high conservation importance and supports a number of species such as skylark that have undergone recent population declines. Specific mitigation measures have been outlined including over 100ha of grassland creation, without solar PV modules and with large unbroken sightlines on at least one side to maintain suitable ground nesting bird breeding habitat with continued safety from predators. In addition, the provision of a source of winter seed and enhancement of habitats underneath the panels will increase insect biomass locally which is the food source required during the breeding season.</p> <p>The oLEMP [EN10149/APP/7.9.2] sets out how the mitigation described above habitats will be created and managed during the construction and operation of the proposed scheme delivering benefits for nesting birds.</p>
<p>Q1.4.7</p>	<p>Management of Grassland Butterfly Conservation Lincolnshire Branch [RR-047] have provided some detailed comments on the management of the different grassland types within the order limits.</p> <ul style="list-style-type: none"> a) Provide a response to the recommendations made by Butterfly Conservation Lincolnshire Branch. b) What guidance is available on the specification and management of grassland within solar farms? 	<ul style="list-style-type: none"> a) Butterfly Conservation are concerned about the proposed timing of grassland cutting which covers most of the period when butterflies and moths would be active as adults or caterpillars. Butterfly conservation recommend management aims to provide a mix of short, medium and longer habitats, which could be achieved by planning for rotational grazing or cutting regimes, of different areas of grassland over a three-year cycle. <p>Table A3.2 within the management schedule of the oLEMP [EN10149/APP/7.9.2] sets out the proposed management of grassland habitats. Rotational grazing or cutting over a three-year cycle is possible for the 100ha of created calcareous and neutral grassland. Operational constraints on grassland enhancement under solar PV modules may require a more regular cutting or grazing regime.</p> <p>Table A3.2 within the management schedule of the outline Landscape and Ecology Management Plan (oLEMP) [EN10149/APP/7.9.2] has been amended for the 100 ha of grassland habitat creation so that if grass cutting is the management regime, 1/4 will be left uncut each year on rotation in late summer. If grazing is the chosen management option, then the prescription will be amended</p>

ExQ1 Ref	Question	Applicant Response
		<p>to graze late summer ensuring that at least 20% of the sward is long grass and to move stock regularly to facilitate this.</p> <p>This change has been made within the outline LEMPs and would also be made within the detailed LEMP once produced. The management proposals for grassland enhancement underneath solar PV modules will remain the same.</p> <p>Butterfly Conservation support the plan for three yearly rotational cycle for the tussocky grasslands. However, as for the other grassland types created, they have concerns about the timing of the cuts and recommend that cuts should be between November and early March.</p> <p>The oLEMP [EN10149/APP/7.9.2] sets out the proposed management of margin grassland habitats. Table A3.2 within the management schedule of the oLEMP [EN10149/APP/7.9.2] will be amended to cutting in Spring (March to April) and a rotational cutting regime will be implemented so that 1/3 or coarse grass margins will not be cut each year on rotation, cutting will be in the spring (March or April) to avoid rutting and damage during wet winter weather. This change will be made within both the outline and the detailed LEMP(s) will confirm the management of margin grassland habitats.</p> <p>b) Although there are several published recommendations on creation of biodiverse habitats on solar farms (e.g. BRE, 2014; Fox & Bennett, 2019; Lammerant et al., 2020; Miller et al., 2013; Parker & Monkhouse, 2022; Solar Energy UK, 2022; Steinberger, 2021), there appear to be few studies that present empirical evidence for the relative effectiveness of different habitat management regimes. Hence, many of the recommendations available in published guidance are based on well-established general ecological principles of habitat creation and restoration, rather than on evidence derived from in-situ studies.</p> <p>A study in the UK showed that the abundance of butterflies and bumblebees was greater on a sample of 11 solar farms compared to adjacent undeveloped farmland, and on solar farms that been managed in the interests of wildlife the diversity of these species was also higher (Montag et al., 2016). In another UK</p>

ExQ1 Ref	Question	Applicant Response
		<p>study the density of bumblebees and their nests was enhanced on solar farms that were entirely managed as wildflower meadows compared to those with only wildflower margins (Blaydes et al., 2022).</p> <p>Several articles provide recommendations to improve habitats on solar farms for the benefit of insects (e.g. BRE, 2014; Fox & Bennett, 2019), but in many cases supporting empirical evidence is not provided. Notable exceptions are reviews by Dolezal et al. (2021) and Blaydes et al. (2021). The latter included a assessment of the effectiveness of management interventions proposed to benefit pollinators, which led to ten evidence-based recommendations on improving solar farm management for pollinators. Recommendations arising from these two reviews include providing a diverse mix of flowering plants, ensuring season-long access to foraging resources, creating habitats for nest sites and minimising the use of agrochemicals.</p> <p>Another study found that solar farms managed as wildflower meadows have been shown to have more foraging bumblebees in the immediately surrounding area than those comprised of turf (Blaydes et al., 2022).</p> <p>The habitat creation and enhancement measures outlined in the oLEMP [EN10149/APP/7.9.2] have been designed to not only mitigate for the direct effects of the scheme but also to increase the abundance of invertebrates in general and deliver significant biodiversity net gain.</p>
Q1.4.8	<p>Culverting of Watercourses</p> <p>Under the heading of 'Biodiversity, ecological, geological conservation and water management' NPS EN-3 states in paragraph 2.10.87 that culverting existing watercourses/ drainage ditches should be avoided.</p> <p>The ES [APP-047] states that six sections of ditches which will need culverting for internal access road bridges or are in close proximity to</p>	<p>Internal access tracks within the Site will follow the alignment of existing agricultural tracks and, following further review, there is now no requirement for new drainage ditch crossings. There are several existing ditch crossings across the Site which are proposed to be used to facilitate access across the Proposed Development. A further review of ditch crossings has been undertaken and this is detailed below within Table 1 and should be read in conjunction with ES Volume 3, Figure 3.15: Indicative Watercourse and Ditch Crossings [EN010149/APP/6.2.2] [APP-060]. These commitments are secured within the oCEMP [EN010149/APP/7.7.2] which has been updated at Deadline 1.</p> <p>Crossing Point</p>

ExQ1 Ref	Question	Applicant Response
	proposed works. The Riparian Mammal and Aquatic Habitat Assessment Survey [APP-088] concluded that use of the surveyed ditches as temporary refuge and foraging habitat cannot be entirely discounted. In accordance with paragraph 2.10.88 of NPS EN-3, demonstrate that no reasonable alternatives exist to the culverting of these ditches?	<p>1 (located in the south west corner of Field By28)</p> <p>There is an existing culvert and farm track in this location which would be used to facilitate access. The ditch crossings would have a condition survey completed prior to any works taking place. Where there are assets, e.g. existing culverts, any required repairs, remediation or replacement would take place in accordance with the oCEMP [EN010149/APP/7.7.2] , which has been amended at Deadline 1.</p> <p>2 (located in the north west corner of Field Lf02)</p> <p>There is an existing culvert and farm track in this location which would be used to facilitate access. The ditch crossings would have a condition survey completed prior to any works taking place. Where there are assets, e.g. existing culverts, any required repairs, remediation or replacement would take place in accordance with the oCEMP [EN010149/APP/7.7.2], which has been amended at Deadline 1.</p> <p>3a and 3b (located in the northern corner of Field Bk10)</p> <p>There is an existing culvert and farm track in this location which would be used to facilitate access. The ditch crossings would have a condition survey completed prior to any works taking place. Where there are assets, e.g. existing culverts, any required repairs, remediation or replacement</p>

ExQ1 Ref	Question	Applicant Response
		would take place in accordance with the oCEMP [EN010149/APP/7.7.2] , which has been amended at Deadline 1.
		4 (located in the southern corner of Field Bk04) There is a reasonable alternative for access to this location and therefore, this ditch will not be culverted. This is secured within the oCEMP [EN010149/APP/7.7.2] , which has been amended at Deadline 1.
Q1.4.9	<p>Protected Species Licences</p> <p>The ES states [APP-047, Paragraphs 7.8.11 and 7.9.24] that any loss of bat roosts would be mitigated and compensated under a European Protected Species licence from Natural England (NE). NE [RR-291] state that it is unable to provide a position on the likelihood of a licence being granted without having reviewed a draft licence application.</p> <p>Is it proposed that a draft licence application will be made to NE within the timescales of the examination?</p>	<p>On the basis of surveys carried out and the scheme design as discussed below, it is considered low risk that a European Protected species licence would be required, bats being the only European protected species for which one might be required, as justified below.</p> <p>Surveys of woodlands, adjacent to where hedgerows and trees will be directly affected, indicates that the woodlands are not suitable for significant bat roosts (as trees lack suitable features). Also, the bat activity data does not indicate any significant bat roosts near to where hedgerows are to be removed for highways access as no bat calls were recorded shortly after their anticipated emergence times.</p> <p>Also, the scheme design has avoided removal of trees identified with significant potential to support roosting bats, based on the ground level roost assessments undertaken. Any trees that do require removal are only likely to have up to low potential to support roosting bats – these would be subject to survey (either climbing or emergence) before felling and in the unlikely event that bats are found a licence would be applied for and mitigation agreed with Natural England. As the trees are considered of negligible or low bat roosting potential no significant roosts are anticipated to be affected. It is important to note that there is no benefit in doing climbing or emergence surveys now of trees with low bat roost potential as bat usage of tree roosts is transitory, i.e. they often switch roosts on a daily basis, and we would therefore have to re-do the survey work immediately before construction.</p>

ExQ1 Ref	Question	Applicant Response
Q1.4.10	<p>Woodland Plots</p> <p>The Forestry Commission [RR-131] advise that it would ideally like to see woodland creation carried out in 5 hectare (ha) blocks or that connecting planting with existing woodlands, should create blocks of at least 5ha.</p> <ol style="list-style-type: none"> Confirm the areas of the proposed individual woodland blocks. Can the Forestry Commission's advice be accommodated? If not, provide justification. 	<p>It is therefore considered low risk that a bat roost will be directly affected, especially any significant bat roosts (such as a large maternity roost) and we are therefore not proposing to draft a ghost bat licence application.</p> <p>The Forestry Commission's advice can be accommodated, in summary the Applicant can confirm that the majority (13.4ha) of new tree planting within the Order Limits comprises 5ha blocks of woodland (or larger). In some instances, smaller blocks (2.6ha) are required to provide specific mitigation where it is not considered appropriate to create larger blocks on the balance with other design considerations. The details are set out below.</p> <ol style="list-style-type: none"> The design of the Proposed Development includes approximately 16ha of new tree belt planting at strategic locations within the Order Limits to help soften and screen built development and integrate it to the existing landscape, whilst also providing habitat for biodiversity. <p>The location of tree belt planting is shown on the Green Infrastructure Parameters presented in Appendix 1 of the oLEMP [EN01049/APP/7.9.2] [APP-0142] and has been developed in accordance with the Project Principles set out in the Design Approach Document [EN010149/APP/7.3.2]. All tree belts have a width of 20m to provide sufficient visual screening during winter months and to provide resilient habitat for biodiversity. Where possible, and in accordance with Forestry Commission advice, tree belts are aligned to existing blocks of woodland to extend existing habitats and improve connectivity.</p> <p>The two main areas of tree belt planting proposed within the Order Limits are located in Springwell West. They comprise a group of linear tree belts connecting to Gorse Hill Covert in the north and a separate group connecting to Bloxholm Woods, Long Plantation and Warren Pit Plantation in the south. They are described as follows:</p> <ul style="list-style-type: none"> To the north of Springwell West, a group of connected tree belts are proposed to the west, south and east of the proposed Springwell Substation and BESS compound in Field Tb2 and along the western boundary of the Order Limits. These tree belts would connect to Gorse Hill Covert. The total

ExQ1 Ref	Question	Applicant Response
		<p>area of this group of tree belts equates to approximately 6.4ha. Taking account of Gorse Hill Covert (which is approximately 9.5ha), the new planting would create an overall block of woodland of approximately 15.9ha.</p> <ul style="list-style-type: none"> • To the south of Springwell West, a group of connected belts are proposed to the south of Long Plantation, between Bloxholm Woods and Warren Pit Plantation and along Heath Road (B1191) towards Slate House Farm. The total area of this group of tree belts equates to approximately 7ha. Taking account of Long Plantation, Bloxholm Woods and Warren Pit Plantation (which have a combined area of approximately 40ha), the new planting would create an overall block of woodland of approximately 47ha. <p>Three smaller blocks of tree belt planting are proposed in Springwell West and Springwell East. These areas of planting account for approximately 2.6ha of the 16ha of new tree belts proposed within the Order Limits. They are described as follows:</p> <ul style="list-style-type: none"> • A new tree belt to the south of Ashby Lodge (approximately 0.6ha) • A new tree belt to the north of Field Bk02 and Bk04 (approximately 0.4ha) • A new tree belt to the north of Sheffield House (approximately 1.6ha) <p>b) The two main areas of tree belt planting in Springwell West (described above) accord with to the Forestry Commission's advice to create woodland blocks of at least 5ha. Both groups are over 5ha and will form larger blocks of woodland when taking into account the existing connected woodlands. These areas of new planting account for approximately 13.4ha of the 16ha of new tree belts proposed within the Order Limits.</p> <p>The three smaller blocks of tree belt planting proposed in Springwell West and East (described above) are designed to connect with existing blocks of woodland, but do not create blocks of 5ha in their own right or when taking account of the existing connected woodland. In these instances, the primary purpose of the planting is to provide visual mitigation of the Proposed Development at specific locations e.g. to provide visual screening of the Solar PV development from a particular property. The creation of larger blocks is not considered appropriate at</p>

ExQ1 Ref	Question	Applicant Response
		these locations as it is not required to mitigate the Proposed Development and would result in increased permanent loss of agricultural land (including BMV).
Q1.4.11	<p>Maintenance of Hedgerow</p> <p>Is there any conflict between the maintenance requirements of hedgerows for visual screening purposes and for ecological purposes? And how would this be managed?</p>	<p>There will be no conflict from managing hedgerows in terms of both their landscape and biodiversity functions. Paragraph 6.1.29 of the oLEMP [EN10149/APP/7.9.2] prescribes that the exiting hedgerows would be gapped up / filled in with new planting and would be allowed to grow out more fully and managed for visual screening and biodiversity benefits for the duration of the Proposed Development.</p> <p>ES Volume 1: Chapter 10: Landscape and Visual [EN010149/APP/6.1] [APP-050] assumes that the hedgerows would be allowed to grow out to a height of 3.5m, which exceeds the minimum height required to pass the BNG criteria for scoring hedgerow, whilst delivering the required landscape benefits</p>
Q1.4.12	<p>Birdstrike</p> <p>The Ministry of Defence (MOD) [RR-278] raised concern that the proposed attenuation basin shown in field Tb2 on the Illustrative Layout Plans [AS-006] has the potential to attract and support bird species hazardous to air traffic. It considers a requirement necessary to ensure that proposed waterbodies or wetland features would not introduce a birdstrike hazard to aircraft.</p> <ul style="list-style-type: none"> c) Provide further information on the proposed attenuation basin and whether it has been designed and managed to support bird species. d) Provide comment on the MOD's proposed requirement. 	<p>c) Drainage attenuation features are required for the Springwell Substation in Field Tb2, with smaller features required elsewhere for each satellite compound as detailed within the Outline Drainage Strategy [EN010149/APP/7.16.3] [APP-0149].</p> <p>The Outline Drainage Strategy (Paragraph 3.7.2) also lists the potential options for water storage collection and confirms that storage features and volumes noted for the respective elements are subject to change at later detailed design stages. The Substation / BESS attenuation feature in Tb2 will be designed as a dry (grassed) depression (approx. 1m deep) which collects water in the event of high rainfall and allows for infiltration to the ground. It is not intended to be an open body of water or pond (as previously shown on the Illustrative Layout and Sections [EN10149/APP/2.5] [AS-006]) and therefore is not expected to attract birds. In the event of water temporarily accumulating in the drainage basin (during high periods of rainfall) the risk of birds can be monitored and managed via an Aviation Collision Strike Plan which is secured in the oLEMP [EN010149/APP/7.9.2]. The Illustrative Layout and Sections have been revised and submitted at Deadline 1 within the oLEMP to remove reference to an attenuation pond.</p> <p>Fire fighting water will be stored separately in tanks within the allocated BESS</p>

ExQ1 Ref	Question	Applicant Response
		<p>footprint (no open water). The attenuation feature would be removed at decommissioning and Tb2 restored</p> <p>d) In discussion with the MOD, it has been agreed that the MOD will be consulted on the LEMP and Drainage Strategy, in relation to planting and water features of the detailed design, in relation to aerodrome safeguarding and bird strike risk.</p> <p>Requirement 8 and 10, in Schedule 2 of the draft DCO [EN010149/APP/3.1.2] will be updated to add the MOD as a consultee, rather than a new requirement being included. It is noted that the additions to the requirements themselves are not yet agreed. The latest position between the Applicant and the MOD has been included in the Draft Statement of Common Ground - Ministry of Defence [EN010149/APP/8.7] submitted at Deadline 1.</p> <p>The attenuation basin has not yet been subject to detailed design. They will be designed in consultation with the MOD so that they either do not pose a risk of attracting birds, for example they could potentially be underground structures, or a suitable monitoring and management regime would be put in place outlined in an Avian Collision Strike Plan, agreed in consultation with the MOD, which is secured in the oLEMP [EN010149/APP/7.9.2] so that if the ponds hold water for a sufficient period of time and birds are attracted then this can be monitored and birds displaced.</p>

Table 1-5: Climate Change Questions

ExQ1 Ref	Question	Applicant Response
Q1.5.1	<p>Assessment Methodology</p> <p>Are NKDC and LCC content with the methodology used in the climate change assessment in the ES [APP-048] and the</p>	N/A

ExQ1 Ref	Question	Applicant Response
	assumptions used in ES Appendix 8.1: Raw Data and Emissions Factors [APP-096]?	
Q1.5.2	<p>Baseline for Assessment Comparisons In the decision letter for Gate Burton Energy Park (July 2024), the Secretary of State commented that it considered a Combined Cycle Gas Turbine power plant an inappropriate baseline for assessment comparisons.</p> <p>a) Applicant, provide further justification for this assumption in light of the SoS' view.</p> <p>b) What comparison should be used instead?</p>	<p>a) ES Volume 1, Chapter 8: Climate [APP-048] in Paragraph 8.7.17 contains justification for using comparison of the Combined Cycle Gas Turbine (CCGT) power plant as a method to determine the emissions savings of the Proposed Development. It makes reference to the Secretary of State's decision letter for Gate Burton Energy Park (July 2024), a scheme that was consented despite the Secretary of State's comments. In addition to Gate Burton Energy Park, a number of recently consented developments have utilised the same comparison to CCGT, including Longfield Farm Solar Farm (June 2023) and East Yorkshire Solar Farm (May 2025).</p> <p>b) A technical note is being prepared which will include further justification of the CCGT methodology and an assessment of alternative comparisons. This will be submitted for Deadline 2.</p>
Q1.5.3	<p>Projected Emissions Explain where the figures in the ES [APP-048] Table 8.15 UK Carbon budgets, column 'Estimated project emissions (ktCO₂e)' have been derived, as they do not seem to correlate with the other figures set out in Tables 8.11-8.14.</p>	<p>The estimated project emissions detailed in ES Volume 1, Chapter 8: Climate [APP-048] Table 8.15 UK Carbon budgets are 1,771, 166 and 72 ktCO₂e for the 4th (2023 – 27), 5th (2028 – 32) and 6th (2033 – 37) carbon budgets respectively. The 4th carbon budget figures represent the product stage and 25% of construction stage emissions, the 5th carbon budget figures represent 75% of the construction phase and 3 out of the 40 years of the operational phase, and the 6th carbon budget figures represent 5 out of the 40 years of the operational phase. The figures correlate with the total emissions displayed in ES Volume 1, Chapter 8: Climate [APP-048], Tables 8.11-8.14, however have been apportioned into time periods, rather than purely construction, operation and decommissioning phases.</p>
Q1.5.4	<p>Suggested Benefits The ES [APP-048] sets out that the Proposed Development would provide a saving of 9.6 million tonnes of carbon.</p> <p>a) How does this compare to global emissions, which the ES states is the study area?</p>	<p>a) A saving of 9.6 million tCO₂e can be considered comparatively small compared to global emissions (53.0 GtCO₂e in 2023). The study area is global, as GHG emissions contribute to climate change globally, however the UK's carbon budgets are an appropriate method to determine the Proposed Development's contribution to global climate change, as these are aligned with the goals of the Paris Agreement.</p>

ExQ1 Ref	Question	Applicant Response
	b) Against global emissions, can this be considered a significant beneficial effect?	b) IEMA guidance ¹ states <i>'The crux of significance.... [is] whether it [the project] contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050'</i> . It further states <i>'The 2050 target (and interim budgets set to date) are, according to the CCC, compatible with the required magnitude and rate of GHG emissions reductions required in the UK to meet the goals of the Paris Agreement, thereby limiting severe adverse effects.'</i> When assessing significance, the IEMA guidance is clear that <i>'A project that causes GHG emissions to be avoided or removed from the atmosphere has a beneficial effect that is significant'</i> .
Q1.5.5	Carbon Reduction Plan The oCEMP [APP-0140, Table 5] sets out that all members of the supply chain will provide a carbon reduction plan, where feasible. <ul style="list-style-type: none"> a) Should the need for this be secured in its own right in the dDCO? b) Should the oOEMP [APP-0140] and the oDEMP [APP-0146] also include the need for a carbon reduction plan? 	<ul style="list-style-type: none"> a) The Carbon Reduction Plan is the responsibility of the Principal Contractor during the construction delivery phase, which will be prepared and confirmed in accordance with the Outline Construction Environmental Management Plan (oCEMP) [EN010149/APP/7.7.2], as required. The oCEMP is already secured through the draft DCO in Requirement 12, and the detailed management plan must be submitted to and approved by a designated statutory body. The Carbon Reduction Plan does not require a separate requirement as it is already secured through the dDCO. b) The oOEMP [EN010149/APP/7.10.2] and oDEMP [EN010149/APP/7.13.2] have been updated at Deadline 1 to secure the requirement for members of the supply chain to provide a carbon reduction plan, where feasible.
Q1.5.6	Power Generation Numerous IPs [including RR-319] raise concern that the projected amount of power generated from the Proposed Development will be lower than claimed due to the weather and low hours of sunshine in the Lincoln area.	<p>To minimise duplication, the Applicant has sought to cross-refer where appropriate to responses provided in the Responses to Relevant Representations [EN010149/APP/8.13]; Power generation in relation to irradiance and site location has been dealt with in thematic response "Site suitability/site selection" therein.</p> <p>There is an urgent need for renewable energy projects to deliver the Government's legally binding commitment to net zero. This incorporates different renewable technologies</p>

¹ IEMA (2022) Assessing Greenhouse Gas Emissions and Evaluating their Significance. Accessed online:

ExQ1 Ref	Question	Applicant Response
	Further, other IPs [including RR-322] set out that there are other forms of renewable energy that have lower Total Life Cycles, which should be preferred. What is your reply to both of these suggestions?	<p>discussed in the Total Life Cycle literature from NREL. NPS EN-1 explains at Para 3.3.20 "a secure, reliable, affordable, net zero consistent system in 2050 is likely to be composed predominantly of wind and solar", and the government's "Clean Power 2030 Action Plan: A new era of clean electricity" states on p10 that to deliver a path to clean power, the government has "high ambition. That means 43-50 GW of offshore wind, 27-29 GW of onshore wind, and 45-47 GW of solar power, significantly reducing our fossil-fuel dependency."</p> <p>To the extent the relevant representations referred to go to the need for (including the effectiveness of) large scale solar, NPS EN-1 paragraphs 3.2.6 – 3.2.8 make clear that there is a demonstrated urgent need for a range of renewable technologies including solar. Substantial weight should be given to this need, and the SoS is not required to consider separately the specific contribution of any individual project to satisfying the need established in NPS EN-1.</p>
Q1.5.7	<p>Sourcing Solar PVs and Other Infrastructure</p> <p>Numerous IPs [too many to list] are of the view that there are carbon footprint concerns about the sourcing and manufacturing of Solar PVs from China. What is the Applicant's reply?</p>	<p>A full lifecycle GHG assessment has been conducted in ES Volume 1, Chapter 8: Climate [APP-048], which takes into account a reasonable worst-case assessment of the embodied emissions from Solar PV modules. This has used a wide range of data available from Environmental Product Declarations (EPDs) from Solar PV modules from a range of source countries (including China) and includes the emissions of the manufacture and transport of these materials. All members of the supply chain will provide a Carbon Reduction Plan where feasible, allowing for the optimisation of emissions associated with the supply chain. This measure is secured in the oCEMP [EN010149/APP/7.7.2]. Inclusive of these embodied emissions the Proposed Development has been demonstrated to have a net carbon negative effect, contributing to net carbon savings globally, and resulting in net GHG savings of over 9.6 million tonnes of CO₂e.</p>

Table 1-6: Compulsory Acquisition, Temporary Possession and Other Land or Rights Considerations Questions

ExQ1 Ref	Question	Applicant Response
Q1.6.1	<p>Schedule of Negotiations</p> <p>Provide a revised Schedule of Negotiations</p>	The Applicant has provided an updated Schedule of Negotiations at Deadline 1.

ExQ1 Ref	Question	Applicant Response
	[APP-018] to provide an update on the current status of all negotiations, including Crown Land.	
Q1.6.2	Unknown Landowners There are a number of plots identified in the Book of Reference (BoR) [AS-007] for which the owners are not known. Provide an update on efforts to establish these owners/ interests and details on what further steps will be undertaken to identify these owners prior to the exercise of Compulsory Acquisition (CA) powers.	The Applicant's Land Referencing team have conducted multiple rounds of diligent inquiry, including desktop land referencing research, contacting landowners via letters, phone, email and in person meetings, site inspections, and the erection of site notices to identify unknown land interests. Further site notices were erected at the section 56 stage to notify unknown interests of the acceptance of the Application in accordance with section 230 of the Planning Act 2008. Throughout the examination stage, continued diligent inquiry methods will be utilised to identify unknown ownerships through the following methods: Land Registry refresh, communication with stakeholders, and site visits.
Q1.6.3	Variation to Option Agreement The Statement of Reasons (SoR) [APP-015] notes that the Applicant and Blankney Estates Limited are currently negotiating a variation to the signed option agreement, based on changes required to align with the submitted Application and Order limits. What is the current status of these discussions?	The Applicant and Blankney Estates have agreed Heads of Terms for the variation to the signed Option Agreement. Final wording of the Option Variation is currently being agreed with solicitors.
Q1.6.4	Network Rail Unidentified Property Rights Network Rail (NR) has set out [RR-296] that it is investigating if it has any unidentified property rights that could be affected by the Proposed Development. Provide an update on these investigations.	The Applicant's Land Referencing team conducted diligent inquiry through a variety of methods, such as HMLR title interrogation and engaging directly with landowners. During this diligent inquiry, the registered title for the parcel of land that directly abuts the Peterborough to Lincoln line was purchased and interrogated. On the registered title, there are no entries pertaining to Network Rail property rights and as such Network Rail were not included in the BoR as an affected party. The Applicant consulted Network Rail during Statutory Consultations as a prescribed consultee, during this consultation, no property rights over the Order Land were identified by Network Rail for inclusion into the BoR. However, should Network Rail identify any rights over the parcel of land, the Applicant will include these in the BoR at the earliest possible deadline. In discussions with Network

ExQ1 Ref	Question	Applicant Response
		Rail, the Applicant understands the process is in progress.
Q1.6.5	<p>National Grid and the Order Limits</p> <p>National Grid Electricity Transmission (NGET) has set out [RR-289] that the inclusion of the entirety of the field in which the proposed Navenby Substation would be located contradicts previous discussions NGET had with the Applicant in relation to the Project, where NGET's position is that only the cable route should be shown. NGET also note that it is important that no rights are granted over this area that would restrict the delivery of Navenby substation which is required by the Applicant for delivery of the Project. Provide an update on these discussions.</p>	<p>NGET are currently designing the substation and the exact location of the point of connection is to be confirmed, as the NGET design progresses. The Applicant therefore needs to include the area included within the Order limits to ensure it has the necessary authorisation and powers to connect into the substation.</p> <p>The Applicant and NGET have discussed the cable route required and the flexibility needed to align with the point of connection. A collaborative approach is being followed to coordinate the Applicant's cable route with all operational and construction considerations for both parties. The area shown in the Applicant's submission leading up to and including the proposed NGET substation is for cable route and construction access.</p> <p>The Order Limits include the whole of the identified field pending 1) future land agreements between the landowner and NGET, 2) an approved NGET Navenby Substation Planning Application, and 3) a detailed design of the Point of Connection aligned with both the land and planning secured.</p> <p>The plot in question is 11/1. This plot is shown blue on the Land Plans [EN010149/APP/2.2.2] meaning new rights are sought over it. Pursuant to schedule 9 and Article 24 of the Draft DCO [EN010149/APP/3.1.2], the rights sought over this plot are restricted to substation connection rights, to enable the connection of the Proposed Development with the National Grid Navenby Substation. Similarly, in this location, the Applicant would only be authorised to construction Work No. 5 (grid connection infrastructure) as shown on the Works Plans [EN010149/APP/2.3] [APP-007].</p> <p>The Applicant is currently negotiating protective provisions with NGET. Those provisions would be expected to include controls over the Applicant's ability to exercise compulsory acquisition powers with respect to interests held by NGET, and also require NGET's approval of the Applicant's works in the vicinity of NGET assets or interests. In this way, NGET would have the necessary comfort in terms of potential impacts from the Applicant having the powers in the draft DCO in this area, in particular with respect to the delivery of Navenby substation.</p>
Q1.6.6	Cable Corridors	The Work Plans [EN010149/APP/2.3] [APP-007] identify an area within the Order Limits

ExQ1 Ref	Question	Applicant Response
	<p>The Work Plans [APP-007] show large areas of land for cables (Work No. 6) within the Order Limits. The ES [APP-043] notes that multiple cables will be required across the Proposed Development and the width of these cable trenches will vary depending on the number of cables in each, up to 19 metres. The SoR [APP-015, Paragraph 4.4.3.] indicates that the location/ route of the cables is currently unknown and detailed surveys are required. However, the Vegetation Removal Parameter Plans [APP-60, Figure 3.11a to f] suggest that the locations of the cables (at least where it crosses field boundaries) are known.</p> <p>Given that a maximum width of 19 metres is needed and the Vegetation Removal Plans suggest that the locations of the cables are known, justify how seeking CA powers over all of the land identified for Work No. 6 accords with the need for the SoS to be satisfied that the Applicant is seeking no more land than is reasonably required for the purposes of the Proposed Development.</p>	<p>where the cables for Work No. 6 can be located at the detailed design stage. This approach ensures sufficient flexibility during construction while allowing for the worst-case scenario that has been assessed in the Environmental Statement (ES). Consequently, the assessment accounts for all potential impacts, enabling the Proposed Development to adapt to on-site conditions.</p> <p>The dimensions of the cable trenches will vary depending on the number of underground cables and ducts required. The maximum trench width of 19 meters reflects a scenario where multiple cable circuits are needed, such as in the primary cable corridors between Springwell East, Central, and West, or adjacent to the Springwell Substation and Main Collector Compound. The spacing between cables within these trenches is expected to range from 0.5 to 1.0 meters to prevent overheating.</p> <p>Since the detailed design of the cable routes will occur post-determination, it is necessary to maintain flexibility within the identified Work No. 6 area. This flexibility allows for adjustments based on detailed surveys or unexpected on-site conditions, such as the discovery of archaeological remains, which would require the cable route to be adjusted within the Order Limits to minimise disturbance.</p> <p>While the Vegetation Removal Parameter Plans appended to the oLEMP [EN10149/APP/7.9.2], may suggest known locations where cables cross field boundaries, these plans do not determine the precise route, as final decisions will depend on future surveys and detailed design considerations. The vegetation removal has assumed the maximum extent that may be required for the construction of highway works, internal access tracks and cable routes. Wherever practicable, these works are aligned to existing tracks, crossing and / or gaps in hedgerows to reduce the extent of vegetation removal which is secured in the detailed design by the Design Commitments [EN010147/APP/7.4] [APP-0138]. Should the DCO be granted consent, detailed LEMP(s) will be produced for the Proposed Development in accordance with Requirement 8, Schedule 2 of the Draft DCO [EN010149/APP/3.1.2]. The LEMP(s) would require approval prior to commencement of construction and would be required to be substantially in accordance with the framework set out in the oLEMP [EN10149/APP/7.9.2], including the Green Infrastructure Parameters presented in Appendix 1 and Vegetation Removal Parameters presented in Appendix 2. Therefore, the inclusion of the entire identified area</p>

ExQ1 Ref	Question	Applicant Response
		within Work No. 6 is necessary to ensure that no more land is sought than reasonably required while accommodating design and construction flexibility.
Q1.6.7	<p>Powers of Acquisition – Permanent Rights Article 24 of the dDCO [APP-012] is drafted to enable compulsory acquisition of new rights over all of the Order land, with a schedule which limits the compulsory acquisition power in defined plots to the defined rights listed in Schedule 9.</p> <p>Provide further justification for this approach and demonstrate that persons with an interest in the Order land, particularly for plots identified in the Land Plans [AS-004] and BoR [AS-007] for temporary possession were aware that undefined new rights were being sought over all of the Order land and were consulted on that basis.</p>	<p>Article 24(1) is drafted to make clear that Article 24 is subject to article 31 (temporary use of land for constructing the authorised development).</p> <p>Article 31(1) authorises the undertaker to take temporary possession of the land included in Schedule 11 (article 31(1)(a)(i)), as well as any other Order land.</p> <p>Article 31(10) then confirms that “The undertaker must not compulsorily acquire, acquire new rights over or impose restrictive covenants over, the land referred to in paragraph (1)(a)(i) under this Order” (that is, the land included in Schedule 11 over which only temporary possession is sought).</p> <p>New rights pursuant to Article 24 can therefore not be acquired over land identified in Schedule 11.</p> <p>The advantage of the drafting of Article 24 is that it would allow the compulsory acquisition of new rights over Order land which is shown pink on the Land Plans as being subject to compulsory acquisition of the freehold; whilst the Applicant considers that freehold acquisition is required over the land shown pink, if ultimately a lesser interest could be taken, Article 24 does not preclude that.</p> <p>This approach has precedent in made Orders, for example The Cottam Solar Project Order 2024 (articles 22 and 29) and The West Burton Solar Project Order 2025 (articles 22 and 29).</p> <p>Further explanation for the power is included in the Applicant’s Explanatory Memorandum [EN010149/APP/3.2.2] which has been updated at Deadline 1 at paragraphs 4.5.4 – 4.5.7.</p>
Q1.6.8	<p>Powers of Acquisition – Temporary Possession Articles 31 and 32 of the dDCO [APP-012] give temporary possession powers of any of the</p>	<p>a) Temporary possession powers over the Order land are considered necessary and appropriate as they allow the Applicant to minimise the extent of compulsory acquisition of land and rights. This is explained in the Applicant’s Statement of Reasons [EN010149/APP/4.1] [APP-015] at paragraphs 4.4.2 and 4.4.3(b) in</p>

ExQ1 Ref	Question	Applicant Response
	<p>Order land. Due to this, temporary possession powers are not limited to the land specified in Schedule 11.</p> <p>In addition, the Applicant is seeking to disapply the temporary possession regime under the Neighbourhood Planning Act 2017 (NPA) in Article 6(1)(h). The ExA note that:</p> <ul style="list-style-type: none"> The notice period under Articles 31(3) and 32(3) of 28 days is substantially shorter than the 3 months required under the NPA. Under the NPA, the notice would also have to state the period for which the acquiring authority is to take possession. The NPA provisions include the ability to serve a counter-notice objecting to the proposed temporary possession so that the landowner would have the option to choose whether temporary possession or permanent acquisition was desirable. <p>a) Provide further justification why temporary possession powers of any of the Order land is necessary and appropriate, and explain what steps have been taken to alert all persons with an interest in the Order land to this possibility.</p> <p>b) Other than any prior precedent, what is the justification for only requiring 28 days' notice in Articles 31(3) and</p>	<p>particular. In short, temporary possession powers allow the Applicant to enter on to land for particular purposes in advance of any vesting of the relevant land/rights, which enables the Applicant to only compulsorily acquire the minimum amount of land and rights over land required to construct, operate and maintain the Proposed Development. For example, this would facilitate the Applicant initially taking temporary possession of a wider area for the Grid Connection Corridor, and then once the Applicant has carried out detailed surveys and installed the cables, the Applicant can then acquire new rights (pursuant to Article 24) within only a narrower strip in which permanent rights are required, within the wider construction corridor. This phased approach to occupation and acquisition allows the permanent rights corridor to be defined after construction, and to be only that which is necessary for the operation, maintenance and protection of the apparatus. Without these temporary possession powers, the Applicant would need to acquire permanent rights over a larger area in order to construct the scheme, when ultimately it may only need rights over a narrower or smaller area once operational. Such an approach has precedent amongst other DCOs including the Longfield Solar Farm Order 2023, Gate Burton Energy Park Order 2024, and the Cottam Solar Project Order 2024.</p> <p>In terms of steps taken to alert people of the possibility of taking temporary possession, when engaging with landowners to secure voluntary agreements, the landowners have been made aware of this, and the voluntary agreements allow for the temporary possession of their land for the reasons explained above.</p> <p>b) With respect to the 28 day notice period, the Applicant considers this is sufficient and appropriate for the Proposed Development (being a nationally significant infrastructure project for which there is a critical national priority) and would ensure that the construction programme would not be threatened, which might occur if the Applicant is required to give the three months' notice. If the Applicant was required to give three months' notice it would reduce the Applicant's flexibility in how to exercise the temporary possession power. An unintended consequence of this is that it may need to make decisions on when it requires land on a precautionary basis to avoid programme disruption, leading to land being possessed temporarily earlier than would otherwise be the case which would be to</p>

ExQ1 Ref	Question	Applicant Response
	<p>32(3)?</p> <p>c) Should these articles include the need to state a period of possession and the ability to serve a counter-notice?</p>	<p>the detriment of affected persons through the unnecessary disruption and to the Applicant through being required to compensate the affected persons for that additional disruption. Similarly, a longer notice period may lead to the Applicant serving notice in relation to more land than is ultimately required, on a precautionary basis and therefore resulting in more disruption for the landowners / occupiers than necessary.</p> <p>Whilst the Applicant appreciates how the question has been drafted, prior precedent is relevant, given the Secretary of State has considered this point in recently made DCOs and notice periods have remained at 28 days (for example, The Heckington Fen Solar Park Order 2025). There are also recently made Orders where 14 days has been accepted in relation to temporary possession for construction, for example in The East Yorkshire Solar Farm Order 2025, The West Burton Solar Project Order 2025 and The Cottam Solar Project Order 2024.</p> <p>c) The Applicant does not consider that either a period of possession nor a counter notice are necessary or appropriate, for the reasons set out below.</p> <p>Duration of period of temporary possession</p> <p>The Applicant considers that the duration of the period of temporary possession as provided for in Articles 31(4) and 32(4) is reasonable, necessary and proportionate.</p> <p>The justification for the temporary possession power is that the land is needed for the construction or maintenance of the Proposed Development and, without its use, the Proposed Development and the public benefits it offers, would not be able to be delivered. It is also justified in respect of other land where a need for a greater interference such as outright acquisition or the acquisition of rights, has been justified, as temporary possession would be a lesser interference and the power would allow a more proportionate exercise of those greater powers. In either case, the underlying driver is that the land is required to construct or maintain the Proposed Development.</p> <p>The drafting in articles 31 and 32 is carefully crafted to align the need for the</p>

ExQ1 Ref	Question	Applicant Response
		<p>temporary use of the land, with the duration of the temporary possession. So long as the land is needed for the construction or maintenance of the Proposed Development, the Applicant is justified in taking temporary possession of the land. Once that need has been satisfied the Applicant is afforded a reasonable period to restore the land and return it, in accordance with articles 31 and 32, sub-paragraphs (4) and (5) in both articles. When it no longer needs the land, the Applicant would not be justified to possess it. This is reflected in the drafting of articles 31 and 32.</p> <p>The Applicant is of the firm view that it would be unreasonable to impose a finite maximum duration of the period of temporary possession. A duration limit, by its nature, would give rise to a risk of land still being required for the construction of the Proposed Development beyond the duration limit, because of circumstances beyond the Applicant's control. This would risk the delivery of the Proposed Development and its wider public benefits. To avoid this risk the duration would likely be set very conservatively, which calls into question whether the imposition of the limit would achieve its objective of providing certainty to the affected person.</p> <p>The Applicant considers that its approach, of aligning the need for the land with the duration of temporary possession, is reasonable, proportionate, and necessary to secure the delivery of the public benefits of the Proposed Development.</p> <p>Counter-notice</p> <p>As set out above, the temporary possession power is justified in that it is required to facilitate the construction and maintenance of the Proposed Development and to realise its wider public benefits.</p> <p>The Applicant considers that the provision of some form of counter-notice procedure in a similar vein as that set out in the provisions of the NPA 2017 (which are not in force) would be of no practical benefit to any party and it is not clear that such a provision would be within the vires of a what a development consent order may authorise.</p>

ExQ1 Ref	Question	Applicant Response
		<p>There are two main circumstances in which the temporary possession power may be exercised:</p> <p>(i) in relation to the land which is required only temporarily (shown in green on the Land Plans [EN010149/APP/2.2.2] [AS-004]); or</p> <p>(ii) in relation to other land (shown in pink) prior to its acquisition, or the land shown in blue, in relation to the acquisition of rights.</p> <p>In relation to the first category (temporary possession only) the Applicant is clear that it cannot meet the tests for compulsory acquisition set out in section 122 of the Planning Act 2008 ("PA 2008") because its requirement is only to use the land temporarily during construction. As such, it is not clear that a provision in a DCO that would authorise compulsory acquisition of such land, through a counter-notice provision, would meet the tests in section 122(2) and (3) of the PA 2008.</p> <p>In relation to the second category of land (where temporary possession is required in advance of the acquisition of the land or rights required for the Proposed Development), a counter notice provision would serve no purpose. The Applicant is seeking to obtain the land and rights required for the Proposed Development through negotiations with landowners with the exercise of compulsory powers being the last resort. If a landowner wished to transfer the land, or rights required, to the Applicant at an earlier stage, the Applicant would have no reason not to do so; early purchase would avoid the Applicant having to pay compensation both for the period of temporary possession and then for the acquisition of the land or rights over land.</p>
Q1.6.9	<p>Funding</p> <p>The Funding Statement [APP-016] notes that the current cost estimate of the Proposed Development is approximately £650m-£750m and this estimate has been arrived at by including construction costs, preparation costs, supervision costs, land acquisition costs (including compensation payable in respect of</p>	<p>The Funding Statement does not include decommissioning costs. The Funding Statement is submitted pursuant to Regulation 5(2)(h) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 which provides:</p> <p><i>"if the proposed order would authorise the compulsory acquisition of land or an interest in land or right over land, a statement of reasons and a statement to indicate how an order that contains the authorisation of compulsory acquisition is proposed to be funded,"</i></p> <p>The purpose of the Funding Statement is therefore to demonstrate how compulsory</p>

ExQ1 Ref	Question	Applicant Response
	any compulsory acquisition), equipment purchase, installation, commissioning and power export'. Confirm if decommissioning costs have also been considered.	<p>acquisition would be funded.</p> <p>The Applicant is aware of what its obligations would be under the DCO, should development consent for the Proposed Development be granted. It is aware of the decommissioning requirements and commitments it has proposed, and that failure to comply with those requirements would be a criminal offence.</p> <p>Should development consent be granted, the Applicant will factor all required costs including decommissioning costs, within its decision to commence construction of the Proposed Development.</p>
Q1.6.10	<p>Protective Provisions</p> <p>Cadent Gas Limited [RR-048], National Grid Electricity Distribution (East Midlands) [RR-288], NGET [RR-289] and Anglian Water [RR-026] have all set out that they will require protective provisions within the dDCO. Provide an update on negotiations with each party set out above.</p>	<p>The Applicant's legal team provided its standard protective provisions for electricity, gas, water and sewerage undertakers in July 2024 and has been in contact with Cadent Gas Limited's lawyers since August 2024. The Applicant received a first draft of Cadent Gas Limited's protective provisions in August 2024 and returned its comments to Cadent Gas Limited in May 2025. Cadent Gas Limited has returned its comments to the Applicant and the Applicant is considering its response so that negotiations can progress further between the parties.</p> <p>The Applicant's legal team provided its standard protective provisions for electricity, gas, water and sewerage undertakers in August 2024 to which an initial response from National Grid Electricity Distribution (East Midlands) was received. The Applicant's legal team followed up via email for a response from National Grid Electricity Distribution (East Midlands) in September 2024 and October 2024. National Grid Electricity Distribution (East Midlands) responded in an email of November 2024 and confirmed that it had assets in the site and that it requires protective provisions.</p> <p>Further correspondence occurred between the Applicant and National Grid Electricity Distribution (East Midlands) and a bespoke set of protective provisions was received by the Applicant in March 2025. The Applicant returned its comments on the protective provisions in May 2025. National Grid Electricity Distribution (East Midlands) has returned its comments to the Applicant and the Applicant is currently considering its response.</p> <p>Anglian Water's agent, Jacobs, provided the Applicant with a copy of its protective</p>

ExQ1 Ref	Question	Applicant Response
		<p>provisions in April 2023. The Applicant's legal team initially contacted Anglian Water Services Limited in August 2024, and the Applicant returned its comments on the protective provisions to Anglian Water in February 2025. Anglian Water returned its comments to the Applicant in May 2025. The protective provisions are expected to be returned to Anglian Water imminently so that negotiations can progress further between the parties.</p> <p>The Schedule of Negotiations and Powers Sought [EN10149/APP/4.4.2] describes the status of negotiations with statutory undertakers.</p>

Table 1-7: Cultural Heritage Questions

ExQ1 Ref	Question	Applicant Response
Q1.7.1	<p>Requirement 11 - Archaeology</p> <p>HE state in its RR [RR-159] that there needs to be a mechanism whereby the results of additional assessment stage trial trenching undertaken post-DCO have a material bearing upon the subsequent phase of the archaeological mitigation scheme. The Examining Authority (ExA) note in paragraph 4.1.7 of the Outline Written Scheme of Investigation (oWSI) [APP- 0148] that Task specific WSIs would be prepared in consultation with the Local Planning Authority's (LPA) archaeological advisor prior to the carrying out of any archaeological trenching or investigation.</p> <p>a) Applicant, explain with reference to the wording of R11 and R5 how the LPA will be involved in determining the</p>	<p>Task specific WSIs for post-consent trenching will include for a staged approach to mitigation. Further discussion regarding the scope of post-consent archaeological work is ongoing with LCC, HE and NKDC. The outline WSI will be updated following the outcome of these discussions and will be re-issued at Deadline 2.</p> <p>The Applicant has also submitted a revised draft DCO at Deadline 1 which includes updates to requirements 5 and 11 to address the points raised. The amendment to requirement 5 will require the Applicant to demonstrate how detailed design has taken account of the results of any archaeological investigations or archaeological evaluations carried out pursuant to the outline written scheme of investigation. Requirement 11 has been amended to provide for further archaeological work to inform mitigation measures.</p> <p>The Applicant has included Historic England as a consultee in the revised requirement 11 included in the draft DCO at Deadline 1. The Applicant does not understand NKDC to be requesting to be a consultee. The Applicant understands from comments at the Issue Specific Hearing 1 that the principle of the revised requirement is generally agreed although discussions are ongoing as to the exact parts of the Proposed Development the requirement would need to apply to. Discussions are ongoing.</p>

ExQ1 Ref	Question	Applicant Response
	<p>scope for any subsequent archaeological work and additional mitigation measures in the detailed design, as a result of the above archaeological trenching or investigation?</p> <p>Should R11(1) include that any approval by the relevant planning authority (LCC) be in consultation with HE and NKDC?</p> <p>LCC, NKDC and HE, provide your comments on the proposed drafting of this requirement including any additional/ revised drafting as appropriate with accompanying justification.</p>	
Q1.7.2	<p>Above Ground Heritage Assets</p> <p>NKDC [RR-305] and LCC [RR-233] raised concern that there is a lack of detailed analysis of built heritage assets. The Applicant submitted revised documents [AS-001, AS-012, AS-013, AS-014, AS-015, AS-018 and AS-019] in response to Section (s) 51 advice issued by the Planning Inspectorate [PD-002].</p> <ol style="list-style-type: none"> LCC and NKDC, for those heritage assets that have been scoped into the assessment, do you agree with the results of the Applicant's assessment? LCC and NKDC, can you provide a list within your Local Impact Report (LIR) of built heritage assets that have not been scoped into the assessment which you consider should be scoped in with accompanying justification? Applicant, provide justification for the 	<p>Thompsons Bottom Farmhouse and outbuildings (LBEN 1254329/1254407) comprise a late 18th century farmhouse with mid-19th century additions in the form of bay windows and the separately listed associated stables and coach house dating to the same period. These buildings derive significance and their principal reason for designation as listed buildings from the architectural and historic interest contained within their fabric as examples of their type. The house faces south across a garden north of the lane with a tall hedge marking the property boundary and screening the house from view except when level with the gateway. Further tree planting south of the lane opposite the house and to the west of the house and stables/coach house further obstruct views of and from the farmhouse. The stables and coach house are located north of the house and form the west side of the farmyard which has been infilled with later (non-designated) outbuildings. To the east of the house adjacent to the entrance to the farmyard is another agricultural building which is not listed. Further east along the lane are other houses which are also not listed. The vegetation and buildings around Thompson's Bottom Farmhouse and the associated stable and coach house building serve to restrict views between the listed buildings and the surrounding agricultural land.</p> <p>ES Volume 3, Appendix 9.1: Archaeological Desk- Based Assessment and Stage 1 Setting Assessment [EN010149/APP/6.3.2] [AS-014] recognises that the wider</p>

ExQ1 Ref	Question	Applicant Response
	<p>scoping out of the specific farmhouses referenced in the NKDC RR as follows:</p> <ul style="list-style-type: none"> • Thompsons Bottom Farmhouse and outbuildings (LBEN 1254329/1254407) • Temple Farmhouse (LBEN 1254328 and 1261359) • Home Farmhouse (LBEN 1061825) • Farmyard to the north of The Firs (LBEN 1280661) 	<p>agricultural setting contributes to the significance of the listed buildings through their historic relationship with the agricultural land. The proposed development extends to within 150m of the listed buildings, but the closest panels will be 300m to the east. Additional planting is proposed alongside Warren Lane to screen panels from view when approaching Thompson's Bottom Farm from the east.. The solar farm will therefore be screened from the listed buildings by buildings, existing vegetation and proposed additional planting. The alteration to the wider agricultural surroundings is considered to result in a slight impact to the significance of the listed buildings as recorded in the setting assessment which is considered to be less than substantial harm as reported in Appendix 12 of the Planning Statement. The effect on these listed buildings as a result of this slight impact would not be significant and they were therefore scoped out of the ES.</p> <p>Temple Farmhouse (LBEN 1254328 and 1261359) comprises a 17th century farmhouse with late 18th, early 19th and 20th century alterations and the remains of the 13th century church tower which was restored in the early 20th century. The tower is all that remains above ground of the Knights Templars Preceptory which was abandoned at the dissolution in 1538 and is also designated as a scheduled monument. The farmhouse derives significance and its principal reason for designation as a grade II listed building from the architectural and historic interest in its fabric and the associative value for it being on the site of the Knights Templar's Preceptory. A small fragment of reused medieval tracery survives in an upper window on the north gable of the farmhouse and the building is likely to incorporate other stonework from the preceptory. The farmhouse is experienced within a farm complex of later non-designated buildings with the tower to the north, the presence of the tower in proximity to the farmhouse contributes to the associative historic interest and value of the farmhouse. The tower derives significance from the architectural and historic interest in its fabric, its associative value with the Knights Templar and evidential value as a surviving remnant of a pre-Dissolution church. The nearest solar arrays to the farmhouse will be over 1km to the east. The ZTV (ES Volume 2, Figures Chapter 10: Landscape and Visual, Figure 10.5a [APP-066] and ES Volume 3, Appendix 9.1: Archaeological Desk-Based Assessment and Stage 1 Setting Assessment, Annex 1 [EN010149/APP/6.3.2] [AS-014]), indicates that there is no visibility of the Proposed Development from Temple Farmhouse due to a slight ridge to the east of the farmhouse.</p> <p>The ZTV (ES Volume 2, Figures Chapter 10: Landscape and Visual, Figure 10.5a [APP-066] and ES Volume 3, Appendix 9.1:</p>

ExQ1 Ref	Question	Applicant Response
		<p>Archaeological Desk-Based Assessment and Stage 1 Setting Assessment, Annex 12 3</p> <p>AS-014</p> <p>]), indicates that there is no visibility of the Proposed Development from Temple Farmhouse due to a slight ridge to the east of the farmhouse. LVIA Viewpoint 32 is taken from east of this ridge and shows limited visibility of the Proposed Development. The change to the wider agricultural surroundings beyond areas where the farmhouse is appreciated is considered to result in a slight impact (less than substantial harm) which is not significant. The Proposed Development will not impact on the prominence of the tower which will continue to be experienced within the farm complex, the change to the wider surroundings beyond the areas where the tower is appreciated are considered to result in a negligible impact to its significance. These assets were therefore scoped out of the ES.</p> <p>Home Farmhouse (LBEN 1061825) is an early 18th century farmhouse with 19th and 20th century alterations. It derives significance and its principal reason for designation as a grade II listed building from the architectural and historic interest in its fabric as an example of its type. The farmhouse is experienced on Main Street to the west of settlement of Asby de la Launde and southwest of Asby Hall, with a garden front to the east side and agricultural buildings enclosing a yard to the west with further later agricultural buildings beyond. The wider agricultural land which were likely farmed from Home Farm is filtered by these buildings and by mature trees to the south and southwest of the farmhouse. Proposed highways improvements are within 200m to the west of the farmhouse but will not impact on the contribution that the setting makes to its significance, the nearest solar arrays would be 1km to the west, beyond the modern agricultural buildings and further screened by vegetation. The ZTV (ES Figure 10.5a and 10.5b) indicates that although without vegetation the Proposed Development would be visible from the farmhouse, the existing vegetation provides significant screening. Viewpoints 21 is from further east within Ashby de la Launde, and Viewpoint 22 is from further west on the road junction. Both show that the solar farm would be a distant feature, softened by existing and proposed vegetation. The impact on the significance of the listed building as a result of the change in this wider setting is considered to be slight (less than substantial harm) and not significant, it was therefore scoped out of the ES.</p>

ExQ1 Ref	Question	Applicant Response
		<p>Farmyard to the north of The Firs (LBEN 1280661) comprises a barn, cowsheds, stables and pigeoncote built in a single-phase c.1820. The buildings enclose a farmyard to the north of the non-listed farmhouse. It derives significance and its principal reason for designation as a grade II listed building from the architectural and historic interest in its fabric as an example of a single-phase complex of agricultural buildings. As an agricultural building the surrounding agricultural landscape contributes to its significance as it will include fields worked from the farm, however the farmyard is screened from the wider landscape by trees. The closest solar arrays would be 800m to the east of the farmyard, the impact on its significance is considered to be slight (less than substation harm) and not significant. It was therefore scoped out of the ES.</p>
Q1.7.3	<p>Brauncewell Medieval Village ES Chapter 9 [AS-012] states that there is a slight adverse effect on the setting of Brauncewell medieval village scheduled monument (less than substantial harm) but a significant beneficial effect of a proposed permissive path which is said to offset the adverse effects (para 9.9.25). Does the Applicant consider that the overall effect is moderate beneficial or is the beneficial effect to be taken in balance against the adverse effect to result in a less significant benefit?</p>	<p>The beneficial effect does not reduce the level of adverse effect but should be considered as one of the public benefits of the Proposed Development within the planning balance against the level of impact / harm to the scheduled monument. The proposed permissive path (and potential for additional interpretation of the monument) provides both a targeted benefit for the scheduled Brauncewell medieval village and wider public benefits that go beyond this heritage asset and are outside the scope of the cultural heritage assessment (e.g. recreational walking routes).</p>
Q1.7.4	<p>World War II Aeroplane Crash Sites (non-designated heritage assets MLI25416 and MLI25417) ES chapter 9 [AS-012] states that piling will be avoided in the areas of the World War II (WWII) crash sites and that detailed design will seek to route cables outside of the crash site locations so that these sites will be preserved in situ.</p>	<p>Discussions have been held with the MOD's Joint Casualty & Compassionate Centre (Commemorations & Licensing) (via email and telephone conversation on 22nd April 2025). They have advised that licence applications should be submitted for any works that may encounter remains of the crashed aircraft and that the licences can be extended in time frame or transferred to another archaeologist if necessary. The Applicant intends to apply for a licence as soon as possible.</p>

ExQ1 Ref	Question	Applicant Response
	<p>a) Applicant, if a licence to recover a crashed military aircraft in accordance with the Protection of Military Remains Act 1986 might be required, will a letter of no impediment be sought from the MOD prior to the end of the examination?</p> <p>b) MOD, do you have any comments on the suitability of the works proposed in the areas of the WWII crash sites?</p>	
Q1.7.5	<p>Cable Routes</p> <p>Paragraph 9.9.9 of the ES [AS-012] states that cabling will be above ground in areas of high archaeological density within the Ground Mounted Solar PV Generating Station (Work no.1). However, between Springwell Central and Springwell East and between Springwell Central and Springwell West it is proposed to bury the cables. As stated in para 9.9.13, burying the cables could result in the loss of some of the archaeological features, the loss of physical evidence of their relationships and phasing and damage to other features.</p> <p>a) What reasonable alternatives were considered to the undergrounding of cables in the locations specified on the Works Plans?</p> <p>b) How will adverse impacts on the complex archaeology in the cable route be avoided and/ or minimised in the detail design and how will this be secured?</p>	<p>a) Reasonable alternatives to undergrounding of the cables such as overhead cabling and surface cabling were considered and discounted at early stages in the design. Overhead cabling was discounted to avoid landscape and visual impacts (including additional impacts resulting from changes to the setting of heritage assets) and surface cabling in ducts between Springwell Central and Springwell East, and between Springwell Central and Springwell West was discounted as it would inhibit the land being returned to the landowner for agricultural use after the construction phase, alongside associated safety and security risks.</p> <p>There were several reasonable alternatives that were considered at Design Stage 2 and 3 for the location of the cables specified as detailed in ES Volume 2, Figures 4.1-4.3 [EN010149/APP/6.2] [APP-061]. Fields were discounted or refined to minimise the impact on sensitive receptors, impact on the land and associated environmental impacts, including hedgerow and tree removal.</p> <p>The Applicant reviewed several options for the siting of the Grid Connection Corridor which included a corridor to the west and east of Gorse Hill Covert. Following an environmental review at Design Stage 2, these alternatives were discounted due to the length of the cable route, proximity to Gorse Hill Covert, extent of vegetation removal and road crossings required and the associated environmental impacts. An alternative which includes routing the Grid Connection Cable Route through the middle of the fields to the north of the Springwell Substation was discounted to avoid the jointing bays being located in the centre of</p>

ExQ1 Ref	Question	Applicant Response
		<p>the field which could hinder agricultural operations.</p> <p>The Grid Connection Corridor was further refined during Design Stage 2 discounting the western corridor as shown in ES Volume 2, Figures 4.1-4.3 [EN010149/APP/6.2] [APP-061]. This reasonable alternative was discounted to increase the distance from Gorse Hill Covert and reduce the impact to high priority hedgerows and trees.</p> <p>b) The scope of archaeological work to inform the detailed design (currently set out in the outline WSI) is still being discussed with HE, NKDC and LCC. Adverse impacts to the below ground archaeology will be minimized through the detailed design through measures such as – routeing of the cables within the corridor to avoid the most sensitive areas of archaeological remains, minimizing the width of excavation needed for the cables (subject to engineering / safety requirements) and the width of any topsoil stripping during construction. Any impacts that cannot be avoided will be mitigated through a programme of archaeological investigation and recording to be secured through a task specific WSI. This mitigation is proposed to be secured via the outline WSI and associated Requirement 11 (and Requirement 5) to the Draft DCO [EN010149/APP/3.1.2], as updated at Deadline 1.</p>

Table 1-8: Draft Development Consent Order (DCO) Questions

ExQ1 Ref	Question	Applicant Response
Q1.8.1	<p>Part 1 Preliminary - Article 2(8) The Explanatory Memorandum (EM) [APP-013, Paragraph 4.2.4] states that: <i>‘Paragraph (8) confirms references within the Order to materially new or materially different environmental effects (in the context of the Authorised Development or part of it not being</i></p>	<p>Article 2(8) has precedent in Article 2(10) of The A122 (Lower Thames Crossing) Development Consent Order 2025 and Article 2(7) of The A66 Northern Trans-Pennine Development Consent Order 2024.</p> <p>The Applicant has proposed a slight amendment to the drafting of Article 2(8) in the Draft DCO [EN010149/APP/3.1.2] submitted at Deadline 1, as shown, the reasoning for which is the same as for the original drafting:</p>

ExQ1 Ref	Question	Applicant Response
	<p><i>authorised if it would result in such effects), are not intended to apply where the effects are different to those assessed in the ES by virtue of being an adverse effect that has been reduced or avoided, or a positive effect that has increased in significance. Without this clarification, the “materially new or materially different” provisions could have the inadvertent consequence of not encouraging a reduction in adverse effects or an increased benefit from a positive effect at detailed design’.</i></p> <p>Confirm whether or not article 2(8) has precedent in any previously made DCOs.</p>	<p><i>(8) In this Order, references to materially new or materially different environmental effects in comparison with those reported in the environmental statement are not to be construed so as to include the avoidance, removal or reduction of an assessed adverse environmental effect or a positive environmental effect, or the increase of an assessed positive environmental effect or creation of a new positive environmental effect. A matter will be within scope of the environmental statement if it does not give rise to materially new or materially different environmental effects to those reported in the environmental statement.</i></p>
Q1.8.2	<p>Part 2 Principal Powers – Article 6</p> <p>Article 6 of the dDCO [APP-012] would allow development not authorised by the DCO to be carried out within the Order limits pursuant to planning permission. The ExA consider that this would appear to obviate the need, in such circumstances, to apply to change the DCO (through s153 of the Planning Act 2008 (PA2008)).</p> <p>Provide further justification for this article.</p>	<p>The need to change the DCO (in the event consent is granted) pursuant to Section 153 of the PA 2008 is not obviated because:</p> <ul style="list-style-type: none"> (i) A nationally significant infrastructure project (i.e. the generating station, being Work No. 1) can only be consented under the PA 2008, pursuant to section 31 of the PA 2008. Therefore any change to Work No. 1 would need to be via a change to the DCO pursuant to the PA 2008; and (ii) For development that is not a NSIP, it would ordinarily be capable of being authorised by a planning permission under the Town and Country Planning Act 1990 (TCPA). However, to the extent that development consent (under the PA 2008) is granted for associated development, such associated development could not then be given planning permission under the TCPA. This is a result of the combined effect of section 115(5) and section 33(1) of the PA 2008. In other words the effect of section 115(5) is that the associated development, to the extent it has been consented by a DCO, is treated the same as a NSIP for the purposes of section 33 (and could not be given planning permission). Nothing in Article 6 operates to override the provisions of sections 33 and 115. Therefore to change associated development that has been consented by the DCO, a change would be needed to the DCO.
Q1.8.3	Part 2 Principal Powers – Article 6	The Applicant accepts the EA’s position and has removed sub-paragraph (f) from the

ExQ1 Ref	Question	Applicant Response
	<p>The Environment Agency (EA) [RR-130] has set out that it is satisfied that no activities will take place that would require the need for a flood risk activity permit and does therefore not consent to the disapplication of the consent required in relation to the carrying out of a relevant flood risk activity under the Environmental Permitting (England and Wales) Regulations 2016, as required by section 150 of the Planning Act 2008. This is also relevant for the legislation contained in part (d).</p> <p>Applicant, provide further justification for the need to disapply this legislation in light of the EA's comment.</p>	<p>Draft DCO [EN010149/APP/3.1.2] submitted at Deadline 1.</p> <p>The Applicant has had discussions with the EA in relation to sub-paragraph (d), and the EA has agreed to expand upon its reasoning for its request, in order that the Applicant can better understand its position and then consider any further amendment to Article 6.</p>
Q1.8.4	<p>Part 3 Streets - Article 10 Article 10 of the dDCO [APP-012] would authorise the alteration of any street within the Order limits. Provide further justification to demonstrate why this power is necessary and should not be limited to only identified streets.</p>	<p>Article 10(2) authorises the alteration of any street, and it is noted that this is not restricted to the Order limits. The justification is that at detailed design, there may be additional or slightly different requirements in terms of the highway works that are necessary. This is considered appropriate as there are controls in place pursuant to Article 10(4), which requires that the powers conferred by Article 10(2) may not be exercised without the consent of the street authority. In addition, the amendments made to the oCTMP [EN010149/APP/7.8.2] at Deadline 1 include drafting to require detailed design of works authorised by Articles 10 and 12 to be approved by the local highway authority.</p> <p>There is precedent for this drafting most recently in made Orders including Viking CCS Carbon Dioxide Pipeline Order 2025, Heckington Fen Solar Park Order 2025, and West Burton Solar Project Order 2025.</p>
Q1.8.5	<p>Part 3 Streets - Article 13 Notwithstanding any other precedents, provide justification to demonstrate why this power is appropriate and proportionate having regard to the impacts on pedestrians and others of authorising temporary working sites in these</p>	<p>The question refers to Article 13(6) which provides that the undertaker may use any public right of way which has been temporarily closed under the powers conferred by Article 13, and within the Order limits, as a temporary working site. This means that where a PRoW is otherwise going to be temporarily closed under this Article, whilst it is closed, the PRoW can be used as a temporary working site. This is considered appropriate and proportionate, given it is included to make most efficient use of a PRoW that cannot</p>

ExQ1 Ref	Question	Applicant Response
	streets.	<p>otherwise be used for safety reasons during construction. The power also needs to be considered in the context of other controls pursuant to the Works Plans and Schedule 1 of the Draft DCO [EN010149/APP/3.1.2] (which restrict where works can be undertaken) and various management plans controlling construction, in particular the oCEMP [EN010149/APP/7.7.2] and oCTMP [EN010149/APP/7.8.2].</p> <p>As the question appears to acknowledge, the article is well preceded for example Article 11 of East Yorkshire Solar Farm Order 2025, Article 13 of Viking CCS Carbon Dioxide Pipeline Order 2025, and Article 11 of West Burton Solar Project Order 2025.</p>
Q1.8.6	<p>Part 5 Powers of Acquisition – Article 27 Article 27(1) of the dDCO [APP-012] includes the words ‘paragraph 22(1)’ should this be amended to read ‘paragraph (1)’?</p>	The Applicant has made this amendment in the draft DCO submitted at Deadline 1.
Q1.8.7	<p>Part 6 Miscellaneous and General – Article 40 Article 40(1) states that ‘the undertaker may fell or lop any tree or shrub near any part of the authorised development...’. However, the EM [APP-013, Paragraph 4.6.10] refers to ‘within or overhanging the Authorised Development’. The ExA consider that this could be misleading.</p> <p>Provide a revised EM to address this matter.</p>	The Applicant had amended Article 40 in the updated version of the Draft DCO [EN010149/APP/3.1.2] submitted at Deadline 1 to limit the power in paragraph (1) to trees or shrubs within or overhanging the land within the Order limits.
Q1.8.8	<p>Part 6 Miscellaneous and General – Articles 41 and 41 NKDC [RR-305] has set out that it has some concerns around the powers that would be afforded under Articles 40 and 41.</p> <p>Please explain fully what these concerns are.</p>	Question directed to North Kesteven District Council.
Q1.8.9	Part 6 Miscellaneous and General – Article	The drafting referenced is well preceded (see for example Viking CCS Carbon Dioxide

ExQ1 Ref	Question	Applicant Response
	<p>49</p> <p>Provide further justification for the inclusion of the words 'to take' in Article 49(1).</p>	<p>Pipeline Order 2025, Rampion 2 Offshore Wind Farm Order 2025, London Luton Airport Expansion Development Consent Order, Heckington Fen Solar Park Order 2025). Our experience on other DCOs is that the Crown require this drafting in order to grant section 135 consent. On this basis the Applicant is loathe to amend drafting that has been required by the Crown elsewhere. The Applicant understands the drafting to relate to rights to take something from another person's land, for example something growing on the land or wildlife killed on it, for example by shooting or fishing.</p>
Q1.8.10	<p>Schedule 2 Requirements</p> <p>The EM [APP-013, Paragraph 5.2.3] states: <i>'Many of the requirements require submission of details for approval by the relevant planning authority. In some instances, the relevant planning authority is under a duty to consult with a third party or parties in relation to the document submitted to them. This is a departure from the model provisions'.</i></p> <p>Confirm whether this approach has been accepted in any previously made DCOs.</p>	<p>The Applicant can confirm that this approach has been widely accepted in previously made DCOs, for example: The Cottam Solar Project Order 2024, The West Burton Solar Project Order 2025, The East Yorkshire Solar Farm Order 2025, The Heckington Fen Solar Park Order 2025. In most cases the inclusion of consultees will have been in response to a request from the consultee to be consulted on the requirement.</p>
Q1.8.11	<p>Schedule 2 - Requirement 10</p> <p>The title of R10 of the dDCO [APP-012] states that it relates to surface and foul water drainage. However, the ExA note that the content of R10 makes no reference to surface water.</p> <p>Explain why this is the case.</p>	<p>The drainage strategy covers surface water drainage and in some instances foul water drainage. The express reference to foul water drainage was seeking to make clear that this may not necessarily need to be included in the drainage strategy submitted for approval. The key point is that the drainage strategy must be substantially in accordance with the outline drainage strategy, which includes measures in relation to both surface water and foul water drainage. To avoid confusion, the Applicant proposes renaming the article "Drainage" and removing the words in brackets that reference foul water drainage. Express reference to either surface water or foul water drainage is not necessary to ensure this is secured by this requirement.</p>
Q1.8.12	<p>Schedule 2 - Requirement 11</p> <p>The EM [APP-013, Paragraph 1.6.7] sets out that R11 relates to the approval and implementation of the written scheme of</p>	<p>Requirement 11 has been updated in the draft DCO submitted at Deadline 1, and the Explanatory Memorandum has also been updated to reflect this and to address the point raised by the question.</p>

ExQ1 Ref	Question	Applicant Response
	<p>investigation for archaeological mitigation. However, the first paragraph of R11 does not include the word 'archaeological'.</p> <p>Advise if it should.</p>	
Q1.8.13	<p>Schedule 3 - Railway Matters</p> <p>NR [RR-296] is concerned that Schedule 3 of the dDCO [APP-012] disapplies the Great Northern and Great Eastern Railway Companies Act 1879 and Great Northern Railway (Spalding to Lincoln) Act 1878. It notes that this legislation provides Network Rail with a series of rights and responsibilities which allow it to carry out its statutory undertaking in respect of the regions covered by the legislation. NR also consider that Protective Provisions are required in the dDCO.</p> <p>Provide further justification why the disapplication of this legislation is required and why Protective Provisions are not required.</p>	<p>With respect to the legislation that is sought to be disapplied, Article 6 does not operate to simply disapply entire pieces of legislation.</p> <p>Article 6(1) provides that the following provisions do not apply in relation to “the construction of any work or the carrying out of any operation required for the purposes of, or in connection with, the construction, operation, maintenance or decommissioning of any part of the authorised development”.</p> <p>Article 6(1)(g) then provides that the legislation in Schedule 3 of the dDCO is disapplied “in so far as the provisions still in force are incompatible with the powers contained in this Order”.</p> <p>The extent of the disapplication is therefore tied closely to the Proposed Development and the Order limits.</p> <p>The legislation is not sought to be disapplied to the extent that it impacts NR in terms of its statutory undertaking in all the regions covered by the legislation. The Applicant also notes that both pieces of legislation are disapplied pursuant to Article 6(1)(f) and Schedule 3 of The Heckington Fen Solar Park Order 2025, which is drafted on the same basis.</p> <p>With respect to protective provisions, the Applicant is in discussions with NR on this point in order to confirm the interface between the Proposed Development and any NR assets. We anticipate that there may be a need to negotiate a set of protective provisions to be included in a further revision to the Draft DCO [EN010149/APP/3.1.2].</p>
Q1.8.14	<p>Schedule 16 - Discharge of Requirements</p> <p>NKDC [RR-305] has set out that there will be an increase in planning fees in April 2025 and requests that a proportionate increase is reflected in the fees set out in Schedule 16.</p>	<p>With respect to planning fees, the amendments to the Town and Country Planning (Fees for Applications, Deemed Applications, Requests and Site Visits) (England) Regulations 2012 (as amended) in April 2025 increased the fees payable for applications to discharge conditions. The Applicant has agreed to amend the draft DCO so that these increases are reflected in the fees set out in Schedule 16, and this has been done at Deadline 1.</p>

ExQ1 Ref	Question	Applicant Response
	<p>NKDC also request an increase in the number of days available for considering further amendments as it considers the timescale set out in Schedule 16 does not allow sufficient time for consultation. Further, the EA [RR-130] are of the view that 6(a) (Further information and consultation) should be amended to allow required consultees 15 days of receipt of the application to notify the relevant planning authority in writing specifying any further information it considers necessary in order to comment on the application. The EA consider this is needed to provide adequate consultation timescales that align with those in the Development Management Procedure Order 2015, i.e. 21 days (equivalent to 15 business days).</p> <p>What is the Applicant's reply to these matters?</p>	<p>In terms of the timescales associated with the discharge of requirements in Schedule 16, it is important to the delivery of the Proposed Development, which is a nationally significant infrastructure project, for which there is an urgent need and a critical national priority, that the overall timescale in paragraph 2(1) of Schedule 16 does not increase from ten weeks. The Applicant is, however, open to considering changes to the timeframes for consultation within the parameters of the overarching timeframe.</p> <p>The Applicant is agreeable to amending paragraph 3(2) of Schedule 16 to provide that the relevant planning authority has 15 rather than 10 working days in which to request further information from the Applicant, in the event there is no requirement consultee.</p> <p>The Applicant is agreeable to amending paragraph 3(3) of Schedule 16 to provide that the relevant planning authority has 20 rather than 15 working days in which to request further information from the Applicant, where there is a requirement consultee.</p> <p>These amendments are made in the Draft DCO [EN010149/APP/3.1.2] submitted at Deadline 1.</p> <p>As drafted, paragraph 3(6)(a) provides that a requirement consultee must respond to the relevant planning authority within ten working days if further information is required. The ten working days is considered appropriate and proportionate, given the importance of the delivery of the Proposed Development and is consistent with the timescales included in other made Orders including The Heckington Fen Solar Park Order 2025, The Cottam Solar Project Order 2024, The West Burton Solar Project Order 2025 and The East Yorkshire Solar Farm Order 2025. The Applicant therefore does not intend to amend this.</p>
Q1.8.15	<p>Explanatory Note The dDCO [APP-012] states that <i>'A copy of the Order plans and the book of reference mentioned in the Order and certified in accordance with article 42 (certification of plans and documents, etc) of this Order may be inspected free of charge during working</i></p>	<p>The Applicant confirms that NKDC and LCC have agreed to host a copy of the Order plans and the book of reference mentioned in the Order for inspection free of charge during working hours at North Kesteven District Council, District Council Offices, Kesteven Street, Sleaford, Lincolnshire, NG34 7EF and at Lincolnshire County Council, County Offices, Newland, Lincoln, LN1 1YL.</p>

ExQ1 Ref	Question	Applicant Response
	<p><i>hours at North Kesteven District Council, District Council Offices, Kesteven Street, Sleaford, Lincolnshire, NG34 7EF and at Lincolnshire County Council, County Offices, Newland, Lincoln, LN1 1YL'.</i></p> <p>Confirm that NKDC and LCC has agreed to this.</p>	
Q1.8.16	<p>Explanatory Memorandum</p> <p>The EM [APP-013, Paragraph 1.6.12.] sets out that approval and implementation of a decommissioning environmental management plan also secures a dust management plan, an emergency preparedness and response plan, a site waste management plan and a health and safety plan. The oDEMP [APP-0146, Paragraph 1.1.11] identifies that it will also secure a 'Traffic Management Plan and Travel Plan'.</p> <p>Therefore, should the EM also refer to this plan?</p>	<p>The Applicant has updated the Explanatory Memorandum [EN010149/APP/3.2.2] at Deadline 1 to reflect in paragraph 1.6.12, third bullet point, that the decommissioning environmental management plan also secures a traffic management plan and travel plan.</p>
Q1.8.17	<p>Explanatory Memorandum</p> <p>The provisions of s127 of the PA2008 referred to in the EM [APP-013, Paragraph 3.3.2 and 3.3.3], will only apply if a representation is made under s127(1)(b) which causes the SoS to be satisfied of either of the matters set out in s127(1)(c). The wording of these paragraphs of the EM does not make this clear.</p> <p>Provide a revised version of the EM to address this matter.</p>	<p>The Applicant has updated the Explanatory Memorandum [EN010149/APP/3.2.2] at Deadline 1 to address this point.</p>

Table 1-9: Land, Soils and Groundwater Questions

ExQ1 Ref	Question	Applicant Response
Q1.9.1	<p>Use of Best and Most Versatile Agricultural Land</p> <p>The use of Best and Most Versatile (BMV) land has been raised as a concern by many IPs [too many to list]. NPS EN-3 (Paragraph 3.10.14) states that: <i>‘While land type should not be a predominating factor in determining the suitability of the site location applicants should, where possible, utilise previously developed land, brownfield land, contaminated land and industrial land. Where the proposed use of any agricultural land has been shown to be necessary, poorer quality land should be preferred to higher quality land (avoiding the use of “Best and Most Versatile” agricultural land where possible)’</i>.</p> <p>Explain fully how the Proposed Development and the selection of the site accord with these requirements.</p>	<p>To minimise duplication, the Applicant refers the ExA to Q1.2.1 for matters relating to previously developed land, brownfield land, contaminated land and industrial land.</p> <p>NPS EN-3 paragraphs 2.10.28-34 acknowledge that solar developments may require the use of agricultural land but emphasise that the Best and Most Versatile (BMV) land (Grades 1, 2, and 3a) should be avoided where possible, with poorer quality land prioritised. The Applicant's site selection and design evolution were guided by this principle, aiming to minimise the use of BMV land to the extent practicable.</p> <p>Site Selection and BMV Land Consideration:</p> <p>The Applicant conducted a thorough site selection process, evaluating various factors including land quality, grid connection availability, and environmental constraints, Appendix 1 of the Planning Statement [EN010149/APP/7.1.2] (AS-018). Recognising that Lincolnshire contains over 410,000 hectares of BMV land, the Applicant aimed to minimise the use of such land. The Proposed Development occupies approximately 0.13% of Lincolnshire's BMV land, with only 0.002% designated for long-term green infrastructure. Importantly, the solar infrastructure is designed to be long-term temporary and fully reversible, allowing for the restoration of the land to agricultural use after the Proposed Development lifecycle.</p> <p>Design Measures to Minimise BMV Land Use:</p> <p>The design of the Proposed Development incorporates several measures to reduce the impact on BMV land, as explained in the Design Approach Document [EN010149/APP/7.3.1.2] which include:</p>

ExQ1 Ref	Question	Applicant Response
		<p>Retention of High-Quality Land: Fields comprising solely of Grades 1 and 2 land are retained for arable production, ensuring that the highest quality agricultural land remains in use. Prioritisation of Lower-Quality Land: Non-BMV land is prioritised for habitat creation and green infrastructure, aligning with guidance that recommends prioritising poorer-quality land for development.</p> <p>Efficient Use of Land: The infrastructure footprint on BMV land constitutes just over 4% of the Blankney Estate's total landholding (5,665 hectares), avoiding key agricultural buildings and minimising disruption to existing farming operations.</p> <p>Justification for BMV Land Use: Paragraph 2.10.145 of NPS EN-3 advises that the Secretary of State should consider the economic and other benefits of BMV land. In this context, the solar development forms part of a diversification strategy for the Blankney Estate, generating sustainable income through land rental, which supports the estate's long-term viability and agricultural resilience. The temporary nature of the development ensures that, post-decommissioning, the land can be reinstated to its original agricultural use.</p> <p>The Applicant has demonstrated that total avoidance of BMV land is not feasible due to the nature of the land quality across the Order Limits due to the high-level of BMV within Lincolnshire. However, the Proposed Development has been designed to strike a balance between minimising BMV land use by removing entire fields Grade 1 and 2 and achieving the project's renewable energy goals, as detailed in the Planning Statement [EN010149/APP/7.1.2] (AS-018) and Environmental Statement.</p> <p>Compliance with NPS EN-3 Requirements: The Proposed Development accords with NPS EN-3 paragraphs 2.10.18 - 48 requirements by:</p> <ul style="list-style-type: none">• Demonstrating that the use of BMV land is minimised and justified based on site-specific constraints and the quality of land in Lincolnshire.• Ensuring that development on BMV land is temporary, reversible, and strategically located to avoid high-grade land (Grades 1 and 2) where practicable.

ExQ1 Ref	Question	Applicant Response
		<ul style="list-style-type: none"> Supporting the economic resilience of the Blankney Estate, contributing to long-term agricultural productivity and estate viability. Implementing design principles that prioritise non-BMV land for habitat creation and maintain agricultural operations on the best-quality land. <p>The Proposed Development is consistent with NPS EN-3 by effectively balancing the need for renewable energy generation with the preservation and sustainable use of high-quality agricultural land.</p>
Q1.9.2	<p>Agricultural Land Classification Surveys</p> <p>The Applicant has undertaken Agricultural Land Classification (ALC) Surveys of the application site [APP-112 to APP-114]. NE [RR-291] has noted that the ES [APP-051, Table 11.12] presents a breakdown of land use across the Order limits, but does not specifically categorise any construction compounds or access tracks.</p> <ol style="list-style-type: none"> Applicant, confirm if construction compounds and access tracks have been taken into account in Table 11.12 and if so, where. Are LCC and NKDC content that the ALC surveys have been undertaken robustly? 	<p>a) The construction components of the Proposed Development have not been included within Table 11.12 of ES Volume 1, Chapter 11: Land, Soils and Groundwater [EN010149/APP/6.1.2] as this table outlines the key components that form part of the Proposed Development during the operational phase. The construction compounds will be located in areas of proposed infrastructure, for example, the Primary Construction Compound in Springwell East would be located in Field C8 and would thereafter be used for Solar PV development. The area of Solar PV development is specified within Table 11.12. The majority of access tracks will follow existing agricultural tracks, therefore any impacts on soil including BMV land will be minimal and temporary and therefore, this is not included in Table 11.12. The construction compounds and access tracks are located across areas of BMV land and this has been considered when assessing the construction impacts and mitigation measures to protect the soil. Mitigation measures to protect the soil include the stripping of topsoil, working in the soil in appropriate conditions and inspecting and covering soil bunds with grass. These are detailed and secured in the Outline Soil Management Plan [EN010149/APP/7.11.2]. Table 11.12 has been updated at Deadline 1 to include a breakdown of the ALC grade for the Grid Connection Corridor and cabling areas for clarity, following discussions with Natural England.</p>
Q1.9.3	<p>Permanent loss of Best and Most Versatile Agricultural Land for Green Infrastructure</p> <p>NE [RR-291] and numerous other IPs [too many to list] have raised a number of concerns with regard to the permanent loss of BMV land to Green Infrastructure. Provide further</p>	<p>As set out in ES Volume 1: Chapter 3: Proposed Development Description [EN10149/APP/6.1.2] Paragraph 3.17.6 states that following decommissioning of the Proposed Development, the land will be handed back to the landowners and it is assumed that the landowner would return the land to agricultural use. With the exception of landscape structural planting, including tree belts and hedgerows, the proposed green infrastructure is a temporary impact for the duration of the Proposed Development. It</p>

ExQ1 Ref	Question	Applicant Response
	justification for the use of BMV land for these areas, particularly what consideration has been given to the siting of the 'irreversible' Green Infrastructure away from BMV land and prioritising the siting of 'temporary' Green Infrastructure on BMV land.	<p>should be noted that ES Volume 1, Chapter 11: Land, Soil and Groundwater [EN010149/APP/6.1.2] assumes that all green infrastructure would be permanent solely to ensure a worst case assessment for the availability of BMV land. This aligns with ES Volume 1, Chapter 5: Approach to EIA [EN010149/APP/6.1] [APP-045] which states that a worst case scenario is used to calculate the impacts for each of the environmental assessments to ensure a robust assessment is undertaken.</p> <p>The permanent land take as a result of structural planting is shown on the Green Infrastructure Parameters presented in Appendix 1 of the oLEMP [EN010149/APP/7.9.2] and equates to 16ha of tree belts and 15,563m of new hedgerow planting. The remainder of the proposed green infrastructure, which includes 100ha of calcareous and neutral grassland is considered to be temporary and could be reverted back to agricultural land when the land is returned to the landowner at the end of the decommissioning phase of the Proposed Development.</p> <p>Section 5 and 6 of the Design Approach Document [EN010149/APP/7.3.2] demonstrates how the Applicant has developed the design of the Proposed Development to prioritise the use of non-BMV land for the creation of Green Infrastructure in accordance with Project Principle 8.3. For example, the creation of grassland habitats in Fields By20, Bcd079, E2, Bcd114, Bcd115 and Tb2 are all aligned to non-BMV land.</p> <p>Due to the nature of the land quality within the Order Limits and the general classification both locally and at a wider scale in Lincolnshire, it has not been possible to avoid BMV land entirely for the creation of Green Infrastructure. This will result in the permanent loss of approximately 4ha of BMV land at strategic locations within the Order Limits where structural planting is required to mitigate the Proposed Development. Where this occurs, the location of the strategic planting is dictated by the need to mitigate specific impacts at particular locations (such as to screen views from local footpaths, roads or residential properties) or to provide wider benefits in accordance with the oLEMP [EN010149/APP/7.9.2] (such as to connect existing blocks of woodland). In these instances, it is not possible to avoid BMV land and instead the Applicant has sought to minimise impacts on BMV land by aligning the planting to edge of existing field boundaries. This reduces the impact of the structural planting to relatively narrow fragments of BMV land at the edge of existing field parcels and does not compromise the</p>

ExQ1 Ref	Question	Applicant Response
		<p>continued agricultural use of the majority of the field. This is considered to be an appropriate and proportionate response to mitigate the Proposed Development.</p> <p>In some instances, temporary Green Infrastructure is located on BMV land within the Order Limits. Where this occurs, it has been carefully considered in balance with other environmental factors based on an interdisciplinary approach to design. This is set out within the Design Approach Document [EN010149/APP/7.3.2]. For example, proposals to create grassland habitat on Grade 2 BMV land near to Bloxholm Woods (Fields Bcd140 and Bcd141) takes account of sensitive below ground archaeology and feedback from the landowner on the current use of the land as permanent grass which renders the land unsuitable for arable production. This location also provides a good opportunity to extend and enhance the Local Wildlife Site (Project Principle 3.1). In this instance, the creation of grassland habitat on BMV land is considered to be appropriate and reflects the interdisciplinary approach to design which has been adopted by the Applicant.</p>
Q1.9.4	<p>Best and Most Versatile Agricultural Land and Fixed Solar Equipment</p> <p>NKDC [RR-305] has set out that the amount of land given over to fixed solar equipment (satellite collector compounds, BESS and Springwell substation and main collector compound) would be 21ha, which is described in the ES as a temporary loss of BMV land. NKDC go on to note that IEMA guidelines say that the permanent sealing of land above 20ha (including temporary development where there would be a reduction in soil quality) is a major adverse environmental impact and it notes that ExA's on other solar projects have taken the view that such a loss of land is a permanent impact as it is virtually impossible to mitigate. What is the Applicant's reply?</p>	<p>The term 'sealing over' is taken to relate to areas where there would be a permanent use of land for non-agricultural uses. There are no locations where permanent hardstanding would be located, as all above-ground infrastructure would be removed after the 40 year period of operation and returned to the landowner at decommissioning (including buildings and hardstanding associated with the BESS and Springwell Substation). There will not be reduction in soil quality as the land will be restored back to its prior ALC grade following the decommissioning, therefore the IEMA reference to temporary development is not relevant in this situation and a major adverse impact is not expected.</p> <p>The Proposed Development has an operational life of 40 years after which time all hard infrastructure above ground and below ground to a depth of 1m, with the exception of cabling, would be removed from the land (as secured within the Outline Decommissioning Environmental Management Plan [EN010149/APP/7.13.2].</p> <p>As set out in the Outline Soil Management Plan [EN010149/APP/7.11.2] and secured by Requirement 18 of the draft DCO [EN010149/APP/3.1.2] during construction, operation and decommissioning measures will be put in place to ensure the soil is being handled correctly and is able to be returned back to agricultural use following the decommissioning</p>

ExQ1 Ref	Question	Applicant Response
		<p>phase of the Proposed Development, therefore no permanent impacts are anticipated.</p> <p>The impacts on soil quality and agricultural land will also be minimised during the operational phase through implementation of measures in the Outline Soil Management Plan [EN010149/APP/7.11.2] such as the storage and management of soil bunds and potential for soil improvement through activities such as sheep grazing.</p>
Q1.9.5	<p>Cumulative Effects on Best and Most Versatile Agricultural Land</p> <p>The Applicant has set out [APP-056, Paragraph 16.8.9.] that it estimates the total area of BMV land within Lincolnshire to be over 410,000ha. Therefore, the Proposed Development would alone occupy some 0.13% of the BMV land in Lincolnshire and with the development of all the solar farms identified in the cumulative assessment [APP-056, Table 16.1] alongside the Proposed Development, approximately 2% of the county BMV land resource will be temporarily used. Do LCC and NKDC agree with the Applicant's figures?</p>	<p>Question directed to Lincolnshire County Council and North Kesteven District Council.</p>
Q1.9.6	<p>Soil Management and Mitigation</p> <p>The oCEMP, oOEMP, oDEMP and Outline Soil Management Plan (oSMP) contain a range of measures to manage and mitigate potential effects on soil. NE [RR-291] has raised several concerns with regard to the contents of the oSMP, with regard to soil handling and soil reinstatement.</p> <p>Applicant, provide further justification for the need to handle soils in the wetter winter period, and/ or provide further information to illustrate that every effort will be taken to avoid the need to handle soils in a plastic condition.</p>	<p>The Outline Soil Management Plan [EN010149/APP/7.11.2] has been updated at Deadline 1 to include clear instructions on how to restore soils back to previous ALC grade following construction and to specify that suitably trained personnel will supervise winter construction, where avoidance of the wetter winter period is not possible. The suitably trained personnel will provide training specific to wet weather conditions including plasticity.</p> <p>The oSMP [EN010149/APP/7.11.2] has been updated at Deadline 1 to clarify that the land will be returned to original ALC grade, informed by the pre-development ALC survey outputs.</p> <p>The removal of hardstanding is limited to a 1 metre depth to reduce unnecessary handling of soil (as set out in the Outline Decommissioning Environmental Management Plan</p>

ExQ1 Ref	Question	Applicant Response
	<p>a) Applicant, should the oSMP include a clear commitment to restoring the original ALC grade of all restored agricultural land?</p> <p>b) Applicant, clarify why removal of hardstanding is specifically limited to a 1 metre depth.</p> <p>c) Applicant, explain why reference is made within the ES [APP-051, Paragraphs 11.7.22 and 11.8.24] to the importation of topsoil during restoration and why this could be necessary.</p> <p>d) Are LCC and NKDC content with the measures set out in all of the above management plans?</p>	<p>[EN010149/APP/7.13.2] and Outline Soil Management Plan [EN010149/APP/7.11.2]). Leaving infrastructure in place below 1m depth will not limit farm cultivations, as they are typically limited to the upper 450 mm of soil (subsoiling). This would allow cultivation of land after the Proposed Development has been decommissioned and avoid any further impacts and disturbance to the soil.</p> <p>With regards to ES Volume 1, Chapter 11: Land, Soil and Groundwater [EN010149/APP/6.1.2], the areas of hardstanding will be restored using the soil retained onsite and it is not anticipated that any new topsoil will be required. ES Volume 1, Chapter 11: Land, Soil and Groundwater [EN010149/APP/6.1.2] has been updated at Deadline 1 to reflect the above amendment.</p>
Q1.9.7	<p>Contamination</p> <p>The ES [APP-051, Paragraph 11.8.1.] sets out that an interpretive report is required relating to site investigation work that has already been completed prior to construction works commencing and will be issued to LCC. This will provide further information relating to potential pollutant linkages that were identified in the Preliminary Risk Assessment [APP-115 to APP- 118]. In addition, the Preliminary Risk Assessment makes several recommendations, such as shallow intrusive works to determine ground and groundwater conditions, gas monitoring and boreholes.</p> <p>a) Is it appropriate to prepare the interpretive report post consent?</p>	<p>a) Completion of the interpretative report post-consent is considered to be appropriate, as this will be undertaken prior to any construction works associated with the Proposed Development commencing. This is secured in the Outline Construction Environmental Management Plan (oCEMP) [EN010149/APP/7.7.2] . This document is not required to inform the planning decision, but is required in order to allow the Proposed Development to progress, if consent is granted. The findings of the interpretative report will not materially change the ES findings, but will be used to determine any necessary actions to allow the Proposed Development to be progressed (such as remediation, mitigation or monitoring associated with any existing contamination, if identified) in accordance with the oCEMP [EN010149/APP/7.7.2]. It will be possible to determine, following completion of the interpretative report, whether the recommendations of the Preliminary Risk Assessment have been fully addressed, or whether there are any further matters that require consideration. The results of the interpretative report (along with any recommendations for further phases of work, and conclusions relating to groundwater conditions or ground gas issues)</p>

ExQ1 Ref	Question	Applicant Response
	b) Applicant, how are the recommendations in the Preliminary Risk Assessment being addressed?	<p>will be provided to the local planning authority in accordance with the oCEMP [EN010149/APP/7.7.2].</p> <p>b) The recommendations of the Preliminary Risk Assessment have begun to be addressed by the intrusive site investigation work that has already been undertaken. However, the interpretative report to accompany the factual data is required to ascertain which matters have been fully addressed, and identify those where further risk assessment or site investigation may be required (if any). Consultation with the local authority (and the EA, if required) will ensure that all necessary issues are fully addressed and incorporated into the oCEMP [EN010149/APP/7.7.2] which is secured by Requirement 12 in the Draft DCO [EN010149/APP/3.1.2], with any subsequent monitoring or remediation works (if required) agreed in advance with the relevant local authority.</p>
Q1.9.8	<p>Unexpected Contamination</p> <p>The EA [RR-130, Paragraph 3.5] has requested that an additional requirement be added into the dDCO in relation to unexpected contamination and has put forward wording. The EA has also noted that it would need to be consulted on any remediation strategy to ensure it is carried out in a manner that protects controlled waters.</p> <p>a) Confirm if the wording is considered suitable.</p> <p>b) If not, provide alternative wording and explain why the suggested wording is not suitable.</p> <p>c) Provide a revised dDCO that includes the requirement.</p>	<p>a) With respect to the additional requirement requested, the Applicant considers this is more appropriately included in the oCEMP [EN010149/APP/7.7.2] and this has been added in the updated document submitted at Deadline 1.</p> <p>b) The suggested wording has been incorporated into the oCEMP [EN010149/APP/7.7.2] and this has been added in the updated documentation submitted at Deadline 1.</p> <p>c) The Applicant considers this is more appropriately included and secured in the oCEMP [EN010149/APP/7.7.2] instead of the dDCO. The recommended text has been added in the updated document submitted at Deadline 1.</p>
Q1.9.9	<p>Effects of Firewater on Groundwater</p> <p>Numerous concerns [too many to list] have been raised about the potential for contaminants from a BESS accident to affect</p>	<p>The Outline Battery Safety Management Plan [EN010149/APP/7.14.2] Sections 5.6.6. – 5.6.9 detail measures to minimise any environmental impacts of firefighting water runoff, as summarised below.</p>

ExQ1 Ref	Question	Applicant Response
	<p>groundwater. Further, the EA [RR-130] consider the BESS emergency response plan should consider the potential effect of the release of firewater from the BESS compound on groundwater quality. The ExA note that the oOEMP and oBSMP contain some details in this regard.</p> <ul style="list-style-type: none"> a) Applicant, what is your reply? b) EA, what further information is required? 	<p>Site and BESS design principles and the Emergency Response Plan (ERP) content will confirm that the Lincolnshire Fire & Rescue Service (LFRS) are expected to employ a defensive strategy i.e. only boundary cooling should be employed for cooling of adjacent BESS or associated supporting equipment, this ensures that environmental pollution risks are minimised. BESS enclosures are made of non-combustible materials and incorporate high levels of thermal insulation, to minimise fire propagation risks. Section 5.6.6 of the oBSMP stipulates: “this strategy would be finalised with the local fire authority and would be made clear in the emergency plan”.</p> <p>Boundary cooling typically involves firefighters directing water fog or spray pattern discharge to ensure the incident does not spread to adjacent BESS enclosures. NFCC guidance states: “If it can be confirmed that the recommended firefighting tactic for the BESS is to defensively fire fight and boundary cool whilst allowing the BESS to consume itself, this will reduce the water requirements, and thus the drainage/environmental protection requirements significantly.”</p> <p>The Applicant is fully cognisant that firefighting water runoff may contain particles from a fire, therefore runoff must be contained and tested before being allowed to discharge to the local watercourses. The potential for groundwater e.g. the aquifer, to be adversely impacted by the development has been considered in detail by the assessment that has been undertaken in ES Volume 1, Chapter 11: Land, Soil and Groundwater [EN010149/APP/6.1.2].</p> <p>Mitigation measures secured by the Outline Operational Environmental Management Plan (oOEMP) [EN010149/APP/7.10.2] include measures to manage firewater associated with the BESS. The drainage system is designed to capture this water during a thermal runaway event, where it can be tested and released or, if necessary, removed by tanker and treated offsite (in consultation with the relevant consultees at the time). Pollution analysis will always be conducted before removing from site (if polluted) or releasing into drainage systems, if safe to do so.</p> <p>Sections 3.11.11 – 3.11.14 of the Flood Risk Assessment, Appendix 1: Outline Drainage Strategy [EN010149/APP/7.16.3] details how firefighting water will be captured, with the system specifications finalised and agreed at the detailed design stage and</p>

ExQ1 Ref	Question	Applicant Response
		incorporated into the Emergency Response Plan (ERP).
Q1.9.10	<p>Effects of Solar PVs on Groundwater</p> <p>There have been numerous concerns raised [too many to list] that chemicals contained within the Solar PVs could leak causing contamination and therefore affect groundwater quality. How will the Applicant ensure that this would not occur?</p>	<p>During the operational life of each solar panel, maintenance operations will ensure that no chemicals or heavy metals will be released from within the panels. There are no expected leaks of chemicals from the PV as part of normal operation. With faulty, damaged or end-of-life assets, a key method to reducing the risk of chemical impacts is to ensure they are removed and disposed of responsibly. Any damaged panels would be removed and replaced in accordance with the oOEMP [EN010149/APP/7.10.2]. Panels that are correctly maintained will not result in any release of chemicals or heavy metals to the environment.</p> <p>Should there be any unexpected contamination, this would be mitigated and managed by measures such as immediate cessation of works, containment of impacted materials, notification to the Applicant and relevant authorities, site investigation through sampling and testing, development and approval of a remediation strategy, supervised excavation by a geo-environmental specialist, and submission of a verification report confirming successful remediation. This is in accordance with Table 8 of oCEMP [EN010149/APP/7.7.2], Table 6 of oOEMP [EN010149/APP/7.10.2] and Table 7 of oDEMP [EN010149/APP/7.13.2].</p>
Q1.9.11	<p>Unexploded Ordnance</p> <p>The ES [APP-051, Table 11.3] sets out that the risk of Unexploded Ordnance (UXO) will be managed by the implementation of a UXO Risk Management Plan for intrusive works. Is it appropriate to prepare the risk management plan post consent? Is the requirement for a risk management plan suitably secured in the dDCO?</p>	<p>Yes, the Applicant considers it appropriate for this to be prepared post-consent once further detail about the construction programme and activities is known following detailed design. The Applicant has already completed a detailed UXO risk assessment (on 10 February 2023) and this was included as part of the pre-construction information for the ground investigations that were undertaken. The detailed UXO risk assessment was undertaken to identify the risk of UXO at the Site. The detailed UXO risk assessment concluded that there is a medium risk of UXO in sections of the northern and central-western area of the Site. The remainder of the Site has been assessed as being at low risk from UXO. The report concluded that risk mitigation measures are recommended to support the proposed construction works including a UXO Risk Management Plan to include measures to manage the risk, which may include UXO specialist onsite support for certain construction activities.</p> <p>Yes, the requirement of the UXO risk management plan is secured in the oCEMP [EN010149/APP/7.7.2] which is secured by Requirement 12 in the Draft DCO</p>

ExQ1 Ref	Question	Applicant Response
		[EN010149/APP/3.1.2] and this is a suitable mechanism to secure compliance with the plan and ensure that it is prepared at the appropriate time prior to the construction works being undertaken.

Table 1-10: Landscape and Visual Impact Questions

ExQ1 Ref	Question	Applicant Response
Q1.10.1	References Provide copies, for inclusion into the Examination Library of: <ul style="list-style-type: none"> a) Ref. 10-22: National Character Area Profile 47 – Southern Lincolnshire Edge (2014) Natural England. b) Ref. 10-23: North Kesteven Landscape Character Assessment (2007) David Tyldesley and Associates for North Kesteven District Council. c) Ref. 10-24: The Historic Character of the County of Lincolnshire – English Heritage Project No 4661 - The Historic Landscape Character Zones (2011) John Lord and Alastair Macintosh, Lincolnshire County Council. 	Copies of the three documents listed have been provided to the ExA as part of the Deadline 1 submission on 3 June.
Q1.10.2	Residents and Visitors of Surrounding Villages Are LCC and NKDC satisfied with the Applicant's justification set out in Table 10.2 and Section	Question directed to Lincolnshire County Council and North Kesteven District Council.

ExQ1 Ref	Question	Applicant Response
	<p>10.5 of ES Chapter 10 [APP-050] for not undertaking a full assessment of visual impacts for:</p> <ul style="list-style-type: none"> a) Residents and visitors to the villages of Scopwick, Kirkby Green, Blankney and Ashby de la Launde; and b) Residents of the barracks at RAF Digby. 	
Q1.10.3	<p>Wider Landscape Character</p> <p>Numerous IPs [including RR-306] raise concern regarding the extent of solar development within the wider Lincolnshire area and the impact this would have on the character of the landscape. However, the ES [APP-050] assessed that significant effects in construction, operation and decommissioning would be limited to tightly defined tracts of Landscape Character Area (LCA) 7 and LCA11.</p> <ul style="list-style-type: none"> a) Applicant, explain why the wider landscape character at the regional or county scale would not be adversely affected by the Proposed Development alone. b) When considered cumulatively with other solar developments (both above and below the threshold for NSIP development), does the extent of solar development affect the key characteristics of the Central Plateau Landscape Character Type (LCT) or National Character Area (NCA) 47 - Southern Lincolnshire Edge? 	<p>a) Effects on landscape character are usually restricted to locations where there is at least some view of the development under consideration. Where there is no view of the Proposed Development there cannot usually be any discernible change to the sense of place or the distinct and recognisable pattern of elements which contribute to landscape character. At locations where the Proposed Development constitutes a small or negligible distant feature in the view, the magnitude of effect on landscape character is likely to be minor or negligible. In some instances the effects of a given development on landscape character may be experienced across an entire character unit (LCA or LCT). More commonly however, particularly where the boundaries of LCAs or LCTs are drawn widely and cover a large geographical area, it is usually the case that there would be an effect on part of a character unit but not all of it.</p> <p>With reference to ES Volume 4, Landscape Visualisations [EN010149/APP/6.4] [APP-129] [APP-130] [APP-131] [APP-132] [APP-133], Viewpoints 1, 20, 21, 31, 33, 37, 38, 39 and 40 comprise all of the assessment viewpoints beyond 1km of any above ground infrastructure within the Proposed Development. At these viewpoints it can be seen that the Proposed Development would not result in any more than a small scale of change in landscape character during any phase as the Proposed Development would either not be visible at all or form a small component of a distant view. At most of these viewpoints, the scale of change in landscape character would be negligible during all phases.</p> <p>ES Volume 1, Chapter 10: Landscape and Visual [EN010149/APP/6.1] [APP-050] demonstrates that, due to the relatively flat topography within and</p>

ExQ1 Ref	Question	Applicant Response
	c) Applicant, in a similar format to Figure 16.8 [APP-072], provide a plan that shows the Order limits and other solar developments in relation to the boundary of LCA7, LCA11, the Central Plateau LCT and NCA47?	<p>surrounding the Order Limits combined with the relatively low profile of the Proposed Development and the screening effect of existing vegetation in the landscape, beyond 1km of Springwell East and Central and beyond 1.5km of Springwell West the scale of change in landscape character would be negligible during all phases.</p> <p>From the above ground infrastructure within the Proposed Development, LCA 7 extends approximately 15km north to Lincoln and 5km south to Sleaford whilst LCA 11 also extends 15km north to Lincoln but 19km to the south. Beyond 1-1.5km of the Order Limits the Proposed Development would have no effect on landscape character and therefore there would be no effect on landscape character across the greater majority of both character areas. The Central Plateau Character Type and the National Character Area are even more extensive in geographical extent and therefore again there would be no effect on landscape character across the greater majority of the LCT and NCA.</p> <p>b) There are no other operational, approved or proposed NSIP solar developments on the PINS website (excluding cable corridors) in either the Central Plateau LCT or NCA 47 - Southern Lincolnshire Edge. The consented Heckington Fen DCO solar project is in adjacent NCA 46: The Fens. The consented Cottam, Gate Burton and West Burton DCO solar projects are all in adjacent NCA 48: Trent and Belvoir Vales. The Tillbridge DCO solar project (at recommendation stage) and One Earth DCO solar project (at Pre-examination) are also in NCA 48. Beacon Fen DCO solar project (at Pre-examination) just extends into NCA 47 but is mainly located within and more closely associated with NCA 46 The Fens. The proposed underground cable corridors for the Fosse Green DCO solar project and Leoda DCO solar project would cross NCA 47 and the Central Plateau LCT to access the proposed National Grid Navenby Substation. However, the principal above ground components of these two proposed developments would be located on the western side of the Lincoln Cliff and would have a negligible cumulative effect in combination with the Proposed Development on NCA 47 or Central Plateau LCT. All of the above DCO solar projects are sufficiently distant that they would have a negligible effect on the character of the LCT and NCA within which the Springwell development is proposed.</p>

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There are several much smaller operational and consented solar farms within the LCT and NCA, none of which are located within 5km of the Springwell Order Limits. This includes: the Branston solar farms (approximately 6.5km to the north of Springwell East); North Rauceby solar farm (over 5km to the south west) a cluster of solar farms south of Sleaford (over 10km to the south) and three small fields of solar panels south of Ruskington (over 5km to the south of Springwell). These are scattered across a landscape character type which extends approximately 38km from Lincoln to Folkingham and a national character area which is even more extensive in area.

ES Volume 1, Chapter 10 Landscape and Visual [EN010149/APP/6.1] [APP-050] demonstrates that the effects of the Proposed Development would be limited to a tightly defined tract of land surrounding the Springwell Solar Farm. For the same reasons these other smaller solar farms tend to have a limited and localised effect on landscape character.

Key characteristics for the Central Plateau LCT are not set out in the North Kesteven Landscape Character Assessment but these are essentially the same as those defined for NCA 47 and identified in ES Volume 3, Appendix 10.2: Baseline Landscape Character Appraisal [EN010149/APP/6.3] [APP-108]. The Applicant considers that whether considered on a solus basis or cumulatively with all other known operational and consented solar farm developments, the Proposed Development would not have a significant effect on the key characteristics of the LCT or NCA as a whole. The schemes within the LCT and NCA would have no effect on the character of the noted escarpment and cliff running north-south along the western boundary of the LCT and NCA or the far reaching views from this edge over the Trent and Belvoir Vales below. The landscape would remain large in scale and notwithstanding some localised foreshortening of views, when considered at the LCT or NCA scale, the vast majority of these areas would remain open. The pattern of fields would remain unchanged. Effects on semi natural habitats would be beneficial and the extent of human settlement and activity (post construction) would not be discernibly greater than existing agricultural activity. There would be no effect on airfields which are

ExQ1 Ref	Question	Applicant Response
		<p>noted as a characteristic of the landscape or any discernible alteration to the characteristic long straight roads and tracks with wide verges. Locally the introduction of glass and metallic structures would be prominent but in the wider LCT and NCA, the vernacular architecture would prevail.</p> <p>c) The Applicant has prepared three additional plans which are submitted with this response and form Appendix 2 of this document:</p> <ul style="list-style-type: none"> • Appendix 2, Plan 1 - Cumulative Solar Development and National Character Area 47 • Appendix 2 Plan 2 - Cumulative Solar Development and the Central Plateau Landscape Character Type • Appendix 2, Plan 3 - Cumulative Solar Development and Landscape Character Areas LCA7 and LCA11
Q1.10.4	<p>Character of Surrounding Villages Do LCC and NKDC agree with the Applicant's position in ES chapter 10 [APP-050] that the changes to the Landscape Character Area (LCA) 7 and LCA11 surrounding Blankney, Scopwick, Kirkby Green, Ashby de la Launde and RAF Digby will not affect the character of these villages? If not, provide an explanation of how the character of these villages would be affected.</p>	Question directed to Lincolnshire County Council and North Kesteven District Council.
Q1.10.5	<p>Vegetation in Photomontages The year 10 photomontage for Viewpoint 12 (Spires and Steeples Trail) [APP-130] appears to show the proposed hedgerow in leaf to the right-hand side of the track whereas the existing hedgerow on the left-hand side is without leaves.</p> <p>a) Is it correct that the proposed species of hedgerow would be in leaf in early March?</p>	<p>Within the limitations of the software available, the year 10 photomontage for Viewpoint 12 has been prepared showing an approximation of winter leaf coverage for the type of hedgerow described in the oLEMP [EN010149/APP/7.9.2]. The existing hedgerow on the left hand side of the image comprises of just hawthorn which does lose all leaf cover in winter. The new hedges proposed at Springwell will have a more diverse mix of species including some which are evergreen (eg holly) others with winter berries (eg dog rose) and others which hold a few leaves over the winter (eg wild privet). The hedgerow shown in the montage for Viewpoint 12 contains approximately 90% deciduous species and 10% of species with berries and a few remaining leaves. The applicant considers this to be a reasonable representation of the winter screening provided by a well managed, dense</p>

ExQ1 Ref	Question	Applicant Response
	<p>b) Are there other times of the year that the proposed hedge species would offer less dense screening and if so, could additional photomontage views be provided?</p> <p>c) Further information is requested on how the proposed screening planting would relate to the existing hedgerows across the Proposed Development site in terms of density and the level of visual screening it would offer in the winter months. Is it intended that users of the PRoWs would experience filtered views of the Panels or a dense screen of vegetation?</p>	<p>native mixed hedgerow at year 10.</p> <p>a) As noted above, certain species within the proposed planting mix would have some leaf cover in early March but most species would not at this time of the year. Within the limitations of industry standard software, the Applicant has sought to provide a realistic impression of the view in winter at year 10.</p> <p>b) The Applicant does not consider that there would be any less leaf coverage at other times of the year and therefore additional photomontages are not considered to be necessary.</p> <p>c) Many of the existing hedgerows within the Order Limits are single species hawthorn hedgerows whilst as noted above the new hedges proposed at Springwell will have a more diverse mix of species. The new hedgerows would be established and managed in accordance with the LEMP prepared in accordance with the Outline LEMP [EN010149/APP/7.9.2] to ensure that by year 10 they would provide a similar level of screening to existing hedgerows.</p> <p>The applicant acknowledges that in winter months (typically between early November and late March) there would remain filtered views through the new hedgerows and it has not been suggested that in year 10 the new hedgerows would completely screen the new structures except where a wider shrub belt has been proposed.</p> <p>The viewpoint analysis presented in ES Volume 3, Appendix 10.4: Viewpoint Analysis [EN010149/APP/6.3] [APP-110] acknowledges where filtered views would remain through new hedgerows at year 10. At Viewpoint 12 for example, the viewpoint analysis at year 10 is as follows:</p> <p><i>‘Once new mitigation hedgerows and existing hedgerows have established to 3.5 m, there would be almost no view at all of the Proposed Development. There may remain just an occasional heavily filtered glimpse of the solar PV development in Field C6 in winter months but this would be barely discernible. The proposed mitigation would therefore reduce the scale of change to visual amenity by Year 10.’</i> At Viewpoint 12 therefore, it is recorded that there would remain a small/negligible adverse effect on visual amenity at year 10.</p>

ExQ1 Ref	Question	Applicant Response
Q1.10.6	<p>Viewpoint 36 Photomontage Do the photomontages for viewpoint 36 [APP-133] show the worst potential case placement of structures within the relevant Work No. parameters?</p>	<p>The Applicant confirms that the photomontage for Viewpoint 36 in ES Volume 4, Landscape Visualisations Part 7 [EN010149/APP/6.4] [APP-133] illustrates the layout of structures in the positions shown on the Illustrative Layout Plans and Sections [EN010149/APP/2.5.2]. The Springwell Substation and BESS are illustrated using the 'worst case' maximum height parameters set out in Works No 2 and No 4 of ES Volume 1, Chapter 3: Proposed Development Description [EN010149/APP/6.1.2] and on the maximum platform height (FGL) set out in the same Works No.</p> <p>The Applicant acknowledges that the Springwell Substation could theoretically be located slightly further to the west (potentially up to 50m closer to viewpoint 36) as indeed it could be a similar distance to the north or east. The worst case when viewed from one direction would be slightly less of a worst case when viewed from the other side and vice versa. The Applicant therefore considered it appropriate to illustrate the substation centrally within the identified zone.</p> <p>The Applicant does not consider that the significance of the visual impact would be discernibly different if the structures were located in a marginally different location within the Work No.</p>
Q1.10.7	<p>CCTV Posts The Design Commitment D5 [APP-0138] states that CCTV will be located typically every 50-60 metres. It is noted that CCTV posts are shown on the photomontages for viewpoint 29c [APP-132] but not on viewpoint 28b [APP-132] or viewpoint 17a [APP-131].</p> <ol style="list-style-type: none"> Should there be CCTV posts shown in these photomontages? Provide more details about how the final locations and spacing of CCTV posts will be determined. 	<p>a) The Applicant notes that a pole mounted CCTV camera is shown in Viewpoint 17a of ES Volume 4, Landscape Visualisations: Part 5 [EN010149/APP/6.4] [APP-131] midway along the fence line below the background tree canopy. The Applicant does however acknowledge that no CCTV cameras are shown in the photomontage for Viewpoint 28b of ES Volume 4, Landscape Visualisations: Part 6 [APP-132]. It is likely that a single CCTV camera would be visible from this viewpoint along the fence line visible in this view at year 1. By year 10, the CCTV camera would be screened by the enhanced roadside hedgerow. Viewpoint 29c of ES Volume 4, Landscape Visualisations: Part 6 [APP-132] is also located on the A15 and illustrates a similar view and does show CCTV cameras.</p> <p>The Applicant considers that a single additional CCTV camera in Viewpoint 28b of ES Volume 4, Landscape Visualisations: Part 6 [APP-132] would not alter the judgements presented in ES Volume 1, Chapter 10: Landscape and Visual [EN010149/APP/6.1] [APP-050] regarding the visual effects of the Proposed</p>

ExQ1 Ref	Question	Applicant Response
		<p>Development on users of the A15. In the context of the moving vehicles on the road, the existing pole mounted overhead cables adjacent to the road and the more prominent components of the Proposed Development illustrated in the view, the additional CCTV camera would have a negligible impact on this view.</p> <p>b) The detailed design will incorporate the most up-to-date technology in intrusion detection and response. The specification of the CCTV is secured within the Design Commitments [EN010149/APP/7.4] [APP-0138] D4 and D5 and within the Outline Operational Environmental Management Plan [EN010149/APP/7.10.2]. The security system design will balance a number of factors, including the area to be covered or excluded from coverage, equipment placement, LVIA considerations, topography and land features. The Applicant will minimise the visual impact of the CCTV posts whilst ensuring operational and site security.</p>
Q1.10.8	<p>Viewing Angle Does the assessment of visual effects on viewpoints account for the angle at which you would be viewing the panels (eg. face on from the south, side on from the east and west or the underside of the panels from the north)?</p>	<p>In undertaking the assessment presented in ES Volume 1, Chapter 10: Landscape and Visual [EN010149/APP/6.1] [APP-050] the Applicant has, where necessary, been cognisant of which side of the Solar PV array would be visible (eg face on from the south, side on from the east and west or the underside of the panels from the north). However, in a relatively flat landscape such as at Springwell, the Applicant considers that the orientation in which the panels are viewed makes little difference to the assessment outcome compared to the scenario for example where panels are viewed across a hillside.</p> <p>For static receptor locations, such as at residential properties, the assessment has taken account of which side the panels would be viewed from.</p> <p>However the Solar PV array at Springwell would more frequently be viewed by transient receptors on PRoWs or roads. These receptors would typically experience views of the panels from both the front and the back depending on which direction they are travelling along the road/PRoW. This has therefore been taken into account in the assessment.</p>
Q1.10.9	<p>Visual Effects on Public Rights of Way Users NPS EN-3 (footnote 89 to paragraph 2.10.43) states that screening along public right-of-way</p>	<p>The viewpoint assessment in ES Volume 3, Appendix 10.4: Viewpoint Analysis [EN010149/APP/6.3] [APP-110] and the assessment of effects on receptor groups in ES Volume 1, Chapter 10: Landscape and Visual [EN010149/APP/6.1] [APP-050] does acknowledge as appropriate where the establishment of mitigation planting would restrict</p>

ExQ1 Ref	Question	Applicant Response
	<p>networks to minimise the outlook into the Solar Park may impact on the ability of users to appreciate the surrounding landscapes. Several IP's [including RR-306] raised concern that the open nature of Landscape Character Area (LCA) 7 would be eroded by enclosure arising from screening planting and that the open agricultural character elements of LCA11 would change to an inherently enclosed character with long range vistas compromised in order to screen the Proposed Development.</p> <p>How has the impact on the ability of users to appreciate the surrounding landscapes been taken into consideration in arriving at the conclusions in ES chapter 10 [APP-050]?</p>	<p>longer distance views across adjoining fields (see analysis in relation to Viewpoint 3 for example and the assessment of effects on PROWs between Blankney, Scopwick and Kirkby Green extending up to Blankney Walks Lane and the railway on the eastern site boundary (Paragraph 10.9.199 onwards of Chapter 10).</p> <p>Where views from a PROW across a previously open field would be restricted by new mitigation planting, a precautionary approach to the assessment has been adopted and this has been treated as an adverse effect, even though it is likely that not all people would consider this to be a reduction in visual amenity.</p> <p>Where this is the case, a reduction in the significance of the visual effect has typically been recorded when compared to the Year 1 (pre-establishment of mitigation planting) effect but this is still recorded as a reduced magnitude of adverse change. The Applicant does not consider that any recognised or designated vistas would be adversely affected by the proposed development.</p> <p>Project Principles were established to minimise adverse effects on PROWs including Principle 5.2 (to protect the amenity of the Spires and Steeples Trail) and 5.3 (to consider sequential views and experience of people using local footpaths). These are set out in the Design Approach Document EN010149/APP/7.3.2] together with an explanation of how they have shaped the design response (Sections 5 and 6).</p> <p>The treatment of PROW varies across the Order Limits and is designed to respond to the local landscape character. In Springwell East (LCA11) this includes:</p> <p>A minimum 15m offset to Solar PV development on either side of all PROW to create a wide walking corridor as secured by the Design Commitments [EN010149/APP/7.4] [APP-0138].</p> <p>Discounting Solar PV development from specific fields within the Order Limits to break up the amount of development along footpaths and to create green infrastructure corridors aligned to them as secured by the Works Plans [EN010149/APP/2.3] [APP-007]. For example, discounting Solar PV development from Field Lf02 to preserve longer distance views within Springwell East.</p>

ExQ1 Ref	Question	Applicant Response
		<p>Limiting the extent of PRoWs that would have Solar PV development on both sides of a footpath as secured by the Works Plans [EN010149/APP/2.3] [APP-007]. Structural planting at appropriate locations that replicates the character of existing landscapes features, such as Trundle Lane, as secured by the oLEMP [EN010149/APP/7.9.2] .</p> <p>In Springwell West (LCA7), this includes:</p> <ul style="list-style-type: none"> • minimum 15m offset to Solar PV development on either side of all PRoW to create a wide walking corridor as secured by the Design Commitments [EN010149/APP/7.4] [APP-0138]. • Discounting Solar PV development from specific fields within the Order Limits to break up the amount of development adjacent to footpaths as secured by the Works Plans [EN010149/APP/2.3] [APP-007]. As a result there are no instances where Solar PV development is proposed on both sides of an existing footpath. • Structural planting at appropriate locations that replicates the character of existing landscapes features, such as tree belt planting adjacent to Bloxholm Woods, as secured by the oLEMP [EN010149/APP/7.9.2]. <p>Views from the PRoWs would therefore comprise a mosaic of solar farm development and arable crop. The new infrastructure would essentially sit within a mature agricultural framework and views would remain primarily rural combining agrarian characteristics with those of a solar farm.</p>
Q1.10.10	<p>Project Principles Requirement (R) 5 of the dDCO [APP-012] requires the detailed design proposals to be developed in accordance with the Design Commitments [APP-0138]. The Design Commitments are based on the Project Principles as set out in section 6 of the Design Approach Document [APP-0137] but do not cover all the project principles.</p> <p>a) Should R5 require the detailed design to be developed in accordance with</p>	<p>The Design Approach Document EN010149/APP/7.3.2 demonstrates how the Project Principles have guided the evolution of the Proposed Development up to the point of DCO submission and how they manifest themselves as tangible outputs in the proposed design and management plans that will be secured by the draft DCO [EN010149/APP/3.1.2].</p> <p>Each Project Principle has the potential to influence multiple aspects of the Proposed Development and inform a variety of different outputs. For example, Principle 2.2 (responding to local character) has informed the spatial extents set out on the Works Plans [EN010149/APP/2.3] [APP-007], the Green Infrastructure Parameters set out within the oLEMP [EN010149/APP/7.9.2] and specific design requirements, such as the size type and colour of different components, which are set out in the Design Commitments</p>

ExQ1 Ref	Question	Applicant Response
	<p>both the Design Commitments and the Project Principles? If not, explain how the Project Principles would be applied to the detailed design proposals.</p> <p>b) Should the Project Principles be included in Schedule 13 (documents and plans to be certified) of the dDCO?</p>	<p>[EN010149/APP/7.4] [APP-0138] and the Project Parameters [EN010149/APP/6.3] [APP-074]. Section 6 of the Design Approach Document EN010149/APP/7.3.2] provides a summary of how the Proposed Development has responded to each of the Project Principles and where they are secured.</p> <p>On this basis, the Project Principles (and the outputs derived from them) are embedded to, and secured by, a range of different 'documents and plans to be certified' within Schedule 13 and pursuant to the requirements in Schedule 2 of the draft DCO [EN010149/APP/3.1.2]. The Project Principles themselves are therefore not required to be secured.</p> <p>Should the DCO be granted, the detailed design will be controlled by the relevant certified documents and plans (not just the Design Commitments) to ensure it is developed in accordance with the Project Principles.</p> <p>Adherence to the certified documents and plans, pursuant to Schedule 2, will secure the intended outputs of the Proposed Development Project Principles at the detailed design stage whilst also upholding the conclusions of the Environmental Statement and providing for flexibility.</p>
Q1.10.11	<p>Good Design</p> <p>The Design Approach Document (DAD) [APP-0137] sets out the need for good design and includes Design Principles that would be used to inform the detailed design process for different components of the Proposed Development.</p> <p>Provide further explanation of how the Springwell Substation (Work No. 2), Satellite Collector Compounds (Work No. 3) and the BESS (Work No. 4) would be capable of being laid out and designed (including through use of colour and materials) in order to promote the best possible aesthetic and visual appearance</p>	<p>a) The design principles are set out in Section 4 of the Design Approach Document EN010149/APP/7.3.2] and include 'Strategic Principles' and 'Project Principles'. These have been used to guide the evolution of the Proposed Development up to the point of DCO submission and are expressed as tangible outputs in the certified plans and documents to be secured by the draft DCO [EN010149/APP/3.1.2].</p> <p>The Springwell Substation, Satellite Collector Compounds and the BESS are designed to respond to the distinctive and unique local character of the Site in accordance with Project Principle 2.2. This includes the siting of these components and the provision of new planting and earthworks to reduce landscape and visual effects and integrate them with the surrounding landscape.</p> <p>Each Project Principle has the potential to influence multiple aspects of the</p>

ExQ1 Ref	Question	Applicant Response
	and to minimise landscape and visual effects. The Design Commitments [APP-0138] document includes various options for the colour and materials of above ground structures. Provide a summary of how the final appearance of above ground structures in Work Nos. 2 to 4 would be determined in order to minimise their landscape and visual effects? What bearing would the proposed colour and any reflectivity of the solar panels and panel mounting structures have on their landscape and visual impact?	<p>Proposed Development and is secured by a range of different ‘documents and plans to be certified’ within Schedule 13 and pursuant to the requirements in Schedule 2 of the draft DCO [EN010149/APP/3.1.2]. This includes the spatial extents shown on the Works Plans [EN010149/APP/2.3] [APP-007] and the Green Infrastructure Parameters presented in the oLEMP [EN010149/APP/7.9.2]. Other aspects of the detailed design, such as size, type and colour of these components will be controlled by the Project Parameters [EN010149/APP/6.3] [APP-074], and Design Commitments [EN010149/APP/7.4] [APP-0138].</p> <p>Specific Design Commitments [EN010149/APP/7.4] [APP-0138] in relation to the layout and appearance of Works Nos. 2-4 are summarised below with an explanation of how they have been selected to minimise landscape and visual effects:</p> <p><i>A1 Springwell Substation, BESS, Collector Compounds, Standalone Inverter, Transformer and Switchgear and ITS (part of the balance of solar system plant comprised in Work No. 1) will be offset at least 250m from residential properties. This will minimise the visual effects on the residential amenity experienced at dwellings in the landscape surrounding such infrastructure. The offset is intended to ensure that the visual effects at residential properties would not be overbearing or oppressive.</i></p> <p><i>D17 Satellite Collector Compounds will be mounted on concrete pad foundations or plinths. The proposed structures will be grey or dark green containers or brick or block buildings, rendered/painted to suit local building styles and to be sensitive to the local environment. Grey or dark green colours have been selected to achieve the best possible fit with the surrounding palette of colours in the baseline landscape and to minimise the use of more conspicuous colours which are less characteristic of the landscape.</i></p> <p><i>D19 BESS containers and transformer units will be grey or green in colour for the same reasons outlined above.</i></p> <p><i>D20 A 4m high acoustic barrier will surround the BESS compound and 6m high absorbent acoustic barrier will be positioned to the west, north and east faces of the Springwell Substation transformers. These will be grey or green in colour. Again this</i></p>

ExQ1 Ref	Question	Applicant Response
		<p>is intended to minimise the visual prominence of the barriers when viewed against the backdrop of trees in Gorse Hill plantation and along New England Lane.</p> <p><i>D21 There will be no permanent (continuous) lighting for security purposes except for at emergency exits.</i> This will minimise visual intrusion from lighting in the rural landscape at night.</p> <p>Within the parameters and constraints set by the certified documents and plans (including the design commitments) the exact layout and design of these components will have no discernible bearing on visual impact or the outcome of the LVIA.</p> <p>b) If DCO consent is given, the detailed design of Works Nos. 2-4, including the final appearance of above ground structures, will be developed for approval by the relevant planning authority in accordance with Schedule 2, Requirement 5 of the draft DCO [EN010149/APP/3.1.2]. Requirement 5 also sets out that the detailed design must be in accordance with the design commitments and project parameters as well as any details approved under requirements 7 (battery safety management), 8 (landscape and ecology management plan), 9 (fencing and other means of enclosure), 10 (surface and foul water drainage), 11 (archaeology), 15 (operational noise) and 17 (public right of way and permissive path management plan).</p> <p>Specific Design Commitments [EN010149/APP/7.4] [APP-0138] in relation to the appearance of Works Nos. 2-4 are summarised in response to question (a) with an explanation of how they have been selected to minimise landscape and visual effects.</p> <p>Within the constraints set by Design Commitments, the exact colour and material is highly unlikely to have any discernible bearing on visual impact or the outcome of the LVIA.</p> <p>The variation in colour and 'reflectivity' of solar panels by different manufacturers is relatively small ranging from dark blue to black. All have a similar anti-glare/anti reflective coating and are designed to maximise the absorption of sunlight and</p>

ExQ1 Ref	Question	Applicant Response
		<p>minimise reflection. Likewise the mounting structures are very similar irrespective of the manufacturer comprising a steel construction.</p> <p>The exact colour is highly unlikely to have any discernible bearing on visual impact or the outcome of the LVIA. The visual effects arising result from the presence of the structures themselves rather than the precise colour.</p>
Q1.10.12	<p>Advanced Planting</p> <p>Paragraph 5.3.8 of the Outline Landscape Environmental Management Plan (oLEMP) [APP- 0142] states that the Applicant is committed to implementing proposed vegetation and advanced planting prior to the installation of solar panels including planting adjacent to the A15 to mitigate glint and glare effects of Solar PV development in Winter 2024-25.</p> <ol style="list-style-type: none"> The ExA observed what appeared to be advanced planting in field C6 on Unaccompanied Site Inspection 1 [EV1-001]. Provide details of locations where early planting has already been implemented. Have any other locations been identified for advance planting of screening vegetation and why? How would any further proposed advance planting be secured by the dDCO [APP-012]? Other than the areas where construction access is required, what would prevent all the proposed screening vegetation being planted 	<p>a) The Applicant recognises the importance of establishing new planting at the earliest practicable opportunity to mitigate the Proposed Development in accordance with Project Principle 3.5. This is set out in the Design Approach Document [EN010149/APP/7.3.2] and the oLEMP [EN01049/APP/7.9.2].</p> <p>The Applicant has updated Section 5 of the oLEMP [EN01049/APP/7.9.2] to clarify the definition of ‘advanced’ and ‘early’ planting in response to the First Written Questions. ‘Advanced planting’ refers to new planting that takes place in advance of the DCO consent. ‘Early planting’ refers to planting that can take place following DCO consent (if it is granted) and before construction is complete. This is referred to as early planting because it would be implemented earlier than the ‘worst case’ scenario assessed within the Environmental Statement which assumes new planting would implemented after construction (refer to ES Volume 1, Chapter 10: Landscape and Visual [EN010149/APP/6.1] [APP-050]).</p> <p>The Applicant can confirm that advanced planting has been undertaken in Winter 2024-25 at two locations within the Order Limits in accordance with paragraph 5.3.9 of the oLEMP [EN01049/APP/7.9.2]. These areas were selected by the Applicant as priority areas for planting with most benefit in expediting the mitigation of adverse significant visual effects, demonstrating alignment with the Project Principles, and reinforcing the Applicant’s public commitment to be good neighbours and to put communities at the heart of its decision-making process. They are described as follows:</p> <ul style="list-style-type: none"> Approximately 410m of new hedgerow planting along the A15 at the eastern boundary of Field W1. The planting is designed to gap-up the existing hedgerow and screen views of the proposed Solar PV development once established.

ExQ1 Ref	Question	Applicant Response
	prior to the installation of solar panels and could this mitigate any adverse visual effects in the construction phase and year 1 of the operational phase?	<p>Advanced planting was considered a priority at this location to provide early mitigation of glint and glare impacts arising from the Proposed Development on users of the A15.</p> <ul style="list-style-type: none"> Approximately 436m of new hedgerow planting east of the Spires and Steeples Trail to the west of Fields C8, C9 and north west of C6. The planting is designed to provide early mitigation of landscape and visual impacts on the users of the Spires and Steeples Trail. Advanced planting was considered a priority at this location as the footpath is considered to have a heightened sensitivity given its status as a regionally promoted recreational route, its proximity to Scopwick, its inclusion within the neighbourhood plan as a key route between Scopwick and Metherringham, and in response to general concerns raised at consultation about the impact of solar development on people's enjoyment of local PROWs. b) The Applicant has not identified any further areas of advanced planting beyond the priority areas already implemented in Winter 2024-25. The reasons for advanced planting in these areas are set out in the response to question (a) above. c) As advanced planting takes place in advance of DCO consent it cannot be secured by the draft DCO [EN010149/APP/3.1.2]. Any further advanced planting would need to be in agreement with the relevant Landowner under existing land management rights. <p>Any proposals for early planting would be secured by the oLEMP [EN01049/APP/7.9.2] in accordance with Schedule 2, Requirement 8 of the draft DCO [EN010149/APP/3.1.2].</p> <ul style="list-style-type: none"> d) Whilst advanced planting has been undertaken to mitigate potential for significant adverse environmental effects during the construction phase and early years of operation in priority locations (refer to section a), the Applicant can't commit to planting all of the proposed screening vegetation prior to a decision as to whether to grant the DCO. This is because the detailed design (including planting) is subject to approval by the relevant planning authority in accordance with Schedule 2, Requirement 5 of the draft DCO [EN010149/APP/3.1.2].

ExQ1 Ref	Question	Applicant Response
		<p>If the DCO is granted, the Applicant has committed to producing a phasing strategy for new planting at the detailed design stage of the project in accordance with paragraph 4.1.14 and 5.3.12 of the oLEMP [EN01049/APP/7.9.2]. This would be aligned to the construction phase strategy and identify priority areas for early planting, identified through engagement with the Community Liaison Group, Lincolnshire County Council, the Environment Agency and Natural England, to be implemented based on areas that would have most benefit in reducing the short-term impacts of the Proposed Development. The earliest the commencement of preparation of the LEMP can commence is Spring 2026 (post DCO consent), within which the phasing of planting in advance of construction and during construction would be set out.</p> <p>Any planting that occurs during the early stages of the construction phase would have some benefit in providing earlier mitigation of the visual effects of the Proposed Development. However it is unlikely that such planting would provide sufficient mitigation of the effects during the construction phase or at year 1 to alter the assessment findings presented in ES Volume 1, Chapter 10 Landscape and Visual [EN010149/APP/6.1] [APP-050]. However the mitigation planting would mature sooner and reach the level of maturity described for the year 10 assessment at an earlier stage in the lifetime of the Proposed Development.</p>
Q1.10.13	<p>Height Parameters Fields By03, By10, By28, Lf04, Lf11 include land which is in flood zone 2 and 3. Figure 3.2b [APP-060] shows that all panels in these fields are subject to a maximum height parameter of 3.5m above ground level.</p> <p>a) Do all panels within these fields By03, By10, By28, Lf04, Lf11 need to be installed to the maximum height parameter of 3.5m or only those panels that fall within the actual flood zone areas?</p>	<p>a) Panels located outside of Flood Zone 2 and 3 require no additional raising for flood risk protection. For flood mitigation, the toe of the panels located in the Flood Zone 2 and 3 will be raised by at least 800mm in accordance with the requirements of the Environment Agency. The maximum height parameter of 3.5 allows flexibility for the panels to be located at this height due to flood risk, however, it should be noted that this is a maximum height parameter.</p> <p>b) The heights of the Solar PV panels are detailed in ES Volume 3, Appendix 3.1: Project Parameters [EN010149/APP/6.3] [APP-074] and secured by Requirement 5 in the Draft DCO [EN010149/APP/3.1.2]. The height parameter plans show visually what is secured by the Project Parameters but do not themselves add any additional controls and therefore do not need to be secured.</p>

ExQ1 Ref	Question	Applicant Response
	b) Should the height parameter plans Figures 3.2(A-F) be included within Schedule 13 of the dDCO? If not, provide justification.	
Q1.10.14	<p>Security Fencing</p> <p>Is the Applicant confident that the proposed post and wire fencing and other security measures will be sufficient for security? Or is there a risk that more robust security might be needed in the future which could have a worse visual impact?</p>	<p>Yes, the Applicant has conducted a site security risk assessment to inform the design along with consideration of industry best practice and is confident that this will be sufficient. As set out in ES Volume 1, Chapter 3: Proposed Development Description [EN010149/APP/6.1.2] and the Design Commitments [EN010149/APP/7.4] [APP-0138] post and wire fencing, up to 2.5m in height will enclose the areas of Solar PV development (Works No. 1) and fencing installed around the perimeter of the Springwell Substation, Satellite Collector Compounds and Battery Energy Storage System (Works No. 2, Work No. 3 and Work No. 4) would be either palisade design or mesh design with pulse monitoring. Palisade fencing would be up to 2.75m in height and comprise steel rails attached to horizontal-running rails connected to vertical steel joints. Mesh fencing would comprise a mesh fence up to 2.75m in height with a pulse monitoring security fence up to 3.4m height inside the mesh fence. Pole-mounted facing CCTV systems, which typically have a maximum height of 5m, would be positioned around the perimeter of the operational areas of the Site with fixed views of the Proposed Development as a security measure.</p>
Q1.10.15	<p>Co-ordination of Visual Mitigation with the National Grid Substation Proposals</p> <p>LCC [RR-233] and NKDC [RR-305] consider there are potential opportunities for the Applicant and the National Grid Substation proposals to coordinate mitigation planting in the area around the National Grid Substation. The local authorities give the example of extending of carriageway hedgerow planting further north along the western edge of the A15 (along field parcels Bcd024, Bcd027, Bcd031).</p> <p>Has the Applicant explored either the example</p>	<p>The Applicant is engaged in ongoing discussions with the Navenby Substation project team at National Grid.</p> <p>The Applicant understands that National Grid is currently still finalising its proposals for the Navenby Substation and developing landscape mitigation proposals as appropriate. It is understood that further information is likely to be made available in an EIA Scoping Report which will be submitted by National Grid in Q2 2025.</p> <p>National Grid has advised that, in its opinion, the mitigation proposals within its proposed development boundary are likely to be sufficient to mitigate any likely significant effects of their development on a solus basis.</p> <p>As noted in ES Volume 1, Chapter 16: Cumulative Effects [EN010149/APP/6.1.2] due to the distance between the two sites, there are very few locations where both the</p>

ExQ1 Ref	Question	Applicant Response
	given by the local authorities or any other opportunities to provide mitigation planting within the Order limits that would provide screening of the National Grid Substation? If not, provide justification.	<p>Proposed Development and the National Grid Navenby Substation would be visible simultaneously or in combination. Gorse Hill Covert acts as a strong visual barrier between the two developments. The only locations where there would theoretically be a view of both developments at the same time would be from approximately a 1km length of the A15 and potentially from a short section of the PRoW network between Heath Lane in the north and Gorse Hill Lane in the south. It has therefore been assessed by the Applicant that there would be no significant simultaneous or in combination cumulative visual effects (experienced at a static location in the landscape) between the Proposed Development and the National Grid Navenby Substation.</p> <p>The Applicant acknowledges that over a 1km section of the A15 between the turning for Temple High Grange Farm and Gorse Hill Lane the two developments would theoretically be visible at the same time but in reality, they would lie in different directions from the road and therefore whether travelling north or south along the A15 only one or the other would be visible at any time.</p> <p>With regards to the suggestion by LCC [RR-233] and NKDC [RR-305] of extending carriageway hedgerow planting further north along the western edge of the A15 (along field parcels Bcd024, Bcd027, Bcd031), the Applicant does not consider this would be necessary to mitigate any significant cumulative visual effects. Nevertheless, the Applicant and National Grid have agreed to discuss the Navenby Substation mitigation design further once National Grid's development proposals are further developed. The Applicant has stated it is open to co-ordination with National Grid as required, if land within the Applicant's Order Limits could support National Grid mitigating the effect of their development.</p> <p>The Applicant therefore proposes to provide a further update and response to this question at Deadline 3.</p>
Q1.10.16	<p>Not Significant Effects</p> <p>Paragraph 3.34 of the Guidelines for Landscape and Visual Impact Assessment (3rd Edition) states that it should be made clear that effects not considered to be significant will not be completely disregarded.</p>	<p>The Environmental Statement has assessed all environmental factors that have been scoped into the EIA and reports both the non significant and significant effects. An assessment of intra-project and inter-project combined effects is detailed in ES Volume 1, Chapter 16: Cumulative Effects [EN010149/APP/6.1.2]. The Planning Statement [EN010149/APP/7.2.2] [AS-018] acknowledges this principle by thoroughly assessing non-significant effects in relation to landscape and visual, cumulative and combined</p>

ExQ1 Ref	Question	Applicant Response
	<p>Explain how this has been taken into consideration, including in relation to the assessment of cumulative and combined effects, population effects and the wider 'planning balance' within the Planning Statement [AS-018].</p>	<p>effects, population effects, and the wider planning balance.</p> <p>Cumulative and Combined Effects The Planning Statement [EN010149/APP/7.2.2] [AS-018] emphasises that even effects not considered individually significant are still factored into cumulative and combined assessments. This is particularly evident in the landscape and visual impact evaluations:</p> <p>Section 8.7.45–8.7.47 Landscape and Visual Cumulative Effects, within the Planning Statement [EN010149/APP/7.2.2] [AS-018] discusses how landscape and visual impacts, even when not deemed significant individually, are considered in terms of their cumulative effects alongside other nearby developments, such as the National Grid Navenby Substation and RAF Digby projects. This ensures that even smaller-scale impacts are acknowledged in the broader context of visual change.</p> <p>The Planning Statement [EN010149/APP/7.2.2] [AS-018] also recognises sequential cumulative visual effects for travellers along key routes, ensuring that non-significant visual changes still contribute to a comprehensive understanding of landscape impacts.</p> <p>Population Effects Population-related effects are similarly acknowledged, even when classified as non-significant: Section 8.10.1–8.10.8 - Population of the Planning Statement [EN010149/APP/7.2.2] [AS-018] assesses socio-economic impacts, including effects on local employment, Public Rights of Way (PRoWs), and workforce spending during the construction, operation, and decommissioning phases. These impacts, while identified as minor or slight, are still considered in the overall analysis of socio-economic effects. The assessment also includes changes in local economic contributions and PRoW accessibility, reflecting that even minimal shifts can have broader implications for community and social infrastructure.</p> <p>Wider Planning Balance The Planning Statement [EN010149/APP/7.2.2] [AS-018] incorporates all identified effects, regardless of their significance, into the wider planning balance: Section 9.1.21–9.1.24 - Conclusion and Planning Balance of the Planning Statement [EN010149/APP/7.2.2] [AS-018] explicitly states that non-significant adverse impacts are</p>

ExQ1 Ref	Question	Applicant Response
		<p>not disregarded but are considered alongside substantial project benefits during decision-making. This approach ensures that all environmental, social, and economic impacts are weighed in the final assessment of the Proposed Development acceptability.</p> <p>The planning balance approach is consistent with the requirements of EN-1, ensuring that the Secretary of State weighs all adverse impacts, significant or otherwise, against the need for critical renewable energy infrastructure.</p> <p>As a Critical National Priority Infrastructure, the Proposed Development benefits from the strongest policy position set out in the national planning policy. EN-1 sets out a presumption in favour of energy-related development. The Planning Statement [EN010149/APP/7.2.2] [AS-018] confirms that the Proposed Development complies with EN-1, EN-3, EN-5, the NPPF and Local Plans for both North Kesteven District Council and Lincolnshire County Council. Where significant adverse effects have been identified, the Applicant has demonstrated its application of the mitigation hierarchy and careful consideration of design. However, impacts on landscape and visual receptors, soils, and agricultural land, which cannot be avoided, reduced, or mitigated, as per paragraph 4.2.11 of EN-1, remain. Cumulative impacts are also considered, as per the requirements of paragraph 4.2.12 of EN-1, and identify a significant impact which cannot be avoided, reduced or mitigated in relation to landscape and visual receptors.</p>
Q1.10.17	<p>Landscape Fabric</p> <p>The ES [APP-050] states there would be moderate beneficial effects to landscape fabric (woodland, trees and hedgerows) in the yr 10 of operation and decommissioning phases. Can this be considered a benefit of the project in relation to landscape effects if the additional planting is there to provide mitigation screening for a large-scale solar development which itself has an adverse effect on the landscape?</p>	<p>Yes, the Applicant considers this to be a beneficial effect on the landscape fabric in yr 10 of operation and decommissioning, despite the planting being proposed to mitigate visual effects. The planning balance, as outlined in Section 9 of the Planning Statement [EN010149/APP/7.2] [AS-018] and paragraph 9.1.19 sets out the additional benefits that will be delivered by the Proposed Development should consent be granted. In accordance with the Guidelines for Landscape and Visual Impact Assessment (3rd Edition) effects on landscape fabric, landscape character and visual amenity are assessed separately in ES Volume 1, Chapter 10: Landscape and Visual [EN010149/APP/6.1] [APP-050]. It is correct to note that the new woodland, trees and hedgerows which would become established over the lifetime of the Proposed Development are principally proposed to mitigate adverse visual effects. However, the establishment of this vegetation will not only mitigate these visual effects but also have a beneficial effect on the landscape fabric. It is not proposed to remove the new planting during decommissioning, and</p>

ExQ1 Ref	Question	Applicant Response
		<p>therefore at decommissioning, this newly established mitigation planting would positively contribute to the green infrastructure that permeates the Order Limits.</p> <p>Good design has been embedded into the Proposed Development from the outset of the site selection process, with the search process seeking to avoid areas of higher landscape sensitivity. In this context, the first tier of the mitigation hierarchy, has been applied as there are no local or national landscape designations which would be impacted by the Proposed Development. At a site-specific level a comprehensive mitigation package has been embedded into the design of the Proposed Development to date, with further commitments made to minimise any likely significant impacts. However, the nature of the Proposed Development, the sensitivity of receptors and the existing rural context mean that there are some impacts which cannot be mitigated. The Applicant considers given the acute need for the Proposed Development it has taken all reasonable measures to minimise these likely significant effects.</p> <p>In a policy context, paragraph 5.10.5 of EN-1 accepts that there will likely be some impact in terms of landscape and visual effects as a result of DCO scale energy projects, stating: <i>Virtually all nationally significant energy infrastructure projects will have adverse effects on the landscape, but there may be beneficial landscape character impacts arising from mitigation.</i></p>
Q1.10.18	<p>Density of Planting</p> <p>The oLEMP [APP-0142] states that new hedgerow planting throughout the Order Limits is proposed, both to bolster existing hedgerows but also to create new hedgerows. Further detail is requested on how it would be determined whether a section of hedgerow will need to be infilled, will it just be where there is a complete break in hedgerows as shown on the Green Infrastructure Plans [APP-060, Figure 3.3A-F] or will existing sparse/ thin hedgerows also be enhanced to provide a higher level of screening?</p>	<p>The Applicant confirms that the sections of hedgerow to be infilled/strengthened are not limited to those lengths highlighted in Figure 3.3A-F of ES Volume 2, Figure 3.3: Green Infrastructure Parameters [EN010149/APP/6.2.2] Although these plans show some infill planting where there are long breaks in existing hedgerows (typically identifiable on aerial photography) they are only illustrative and are not intended to be granular in their presentation of hedgerow sections to be enhanced.</p> <p>At this stage, the Applicant has not undertaken a sufficiently detailed survey of each hedgerow surrounding the Proposed Development to identify small gaps or to note which sections are sparse and thin. Surveys undertaken to date to inform the EIA and biodiversity net gain calculation in ES Volume 3, Appendix 7.14: Biodiversity Net Gain Assessment [EN010149/APP/6.3.2] identify the overall condition of the hedgerows as necessary to inform the necessary ecological and biodiversity assessments.</p>

ExQ1 Ref	Question	Applicant Response
		<p>The Applicant confirms, however, that it intends to enhance hedgerows as necessary around all fields containing above ground infrastructure including those identified in ES Volume 2, Figure 3.3: Green Infrastructure Parameters [EN010149/APP/6.2.2] .</p> <p>Following consent, the Applicant confirms that, as part of the detailed design process, a landscape architect will undertake a detailed survey of all hedgerows within the Order Limits and identify lengths of hedgerow which require infilling of gaps or increasing in density to provide a reasonable degree of screening to mitigate the visual effects of the Proposed Development. This is detailed in Section 6 of the oLEMP [EN010149/APP/7.9.2] the content of which will be secured by Requirement 8 of the draft DCO [EN010149/APP/3.1.2].</p> <p>Linear gaps of more than 1m and lengths of hedgerow where in the opinion of the landscape architect the hedgerow is sparse or thin will be geo-referenced and recorded. When judging whether the density of existing hedgerows should be enhanced, the Applicant notes that ES Volume 1, Chapter 10: Landscape and Visual [EN010149/APP/6.1] [APP-050] does not assume complete screening by hedgerows. The Applicant acknowledges that some filtered glimpses may remain through hedgerows in winter months. In summer months however, it is assumed that in terms of density, the hedgerows would screen the development behind them. Therefore where in summer months the hedgerows do not provide a robust screen, these will be identified for additional enhancement.</p> <p>Gaps identified will be infilled with new hedgerow plants and where hedgerows are considered to be insufficiently dense by the landscape architect, a supplementary row of hedgerow planting will be implemented as appropriate and in both cases in accordance with the oLEMP [EN010149/APP/7.9.2] .</p>
Q1.10.19	<p>Enhancement Opportunities Paragraphs 10.6.6 and 10.6.7 of the ES [APP-050] identify that the North Kesteven Landscape Character Assessment encourages “Replacement hedgerow planting where these</p>	<p>Question directed to North Kesteven District Council.</p>

ExQ1 Ref	Question	Applicant Response
	have been lost or degraded” for both LCA 7 and LCA 11.” Is the extent of hedgerow planting proposed by the applicant in line with the enhancement opportunities identified in the North Kesteven Landscape Character Assessment?	
Q1.10.20	<p>Control Documents</p> <p>The Mallard Pass DCO (R7(2)(a)) states that each LEMP must include details of: “the location, number, species, size and planting density of any proposed planting including details of any proposed tree, hedgerow and shrub planting and the proposed times of such planting;”</p> <ol style="list-style-type: none"> Should the Springwell dDCO include a similar wording in R8? If not, explain if and how the species, size and planting density of proposed screening planting would be secured in the dDCO. 	<p>The Applicant has updated Section 1 and 8 of the oLEMP [EN010149/APP/7.9.2] to secure these measures and states that ‘each LEMP will include details of the location, number, species, size and planting density of any proposed planting including the details of any proposed tree, hedgerow and shrub planting and the proposed times of such planting’.</p> <p>The updated oLEMP [EN010149/APP/7.9.2] is submitted at Deadline 1 and is secured by Requirement 8 of the draft DCO [EN010149/APP/3.1.2].</p>
Q1.10.21	<p>Planting Performance Criteria</p> <p>Further information is requested on the performance criteria for the successful establishment of planting for visual screening. The ExA note that Table A3.1 in the oLEMP [APP-0142] refers to maintaining a 3.5m height but can you explain how the density of planting would be monitored and managed to ensure that visual screening is achieved? (for example, a 3.5m tall hedgerow which is very sparse might provide very little screening)</p>	<p>The Applicant proposes that the density of new hedgerow planting is measured and monitored in accordance with the oLEMP [EN010149/APP/7.9.2] which has been updated in response to this question.</p> <p>Section 7 of the updated oLEMP [EN010149/APP/7.9.2] states that monitoring of new tree and hedgerow heights and densities will be undertaken in years 1, 2, 3, 5 and 10 to help ensure they reach the target heights set out in the Environmental Statement. For hedgerows, the target height is at least 3.5m with a width of at least 1.5m at 1.5m above ground level by Year 10. For woodland and scrub, the target height is at least 4m by Year 10.</p> <p>The updated oLEMP [EN010149/APP/7.9.2] is submitted at Deadline 1 and is secured by</p>

ExQ1 Ref	Question	Applicant Response
		Requirement 8 of the draft DCO [EN010149/APP/3.1.2] .

Table 1-11: Noise and Vibration Questions

ExQ1 Ref	Question	Applicant Response
Q1.11.1	Methodology Are NKDC content with the methodology used in the noise and vibration assessment in the ES [APP-052] and the assumptions [APP-052, Paragraphs 12.4.16 to 12.4.37] used for: construction plant items and activities; construction and decommissioning traffic; and operational plant noise?	Question directed to North Kesteven District Council.
Q1.11.2	Construction Noise The oCEMP [APP-0140] states that applicable noise thresholds will be defined in each of the CEMPs and that compliance with these noise limits will ensure adverse effects are unlikely. a) Should noise limits be defined in the oCEMP and/ or dDCO? b) If not, how can the ExA be sure that noise limits for construction works would be adequately secured and that adverse effects would be unlikely?	a) The construction noise limits set out within ES Volume 1, Chapter 12: Noise and Vibration [APP-052] have been added into the oCEMP [EN010149/APP/7.7.2] at Deadline 1. The oCEMP [EN010149/APP/7.7.2] is secured by Requirement 12 in the draft DCO [EN010149/APP/3.1.2] . b) Please refer to the response in part (a).
Q1.11.3	Operational Noise The current drafting of R15 refers to 'the operational noise rating levels as set out in the environmental statement'. a) For clarity and precision, should such 'noise rating levels' be specified in	a) Reference to the adopted noise rating levels are provided in section 12.4.43 within ES Volume 1, Chapter 12: Noise and Vibration [EN010149/APP/6.1] [APP-052] . Section 12.4.43 sets out that the noise rating levels are 40 decibels (dB) in the daytime and 35 dB in the nighttime, which would align with guidance in the Planning Practice Guidance (PPG). These limits have been agreed with North Kesteven District Council and would be applicable to all noise sensitive receptors.

ExQ1 Ref	Question	Applicant Response
	<p>R15?</p> <p>b) Explain the links and any overlap between R15 and R5 (Detailed design approval) and R13 (Operational environmental management plan).</p>	<p>Requirement 15 of the draft DCO [EN010149/APP/3.1.2] has been updated at Deadline 1 to cross refer to this section of the ES to provide clarity and precision as to the relevant levels.</p> <p>b) The details submitted pursuant to the detailed design Requirement 5, will need to be consistent with and ensure compliance with Requirement 15 (as per Requirement 5(2)(b)). It may be that in practice Requirement 15 is sought to be discharged first to establish and confirm how the noise levels will be met, and then the detailed design submitted under Requirement 5 would adopt this. Equally, any details or measures being submitted for approval pursuant to Requirement 5 and 15 will need to be compliant and able to comply with any approved OEMP under Requirement 13. There is likely to be some overlap between these requirements, and that is deliberate to ensure a holistic and cohesive approach to the design and operation of the Proposed Development. The Applicant will therefore need to manage the preparation of the detail under these requirements to ensure consistency and full compliance.</p>
Q1.11.4	<p>Public Rights of Way</p> <p>Due to the transient and temporary nature of users along Public Rights of Way (PRoW) through the Proposed Development, and the proposed distance between PRoW and equipment, noise impacts along these areas have not been assessed. However, an IP [RR-031] raised concern that the users of this network of ProW include regular users who should not be classed as temporary and whilst the users are “transient” in that they are passing along the ProW, their whole experience of the use and enjoyment of the ProW would be destroyed by noise and disturbance.</p> <p>a) Is there guidance available as to the noise level that would constitute a</p>	<p>a) There is currently no specific guidance or standard which identifies applicable noise criteria for PRoW, primarily due to the exposure of noise along PRoW being temporary as users are transient moving through the area.</p> <p>The character of construction noise can be varied, depending on the type of plant and equipment being used. For example, generators emit steady and continuous noise, whereas noise from mobile plant items such as loading shovels and dumpers fluctuates as they move around the construction area. It is anticipated that the noise generated duration construction would be a mix of both these types of sources.</p> <p>b) Noise levels experienced at positions along the PRoW are likely to be varied, dependent on the positioning and source level of the dominant plant and equipment at any one time. From a time perspective, users of the PRoW would likely be subject to construction noise levels which exceed the existing average ambient for a matter of minutes as they travel adjacent to the immediate construction area where plant and machinery is positioned adjacent to the PRoW.</p>

ExQ1 Ref	Question	Applicant Response
	<p>significant effect for recreational users of PRow?</p> <p>b) Provide a description of the character of the noise and the maximum noise level experienced by recreational users of PRow.</p>	<p>Where the dominant plant is positioned at an increased distance from the PRow, this would in turn reduce the horizontal distance of the PRow affected (where elevated noise levels above the average ambient would occur) and in turn, reduce the length of time users of the PRow may be affected as a result.</p> <p>It is acknowledged that whilst construction noise may be perceptible and occasionally the dominant source of noise for users of the PRow, the anticipated levels would not result in a prolonged impact along an individual route.</p>
Q1.11.5	<p>Distinctive Tonal, Impulsive or Low Frequency Noise</p> <p>Paragraph 5.12.6 of NPS EN-1 requires that the Applicant's assessment includes the identification of any distinctive tonal, impulsive or low frequency characteristics of noise.</p> <p>a) Provide a summary, in the clearest possible terms, of how these characteristics have been identified. This may include examples of equivalent sounds sources to provide a guide to all IPs.</p> <p>b) Given the design flexibility sought for particular elements of the proposal, what likelihood is there that such characteristics might change once the final design has been determined?</p>	<p>a) Distinctive characteristics of noise have been identified by applying a typical spectrum shape to each proposed noise source based on industry source data for the Proposed Development and source monitoring of similar type installations. Each plant noise source has been included within the computer noise model and predicted to all the sensitive receptors considered.</p> <p>To account for certain characteristics at the receptors, British Standard 4142: 2014+A1: 2019 includes the addition of rating penalties (to the specific noise) as a factor of 'perceptibility' (i.e the likelihood that the potential acoustic features are audible at the receiving position), where the prominence of tonal or impulsive sound from a source can be readily distinguishable over the residual sound. For the purposes of the assessment, the addition of rating penalties considers the numerical comparison of the specific noise from operational fixed plant against the residual sound level (i.e the pre-existing baseline) at each receptor in order to determine perceptibility.</p> <p>The character of the sound from the proposed equipment is generally thought to be of a constant level, with no rapid change in the level or character of noise. It is therefore considered unnecessary to apply an impulsivity correction. The cooling and inverter systems run on demand but once in operation, they run on a continual basis for long periods rather than cycling on and off at defined times. Therefore, an acoustic penalty for intermittency has not been applied.</p> <p>As a worse-case assumption within the noise assessment, all operational plant was assumed to be tonal, with the application of rating penalties applied where</p>

ExQ1 Ref	Question	Applicant Response
		<p>the predicted specific noise level at receptors increases the residual noise (i.e the pre-existing baseline). Corrections have been applied in accordance with the applicable British Standard, with the rated noise assessed against the adopted noise criteria. For the purposes of noise modelling, the assessment assumes all plant items operate at 100% capacity during both daytime and night.</p> <p>b) The characteristics of the fixed plant noise would remain consistent in the final design given the equipment would still serve the same operational purpose. The perceptibility of those plant sources (against the prevailing baseline noise) may alter marginally, dependent on the final plant specifications however, any such changes would still be subject to compliance with the agreed noise limits. Compliance with the adopted noise limits would ensure that the residual effects remain as not significant.</p>
Q1.11.6	<p>Horizontal Directional Drilling Paragraph 2.8.3 of the oCEMP [APP-0140] states that activities such as trenchless/ Horizontal Directional Drilling (HDD) could be required outside of the assumed day-time construction hours (i.e. evening, Sundays, Bank Holidays or at night), which will be agreed upon with the relevant planning authority prior to these works.</p> <p>a) Are there any other construction activities that might be required to be undertaken outside of the assumed day time construction hours?</p> <p>b) In what circumstances and with what justification would HDD be expected to occur outside assumed day time construction hours?</p> <p>c) What would be the expected frequency and duration of such HDD works and over what period might they be</p>	<p>a) Lincolnshire Police are likely to escort the AIL (Abnormal and Interspersal Loads) from port (potentially Immingham docks) to the Site substation location. The Police will dictate when the AIL should be transported, this could be out of normal working hours, over a weekend or bank holiday in order to minimise the impact on the road network. This includes loading, transportation and unloading of the AIL. Further detail can be found in the oCTMP [EN010149/APP/7.8.2] and oCEMP [EN010149/APP/7.7.2].</p> <p>b) Scenarios include areas where either the length or depth of the drill or the type of material that is being drilled and ducted through would require a continuous operation; once started, these operations need to be continuous until completed to avoid redrilling e.g. from a collapsed bore. For example, the cables will cross the adopted highway within the extent of Work No. 6 in order to connect back to the Springwell substation and Main Collector Compound as shown in the Works Plans [EN010149/APP/2.3] [APP-007]; the physical length of these works may lead to them taking longer than planned and running over the core hours, for reasons explained above. The detailed design will be developed to identify specific cable crossing areas suitable for HDD. These activities will be timed to avoid out of hours drilling wherever possible.</p>

ExQ1 Ref	Question	Applicant Response
	<p>expected to continue in any specific location?</p> <p>d) Provide justification as to whether a worst-case scenario for HDD at night has been assessed in the ES.</p>	<p>c) The indicative frequency is once per location; duration is one working week to drill and install all of the ducts. At any time during that week, drilling may be required outside of the assumed day-time construction hours, which will be agreed upon with the relevant planning authority prior to these works as detailed and secured in the oCEMP [EN010149/APP/7.7.2] .</p> <p>d) Activities such as HDD could be required outside of the assumed day-time construction hours (i.e evening, Sundays, Bank Holidays or at night) however, as this has not been confirmed, the assessment has not been undertaken at this stage. The ES has assessed the standard construction hours as detailed and secured in the oCEMP [EN010149/APP/7.7.2], noting that should any works be required at night, this would be agreed upon with the relevant planning authority prior to these works and would be undertaken in adherence with the criteria set out in BS5228, as secured in the oCEMP [EN010149/APP/7.7.2].</p>
Q1.11.7	<p>Decommissioning</p> <p>ES chapter 12 [APP-052] states that the likely noise impacts from decommissioning activities are considered to be similar to the noise impacts predicted from construction activities. Are there any noise impacts in the decommissioning phase (for example from the breaking apart of concrete) that could be greater than the impacts in construction?</p>	<p>Activities are likely to remain consistent with the construction phase. There may be a localised area of concrete breaking however, this is expected to be limited to within Field Tb2 where the BESS and Springwell Substation are located. The impact at receptors in turn is likely to be localised for a short period of time. Decommissioning noise levels would be subject to the same criteria as that during the construction phase, with appropriate mitigation measures secured within the oDEMP [EN010149/APP/7.13.2] .</p>

Table 1-12: Population Questions

ExQ1 Ref	Question	Applicant Response
Q1.12.1	<p>Skills and Education Package</p> <p>NKDC [RR-305] state that it is seeking a skills and education package.</p>	<p>c) The Applicant and both LCC and NKDC have had ongoing engagement on the potential for an agreement, subject to the Applicant being satisfied that such a package would meet the tests of s106. These ongoing discussions are</p>

ExQ1 Ref	Question	Applicant Response
	<p>a) NKDC, do you consider this to be necessary for mitigation of impacts or is it considered enhancement?</p> <p>b) NKDC, do you consider that this should be in addition to the measures set out in the outline Employment, Skills and Supply Chain Plan [APP-0153] and R16 of the dDCO [APP-012]?</p> <p>c) Has there been any discussion regarding a possible s106 agreement? If so, provide an update.</p>	<p>documented in the respective Statement of Common Grounds submitted at Deadline 1.</p>
Q1.12.2	<p>Supply Chain Effects</p> <p>In Paragraphs 13.7.12 and 13.7.52 of ES chapter 13 [APP-053] it is assumed that the supply chain effects are retained at Construction Labour Market Area and Lincolnshire scales respectively. Is there an existing supply chain at these scales that can support the construction and operation phases?</p>	<p>The baseline section (specifically paragraphs 13.5.23 to 13.5.27) in ES Volume 1, Chapter 13: Population [EN010149/APP/6.1.2] set out the scale of the relevant supply chain economy at different spatial scales, and preceding sections also identify the breakdown of businesses and employment in these areas to inform the assessment.</p> <p>The 'supply chain effects' referred to in ES Volume 1, Chapter 13: Population [EN010149/APP/6.1.2] refer to the multiplier effects (the net additional economic benefit that will be created as a direct result of the income earned and spent and output produced by the employment supported, and as an indirect result of spend on materials in the supply chain related to those direct jobs supported).</p> <p>Multiplier effects include a combination of the benefits accrued by a combination of assessment of effects of construction workforce spending, contribution to construction output, and construction supply chain effects. It is noted in ES Volume 1, Chapter 13: Population [EN010149/APP/6.1.2] that there is some overlap in how these elements are measured and so it is not appropriate to sum them to an overall gross total.</p> <p>The reasonable 'worst-case' scenario was derived from application of the HM Green Book 'low' employment multiplier for this sector (applying 0.1 to establish indirect jobs supported by the Proposed Development). Those multipliers result in the lowest level of 'spin-off' employment in the supply chain and in turn, results in the lowest representation of indirect</p>

ExQ1 Ref	Question	Applicant Response
		<p>job creation in order to be conservative.</p> <p>As such, it is not correct to assert that <u>all</u> of the supply chain effects are retained at Construction Labour Market Area and Lincolnshire scales respectively, and the paragraphs referenced do not make that assumption – they measure the estimated level of direct supply chain activity that it is anticipated would be captured at these scales.</p> <p>This is used for assessment case purposes, and that the Employment and Skills Plan would seek to promote local supply chain activities such that multipliers may be enhanced, promoting more local and targeted opportunities for contracts and increasing and retaining more economic benefit.</p> <p>ES Volume 1, Chapter 13: Population [EN010149/APP/6.1.2] makes clear, for example at Paragraph 13.7.13, that the level of retention of supply chain benefit varies depending on the project and will be a commercial decision of the contractor who would seek to source materials and employ some local and some regional or even national sub-contractors. As such, the spatial context of supply chain effects could range from local to national depending on the supply and sourcing of construction materials and other supplies.</p> <p>Overall, the ES does not rely on the supply chain activity (for example employment supported as a result of direct net additional GVA and spending) to be retained locally, but provides an assessment for a scenario in which it is – resulting in at best a neutral/slight beneficial (not significant) effect.</p> <p>Notwithstanding this, the Applicant has committed to an Outline Employment, Skills and Supply Chain Plan [EN010149/APP/7.20] [APP-0153] which details commitments to work with partners and the local and regional construction supply chain to enhance the proportion of activities that can be accessed by firms with relevant experience and competencies.</p>
Q1.12.3	<p>Stepping Out Network and Effects on Tourism</p> <p>ES Chapter 13 [APP-053] acknowledges that</p>	<p>Question directed to North Kesteven District Council and Lincolnshire County Council.</p>

ExQ1 Ref	Question	Applicant Response
	<p>significant visual effects from PRoW and the Stepping Out Network may adversely impact the number of visitors to the area in the operational phase. However, the Applicant's position [APP-053, Paragraph 13.7.26] is that as other routes of the network may continue to be used, the residual impacts associated with loss of visitors such as the potential loss of business will not likely be impacted.</p> <p>a) Do you agree with the Applicant's conclusion of no significant effect on tourism related to the stepping out walks considering there are moderate/major adverse visual effects for footpath users identified in ES chapter 10 [APP-050]?</p> <p>b) Is any evidence available that quantifies how regularly the PRoW and the Stepping Out Network within and adjacent to the Order limits are used?</p>	
Q1.12.4	<p>Health and Quality of Life</p> <p>LCC [RR-233] raised concern that the Applicant has not undertaken a health impact assessment. Submissions have also been made by local residents [too many to list] on the potential effects on health and well-being. Paragraph 5.12.6 of NPS EN-1 requires that, where noise impacts are likely to arise from the proposed development, the applicant's assessment includes an assessment of any likely impact on health and well-being where appropriate.</p> <p>Further, paragraph 5.12.17 of NPS EN-1</p>	<p>a) At an early stage, the Project advised of its intention to consider effects on human health through individual topic chapters within the EIA – ES Volume 3, Appendix 5.1: Scoping Report [EN010149/APP/6.3] [APP-075] specifically set out (at paragraphs 5.6.1 to 5.6.5) that (emphasis added):</p> <p><i>"It is proposed that consideration of the potential effects to human health as a result of the Proposed Development will be covered through the findings of other assessments undertaken as part of the EIA process, as follows: <u>Air quality; Landscape and visual; Noise and vibration; and Traffic and transport.</u></i></p> <p><i>Each of these chapters within the EIA Scoping Report and subsequent PEIR and ES will consider the potential effects to human health within their own assessments. Outside of the EIA process, a <u>glint and glare assessment will be</u></i></p>

ExQ1 Ref	Question	Applicant Response
	<p>states that proposals, where possible, should contribute to improvements to health and quality of life through the effective management and control of noise.</p> <ol style="list-style-type: none"> Provide further justification for not undertaking a health impact assessment. Explain further how the application has taken the impact of noise on health and well-being into consideration? Summarise how the proposed development contributes to improvements to health and quality of the life, cross referencing where necessary to existing documents. If it has not been possible for the proposed development to achieve improvements to health and quality of life, then explain why not. 	<p><u>undertaken which will consider the potential human health effects from glint and glare.</u></p> <p><i>As any potential human health impacts will be captured by the aforementioned assessments and there are not expected to be any significant human health impacts outside of these assessments, it is proposed that human health is not subject to dedicated assessment and therefore excluded from the scope of the EIA."</i></p> <p>ES Volume 3, Appendix 5.2: Scoping Opinion [EN010149/APP/6.3] [APP-076] received from PINS, as well as LCC and NKDC confirmed that this approach was acceptable. PINS noted at Paragraph 2.3.5 that:</p> <p><i>"The Scoping Report proposes that impacts to human health will be considered in other relevant Chapters including Air quality; Landscape and visual; Noise and vibration; Traffic and transport. Potential human health effects from glint and glare will be considered in the glint and glare assessment. <u>The Inspectorate is content with this approach</u>, however the ES should clearly set out potential impacts to human health from the Proposed Development during construction, operation and decommissioning and cross-reference where impacts are assessed within the ES; <u>this may extend beyond the chapters proposed above, e.g. Land Contamination.</u>"</i></p> <p>PINS further noted at 2.3.15 that:</p> <p><i>"Given the uncertainty surrounding the location of the substation and proximity to receptors, <u>the ES should address the risks to human health arising from EMF to the extent that it is relevant to the nature of the development, taking into account relevant technical guidance, and where significant effects are likely to occur. The Inspectorate considers that the ES should demonstrate the design measures taken to avoid the potential for EMF effects on receptors from the substation infrastructure.</u>"</i></p> <p>Lincolnshire County Council and North Kesteven District Council both note in ES</p>

ExQ1 Ref	Question	Applicant Response
		<p>Volume 3, Appendix 5.2: Scoping Opinion [EN010149/APP/6.3] [APP-076] that they:</p> <p><i>“agree this [human health] can be scoped out as a specific chapter in the ES and that considerations will form part of other topics/chapters”</i></p> <p>In ES Volume 3, Appendix 5.3: Scoping Opinion Response Matrix [EN010149/APP/6.3] [APP-077], the Applicant set out that consideration of impacts upon human health as a result of the Proposed Development is covered through the findings of other assessments undertaken as part of the EIA, such as air quality, landscape and visual, noise and vibration and traffic and transport.</p> <p>In summary, the scope and assessment methodology for each of the ES chapters relevant to human health was agreed as set out within ES Volume 3, Appendix 5.2: Scoping Opinion [EN010149/APP/6.3] [APP-076]. This included input and consideration of comments and requirements from local planning authorities and statutory bodies responsible for human health. It was agreed that incorporating human health matters across the relevant ES chapters was a suitable methodology.</p> <p>Further consultation pre-application with statutory and local health bodies and healthcare providers has been undertaken by way of Section 42 statutory consultation.</p> <p>The Applicant is confident that the scope and methodology of the human health and wellbeing assessment undertaken has sufficiently addressed concerns raised during the pre-application process, and that any comments raised during the examination process have been adequately responded to. Notwithstanding this, the Applicant also recognises that Local Authorities, members of the public, Parish Councils and local opposition groups cite concern about physical and mental health and wellbeing, related to a wider range of factors.</p> <p>The Applicant is content that receptors and health pathways, and individual environmental effects related to health and wellbeing have been appropriately</p>

ExQ1 Ref	Question	Applicant Response
		<p>considered, assessed and mitigated for (where practicable) as per the approach agreed at EIA Scoping. However, given the representations, the position of stakeholders and the fact that the approach to consideration of health and wellbeing is split across a number of different ES chapters, Management Plans and other documents (such as the Equality Impact Assessment [EN010149/APP/7.18] [APP-0151]), the Applicant considers that it would be beneficial to provide a comprehensive document that consolidates these elements in one place to demonstrate the consideration of health pathways in the form of a Health and Wellbeing Summary Statement [EN010149/APP/8.10] which has submitted to the examination at Deadline 1.</p> <p>b) The Applicant notes that the consideration of noise effects falls within this category. It is recognised that noise may have a negative effect on the human body, such as stress which may continue during sleep. The assessment of likely significant noise effects is set out in ES Volume 1, Chapter 12: Noise and Vibration [EN010149/APP/6.1] [APP-052] which draws on criteria such as that developed by the British Standards Institute to assess the likelihood of complaints and determine the significance of noise.</p> <p>The Applicant has considered and assessed the impact of noise on health and wellbeing, in-line with policy, guidance and statutory thresholds. This has included the consideration of baseline noise reading, and the prediction of construction and operational noise sources. As part of this, embedded and additional mitigation has been developed to address the potential for significant effects, and to ensure that practicable measures are undertaken to reduce residual effects to a less than significant level.</p> <p>There are a number of embedded design commitments secured by the draft DCO [EN010149/APP/3.1.2] and described in the Design Commitments [EN010149/APP/7.4] [APP-0138] that would reduce the likelihood of health effects relating to noise that would otherwise be experienced, including development being offset at least 250m from residential properties.</p> <p>The Applicant will adopt measures outlined within the oCEMP</p>

ExQ1 Ref	Question	Applicant Response
		<p>[EN010149/APP/7.7.2] and the oDEMP [EN010149/APP/7.13.2] such as ensuring that plant and equipment is fitted with noise reduction modifications, the erection of temporary hoardings to screen construction activities and maintaining all vehicles, equipment and noise control measures in good and efficient working order.</p> <p>Where percussive piling is used within 400m of residential receptors, it will be for no more than two periods of four hours each with at least one hour of no piling between the four-hour periods – while any works that would be required outside of day-time hours would be agreed with the relevant planning authorities. The adoption of the oOEMP [EN010149/APP/7.10.2] includes mitigation related to the optimised selection of plant and equipment.</p> <p>The assessment shows that residual noise effects during the operational, construction and decommissioning phases (activities and traffic noise) to be low and not significant.</p> <p>It is recognised in the Equality Impact Assessment [EN010149/APP/7.18] [APP-0151] that potential noise impacts during construction, operation, and decommissioning phases may have differential and negative effects on the elderly, children, people with disabilities, and pregnant women.</p> <p>However, given mitigation measures include best practices outlined in the Outline Construction Environmental Management Plan (oCEMP) [EN010149/APP/7.7.2], Outline Construction Traffic Management Plan (oCTMP) [EN010149/APP/7.8.2], Outline Operational Environmental Management Plan (oOEMP) [EN010149/APP/7.10.2], and Outline Decommissioning Environmental Management Plan (oDEMP) [EN010149/APP/7.13.2], residual effects are not considered to be of a threshold</p>

ExQ1 Ref	Question	Applicant Response
		<p>that would affect health pathways (which as advised by IEMA Guidance² may include sleep disturbance and quality of life), which influences mental health.</p> <p>c) Paragraph 4.4.1 of NPS EN-1 highlights that energy infrastructure has the potential to impact the health and well-being of the population. EN-1 goes on to state that where development has the potential to affect human beings, the ES should assess those effects for each element of the project, identifying any adverse health impacts and measures to avoid, reduce, or compensate for the impacts as appropriate.</p> <p>As summarised in the Planning Statement [EN010149/APP/7.2.2] [AS-018], as well as significantly contributing to meeting policy commitments and legal decarbonisation targets for securing renewable energy, the Proposed Development will secure enhancements that would contribute to health and wellbeing pathways, and mitigation that would seek to reduce or avoid residual adverse environmental effects which could affect health to a less than significant level.</p> <p>These benefits occur during different stages of the Proposed Development's lifetime and are secured by the draft Development Consent Order [EN010149/APP/3.1.2] unless otherwise stated.</p> <p>In IEMA Guidance "<i>Determining Significance For Human Health In Environmental Impact Assessment</i>"³ it is noted that there is a strong evidence base in the scientific literature for a causal relationship between physical activity and good physical and mental health.</p>

² IEMA (2022) Determining Significance For Human Health In Environmental Impact Assessment. Accessed Online: [REDACTED]

³ IEMA (2022) Determining Significance For Human Health In Environmental Impact Assessment. Accessed Online: [REDACTED]

ExQ1 Ref	Question	Applicant Response
		<p>As such, the Proposed Development includes the following features that will contribute to positive health and wellbeing effects in that regard:</p> <p>Proposed enhancements and improvements to the local footpath and cycle network including the provision of new PRowWs:</p> <ul style="list-style-type: none"> • Linking RAF Digby to Scopwick. • Providing a connection between the existing PRow west of the A15 to New England Lane. • Providing a connection across the A15 by linking Temple Road to Bloxham Woods Car Park. <p>The creation of four new permissive paths:</p> <ul style="list-style-type: none"> • A new permissive path along the western edge of the Proposed Development linking New England Lane to Temple Road, north of Brauncewell (approx. length 4,130m). • A new permissive path connecting the B1191 (Heath Road) with the existing PRow between RAF Digby and Rowston (Rows/5/1) (approx. length 1,610m). • A new permissive path linking Bloxholm Wood to Brauncewell Village (approx. length 1,120m). • New permissive paths to provide a series of circular walking loops from Bloxholm Woods (approx. length 1,830m). <p>In addition to this, proposals include the enhancement of 2km of existing PRow, which will attract new users to the area and make this green infrastructure more accessible to local residents and tourists. The overall impact of the Proposed Development on users of PRow and permissive paths during the operational phase will be slightly beneficial through the creation of new routes, increasing connectivity and access to green spaces within the study area.</p> <p>Aside from improving access and active recreation, the Project will also provide a new community growing area to the north of Scopwick. The community growing area would be located adjacent to existing community facilities along Vicarage Lane (including Scopwick Cemetery, park and play area) and is adjacent to the</p>

ExQ1 Ref	Question	Applicant Response
		<p>Spires and Steeples Trail and Stepping Out Scopwick Loop. The community growing area would be secured via the oLEMP [EN010149/APP/7.9.2] and allows for permissive access 364 days a year to an area of up to 2ha for community use during the operation of the Proposed Development.</p> <p>The detailed design of the space would be developed post-DCO consent in conjunction with the Community Liaison Group – noting that IEMA Guidance on Effective Scoping of Human Health⁴ states that “<i>Engagement can help to improve community understanding of the project and practitioner understanding of the community. Engagement can also actively alleviate particular impacts upon mental health, by providing a sense of control, inclusion and participation. Such engagement activities could be considered primary mitigation.</i>”</p> <p>In addition, the Proposed Development will secure improvements of the natural environment - It is recognised that experience of the natural environment through recreational and other use of PRow is an important aspect contributing to mental and physical health and wellbeing:</p> <p>A variety of biodiversity benefits including: new habitat for invertebrates, reptiles, amphibians, small mammals and birds; vegetated cover for foraging and dispersal, to maintain bat flight lines across the landscape, and provide a winter seed source for birds set out within the oLEMP [EN010149/APP/7.9.2].</p> <ul style="list-style-type: none"> • A minimum Biodiversity Net Gain of 10% as secured within the oLEMP [EN010149/APP/7.9.2] . This has been assessed through ES Volume 3, Appendix 7.14: Biodiversity Net Gain Assessment [EN010149/APP/6.3.2] <p>Employment and income is intrinsically linked to health, with good quality employment leading to positive impacts on health and wellbeing, and the availability of high quality jobs being key to achieving inclusive economic growth. An Outline Employment, Skills and Supply Chain Plan [EN010149/APP/7.20]</p>

⁴ IEMA (2022) Effective Scoping of Human Health in Environmental Impact Assessment – Accessed Online: [REDACTED]

ExQ1 Ref	Question	Applicant Response
		<p>[APP-0153] will:</p> <ul style="list-style-type: none"> • Increase direct and indirect employment and opportunities; • Lever potential of the Proposed Development and other similar schemes in the local area, to encourage the next generation to take up careers in the renewable energy sector and invest their futures in Lincolnshire; • Engage effectively with local businesses and wider supply chain, and • Assist in development and dissemination of local knowledge and skills relating to renewable energy infrastructure. <p>The Applicant has an established record of adding legacy value through supply chains and has committed to promoting the delivery of economic benefits generated by the Proposed Development to residents and business. on the Proposed Development and catalysing increased capabilities and specialisms in green construction and manufacturing across Lincolnshire. This is set out within the Outline Employment, Skills and Supply Chain Plan [EN010149/APP/7.20] [APP-0153].</p> <p>While not a consideration for the SoS, The Applicant is proposing a Community Fund of £400 per megawatt of installed capacity per year from the start of operation and lasting throughout the lifetime of the Proposed Development. It is envisaged that it would be managed by an independent third party and delivered in partnership with the local community. Local people would be able to advise on the fund strategy and spend, to prioritise issues that are important to the local area.</p> <p>d) Response not needed, please see response to (c) above.</p>
Q1.12.5	<p>Permissive Paths</p> <p>The Proposed Development would provide an additional 8.58km [APP-0145] of permissive paths. What will happen to the permissive paths after decommissioning?</p>	<p>After decommissioning, the DCO would not have effect and the status of permissive paths beyond decommissioning stage is not therefore controlled. The permissive paths would no longer be maintained by the Applicant and these will be returned to the landowner after decommissioning. The landowner may decide to maintain these routes and allow access beyond decommissioning, however this is not within the control of the Applicant.</p>
Q1.12.6	<p>Ethical Procurement</p> <p>Numerous RRs [too many to list] have raised concerns regarding ethical procurement of solar panels. Paragraph 2.5.5 of the outline Employment, Skills and Supply Chain Plan</p>	<p>The Applicant recognises the increased risk of modern slavery in the solar energy supply chain, particularly due to the complexities associated with the manufacture of solar PV panels. As noted in Paragraph 2.5.5 of the Outline Employment, Skills and Supply Chain Plan [EN010149/APP/7.20] [APP-0153], these risks are taken seriously and a rigorous approach is applied to ensure all supply chain partners align with the Applicant's</p>

ExQ1 Ref	Question	Applicant Response
	<p>[APP-0153] states that solar developments can carry an increased risk of modern slavery due to the complexities in the supply chain relating primarily to solar panels. Paragraph 2.5.4 states that a rigorous approach would be taken to ensure those in the supply chain and contractors abide by the Applicant's values.</p> <p>a) Provide more detail on the measures that would be applied to the Applicant's own operations, and those of the supply chains, to evaluate the risks of modern slavery including an explanation of how these measures would be secured.</p> <p>b) Provide more detail on the compliance screening and certification process for suppliers of solar panels.</p>	<p>values and legal obligations, including compliance with the Modern Slavery Act 2015. The Applicant is a Joint Venture and formal procurement will commence only after development consent is secured. The Applicant includes EDF Renewables UK, which intends to build and operate the Proposed Development should consent be granted. EDF Renewables UK is part of the wider EDF Group, which operates under robust and proven procurement policies developed through delivery of other solar PV and battery energy storage system (BESS) projects. These policies and processes, described below, are directly applicable to the Proposed Development and provide a tested framework for managing ethical supply chain issues.</p> <p>1. Modern Slavery Risk Evaluation in Operations and Supply Chains</p> <p>The Applicant has stringent internal procedures for evaluating and mitigating the risk of modern slavery, both in its own operations and throughout its supply chain. These measures include:</p> <ul style="list-style-type: none"> • Supplier Onboarding All framework suppliers and contractors must demonstrate ongoing compliance with the Modern Slavery Act 2015 as a condition of engagement. This is assessed through a detailed anti-slavery questionnaire, supported by documentary evidence. • Site Audits: Compliance checks are conducted physically at supplier premises where necessary, especially for high-risk categories (for example PV module, BESS cells, inverters). • Contractual Safeguards: Contracts contain a clause that permits immediate termination in the event of non-compliance with anti-slavery requirements. These clauses also mandate compliance by subcontractors and enable EDF to audit all levels of the supply chain. • Employee Vetting: Direct employment is conducted in strict compliance with applicable national employment legislation, with additional screening to prevent forced labour or exploitation. <p>2. Sustainable Procurement and Due Diligence Process</p> <p>EDF Renewables' sustainable procurement process provides a structured approach to identifying and mitigating modern slavery risks. This process comprises:</p> <ul style="list-style-type: none"> • Phase 1: Desktop Screening Qualified suppliers complete a comprehensive Environmental and Social (E&S)

ExQ1 Ref	Question	Applicant Response
		<p>questionnaire that addresses:</p> <ul style="list-style-type: none"> • Prohibition of child and forced labour • Anti-discrimination and harassment policies • Freedom of association and collective bargaining • Compliance with International Labour Organization (ILO) Conventions and UN Guiding Principles on Business and Human Rights • Commitment to decent working conditions, fair wages, and working hours • Freedom of movement for workers <p>Responses are reviewed by EDF's Sustainability Department, and each supplier is assigned an E&S score which feeds into the overall qualification assessment (alongside quality and cost metrics).</p> <ul style="list-style-type: none"> • Phase 2: Onsite Verification High-risk or strategically significant suppliers undergo an onsite audit to verify the accuracy of responses given in Phase 1. This includes direct assessment of labour practices, worker accommodations, and subcontracting arrangements. • Contractual Clauses and Flow-Down Requirements All contracts include an E&S clause requiring compliance with environmental and social standards. Suppliers must cascade these obligations to their subcontractors and provide proof of compliance on request. EDF retains the right to audit the full supply chain, including subcontractors and production sites. <p>3. Certification and ESG Audits for Solar Panel Suppliers</p> <p>Specifically for PV module suppliers, the Applicant conducts a multi-layered due diligence process, including:</p> <ul style="list-style-type: none"> • ESG Evaluation: Suppliers undergo evaluation across four core ESG areas: • Environmental & Social Governance • Environmental Management • Social Management • Responsible Procurement Practices • Production Site Audits: For solar panels, site-level audits are undertaken to assess working conditions, traceability of raw materials (e.g., polysilicon), and adherence to international labour standards.

ExQ1 Ref	Question	Applicant Response
		<ul style="list-style-type: none"> Ongoing Monitoring: Suppliers are subject to regular review by EDF's corporate audit team, with support from regional teams with proximity to the manufacturing sites. This layered governance model ensures both global oversight and local engagement. <p>Securing These Measures</p> <p>All of the above measures are secured through the commitments set out in Section 2.5 of the Outline Employment, Skills and Supply Chain Plan [EN010149/APP/7.20] [APP-0153] and will be carried through into the detailed design and delivery stages. They will be embedded into the procurement strategy and contractual frameworks to ensure enforceability. The Applicant remains committed to continuous improvement in responsible sourcing and welcomes engagement with regulators and stakeholders to further strengthen modern slavery protections.</p>

Table 1-13: Traffic and Transport, including Public Rights of Way Questions

ExQ1 Ref	Question	Applicant Response
Q1.13.1	<p>Strategic Road Network</p> <p>National Highways (NH) [RR-290] has set out that the Applicant should provide further information, regarding the methodology for calculating the number of peak hour workers on the Strategic Road Network (A1/ A46) to allow it to complete its independent checks. The Applicant stated at Issue Specific Hearing 1 [EV4-008 and EV4-009] that further discussions have since taken place. Provide and update on your current position with regards to potential effects on the strategic road network. If additional evidence is still needed, please set out fully what is required.</p>	Question directed to National Highways.

ExQ1 Ref	Question	Applicant Response
Q1.13.2	<p>Assessment Methodology - Traffic Survey Data</p> <p>The Transport Assessment [APP-123, Paragraph 5.4.4] states: <i>'Whilst only 2024 survey data has been used as a baseline for the junction modelling in Section 9, ATC survey data collected in 2023 and DfT count point data collected in 2022 has been used to obtain data for the assessments undertaken in ES Volume 1, Chapter 6: Air Quality and ES Volume 1, Chapter 12: Noise and Vibration'</i>. Provide further explanation why using different survey data has been selected for the different assessments and is such an approach justified and robust?</p>	<p>In ES Volume 3, Appendix 14.1: Transport Assessment [EN010149/APP/6.3] [APP-123] the Transport Assessment relies on junction count data, focussing on peak hours and junction capacity, while the assessment detailed in the EIA chapters focus on link flows and daily volumes which is a standard approach, thereby requiring different baseline data formats in order to undertake the relevant assessments.</p> <p>Alternative data sources (i.e. Department for Transport (DfT) count point data) were used to obtain baseline traffic data for three links (A15 (south of Metheringham Heath Lane), A15 (north of Leasingham) and B118 (south of Scopwick)), which were not covered in the 2024 traffic survey. 2022 DfT count point data and 2024 survey data was used to predict construction, operational and decommissioning phases traffic data for the Proposed Development for the assessment undertaken in ES Volume 1, Chapter 6: Air Quality [EN010149/APP/6.1] [APP-046] and ES Volume 1, Chapter 12: Noise and Vibration [EN010149/APP/6.1] [APP-052]. Count point data is published by DfT and is therefore considered a reliable data source.</p>
Q1.13.3	<p>A15/ B1202 Junction Improvement</p> <p>The Transport Assessment (TA) [APP-123] identifies capacity issues at this junction, but notes that LCC are proposing their own improvement works due to existing issues. LCC has set out [RR-233] that it considers the Proposed Development should make a financial contribution to the improvements works. In addition, in the absence of the delivery of the improvement works, the Applicant has proposed a commuter bus alternative [APP-054, Paragraph 14.9.6].</p> <ol style="list-style-type: none"> Provide an update on the delivery of the potential junction improvement works, including anticipated timescales. Applicant, what is your response to the 	<ol style="list-style-type: none"> No physical works to the junction of the A15 / B1202 are proposed as part of the Proposed Development. LCC is currently developing a junction improvement scheme, which is not yet in the public domain. <p>It has been agreed with LCC that the Construction Traffic Management Plan will include measures to reduce staff movements through this junction during peak hours via car sharing and a staff bus scheme and by banning HGV access through the junction during peak hours.</p> <ol style="list-style-type: none"> LCC has requested a funding contribution via a Section 106 agreement. The Applicant however has noted that the requested contribution cannot be made as it fails to meet the requirements set out in the relevant tests. <p>With respect to a financial contribution pursuant to section 106 of the Town and Country Planning Act 1990, such a contribution must meet the tests for a s106 obligation, being that <i>"Planning obligations may only constitute a reason for granting planning permission if they meet the tests that they are necessary to</i></p>

ExQ1 Ref	Question	Applicant Response
	<p>request from LCC to contribute towards the cost of the improvement works?</p> <p>c) LCC, are you content that in the absence of any improvement works, the proposed commuter bus is a realistic alternative?</p>	<p><i>make the development acceptable in planning terms. They must be:</i></p> <ul style="list-style-type: none"> <i>necessary to make the development acceptable in planning terms;</i> <i>directly related to the development; and</i> <i>fairly and reasonably related in scale and kind to the development."</i> <p>The Applicant does not understand the suggested contribution to meet the required tests that the ExA and SoS would want to see satisfied in order to place any reliance on the provisions of these works as mitigation for the Proposed Development. The Applicant understands the upgrades to the A15 / B1202 junction to be needed, irrespective of the Proposed Development (the upgrade being to address a longstanding issue at the junction, whereas the impact of the Proposed Development is a temporary one during construction). The contribution therefore doesn't appear to be directly related to the development nor fairly and reasonably related in scale and kind. In addition, based on the Applicant's understanding from discussions with LCC around likely earliest timescales for completion of the junction upgrade, the works would not have been completed ahead of the construction period for the Proposed Development, meaning the works could not mitigate the impact and are therefore not necessary to make the Proposed Development acceptable in planning terms (especially where alternate measures would also be appropriate).</p>
Q1.13.4	<p>North Hykeham Relief Road</p> <p>The TA [APP-123, Paragraph 10.1.29] identifies that the North Hykeham Relief Road scheme is expected to be completed in 2028. On this basis, the Applicant considers that it is likely that the baseline levels of traffic predicted for 2028 will not materialise, thus the operation of the A15/ B1202 Junction should improve, and the overall impacts of development traffic lessened.</p> <p>a) Provide an update on the delivery of the proposed relief road.</p> <p>b) LCC, do you agree with the Applicant's view?</p>	<p>General details of the proposed road can be found on the Lincolnshire County Council Planning Portal using reference Planning Application PL/0087/23.</p> <p>Planning approval for the project was granted in May 2024 and legal orders were published in October 2024. The publicly available data notes that construction is expected to commence in 2025, with the road complete in 2028. The Department for Transport (DfT) has been requested to part fund the project and a decision on this funding is awaited.</p> <p>The assessment undertaken has not specifically modelled the addition of the North Hykeham Relief Road. The planning documents for the relief road suggest that traffic flows on the A15 will reduce once the new road is complete. As such, the assessment has considered a worst case scenario. The Proposed Development is not reliant upon the North Hykeham Relief Road being completed.</p>

ExQ1 Ref	Question	Applicant Response
Q1.13.5	<p>Abnormal Indivisible Loads Route The oCTMP [APP-0141, Appendix 3] sets out the route that Abnormal Indivisible Loads (AILs) would follow to the application site. NR [RR-296] wishes to ensure that AIL movements under or near the Bridges are undertaken safely at all times and has set out that its engineers will be considering the details in the oCTMP.</p> <ul style="list-style-type: none"> a) NH and LCC, is the proposed route considered to be acceptable? b) NR, provide an update on your consideration of the oCTMP. c) Applicant, set out how any AIL movements will safeguard any bridges along the route. 	<p>c) The proposed AIL movements are controlled by legislation (Road Vehicles (Construction and Use) Regulations and the Special Types General Order (STGO) 2003) and the Applicant's haulier will be required to submit a permit to National Highways for their movement. Within the permit is a requirement to submit details of all loaded dimensions and weights to all stakeholders on the proposed route. A formal consultation period is then undertaken with National Highways receiving details from all stakeholders including Network Rail. The proposed AIL components will be loaded so that they do not exceed the bridge clearance heights on the route. This height will be physically measured prior to loads starting their journey to ensure full compliance.</p>
Q1.13.6	<p>Outline Travel Plan The measures proposed by the Applicant to promote sustainable modes of transport are set out in the oCTMP [APP-0141, Appendix 1]. Does the Outline Travel Plan go far enough and should it include mode share targets?</p>	<p>The proposed measures are considered sufficient. Unlike other forms of development, the Applicant has direct control over staff movements as they are contracted staff. To ensure compliance with the measures, the Applicant will include in their works contract with contractors, obligations for their staff to use the proposed staff bus and to car share. In this way, the contractors are contractually obliged to ensure staff are using the bus and car sharing. This will be monitored by the Applicant for compliance and will be enforced at all times, as noted in the oCTMP [EN010149/APP/7.8.2].</p>
Q1.13.7	<p>Construction Traffic Routes Concern about construction traffic travelling through local villages has been raised by numerous interested parties [too many to list]. The routes proposed to be used by construction traffic are identified in the ES [APP-070, Figure 14.4] and in the oCTMP [APP-0141]. To ensure that effects do not arise</p>	<p>The Applicant has taken the feedback from stakeholders into account when making decisions about construction traffic and the avoidance of local villages where possible.</p> <p>These construction traffic routes will be enforced under the CTMP and the oCTMP [EN01049/APP/7.8.2] is secured by the draft DCO [EN010149/APP/3.1.2].</p>

ExQ1 Ref	Question	Applicant Response
	that have not been assessed in the ES, should these routes be secured in a requirement within the dDCO?	
Q1.13.8	<p>Construction Traffic Movements</p> <p>The ES [APP-054, Table 14.23] identifies anticipated construction traffic movements on each assessed link. To ensure that effects do not arise that have not been assessed in the ES, should these figures be secured in a requirement within the dDCO?</p>	<p>The figures in Table 14.23 of ES Volume 1: Chapter 14: Traffic and Transport [EN010149/APP/6.1.2] [AS-010] represent the Applicant's best estimate, based upon its proposed programme, material requirements and construction techniques and represent average conditions as a snap shot at the peak of construction.</p> <p>The necessary controls for traffic movement have been included in the oCTMP [EN010149/APP/7.8.2] which is secured by the draft DCO [EN010149/APP/3.1.2].</p> <p>There is an additional check in place via Schedule 16 of the draft DCO in order to ensure the effects of the Proposed Development are tied to and are no worse than those in the ES. In this instance that would mean that when the Applicant submits the CTMP for approval under Requirement 14, the Applicant also needs to confirm pursuant to Schedule 16, paragraph 2(3) that the content of the CTMP is not likely to give rise to any materially new or different effects compared with those in the ES. If that statement by the Applicant confirmed the effects were likely to be worse, the relevant planning authority may well refuse to approve the CTMP. It is for these reasons that the figures in the ES themselves do not need to be in the DCO requirement.</p>
Q1.13.9	<p>Public Rights of Way Improvements</p> <p>LCC [RR-233] wish to see: a new PRow linking ROWS/5/1 to the highway on the western end; an enhancement to fix the gap between the legal line of Ashby De La Launde PF11 to the highway; the continuation of Cuckoo Lane; and that the surfacing for the proposed upgrade to the existing PRow between Scopwick and Blankney to bridleway status to be defined to ensure that it is accessible all year round.</p> <p>a) Applicant, what is your response to these requests?</p>	<p>a) ROWS/5/1: The existing informal route for the western end of ROWS/5/1 follows an access track, which is the sole access for HGVs and operational vehicles for essential infrastructure that serves RAF Digby and therefore it's not appropriate to dedicate this route as a PRow and encourage pedestrians to use it. Furthermore, the Proposed Development will not have any effect on the access track during construction or operational phases.</p> <p>Ashby De La Launde PF11: The legal line of Ashby De La Launde PF11 does not align with the signed route from the highway on the B1191. The proposed PRow on the opposite side of the B1191 has been agreed to be extended by c.28 metres to align to the signed route and this has been updated in the Streets, Rights of Way and Access Plans [EN010149/APP/2.4.3] at Deadline 1.</p>

ExQ1 Ref	Question	Applicant Response
	b) LCC, provide further evidence to justify the need for such improvements and why they are necessary to make the development acceptable.	<p>Cuckoo Lane: The MoD have separate proposals that affect Cuckoo Lane as part of a planning application, therefore no PROW proposals to this part of Cuckoo Lane are included as part of the Proposed Development.</p> <p>Scopwick to Blankney upgrade: All weather surfacing has been agreed to be used to upgrade the existing PROW between Scopwick and Blankney as previously detailed in the Outline Public Rights of Way and Permissive Path Management Plan [EN010149/APP/7.12.2].</p>
Q1.13.10	<p>Outline Public Rights of Way and Permissive Paths Management Plan</p> <p>The Outline Public Rights of Way and Permissive Paths Management Plan (oPROWPPMP) [APP-0145] contains the Applicant's approach to managing the PROWs and Permissive Paths to ensure they are safe and accessible. Network Rail [RR-296] has set out that the oPROWPPMP proposes changes to a public right of way that includes a railway crossing (the Scopwick Yard Level Crossing which connects Scop/8/2 and M/tin/7/1) and that it does not appear that the impacts on the railway or on continuing use of the public rights of way using the level crossing in this location have been considered. It notes that the oPROWPPMP sets out various alternative routes for Scop/8/2 but these do not facilitate access across the railway to connect with the existing path on the other side and would therefore render the level crossing obsolete while any diversions are in place.</p> <p>a) LCC, are you content with the details set out in the oPROWPPMP?</p>	<p>a) Directed to LCC</p> <p>b) Scop/8/2 will not be closed during construction, operations or decommissioning. Access will be maintained, so as to not sever the east-west route via the Scopwick Yard Level Crossing and connection to M/tin/7/1 (NWR RR), which sit to the east of the Proposed Development. An amendment to the Outline Public Rights of Way and Permissive Path Management Plan [EN010149/APP/7.12.2] at Deadline 1 secures this measure.</p>

ExQ1 Ref	Question	Applicant Response
	b) Applicant, how will access to the level crossing be maintained?	

Table 1-14: Water Questions

ExQ1 Ref	Question	Applicant Response
Q1.14.1	Existing Drainage Infrastructure Anglian Water has noted [RR-026] that there are numerous buried mains pipes and sewers located within/ adjacent to the public highway and green verges and in locations west and north of Scopwick and south-west of Ashby there are buried main water supply pipes which cross the open countryside. How have these been taken into account in the Illustrative Layout Plans and Sections [APP-009] to avoid any potential impacts?	<p>The Illustrative Layout Plans and Sections [EN010149/APP/2.5.3] are indicative and demonstrate one way that the authorised development could be carried out within the constraints of the Control Documents contained within the DCO Application. However, consent is not sought for this layout.</p> <p>The Applicant is in ongoing discussion with Anglian Water as detailed in the Statement of Common Ground- Anglian Water Services Ltd [EN010149/APP/7.21] [APP-0154]. All current interfaces have been identified and suitable measures for asset protection put in place. Future utility surveys will be carried out prior to construction in accordance with the agreed Protective Provisions. The detailed design will be developed to interface appropriately with the relevant utilities in collaboration with Anglian Water Services.</p>
Q1.14.2	Flood Risk at Scopwick Numerous IPs [including RR-369 and RR-190] have raised concerns about: <ol style="list-style-type: none"> 1. the use of piling and the potential to damage fragile clay drainage pipes across the site; 2. the artesian effect around Scopwick and piling could push the ground water up into the upper stratum, causing flood risk to the village of Scopwick; 3. being able to manage the anticipated volume of water and use of swales and vegetation absorption to counter 	<p>1 - There are likely to be land drains which will assist with the drainage of arable land within the Order Limits. The presence and location of land drains are unconfirmed given the historic and informal nature of the construction of land drainage. Should any land drain be damaged during the construction phase any resultant flood risk will be very localised. If existing land drainage systems are damaged during construction works, they will either be reinstated or diverted with equivalent drainage systems, to ensure no lasting changes compared to the baseline. This is secured in the Outline Construction Environmental Management Plan (oCEMP) [EN010149/APP/7.7.2].</p> <p>2 – An intrusive site investigation was completed in April and May 2023, which includes information on the underlying groundwater regime across the Site. The groundwater data, along with the confirmed ground conditions will be used to determine the most appropriate foundation solutions and sustainable drainage for the scheme. Should it be required, a further phase of site investigation will be undertaken to obtain the necessary details (as</p>

ExQ1 Ref	Question	Applicant Response
	<p>the flows of rainfall; and</p> <p>4. lack of external supervision of construction works and ongoing maintenance.</p> <p>Applicant, respond to each of these concerns.</p>	<p>recommended by the ES Volume 3, Appendix 11.2: Preliminary Risk Appraisal [EN010149/APP/6.3] [APP-115] [APP-116] [APP-117] [APP-118]). Once available, the data will provide site-specific information on the groundwater levels across the site (including around the village of Scopwick). This will ensure that data are available for the preparation of a suitably detailed Piling Risk Assessment, should piled techniques be required for any of the infrastructure or Solar PV development in the area around Scopwick. The foundation designs for any infrastructure features in this area will be defined at the detailed design stage, post consent, and this information will be critical in preparing an appropriate Piling Risk Assessment (if needed) to ensure that issues such as the potential for effects on the groundwater level and flow are considered and appropriately mitigated for.</p> <p>3 - Any precipitation falling on each solar panel will runoff the panels and flow towards / infiltrate in the rain shadow of the down-slope modules. This feature will enable the use of the rain shadow area of the panels to maintain the infiltration potential of the site.</p> <p>A surface water drainage system will be developed as part of the development in accordance with the Flood Risk Assessment, Appendix 1: Outline Drainage Strategy [EN010149/APP/7.16.3] which will capture and manage any additional run off from the site and ensure that pre development (QBAR greenfield) run off is maintained with no additional flows entering Scopwick Beck or any other watercourse. The retention of flows to QBAR greenfield rates will result in a reduced peak flow from current natural runoff from the site during extreme rainfall events, offering a reduction in offsite flows for all rainfall events in excess of the QBAR (approx. 1 in 2 year) event. Excess flows will be retained on site in suitably designed attenuation features.</p> <p>Auxiliary components such as Inverter Transformer Stations, storage compounds and switch rooms are treated as impermeable areas and the Flood Risk Assessment, Appendix 1: Outline Drainage Strategy [EN010149/APP/7.16.2] demonstrates that the any additional volumes of runoff from these impermeable areas can be prevented from freely draining from the Site.</p> <p>Drainage for the areas of hardstanding of auxiliary components can be shown as backfilled trenches at the perimeter of these structures. The trenches take the runoff from</p>

ExQ1 Ref	Question	Applicant Response
		<p>the impermeable areas and attenuate at the source, therefore mitigating the runoff from the site. The volume of these trenches could be reduced if infiltration rates are favourable.</p> <p>4 – The Applicant will have construction managers full time on Site for the duration of the construction period. They will be responsible for ensuring that the requirements of the CEMP are adhered to.</p> <p>The Applicant has an Asset Operations team that will be responsible for monitoring the maintenance of all areas of Springwell during the operational period.</p>
Q1.14.3	<p>Outline Drainage Strategy The Outline Drainage Strategy (oDS) [AS-016, Appendix A] sets out that no infiltration testing has been undertaken at the Proposed Development to date, though anecdotal information (soilscape and runoff rates) suggests a measure of infiltration may be viable.</p> <p>The oDS sets out that due to the rural nature of the Proposed Development, discharge of surface water to the public sewer network is not being sought as part of the Proposed Development. The EA are concerned [RR-130] that there is the potential for impacts on surface water from the disposal of foul water from the proposed facilities at the BESS. The EA note that the proposed development site boundary of Springwell West is located approximately 290 metres from a public foul sewer (Main Street, Ashby de la Launde) and are of the view that the Applicant needs to demonstrate that connection to the public foul sewer is not feasible (in terms of cost and/ or</p>	<p>a) The drainage and attenuation features will allow for natural infiltration with a connection to the existing wider ditch network. This will replicate the existing situation whereby some precipitation infiltrates into the subsoils while surface runoff occurs in more extreme rainfall events. As the drainage strategy is not reliant on infiltration and the Proposed Development aims to mimic the natural drainage regime, further testing is not required at this stage and can be carried out post consent. The volume of the attenuation features can be reduced if infiltration rates are favourable.</p> <p>b) The connection to a public sewer is determined as not feasible due to the distance of approximately 3km from the nearest public foul sewer (Main Street, Ashby de la Launde) to the welfare facilities that will be located in Field Tb2 in the north of Springwell West. This combined with the low number of permanent staff (24 operational staff) that would be onsite during the operational phase, associated environmental impacts of connecting to a public sewer, disruption that it would cause to local communities, the road network and associated costs, this option is not considered to be feasible.</p> <p>c) With respect to adding the EA as a consultee on the drainage strategy, in discussions with the EA the Applicant understands that it only wants to be able to comment on the foul water drainage aspect of any drainage strategy. The Applicant has therefore added this to the requirement at Deadline 1. In relation to Anglian Water, the Applicant does not agree that Anglian Water should be added as a consultee. Anglian Water's request appears to be that it wants to be</p>

ExQ1 Ref	Question	Applicant Response
	<p>practicality).</p> <p>Both Anglian Water and the EA [RR-026] [RR-130] have requested that it is included as a specific consultee to the discharge of Requirement 10 (Schedule 2) (Surface and foul water drainage) of the dDCO [APP-012] to enable it to make comments on the final drainage strategy.</p> <ul style="list-style-type: none"> a) Given that infiltration is at the top of the drainage hierarchy should more work and on-site investigation be undertaken to establish this now? b) Provide more evidence to demonstrate that connection to a public foul sewer is not feasible. c) Should the EA and Anglian Water be added as discharge consultees to Requirement 10 of the dDCO? 	<p>consulted if the Proposed Development was connecting into the public sewer. As set out above, and as acknowledged in Anglian Water's relevant representation, the Proposed Development is not proposed to connect into the public sewer. On this basis the Applicant has not amended the requirement to include Anglian Water.</p>
Q1.14.4	<p>Water Supply</p> <p>The ES [APP-055, Paragraph 15.12.1] notes that there is uncertainty regarding the confirmation of whether the welfare facilities will be water mains fed or whether a bowser can supply the potable water. When will this be confirmed and has the potential for a mains water connection been allowed for in the Order limits?</p>	<p>As part of continued stakeholder engagement, the Applicant has provided Anglian Water Services (AWS) with information regarding the requirements of potable and non-potable water supplies. During operational and construction phases potable water would have a preferred mains supply to the welfare facilities at the Project substation and bowzers would supply temporary facilities. Details of discussions with Anglian Water are included as part of the Statement of Common Ground- Anglian Water Services Ltd [EN010149/APP/7.21] [APP-0154]. The decision between bowser or mains fed potable water would be made during detailed design in collaboration with AWS. The Applicant confirms there is a potential potable water mains pipe connection within the Order Limits, an example of which is a pipe running from A15 towards Thompsons Bottom. The Applicant would use Anglian Water Services' application systems to agree and complete the appropriate connection for the detailed design.</p>
Q1.14.5	Outline Construction Environmental	<p>The Applicant has amended paragraph 2.11.1 within the oCEMP [EN010149/APP/7.7.2]</p>

ExQ1 Ref	Question	Applicant Response
	<p>Management Plan and Outline Operational Environmental Management Plan</p> <p>The outline plans [APP-0140] [APP-0143] set out an Emergency Preparedness and Response Plan will be developed in consultation with the EA, in relation to responding to flood warnings. The EA note [RR-130] that it does not normally comment on or approve the adequacy of flood emergency response procedures accompanying development proposals and consultation with the EA is therefore unlikely to be required. Provide amended outline plans to address this matter.</p>	<p>and paragraph 2.11.2 of the oOEMP [EN010149/APP/7.10.2] at Deadline 1 to remove reference to consultation with the EA in relation to responding to flood warnings.</p>

Table 1-15: Other Matters, including Waste

ExQ1 Ref	Question	Applicant Response	
Q1.15.1	<p>Anticipated Construction and Operational Waste Quantities</p> <p>The EIA regulations state that the description of the development should include an estimate, by type and quantity, of types of waste produced during the construction and operation phases (Schedule 4 Paragraph 1(d)). Anticipated quantities of waste have not been provided in ES Chapter 3 [APP-043], the oCEMP [APP-0140] or the oOEMP [APP-0143] for the construction and operation phases.</p> <p>In line with the EIA regulations and the</p>	<p>Waste streams expected to be generated during construction are detailed in Section 4 of the Outline Site Waste Management Plan which forms an appendix to the Outline Construction Environment Management Plan [EN010149/APP/7.7.2].</p> <p>The anticipated volumes of waste from the Proposed Development during construction, operation and decommissioning are outlined below in Table 1. It should be noted that these assumptions are based on similar projects and the service life of the Proposed Development components as outlined in Table 3.20 of ES Volume 1, Chapter 3: Proposed Development Description [EN010149/APP/6.1.2] .</p> <p>Table 1: Anticipated quantity and type of construction waste</p> <table><tr><th>Construction Phase</th></tr></table>	Construction Phase
Construction Phase			

ExQ1 Ref	Question	Applicant Response																																																								
	requirements of NPS EN-1 confirm the anticipated volumes of waste from the Proposed Development, and the impact of waste generation from the Proposed Development on the capacity of waste management facilities.	<table><tr><th>Type of Waste</th><th>Recycle (tonnes)</th><th>Landfill (tonnes)</th></tr><tr><td>Damaged Solar PV modules</td><td>273</td><td>14</td></tr><tr><td>Concrete</td><td>300</td><td>300</td></tr><tr><td>Aggregate</td><td>762</td><td>762</td></tr><tr><td>Steel</td><td>450</td><td>0</td></tr><tr><td>Plastic</td><td>466</td><td>156</td></tr><tr><td>Cardboard/Paper</td><td>6,910</td><td>0</td></tr><tr><td>Wood</td><td>11,114</td><td>3,704</td></tr><tr><td colspan="3">Operation Phase (40 Years)</td></tr><tr><td>Damaged Solar PV modules</td><td>1,092</td><td>114</td></tr><tr><td>String Inverters (replacement)</td><td>672</td><td>35</td></tr><tr><td>Battery units (replacement)</td><td>45,885</td><td>2,415</td></tr><tr><td>BESS MVS (replacement)</td><td>10,944</td><td>576</td></tr><tr><td>Steel</td><td>2</td><td>0</td></tr><tr><td>Plastic</td><td>978</td><td>327</td></tr><tr><td>Cardboard/Paper</td><td>48</td><td>0</td></tr><tr><td>Wood</td><td>60,177</td><td>185</td></tr><tr><td colspan="3">Decommissioning Phase</td></tr></table>			Type of Waste	Recycle (tonnes)	Landfill (tonnes)	Damaged Solar PV modules	273	14	Concrete	300	300	Aggregate	762	762	Steel	450	0	Plastic	466	156	Cardboard/Paper	6,910	0	Wood	11,114	3,704	Operation Phase (40 Years)			Damaged Solar PV modules	1,092	114	String Inverters (replacement)	672	35	Battery units (replacement)	45,885	2,415	BESS MVS (replacement)	10,944	576	Steel	2	0	Plastic	978	327	Cardboard/Paper	48	0	Wood	60,177	185	Decommissioning Phase		
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ExQ1 Ref	Question	Applicant Response		
		Solar PV Modules	54,577	2,873
		Inverters	224	12
		Battery units	22,943	1,208
		BESS MVS	5,472	288
		Concrete	0	0
		Steel	161,250	0

Waste arising from the construction, operation and decommissioning of the Proposed Development will be managed in accordance with the measures set out and secured in the Outline Site Waste Management Plan which forms an appendix to the **Outline Construction Environmental Management Plan [EN010149/APP/7.7.2]** and **Outline Operational Environmental Management Plan [EN010149/APP/7.10.2]** and **Outline Decommissioning Environmental Management Plan [EN010149/APP/7.13.2]**. This includes adherence to the waste hierarchy which sets out the priority order that should be considered when managing waste on Site and the adoption of best practice measures which go beyond statutory compliance requirements.

Waste arising from construction and operation is anticipated to consist of electrical or electronic equipment. Where this does arise, this would be managed in accordance with the Site Waste Management Plan and recovered and recycled by an authorised reprocessor as required by the Waste Electrical and Electronic Equipment (WEEE) Regulations 2013.

A high level appraisal of the estimated waste generated from the construction and operational phase and the impact on the capacity of waste management facilities has been undertaken using a similar methodology that was used in the Tillbridge Solar Farm application. The calculation is based on publicly available data sourced from the Environment Agency's Waste Data Interrogator, specifically using the dataset "East Midlands Landfill Capacity 2023".

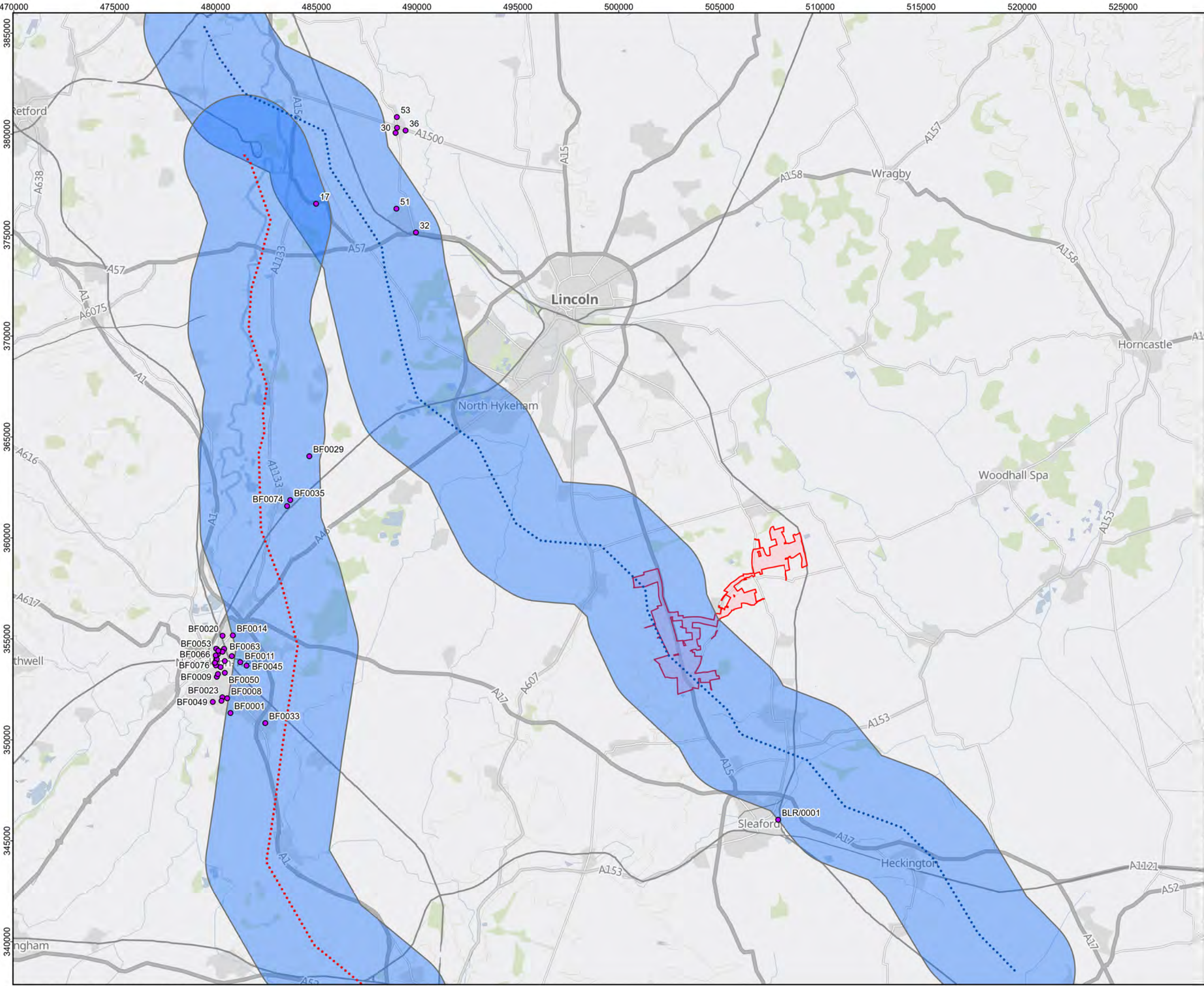
ExQ1 Ref	Question	Applicant Response
		<p>Based on an appraisal of waste facilities in East Anglia using publically available data, the total construction waste are anticipated to be below 0.2% of regional inert (18,916m³) and 0.1% of non-hazardous (14,700m³) landfill capacity, therefore, it is anticipated that there would be sufficient capacity during construction.</p> <p>During the operational phase, based on a average of waste generated per annum, the quantity of waste produced is anticipated to be below 0.0.2% of regional inert (18,916,000 m³) and below 0.03% of non-hazardous (14,700,000 m³) landfill capacity, therefore, it is anticipated that there would be sufficient capacity during the operational phase.</p> <p>These calculations are based on the currently available capacity data and it should be noted that future changes in baseline landfill capacity are not yet known, and therefore this conclusion may be subject to revision as updated regional waste planning data becomes available.</p> <p>The Applicant will engage with Lincolnshire County Council at the start and during the construction, operation and decommissioning phases in relation to waste management facilities to ensure this is up to date. Relevant measures to manage waste arisings are detailed and secured in the Outline Construction Environmental Management Plan [EN010149/APP/7.7.2], Outline Operational Environmental Management Plan [EN010149/APP/7.10.2] and Outline Decommissioning Environmental Management Plan [EN010149/APP/7.13.2].</p> <p>To ensure that the “Best Available Treatment Recovery and Recycling Techniques” are utilised, a list of up-to date authorised reprocessors would be established prior to the construction and operational phase of the Proposed Development and kept up to-date through engagement with Lincolnshire County Council. Measures to manage waste during the construction and operation phase are secured through the Outline Construction Environment Management Plan [EN010149/APP/7.7.2] and Outline Operation Environmental Management Plan [EN010149/APP/7.10.2].</p>
Q1.15.2	Below Ground Cables at Decommissioning At the end of the operational phase, it is	a) The Solar PV Site will be reinstated in accordance with the Outline Decommissioning Environmental Management Plan (oDEMP)

ExQ1 Ref	Question	Applicant Response
	<p>proposed that all the below ground cables will be left in place. NPS EN-3 states that generally, it is expected that the panel arrays and mounting structures will be decommissioned, and underground cabling dug out to ensure that prior use of the site can continue.</p> <ul style="list-style-type: none"> a) Explain the reasoning for leaving the below ground cables in place. b) Are there any adverse effects or potential hinderance to use of the land associated with the cables being left in place? 	<p>[EN010149/APP/7.13.2]. At decommissioning, all below-ground cabling within 1m of the ground surface would be removed. Any cables below this depth will be left in situ, as this would allow for the cultivation of land after the Proposed Development has been decommissioned. This approach minimises soil disturbance by avoiding unnecessary handling, plus reduces potential impacts on nearby residential and ecological receptors, and avoids unnecessary disruption to established hedgerows and biodiversity habitats created by the Proposed Development.</p> <ul style="list-style-type: none"> b) There are no significant adverse effects anticipated from the cables below 1m being left in place following the decommissioning phase. Cultivation activities are typically limited to the upper 450 mm of soil (subsoiling). Therefore, leaving the cables in below 1m would not hinder the use of the land once the operation has stopped and decommissioning is completed. The landowner will be able to use their land as they did before the Proposed Development.
Q1.15.3	<p>Microlight Aircraft Site An IP [RR-337] has raised concern about the potential effects of the Proposed Development on a registered microlight aircraft site and noted that the Civil Aviation Authority have expressed their concerns to the Applicant. Has the application assessed such potential effects?</p>	<p>Yes, the application has assessed the potential effects upon the registered microlight aircraft site (Hill Top Farm Airfield) within ES Volume 3, Appendix 5.4: Glint and Glare Study [EN010149/APP/6.3.2].</p> <p>The Civil Aviation Authority (CAA) have not raised any concerns pertaining to the potential effects, nor provided a relevant representation. Engagement with Hill Top Farm, who were initially aided by the Airfield Advisory Team (before being disbanded in April 2025) had been undertaken to understand the operations at the airfield and determine specific receptors to consider during the assessment.</p> <p>Engagement with Hill Top Farm Microlights is ongoing. ES Volume 3, Appendix 5.4: Glint and Glare Study [EN010149/APP/6.3.2] has been updated at Deadline 1 to include a summary of engagement that has been undertaken to date.</p>
Q1.15.4	<p>Fuel Pipeline At Open Floor Hearing 1 [EV3-002 and EV3-003] an IP set out that there is no evidence of any discussions with the British Pipe Line Agency about the fuel pipeline that runs in</p>	<p>The British Pipeline Agency (BPA) have been contacted to discuss the Proposed Development. Through review of the BPA response, it was determined that there is a Fina pipeline running roughly north-south to the west of the Proposed Development. The nearest point of the pipeline to overground elements of the Proposed Development i.e. any works that are not cable corridor, is over 1400m away. The nearest point of the</p>

ExQ1 Ref	Question	Applicant Response
	proximity to the Order limits at Springwell West. Confirm if any discussions have taken place with the British Pipe Line Agency and whether the Proposed Development could have any effects on the pipeline, including from construction traffic.	pipeline to a cable corridor (connection to National Grid Navenby Substation) is over 500m away. Based on this, there are no expected impacts on or any interfaces with any BPA / Fina assets from the Proposed Development including construction traffic.

Appendix 1 - Brownfield Site Search Figures





LEGEND:

Order Limits

Overhead power line -
West Burton to Bicker
Fen

3km site search for OHL
- West Burton to Bicker
Fen

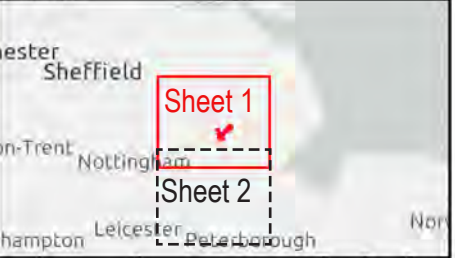
Overhead power line -
Cottam to Eaton Socon

3km site search for OHL
- Cottam to Eaton
Socon

Brownfield Sites within
or close proximity to the
3km site search

NOTES:

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter



01	JUN 2025	DEADLINE 1	LDA	AA	AA
Rev	Date	Description	Drn	Chk	App

Springwell Solar Farm

DOCUMENT:

RESPONSES TO FIRST WRITTEN
QUESTIONS

TITLE:

FIGURE 1, SHEET 1 OF 3
BROWN FIELD SITE SEARCH

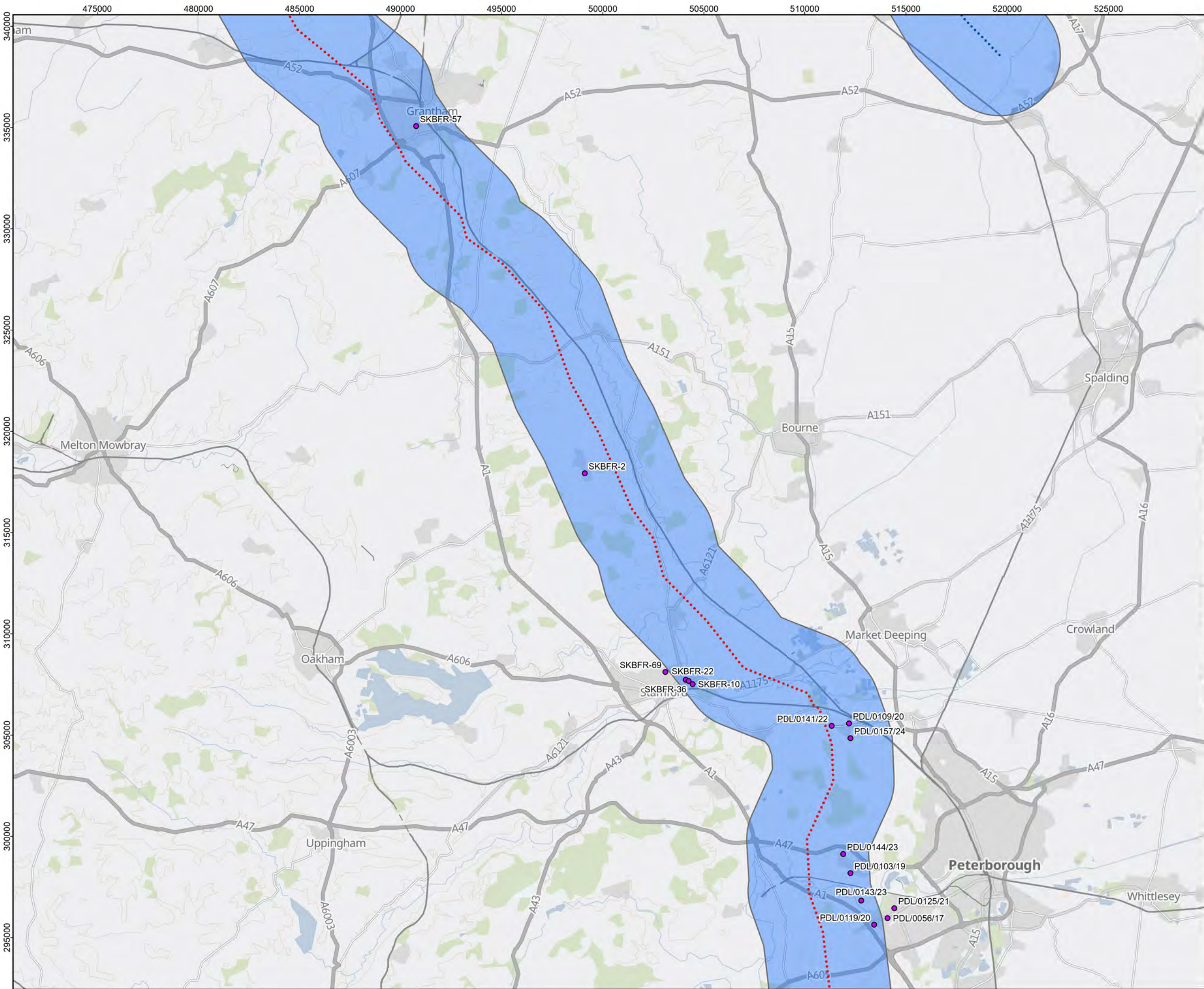
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EN010149/APP/8.13

0 0.5 1 1.5 2 2.5
Kilometers

Scale: 1:175,000 @ A3

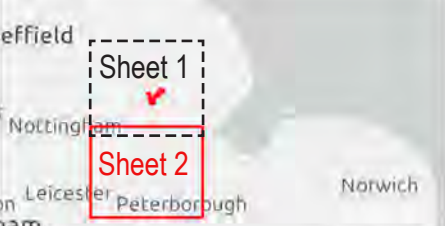
REV P01



- LEGEND:**
- Order Limits
 - Overhead power line -
 - West Burton to Bicker Fen
 - Cottam to Eaton Socon
 - 3km site search for OHL
 - West Burton to Bicker Fen
 - Cottam to Eaton Socon
 - Brownfield Sites within or close proximity to the 3km site search

NOTES:

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter



01	JUN 2025	DEADLINE 1	LDA	AA	AA
Rev	Date	Description	Drn	Chk	App

Springwell Solar Farm

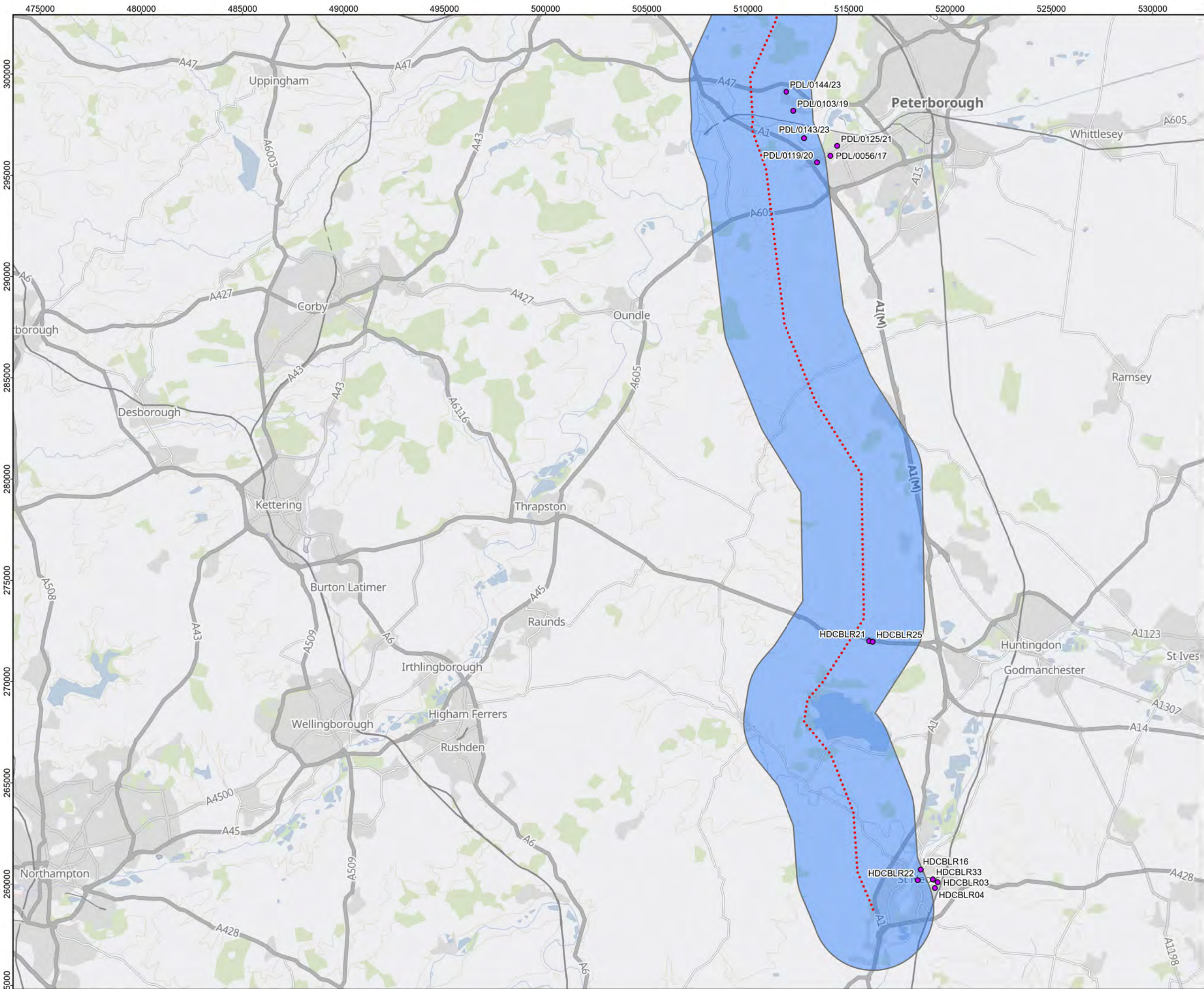
DOCUMENT:
RESPONSES TO FIRST WRITTEN QUESTIONS

TITLE:
FIGURE 1, SHEET 2 OF 3
BROWN FIELD SITE SEARCH

PINS REFERENCE NUMBER:
EN010149/APP/8.13

Scale: 1:175,000 @ A3

REV P01



LEGEND:

- Order Limits
- Overhead power line - West Burton to Bicker Fen
- 3km site search for OHL - West Burton to Bicker Fen
- Overhead power line - Cottam to Eaton Socon
- 3km site search for OHL - Cottam to Eaton Socon
- Brownfield Sites within or close proximity to the 3km site search

NOTES:

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

Nottingham
Birmingham

Sheet 1
Sheet 2
Sheet 3

01	JUN 2025	DEADLINE 1	LDA	AA	AA
Rev	Date	Description	Drn	Chk	App

Springwell Solar Farm

DOCUMENT:
RESPONSES TO FIRST WRITTEN QUESTIONS

TITLE:
FIGURE 1, SHEET 3 OF 3
BROWN FIELD SITE SEARCH

PINS REFERENCE NUMBER:
EN010149/APP/8.13

0 0.5 1 1.5 2 2.5
Kilometers
Scale: 1:175,000 @ A3

REV P01

Appendix 2 - References for Q1.10.3





Introduction

As part of Natural England's responsibilities as set out in the Natural Environment White Paper,¹ Biodiversity 2020² and the European Landscape Convention,³ we are revising profiles for England's 159 National Character Areas (NCAs). These are areas that share similar landscape characteristics, and which follow natural lines in the landscape rather than administrative boundaries, making them a good decision-making framework for the natural environment.

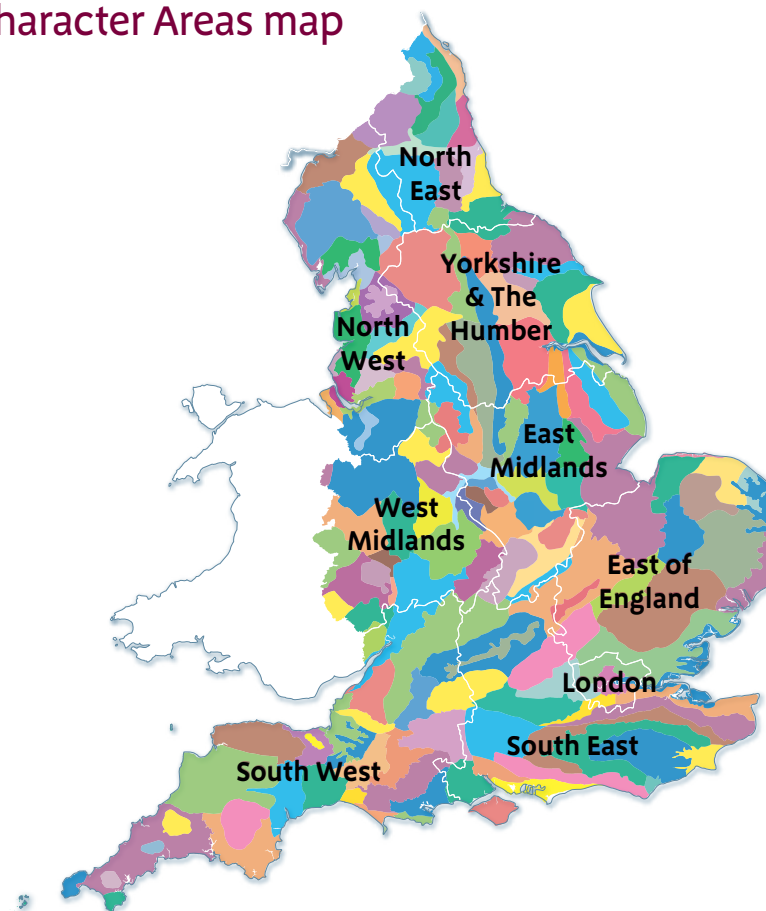
NCA profiles are guidance documents which can help communities to inform their decision-making about the places that they live in and care for. The information they contain will support the planning of conservation initiatives at a landscape scale, inform the delivery of Nature Improvement Areas and encourage broader partnership working through Local Nature Partnerships. The profiles will also help to inform choices about how land is managed and can change.

Each profile includes a description of the natural and cultural features that shape our landscapes, how the landscape has changed over time, the current key drivers for ongoing change, and a broad analysis of each area's characteristics and ecosystem services. Statements of Environmental Opportunity (SEOs) are suggested, which draw on this integrated information. The SEOs offer guidance on the critical issues, which could help to achieve sustainable growth and a more secure environmental future.

NCA profiles are working documents which draw on current evidence and knowledge. We will aim to refresh and update them periodically as new information becomes available to us.

We would like to hear how useful the NCA profiles are to you. You can contact the NCA team by emailing ncaprofiles@naturalengland.org.uk.

National Character Areas map



¹ The Natural Choice: Securing the Value of Nature, Defra (2011; URL: www.official-documents.gov.uk/document/cm80/8082/8082.pdf)

² Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services, Defra (2011; URL: www.defra.gov.uk/publications/files/pb13583-biodiversity-strategy-2020-111111.pdf)

³ European Landscape Convention, Council of Europe (2000; [redacted])

Summary

The Southern Lincolnshire Edge is an area of clear character defined by the dramatic limestone cliff to the west and the dip slope that drops gently away to the edge of the fens in the east. It shares the cliff and the dip slope, and many landscape characteristics, with the Northern Lincolnshire Edge and Coversands National Character Area to the north. It is an open landscape with far-reaching views over the Trent and Belvoir Vales and up to Lincoln Cathedral. On the free-draining higher ground, landcover is primarily arable, in large geometric fields divided by limestone walls, with few trees or woodland. On the wetter, heavier clay soils to the east and south-west, pasture is more prevalent; hedgerows are the predominant boundary and the landscape has a more intimate, enclosed feel, with more trees, woodland and parkland.

The underlying Jurassic Limestone geology has a defining impact on the landscape, not just through the distinctive topography, but also through its widespread use for construction of walls and buildings and numerous limestone quarries, both active and disused. Semi-natural habitats – including calcareous and neutral grassland and broadleaved woodland – are fragmented and sparsely scattered. Wide verges along roads and tracks provide important refuges for unimproved flower-rich grassland. The farmland supports large numbers of arable birds such as skylark, lapwing, grey partridge and corn bunting. There are many visible reminders of early human activity in the form of Roman roads and canals, such as Ermine Street and Car Dyke, medieval ridge and furrow, deserted medieval villages and moated sites. The 20th-century heritage includes a number of airfields created during the World Wars and industrial buildings such as the Bass Maltings in Sleaford.

The primary ecosystem services provided by this area include food provision, biomass provision, water availability, sense of place and sense of history. Enhancements in management of soil, water, habitats and landscape features on agricultural land could help to strengthen the provision of many of these services. More efficient use, capture and re-use of water by industry and households could help to protect the major aquifer and water availability from rivers. The protection of archaeology, historic buildings and traditional villages is key to preserving sense of place and sense of history.

[Click map to enlarge; click again to reduce](#)

[Click map to enlarge; click again to reduce](#)

Statements of Environmental Opportunities:

- **SEO 1:** Enhance the agricultural landscape and soils to increase efficiency of food production, conserve and connect fragmented patches of limestone grassland and woodland and maintain the traditional fabric of the rural landscape, to preserve sense of place and sense of history, protect water quality, enhance biodiversity and improve resilience to climate change.
- **SEO 2:** Protect and sympathetically manage geological features and historic features such as Ermine Street Roman road, medieval earthworks, industrial buildings, historic drystone wall networks and traditional villages, to sustain a sense of history and sense of place, providing interpretation to aid understanding of the landscape.
- **SEO 3:** Ensure that new development is planned and executed to preserve a sense of place, sense of history, tranquillity and biodiversity, while minimising water use and avoiding exacerbation of flooding and habitat fragmentation.
- **SEO 4:** Enhance the provision for access and recreation while maintaining the tranquillity of undisturbed areas and providing educational opportunities and interpretation.



Productive arable land occupies higher ground on the Southern Lincolnshire Edge, with large fields and low boundaries giving an open feel and far-reaching views.

Description

Physical and functional links to other National Character Areas

To the north, the high, arable, limestone plateau continues through the Northern Lincolnshire Edge and Coversands National Character Area (NCA). There are many similarities between the two NCAs. The ridge of Jurassic Limestone that runs through them is part of a belt that runs from the Dorset Coast to the Humber Estuary. The Trent and Belvoir Vales NCA lies to the west, while the flat, drained land of The Fens NCA can be found to the east.

The River Witham rises south of Grantham, passes through Lincoln and drains to The Wash at Boston. The River Slea rises in this NCA at West Willoughby near Ancaster, and drains north-east into The Fens NCA to join the River Witham and eventually drain into The Wash. The Witham catchment features the Trent Witham Ancholme River Transfer Scheme. The limestone holds a regionally important aquifer and supplies water for industry, agriculture and domestic consumption.

There are a number of long-distance routes linking this to other NCAs: historic routes such as Ermine Street, a Roman road linking London to Lincoln and York; and walking routes such as the Viking Way, between Rutland Water and the Humber Bridge, which although created in the 1970s reflects the historic influence of Danelaw in the area.

Major road routes include the A15 linking Sleaford to Lincoln. Railways run east-west linking Sleaford to Boston and Nottingham, and north-south linking Sleaford to Lincoln and Spalding.

Key characteristics

- Elevated arable escarpment with a distinct cliff running north-south along the western boundary, providing far-reaching views over the Trent and Belvoir Vales NCA.
- Productive loamy soils on the limestone plateau, giving rise to a large-scale open landscape of arable cultivation with large, regular fields and few boundaries of tightly cut hedgerows or rubble limestone walls.
- Heavy clay soils in the east and south-west of the area, which support more grazing land in smaller, less regular fields, along with small areas of woodland and parkland.
- Semi-natural habitats in small, isolated fragments, with pockets of woodland on clay soils, fen at the foot of the dip slope and flower-rich limestone grassland, particularly along road verges.
- Sparse settlement on higher land, with springline villages along the foot of the cliff, parklands and country estates such as Rauceby and Belton on lower ground, and larger settlements – including Sleaford, Ruskington and Metherringham – to the east of the dip slope.
- Active and re-used airfields prominent on the ridgetop.
- Long, straight roads and tracks, often with wide verges, including Ermine Street, which follows the route of a key Roman north-south route.
- Vernacular architecture and walling, especially in villages, of local warm-coloured limestone with dark brown pantiles.

The Southern Lincolnshire Edge today

The landscape of the Southern Lincolnshire Edge National Character Area is one of an elevated, gently sloping plateau with a sharply defined western boundary in the form of a north-south cliff of Jurassic Limestone. The cliff is a dramatic linear feature, with a two-tier section in the south between Leadenham and Grantham. This is made up of a lower tier of ironstone, Lower Jurassic Marlstone Rock, separated from a higher tier of Middle Jurassic Lincolnshire Limestone by the softer Whitby Mudstone Formation. The higher land has fertile soils that support productive, largely arable agriculture in large, regular fields bounded by drystone walls. The landscape is an open one with relatively few trees and woodland and far-reaching views into the Trent and Belvoir Vales to the west and down the dip slope to the fens in the east. Cropping is predominantly cereals, but also sugar beet and potatoes. On lower land to the south-west and the eastern edge, where the dip slope falls to meet the fens, deposits of glacial till result in heavier land that is slower draining and prone to waterlogging in winter. This landscape has a more enclosed, wooded feel, with smaller, less regular fields and more hedgerows, hedgerow trees, parkland and woodland. The heavier land supports more livestock grazing pastures and more mixed farms than on the higher, more freely draining plateau.

Watercourses occur along the cliff edge where the porous limestone meets seams of less permeable clay. Streams also rise on the dip slope and drain into the fenland to the east, the River Slea being the biggest of these. The River Witham cuts through the limestone cliff just south of Lincoln. Dry valleys indicate the free-draining nature of the underlying geology. The agricultural land has a dense network of ditches, particularly on the heavier land, and many have farm reservoirs. There are no water company reservoirs in the area and

few natural ponds or lakes, due to the permeable nature of the soils across much of the area. However, the limestone holds a regionally important aquifer and supplies water for industry, agriculture and domestic consumption

Semi-natural habitats are fragmented and sparsely scattered within the Southern Lincolnshire Edge NCA. Verges along roads, tracks and Roman roads provide a valuable refuge for flower-rich limestone and neutral grassland. These habitats support many species of rare plants and in turn provide valuable habitats, food sources and movement corridors for butterflies, insects and other wildlife. Some of the arable land is of great value for arable birds, particularly skylark, lapwing, corn bunting, grey partridge, yellow wagtail, tree sparrow and turtle dove, which use it for nesting and feeding. The River Witham supports white-clawed crayfish. Woodland is primarily composed of oak and ash, interspersed with wild service tree, cherry, aspen and field maple. There are important areas of ancient limewoods on the north-east fringe, along the border with The Fens NCA.

The cliff and the high land to the east of it retain numerous prehistoric and Roman sites, such as the bronze-age triple ditch system at Honington and Ermine Street Roman road. Ridge and furrow is well preserved in some places to the east, under uncultivated grassland. This lower-lying, wetter landscape on the margins of the fens also preserves archaeological features such as Car Dyke Roman drainage channel and several medieval moated sites and fish ponds. The high incidence of medieval defensive sites suggests this area was once regarded as a frontier. The south-west corner of the NCA between Sleaford and Grantham includes several parklands, including Belton Park and Rauceby Park.

Settlement is concentrated around the perimeter of the NCA, along the cliff foot, where villages have been founded on springlines, and at the foot of the dip slope, where the larger conurbations such as Sleaford lie. Many of the villages retain their traditional character, with buildings of local limestone and pantile roofs. Villages to the east of the dip slope tend to be in elongated parishes that stretch between the wetter lowlands suitable for grazing and the higher, drier land better suited for arable cropping. Some manor houses and estates occupy sheltered locations looking up at the cliff, such as Leadenham.

Industry in the area, both historically and today, focuses on limestone and aggregate quarrying and agriculture. Major transport links include busy

A roads, such as the A15 between Lincoln and Sleaford, and railway lines running north–south and east–west. Publicly accessible routes and areas are less prolific than in some NCAs; there are only 0.9 km per km² of public rights of way and no country parks or National Nature Reserves. However, there are long-distance routes such as the Viking Way, 311 ha of publicly accessible land, and a number of parklands – such as Belton – that are open to the public. The area is moderately tranquil; less-disturbed areas include the more remote parts of the sparsely settled areas, the open landscape of the dip slope and the more sheltered, enclosed, traditional landscapes of the claylands, with the area around Sleaford being the most disturbed.



Sleaford's Bass Maltings is the largest industrial building on English Heritage's 'at risk' register and it is thought to be the largest malting house ever built in Europe.

The landscape through time

The limestone that so dramatically defines this area in terms of landform, vegetation and building materials was part of a succession of limestones and mudstones that were laid down across the area during the Jurassic Period, 195-145 million years ago. These rocks and the fossils that they contain provide evidence that they were deposited in shallow tropical seas with reefs, sandbars, tidal lagoons and coastal swamps. During the Pleistocene (1.8-0.01 million years ago) the area was affected repeatedly by glaciation. The ice sheets left tills (boulder clay) that are particularly evident in the southern and eastern parts of the NCA, forming the heavy clay soils of those areas. Meltwater released from the glaciers carried sand and gravel that was deposited in channels below the glaciers or in outwash plains in front of them.

It is thought that the higher land of the dip slope would have been cleared of trees in the early Neolithic. Its free-draining nature would have been attractive to early settlers and would have provided a valuable dry overland route away from the marshy and densely wooded lowlands on either side.⁴ Visible reminders of early settlement are widespread, including prehistoric burial mounds, linear boundary features and trackways. Roman activity is visible in structures such as Car Dyke Roman canal, the marching camp at Sudbrook and Ermine Street.

Placenames suggest that villages were of Scandinavian or Saxon origin. Saxon and medieval settlement developed in a series of small villages along the springlines on the western scarp, and on the lower claylands of the dip

slope to the east. Archaeological and placename evidence suggests that the area was substantially cleared of woodland by the 11th century and, on higher land, largely unsettled heath was used as common grazing until it was enclosed for farmland from the late 18th century. Medieval and Tudor estates testify to the wealth derived from wool production, the heathlands providing common pastures for sheep, as well as rabbit warrens.

The marginal nature of the soils before improvement and enclosure in the 18th and 19th centuries meant they would have been of limited agricultural productivity, which perhaps contributed to the abandonment of some of the medieval villages in the area, combined with the devastating effect of the Black Death. Enclosure of fields from the common land under the Parliamentary Enclosures Acts of the 18th and 19th centuries resulted in a large-scale regular field boundary network away from the villages. Ermine Street continued to play an important role and influenced the layout of enclosures. Scattered farmsteads were built at this time, typically with combination barns serving cattle courts, although some may have originated as monastic granges or specialist sheep farms in the medieval period. Parklands associated with the country houses of major landowners are found on both sides of the Edge (Lincolnshire Cliff) along its entire length, and in the 19th century estates were responsible for the development of estate villages as well as farmsteads.

The open, reasonably flat ground near the escarpment, with strong prevailing winds to aid take-offs and landings, meant this landscape was well-suited to the selection of sites for airfields, most famously at Cranwell, which was developed from its origins in the First World War to the Royal Air Force's

⁴ East Midlands Regional Landscape Character Assessment, East Midlands Landscape Partnership (2010; URL: www.naturalengland.org.uk/regions/east_midlands/ourwork/characterassessment.aspx)

(RAF's) main officer training school. Waddington and other bomber bases were established after 1934 and expanded during the Second World War and the Cold War. Many of the airfields are no longer in use, but some retain runways, hardstandings, bomb dumps and buildings.

The latter half of the 20th century saw widespread agricultural intensification, involving comprehensive drainage schemes, removal of drystone walls and

hedgerows to create bigger fields, and an increase in arable production. It also saw an increase in the size of the major settlements and the upgrading of major transport routes. All of these served to reduce and fragment semi-natural habitats. In the 21st century agri-environment schemes have helped to fund the maintenance, enhancement and restoration of traditional field boundaries, semi-natural habitats and historic features such as archaeological earthworks and traditional farm buildings.



The landscape was well suited to the selection of sites for airfields, most famously at Cranwell, which was developed from its origins in the First World War to the RAF's main officer training school.

Ecosystem services

The Southern Lincolnshire Edge NCA provides a wide range of benefits to society. Each is derived from the attributes and processes (both natural and cultural features) within the area. These benefits are known collectively as 'ecosystem services'. The predominant services are summarised below. Further information on ecosystem services provided in the Southern Lincolnshire Edge NCA is contained in the 'Analysis' section of this document.

Provisioning services (food, fibre and water supply)

- **Food provision:** This is a productive agricultural area, producing arable crops (particularly cereals and oilseeds) and meat from pigs, poultry and sheep. Farms are generally medium to large in size, with most holdings more than 100 ha. Economies of scale mean that many of the businesses could be well-placed to invest in new and innovative machinery and techniques that help to maximise production while minimising environmental impact, such as precision farming, controlled farm traffic and minimum tillage. Farms on the free-draining soils on higher ground may be particularly vulnerable to the effects of drought, so measures to improve soil quality and increase water-use efficiency and water storage will be particularly important in a changing climate.
- **Biomass energy:** Low woodland cover means there is currently limited production of woody biomass. The area has generally medium potential for short rotation coppice and some areas of high potential for miscanthus. A straw-fired power plant has opened in Sleaford, with contracts for supply of surplus straw from farms within a 50-kilometre

radius. Greater levels of woody biomass could be provided through the management of existing woodland, where compatible with nature conservation objectives, and through the planting of new woodland in appropriate locations, particularly where it will help to reduce soil erosion and flooding, link isolated woodlands and screen new development.

- **Water availability:** There is water available for abstraction from certain stretches at high and medium flows, and from parts of the Slea only at very high flows. The limestone holds a regionally important aquifer and supplies water for industry, agriculture and domestic consumption. The Witham catchment benefits from the Trent Witham Ancholme River Transfer Scheme, which can transfer water between rivers to maintain minimum flows and meet abstraction needs. Many farms have farm reservoirs to provide water for irrigation. Measures to improve the structure of agricultural soils should help to maximise infiltration rates and aquifer recharge. Opportunities should be sought to incorporate water-saving features and sustainable urban drainage systems into new developments and retrofit into existing buildings and infrastructure. Support should be provided to help businesses and householders to reduce water consumption and increase rain and greywater capture and recycling.

Regulating services (water purification, air quality maintenance and climate regulation)

- **Regulating water quality:** Water resources are potentially vulnerable to pollution from agriculture and water treatment plants. Support should be provided for farmers and agricultural contractors to encourage best practice in soil and water management, efficient and appropriate use of nutrients and agricultural chemicals, and creation of features to limit run-off of pollutants and sediment such as buffer strips, riparian habitats and settlement ponds. Water companies should be encouraged to make further investment to reduce discharges to rivers.
- **Regulating water flow:** Sleaford is susceptible to both groundwater and surface water flooding, but in general flooding is not a major issue in this area. The Witham and Slea rivers suffer from low flows at times, but these can be moderated using the Trent Witham Ancholme River Transfer Scheme. Measures to reduce speed of rainwater run-off from agricultural land could help to reduce flooding intensity. These could include enhancing soil structure and organic matter, maintaining vegetation cover over winter and creating features such as buffer strips and storage ponds. New development should be planned, and existing development modified, to incorporate sustainable urban drainage systems, to reduce surface water run-off and stagger release of storm water into watercourses.
- **Regulating soil erosion:** Erosion of soil by wind and water is a potentially serious issue in this open arable landscape that has large areas of light soil under cultivation. The shallow, lime-rich soils over limestone (covering 41 per cent) and light textured and shallow variants of the freely draining,

lime-rich loamy soils (covering 23 per cent) are at greatest risk of erosion, particularly on sloping, cultivated ground or where soil is exposed. Climate change is likely to bring more frequent extreme weather events that could increase both wind and water erosion of soils. Measures to limit soil erosion could help to increase food production, improve water quality and benefit biodiversity both within the NCA and downstream.

- **Pollination:** Farms in the area grow large quantities of insect-pollinated crops, particularly oilseed rape, so pollination is a potentially important service in this area. The existing fragments of flower-rich grasslands, especially verges along tracks and roadsides, will be important as a source of nectar and overwintering habitat to support pollinator populations, as will hedgerows and field margins. Securing appropriate management of these areas to allow maximum flowering and to extend and link them would benefit pollinators. Helping farmers and agricultural contractors to minimise insecticide use and ensure best practice could help to protect pollinator populations.
- **Pest regulation:** With large areas of contiguous arable land, this is a potentially important service. Measures that could help to increase populations of beneficial predator species include: strengthening networks of flower-rich and rough grassland, particularly in buffer strips around field edges; sympathetic management of hedgerows; and creation of features such as beetle banks and pollen and nectar mix. Evidence on the impact and value of this service is still lacking, and this could be an appropriate area in which to support research.

Cultural services (inspiration, education and wellbeing)

- **Sense of place/inspiration:** Key components contributing to the sense of place include: the dramatic limestone cliff in the east; the springline villages at the foot of the cliff; the open arable landscape on higher land with large, geometric fields and far-reaching views; the more enclosed landscape with hedgerows, trees, woodland and parkland to the east and south-west that support grazing livestock; the rich Roman, medieval and 20th-century archaeology, particularly straight Roman roads such as Ermine Street, military airfields and the impact of estates in designed landscapes, regular enclosed fieldscapes, farmsteads and estate housing; scattered fragments of flower-rich calcareous grassland, particularly along verges; and widespread use of local limestone in drystone walls and buildings. Protection and positive management of these features should be encouraged.
- **Sense of history:** The Roman, medieval and 20th-century archaeology of the area is particularly rich, with Roman routeways and canals, deserted medieval villages and moated sites, and many abandoned airfields still highly visible in the landscape. The traditional character of villages has been maintained and the historic routeways and what remain of traditional field boundaries serve as a reminder of historic land use. Placenames are largely of Scandinavian and Saxon origin. Designated and important historic features should be protected and sympathetically maintained and managed. New development, including of airfield sites and industrial buildings, should consider this historic character and context.
- **Biodiversity:** Although semi-natural habitats are highly fragmented in this landscape, there are some sites of great value for biodiversity, particularly calcareous and neutral grassland and ancient woodland. Road and track verges offer important refuge for flower-rich grassland but need appropriate management and protection from vehicular damage to realise their wildlife potential. Farmland can be of great value for arable and wading birds, with this NCA being ranked as one of the top five in England for skylark. Opportunities to increase the extent and connectivity of existing sites should be sought while taking care to avoid any impact on food production. Restoration of mineral extraction sites provides opportunities to create new priority habitats.
- **Geodiversity:** The dramatic limestone cliff and disused quarry sites provide some valuable exposures of limestone and ironstone which illustrate the geological history of the area. Geological sites should be protected and positively managed, and access and high-quality interpretation provided, to make the most of this educational and scientific resource. Quarry restoration schemes should be encouraged to retain geological exposures and provide public access to them.

Statements of Environmental Opportunity

SEO 1: Enhance the agricultural landscape and soils to increase efficiency of food production, conserve and connect fragmented patches of limestone grassland and woodland and maintain the traditional fabric of the rural landscape, to preserve sense of place and sense of history, protect water quality, enhance biodiversity and improve resilience to climate change.

For example, by:

- Providing information, advice, training and other support to help farmers use new technology, such as precision farming, that reduces the negative environmental impacts of food production.
- Providing information, advice, training and support to farmers to promote best practice and help farmers to: enhance soil structure and organic matter (through measures such as minimum tillage, controlled farm traffic and green manures); reduce soil erosion (through measures such as tree and hedgerow planting, buffer strips, infield grass strips and beetle banks, and establishing vegetative cover and/or green manures over winter); reduce diffuse and point-source water pollution (through measures such as updating infrastructure and creating features such as buffer strips, settlement ponds or silt traps, and riparian woodland); minimise water use; and increase capture and re-use of greywater and rainwater.
- Providing training for agricultural contractors and sprayer operators on protection of watercourses and groundwater and on best practice in insecticide use to avoid harm to pollinator and beneficial predator populations.
- Encouraging farmers, particularly in primarily arable areas, to provide or leave flower-rich habitats as a nectar-source for pollinators and areas of rough grass for over-wintering, and to use alternative measures for insect pest management and control.
- Supporting research into the potential for and value of natural pest control services in this National Character Area (NCA) and disseminating useful findings to local farmers and agricultural contractors.
- Encouraging less frequent cutting of hedgerows and creation of features to benefit farmland birds, such as overwintered stubbles, fallow nest plots and wild birdseed mix.
- Encouraging appropriate management and restoration of species-rich roadside verges to maintain and enhance their wildlife and landscape value, and the creation of species-rich grassland on adjacent land to increase their value as wildlife corridors.
- Exploring opportunities for production of timber and woody biomass from existing woodlands, where this is compatible with or beneficial to nature conservation objectives, and new tree planting in locations where it will help to reduce wind erosion of agricultural soil, intercept run-off from agricultural land, provide shade for livestock and buildings, connect isolated fragments of woodland and/or provide stepping stones for woodland species.

Continued on next page

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- Seeking opportunities to restore, buffer and connect existing priority habitats, particularly calcareous and neutral grassland, woodland, heathland and riparian habitats, where they will help to protect water quality, reduce flooding and benefit biodiversity.
- Providing information, advice, training and other support to help farmers reduce the carbon dioxide emissions associated with farming.
- Supporting research into the benefits and impacts of applying ash from straw-fired power plants to agricultural land, and disseminating this to the agriculture industry.
- Encouraging the creation of priority habitats during restoration of disused quarry sites.



Lower ground supports more mixed farming, with grazing land, hedges and trees, and the escarpment offers distant views over the Trent and Belvoir Vales.

SEO 2: Protect and sympathetically manage geological features and historic features such as Ermine Street Roman road, medieval earthworks, industrial buildings, historic drystone wall networks and traditional villages, to sustain a sense of history and sense of place, providing interpretation to aid understanding of the landscape.

For example, by:

- Encouraging and supporting positive management and protection of characteristic features of rural landscapes such as drystone walls, hedgerows, woodlands and archaeological earthworks.
- Protecting historic linear routes and seeking ways to minimise vehicular damage and secure positive management to maintain flower-rich grassland.
- Providing information, advice and training to property owners and tradespeople in maintenance and restoration of old buildings using appropriate materials and techniques.
- Encouraging the use of local stone in building, walling and restoration work.
- Facilitating the recording and sampling of temporary sections and excavations to expose geological features.
- Providing high-quality interpretation material using a range of media to increase understanding and appreciation of the landscape and its evolution.
- Protecting and managing key prehistoric, Roman and medieval archaeological sites, particularly Ermine Street, Car Dyke, deserted medieval villages, ridge and furrow and moated sites.
- Encouraging developers to plan and execute redevelopment of disused airfields in ways that retain the historic essence and some of the features of the original airfield and enhance their wildlife value, for example through creation of limestone grassland.
- Facilitating sympathetic restoration and future use of key disused historic buildings such as Bass Maltings.
- Improving access to key geological sites, particularly for educational visits, where appropriate.
- Ensuring that the restoration of disused mineral extraction sites retains exposures that illustrate geological processes.



Ermine Street Roman route provides a distinctive feature in the landscape contributing to access and recreation and sense of place as well as biodiversity due to the wide flower-rich verges.

SEO 3: Ensure that new development is planned and executed to preserve a sense of place, sense of history, tranquillity and biodiversity, while minimising water use and avoiding exacerbation of flooding and habitat fragmentation.

For example, by:

- Continuing to work with quarry operators, agricultural contractors, farmers and other businesses to support the implementation of water-saving measures and the capture and re-use of greywater and rainwater, to reduce demand for abstraction.
- Planning new development and adapting existing development to incorporate sustainable urban drainage systems and water-saving features.
- Providing information and advice for householders on how to minimise water consumption.
- Working with water companies to reduce discharge of pollutants from water treatment works.
- Protecting the scarp slope from inappropriate development, increasing woodland cover where possible.
- Protecting stone-built vernacular architecture including farmhouses and farmsteads, and using appropriate materials and techniques when restoring them.
- Ensuring that new irrigation reservoirs are constructed so that they contribute to biodiversity and fit in to local landform and landscape.
- Maintaining the low rate of urbanisation and development outside urban and fringe areas and ensuring that any in-fill development in the small settlements is appropriately sited and designed.
- Exploring opportunities to incorporate tree planting into new developments, where appropriate, to provide a local source of fuel while also screening new development and providing shade to help regulate temperatures inside buildings.
- Ensuring that any new developments incorporate accessible greenspace, offering residents opportunities for recreation and to benefit from contact with the natural environment.



Welbourn and other villages occur along spring lines at the foot of the escarpment.

SEO 4: Enhance the provision for access and recreation while maintaining the tranquillity of undisturbed areas and providing educational opportunities and interpretation.

For example, by:

- Managing and enhancing the rights-of-way network and long-distance routes, such as the Viking Way, and improving the rights-of-way network by creating permissive and definitive access routes, increasing the opportunities for recreation and enabling people to visit the area in a sustainable way.
- Protecting historic linear routes and seeking ways to minimise vehicular damage.
- Ensuring that restoration of disused extraction sites incorporates open access and opportunities for quiet recreation where possible.
- Providing high-quality interpretation, using a range of media, to explain the context and significance of paths along historic routeways.
- Creating more links between urban populations and the surrounding countryside, finding links between existing accessible sites and semi-natural habitats, especially woodlands, for use by walkers, cyclists and horse riders.
- Restoring and managing historic parklands and estates by retaining veteran trees, restoring wood pasture, restoring vistas and bringing woodlands into appropriate management, enhancing opportunities for sustainable recreational access and contributing to the creation of ecological networks.
- Protecting the open nature of the landscape and far-reaching views from the limestone escarpment.

- Preserving the tranquillity of existing undisturbed areas and seeking opportunities to use hedgerow and tree planting to screen new developments and transport routes. Protect hedgerows and trees where these serve to reduce noise pollution.



Wide verges along roads and historic routes provide important refuges for flower-rich limestone grassland.

Supporting document 1: Key facts and data

Southern Lincolnshire Edge National
Character Area (NCA): 57,041 ha

1. Landscape and nature conservation designations

There are no National Parks or Areas of Outstanding Natural Beauty (AONB) within this NCA.

Source: Natural England (2011)

1.1 Designated nature conservation sites

The NCA includes the following statutory nature conservation designations:

Tier	Designation	Designated site(s)	Area (ha)	% of NCA
International	n/a	n/a	0	0
European	Special Protection Area (SPA)	n/a	0	0
	Special Area of Conservation (SAC)	n/a	0	0
National	National Nature Reserve (NNR)	n/a	0	0
National	Site of Special Scientific Interest (SSSI)	A total of 8 sites wholly or partly within the NCA	118	<1

Source: Natural England (2011)

Please note: (i) Designated areas may overlap (ii) all figures are cut to Mean High Water Line, designations that span coastal areas/views below this line will not be included.

There are 152 local sites in the Southern Lincolnshire Edge NCA covering 2,130 ha which is 4 per cent of the NCA.

Source: Natural England (2011)

- Details of individual Sites of Special Scientific Interest can be searched at:
[REDACTED]
- Details of Local Nature Reserves (LNR) can be searched at:
[REDACTED]
- Maps showing locations of Statutory sites can be found at:
[REDACTED] – select 'Rural Designations Statutory'

1.1.1 Condition of designated sites

Condition category	Area (ha)	% of SSSI land in category condition
Unfavourable declining	0	0
Favourable	35	30
Unfavourable no change	57	49
Unfavourable recovering	24	21

Source: Natural England (March 2011)

- Details of SSSI condition can be searched at:
[REDACTED]

2. Landform, geology and soils

2.1 Elevation

The lowest elevation in this NCA is <1 m; the highest point is 135 m. The mean elevation across the NCA is 42 m.

Source: Natural England (2010)

2.2 Landform and process

The Lincolnshire Edge forms the distinctive limestone backbone running through this NCA.

Source: Northern Lincolnshire Edge with Coversands/Southern Lincolnshire Edge
Countryside Character Area Description

2.3 Bedrock geology

The Lincolnshire Edge is formed by the Middle Jurassic Lincolnshire Limestone which runs along the high ground from Grantham north to the Humber.

Source: Northern Lincolnshire Edge with Coversands/Southern Lincolnshire Edge
Countryside Character Area Description

2.4 Superficial deposits

Glacial boulder clay drift and small deposits of sands and gravels.

Source: Northern Lincolnshire Edge with Coversands/Southern Lincolnshire Edge
Countryside Character Area Description

2.5 Designated geological sites

Designation	Number
Geological Site of Special Scientific Interest (SSSI)	1
Mixed interest SSSI	1

There are 13 Local Geological Sites within the NCA.

Source: Natural England 2011

■ Details of individual Sites of Special Scientific Interest can be searched at:

2.6 Soils and Agricultural Land Classification

Soils include shallow lime-rich and freely draining soils over much of the higher ground. There is some clay with associated poorer drainage on lower ground.

Source: Northern Lincolnshire Edge with Coversands/Southern Lincolnshire Edge
Countryside Character Area Description

The main grades of agricultural land in the NCA are broken down as follows (as a proportion of total land area):

Agricultural Land Classification	Area (ha)	% of NCA
Grade 1	0	0
Grade 2	20,401	36
Grade 3	33,503	59
Grade 4	717	1
Grade 5	0	0
Non-agricultural	1,799	3
Urban	620	1

Source: Natural England (2010)

■ Maps showing locations of statutory sites can be found at: <http://magic.defra.gov.uk/website/magic/> - Select 'Landscape' (shows ALC and 27 types of soils)

3. Key water bodies and catchments

3.1 Major rivers/canals

The following major rivers/canals (by length) have been identified in this NCA.

Name	Length in NCA (km)
River Slea	25
River Witham	6

Source: Natural England (2010)

Please note: other significant rivers (by volume) may also occur. These are not listed where the length within the NCA is short.

3.2 Water quality

The total area of Nitrate Vulnerable Zone is 57,041 ha, 100 per cent of the NCA.

Source: Natural England (2010)

3.3 Water Framework Directive

Maps are available from the Environment Agency showing current and projected future status of water bodies at: http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopics&lang=_e



The River Slea is one of the area's major rivers and drains into the Fens. It was historically important for navigation and was canalised along stretches.

4. Trees and woodlands

4.1 Total woodland cover

The NCA contains 2,136 ha of woodland (4 per cent of the total area), of which 196 ha is ancient woodland.

Source: Natural England (2010), Forestry Commission (2011)



Roman features unclude Car Dyke Canal in the east of the area.

4.2 Distribution and size of woodland and trees in the landscape

Most of the woodland is found on the poorly drained boulder clay that covers the limestone between Sleaford and Grantham. North of the boulder clay there are very few types of woodland, mainly copses and plantations. However, there are a couple of ancient woodlands around Nocton at the foot of the limestone where it descends down into the fen edge clays and gravels.

Source: Northern Lincolnshire Edge with Coversands/Southern Lincolnshire Edge
Countryside Character Area Description

4.3 Woodland types

A statistical breakdown of the area and type of woodland found across the NCA is detailed below.

Area and proportion of different woodland types in the NCA (over 2 ha).

Woodland type	Area (ha)	% of NCA
Broadleaved	1,711	3
Coniferous	245	<1
Mixed	37	<1
Other	143	<1

Source: Forestry Commission (2011)

Area and proportion of Ancient Woodland and Planted Ancient Woodland within the NCA:

Type	Area (ha)	% of NCA
Ancient semi-natural woodland	148	<1
Ancient re-planted woodland (PAWS)	48	<1

Source: Natural England (2004)

5. Boundary features and patterns

5.1 Boundary features

Boundaries marked with either stone walls or hedges are mostly remnants of the Enclosures Acts between 1760 and 1830.

Source: Northern Lincolnshire Edge with Coversands/Southern Lincolnshire Edge Countryside Character Area Description; Countryside Quality Counts (2003)

5.2 Field patterns

Large fields bordered by small trimmed hedges and limestone walls are characteristic of farmland on higher ground, with smaller fields and bigger hedges to the south west and east.

Source: Northern Lincolnshire Edge with Coversands/Southern Lincolnshire Edge Countryside Character Area Description; Countryside Quality Counts (2003)



The view towards Fulbeck, one of the villages along springlines on the scarp edge.

6. Agriculture

The following data has been taken from the Agricultural Census linked to this NCA.

6.1 Farm type

68 per cent of the area's farms were arable (48 per cent cereals, 19 per cent general cropping). 17 per cent of farms were mainly livestock units (grazing livestock 10 per cent, specialist poultry 6 per cent).

Source: Agricultural Census, Defra (2010)

6.2 Farm size

38 per cent of farms (112 of 293 holdings) were greater than 100 hectares, and this category of farm accounted for 86 per cent of the agricultural area in 2009. There was a fairly equal spread of sizes among the remaining farms. The broad pattern was similar to that in 2000, although there were significantly more farms between 20 ha and 50 ha (up from 33 in 2000 to 41 in 2009) and fewer farms greater than 100 hectares (from 143 to 112).

Source: Agricultural Census, Defra (2010)

6.3 Farm ownership

2009: Total farm area = 45,924 ha; owned land = 31,133 ha

2000: Total farm area = 53,364 ha; owned land = 35,146 ha

Source: Agricultural Census, Defra (2010)

6.4 Land use

In 2009, almost half the agricultural area was under cereals, 17 per cent was grass and uncropped land, 12 per cent oilseeds and 9 per cent cash roots. Land with oilseeds had increased by 88 per cent since 2000, cash roots had decreased by 33 per cent and grass and uncropped land had decreased by 26 per cent.

Source: Agricultural Census, Defra (2010)

6.5 Livestock numbers

Sheep accounted for the majority of livestock (15,100), followed by pigs (9,200) and cattle (3,300).

Source: Agricultural Census, Defra (2010)

6.6 Farm labour

There were 921 agricultural workers in this area in 2009 (down from 1,105 in 2000). Of these, 44 per cent were principal farmers, 31 per cent full-time workers, 9 per cent part-time workers, 7 per cent salaried managers and 10 per cent casual/gang workers.

Source: Agricultural Census, Defra (2010)

Please note: (i) Some of the Census data is estimated by Defra so will not be accurate for every holding (ii) Data refers to Commercial Holdings only (iii) Data includes land outside of the NCA belonging to holdings whose centre point is within the NCA listed.

7. Key habitats and species

7.1 Habitat distribution/coverage

Fields in the Ancaster Valley, Ryhall Pasture and Porter's Lodge meadows all contain good examples of limestone grassland. Road verges in this NCA have some of the best surviving grassland habitats. Oak and ash are the dominant species in the woodland, with wild service tree, wild cherry, aspen and field maple. The NCA also contains important arable habitats which support nationally important assemblages of arable birds.

Source: Lincolnshire and Rutland Limestone Natural Area Profile



The scarp slope, although not very steep or high, is a defining landscape feature that is highly visible along the length of the NCA.

7.2 Priority habitats

The Government's new strategy for biodiversity in England, Biodiversity 2020, replaces the previous Biodiversity Action Plan (BAP) led approach. Priority habitats and species are identified in Biodiversity 2020, but references to BAP priority habitats and species, and previous national targets have been removed. Biodiversity Action Plans remain a useful source of guidance and information. More information about Biodiversity 2020 can be found at;

The NCA contains the following areas of mapped priority habitats (as mapped by National Inventories). Footnotes denote local/expert interpretation. This will be used to inform future national inventory updates.

Priority habitat	Area (ha)	% of NCA
Broadleaved mixed and yew woodland (broad habitat)	770	1
Lowland meadows	85	<1
Lowland calcareous grassland	49	<1
Reedbeds	49	<1
Lowland heathland	2	<1

Source: Natural England (2011)

Maps showing locations of priority habitats are available at

- <http://magic.defra.gov.uk/website/magic/> select 'Habitat Inventories'

7.3 Key species and assemblages of species

- Maps showing locations of priority habitats are available at:

<http://magic.defra.gov.uk/website/magic/>

- Maps showing locations of S41 species are available at:

8. Settlement and development patterns

8.1 Settlement pattern

The majority of settlements are gathered around the edges of the scarp, where there are numerous villages built on spring lines and the foot of the dip slope. Settlement on the higher land on the plateau consists largely of individual farmsteads.

Source: Northern Lincolnshire Edge with Coversands/Southern Lincolnshire Edge Countryside Character Area Description; Countryside Quality Counts (2003)

8.2 Main settlements

The main settlements are Sleaford, Waddington, Branston, Ruskington, Metherringham and Heckington. The total estimated population for this NCA (derived from ONS 2001 census data) is 75,288.

Source: Northern Lincolnshire Edge with Coversands/Southern Lincolnshire Edge Countryside Character Area Description; Countryside Quality Counts (2003)

8.3 Local vernacular and building materials

Small villages built in traditional honey-coloured limestone, warm brick and pantiles cluster by springs.

Source: Northern Lincolnshire Edge with Coversands/Southern Lincolnshire Edge Countryside Character Area Description; Countryside Quality Counts (2003)

9. Key historic sites and features

9.1 Origin of historic features

Evidence of a triple ditch system dating to the Bronze Age has been found at Honington. The scattered woodland that has survived today is largely on the boulder clay, the soils of which would have been difficult to plough for the early settlers. Medieval and Tudor estates provide evidence of the major source of wealth from wool. A large number of deserted villages attributed to the depopulation event caused by the Black Death in the 14th century. 20th century development of airfields, including Waddington and Cranwell with its RAF College.

Source: Draft Historic Profile, Countryside Quality Counts, Countryside Character Area description

9.2 Designated historic assets

This NCA has the following historic designations:

- 7 Registered Parks and Gardens covering 649 ha.
- 0 Registered Battlefields.
- 56 Scheduled Monuments.
- 927 Listed Buildings.

Source: Natural England (2010)

- More information is available at the following address:

[Redacted address information]

10. Recreation and access

10.1 Public access

- <1 per cent of the NCA 311 ha is classified as being publically accessible.
- There are 522 km of public rights of way at a density of 0.9 km per km².
- There are no National Trails within the NCA.

Source: Natural England (2010)

The following table shows the breakdown of land which is publically accessible in perpetuity:

Access designation	Area (ha)	% of NCA
National Trust (accessible all year)	0	0
Common Land	73	<1
Country Parks	0	<1
CROW Access Land (Section 4 and 16)	107	<1
CROW Section 15	164	<1
Village Greens	1	<1
Doorstep Greens	1	<1
Forestry Commission Walkers Welcome Grants	72	<1
Local Nature Reserves (LNR)	14	<1
Millennium Greens	<1	<1
Accessible National Nature Reserves (NNR)	0	0
Agri-environment Scheme Access	14	<1
Woods for People	186	<1

Sources: Natural England (2011)

Please note: Common Land refers to land included in the 1965 commons register; CROW = Countryside and Rights of Way Act 2000; OC and RCL = Open Country and Registered Common Land.



Historic parklands contribute to sense of history, sense of place, recreation opportunities and biodiversity.

11. Experiential qualities

11.1 Tranquillity

Based on the CPRE map of Tranquillity (2006) areas particularly around Sleaford and other settlements, are less tranquil.

A breakdown of tranquillity values for this NCA are detailed in the table below:

Category of tranquillity	Score
Highest	42
Lowest	-66
Mean	3

Sources: CPRE (2006)

More information is available at the following address:

[Redacted address]

11.2 Intrusion

The 2007 Intrusion Map (CPRE) shows the extent to which rural landscapes are 'intruded on' from urban development, noise (primarily traffic noise), and other sources of visual and auditory intrusion. This shows that 94 per cent of the area is undisturbed, highlighting the rural nature of this NCA. A breakdown of intrusion values for this NCA is detailed in the following table.

Intrusion category	1960s (%)	1990s (%)	2007 (%)	Percentage change (1960s-2007)
Disturbed	12	28	45	33
Undisturbed	87	72	52	-35
Urban	1	1	2	1

Sources: CPRE (2007)

Notable trends from the 1960s to 2007 are that the percentage of disturbed land had increased, matched by a decrease in the percentage of undisturbed land. Although the percentage of urban intrusion has doubled it is still relatively low compared to other NCAs.

■ More information is available at the following address:

[Redacted address]



The heavier soils in the south of the NCA support more mixed agriculture than other parts, with grazing land for sheep and cattle.

12. Data sources

- British Geological Survey (2006)
- Natural Area Profiles, Natural England (published by English Nature 1993-1998)
- Countryside Character Descriptions, Natural England (regional volumes published by Countryside Commission/Countryside Agency 1998/1999)
- Joint Character Area GIS boundaries, Natural England (data created 2001)
- National Parks and AONBs GIS boundaries, Natural England (2006)
- Heritage Coast Boundaries, Natural England (2006)
- Agricultural Census June Survey, Defra (2000,2009)
- National Forest Inventory, Forestry Commission (2011)
- Countryside Quality Counts Draft Historic Profiles, English Heritage (2004)*
- Ancient Woodland Inventory, Natural England (2003)
- Priority Habitats GIS data, Natural England (March 2011)
- Special Areas of Conservation data, Natural England (data accessed in March 2011)
- Special Protection Areas data, Natural England (data accessed in March 2011)
- Ramsar sites data, Natural England (data accessed in March 2011)
- Sites of Special Scientific Interest, Natural England (data accessed in March 2011)
- Detailed River Network, Environment Agency (2008)
- Source protection zones, Environment Agency (2005)
- Registered Common Land GIS data, Natural England (2004)
- Open Country GIS data, Natural England (2004)
- Public Rights of Way Density, Defra (2011)
- National Trails, Natural England (2006)
- National Tranquillity Mapping data, CPRE (2007)
- Intrusion map data, CPRE (2007)
- Registered Battlefields, English Heritage (2005)
- Record of Scheduled Monuments, English Heritage (2006)
- Registered Parks and Gardens, English Heritage (2006)
- World Heritage Sites, English Heritage (2006)
- Incorporates Historic Landscape Characterisation and work for preliminary Historic Farmstead Character Statements (English Heritage/Countryside Agency 2006)

Please note all figures contained within the report have been rounded to the nearest unit. For this reason proportion figures will not (in all) cases add up to 100 per cent. The convention <1 has been used to denote values less than a whole unit.

Supporting document 2: Landscape change

Recent changes and trends

Trees and woodlands

- At the end of 1998 young trees accounted for about 2 per cent of the mature woodland stock. Between 1999 and 2003 an area equivalent to 8 per cent of the 1999 total stock was planted (105 ha). New planting is mostly in scattered blocks and appears to strengthen the existing pattern of shelterbelts and strips, although some on the ridgetops may be less consistent with character.
- The proportion of ancient woodland sites covered by a Woodland Grant Scheme agreement increased from 38 per cent to 61 per cent between 1999 and 2003.

Boundary features

- Between 1999 and 2003 Countryside Stewardship agreements for linear features included fencing (25 km), hedgerow management (33 km), hedgerow planting and restoration (67 km) and restored boundary protection (6 km). These options covered about 4 per cent of the field boundary stock. None of the Countryside Stewardship agreements during this time included options for stone wall restoration or maintenance.
- Between 2005 and 2013 Environmental Stewardship agreements in the area included options for 1,039 km of hedgerow management, 4.4 km of hedgerow restoration, 3.8 km of hedgerow planting, 145.9 km of combined hedgerow and ditch management, 193.5 km of ditch management, 2.4 km

of ditch creation, 1 km of stone wall protection and maintenance, 1.7 km of stone wall restoration and 0.4 km of earth bank management. In total 1,392 km of options for maintenance, restoration and creation of traditional boundary features. The estimated total length of boundaries in the area is 3,242 km (including fences) so this represents positive management or restoration of a large proportion of traditional boundaries.

Agriculture

- Countryside Stewardship uptake for annual area features was consistently below national average, until 2003. Countryside Stewardship agreements for margins >6 m has been significant (804 km), but despite the importance of the area for arable birds there was limited uptake of Countryside Stewardship agreements for management of stubbles or wild bird seed mixture.
- After boundary maintenance, the most popular Environmental Stewardship options between 2005 and 2014 included: 6-metre buffer strips on cultivated land (135.8 ha over 43 agreements); 4-metre buffer strips on cultivated land (125.2 ha over 38 agreements); overwintered stubbles (886.4 ha over 33 agreements); low-input grassland (316.5 ha over 27 agreements); wild bird seed mix (50.4 ha over 24 agreements).

Settlement and development

- Development pressure is having an impact on the character of the NCA with moderately high rates of change in urban areas and development outside urban areas and fringe areas. Expansion of Sleaford and Lincoln is evident, together with expansion of residential and commercial development in smaller settlements such as Ruskington, Heckington, Cranwell and Metherington.
- Increased development and traffic pressure, particularly around Sleaford, has resulted in a reduction in tranquillity, with the percentage of the NCA classed as 'undisturbed' falling from 87 per cent in the 1960s to 52 per cent in 2007; a 35 per cent reduction.

Semi-natural habitat

- The most popular Countryside Stewardship management options in 2003 were for lowland pastures on neutral/acid soils (521 ha) and regeneration of grassland/semi-natural vegetation (348 ha).
- Environmental Stewardship agreements between 2005 and 2014 included options to: manage 89.8 ha and restore 49.6 ha of wet grassland for breeding waders; and create 55.2 ha, restore 34.3 ha and maintain 23.4 ha of species-rich grassland.
- Species-rich grassland on wide road verges and alongside historic routes have suffered declines in condition and species diversity in recent years due to a lack of appropriate management, with many being either cut too frequently, or at the wrong times of year.

Historic features

- In 2003 approximately 65 per cent of historic farm buildings remained unconverted and most were structurally intact.
- There seems to have been a continued loss of military archaeology (buildings, plan-forms, key installations) related to the airfields and related bases along the Edge (Lincolnshire Cliff), either through reversion to farmland or change of use (e.g. retail outlets).
- Environmental Stewardship agreements in the area between 2005 and 2014 included options to: take 90.6 ha of archaeological features out of cultivation; maintain 14,807 m² of traditional farm buildings; manage 109.5 ha of grassland for archaeological features; restore 197.7 ha of wood pasture and parkland.

Rivers

- In 1995 the biological water quality was predominantly excellent and chemical water quality predominantly very good. Both of these were maintained until 2003.

Minerals

- Active quarries include Brauncewell and Longwood Quarry at Blankney (both of which supply limestone, aggregates and lime) and Goldholme Stone's quarry at Ancaster (supplying limestone for building and stone masonry). The quarry at Ancaster was re-opened in 1999 and recently granted a 5 hectare extension.⁵

⁵ URL: [REDACTED] (accessed 20 February 2014)

Drivers of change

Climate change

Potential impacts of climate change in the NCA, and the East Midlands as a whole, could include:

- An increase in the number of flood events and an increase in drought events compounding existing occasional problems with low flows in the Slea and Witham rivers and threatening availability of water from rivers and the limestone aquifer.
- More frequent and more intense storm events may increase the amount of surface water run-off from agricultural land, increasing diffuse pollution from sediment and nutrient run-off.
- Increasingly stormy weather may bring stronger winds which have the potential to increase wind erosion in the spring dry weather, particularly on the lighter soils on the free-draining plateau.
- An increase in droughts, especially in the summer, could affect productivity of the farmed land, and increase demand for water for irrigation, especially on the free draining soils on the plateau.
- Increased frequency and severity of droughts could lower the water table and have negative effects on a range of habitats and species, particularly aquatic, riparian and wetland ones.
- There may be a move towards new crops or increased yields from traditional crops, due to warmer conditions.
- New conditions may favour generalist species, pests, diseases and invasive non-native species, leading to a reduction in biodiversity and/or disruption of habitats.
- Phenological mismatch may lead to a disruption of food species, putting species and ecosystem services at risk.⁶
- Heavy clay soils to the east of the area are likely to be most vulnerable to extreme weather events as they are easily waterlogged and drought stressed.

⁶ A Summary of Climate Change Risks for the East Midlands, Climate East Midlands (2012; URL: [\[redacted\]](#))

Other key drivers

- The main areas of development are centred on Lincoln, Sleaford and Grantham.
- Villages are under increasing pressure from development, both in-fill among existing buildings and expansion on the periphery.
- Due to the elevated and windswept nature of the escarpment and much of the dip slope there is likely to be pressure to accommodate wind energy schemes.
- There is likely to be continued demand for aggregate and limestone extraction.
- Restoration of disused quarries will present potential to create new wildlife habitat and access and educational opportunities.
- Combined demand for food and economic pressure on agriculture is likely to drive continuing intensification of agriculture.
- There will be opportunities to improve the environmental impact of agriculture through use of new and innovative technology and techniques that improve resource-use efficiency and soil quality.



Although the Southern Lincolnshire Edge has low woodland cover, there are some notable local concentrations of woodland and forest, such as here near Metherringham to the east of the NCA.

Supporting document 3: Analysis supporting Statements of Environmental Opportunity

The following analysis section focuses on a selection of the key provisioning, regulating and cultural ecosystem goods and services for this NCA. These are underpinned by supporting services such as photosynthesis, nutrient cycling, soil formation and evapo-transpiration. Supporting services perform an essential role in ensuring the availability of all ecosystem services.

Biodiversity and geodiversity are crucial in supporting the full range of ecosystem services provided by this landscape. Wildlife and geologically-rich landscapes are also of cultural value and are included in this section of the analysis. This analysis shows the projected impact of Statements of Environmental Opportunity on the value of nominated ecosystem services within this landscape.



There are numerous deserted medieval villages, suggestive of the severe impact of the Black Death and harvest failures.

Statement of Environmental Opportunity	Ecosystem Service																		
	Food provision	Timber provision	Water availability	Genetic diversity	Biomass provision	Climate regulation	Regulating water quality	Regulating water flow	Regulating soil quality	Regulating soil erosion	Pollination	Pest regulation	Regulating coastal erosion	Sense of place/Inspiration	Sense of history	Tranquillity	Recreation	Biodiversity	Geodiversity
SEO 1: Enhance the agricultural landscape and soils to increase efficiency of food production, conserve and connect fragmented patches of limestone grassland and woodland and maintain the traditional fabric of the rural landscape, to preserve sense of place and sense of history, protect water quality, enhance biodiversity and improve resilience to climate change.	↑ ***	↗ *	↗ *	n/a	↗ *	↗ *	↑ **	↗ *	↑ **	↑ **	↗ **	↗ **	n/a	↗ **	↗ **	0	↗ *	↑ **	↗ *
SEO 2: Protect and sympathetically manage geological features and historic features such as Ermine Street Roman road, medieval earthworks, industrial buildings, historic drystone wall networks and traditional villages, to sustain a sense of history and sense of place, providing interpretation to aid understanding of the landscape.	↔ *	↔ *	↔ *	n/a	↔ *	↔ *	↗ *	↗ *	↗ *	↗ *	↗ *	↔ *	n/a	↑ ***	↑ ***	↑ ***	↑ ***	↗ **	↑ ***
SEO 3: Ensure that new development is planned and executed to preserve a sense of place, sense of history, tranquillity and biodiversity, while minimising water use and avoiding exacerbation of flooding and habitat fragmentation.	0	↗ *	↗ **	n/a	↗ **	↗ **	↗ **	↗ **	↗ *	↗ *	↗ **	↔ *	n/a	↗ **	↗ **	↗ **	↗ **	↗ **	↗ *
SEO 4: Enhance the provision for access and recreation while maintaining the tranquillity of undisturbed areas and providing educational opportunities and interpretation.	↔ *	↔ *	↔ *	n/a	↔ *	↔ *	↔ *	↔ *	↔ *	↗ **	↔ *	↔ *	n/a	↗ **	↗ **	↗ **	↑ ***	↗ *	↗ *

Note: Arrows shown in the table above indicate anticipated impact on service delivery: ↑ = Increase ↗ = Slight Increase ↔ = No change ↘ = Slight Decrease ↓ = Decrease. Asterisks denote confidence in projection (*low **medium***high) ° symbol denotes where insufficient information on the likely impact is available.

■ National Importance; ■ Regional Importance; ■ Local Importance

Landscape attributes

Landscape attribute	Justification for selection
Elevated arable escarpment with underlying Jurassic limestone forming a distinct cliff running north-south along the western boundary providing far-reaching views over the Trent and Belvoir Vales.	<ul style="list-style-type: none"> ■ Distinct landform of 'cliff' and open plateau contributes to a strong sense of place. ■ One Site of Special Scientific Interest (SSSI) designated for its geological interest, one for mixed biological and geological interest and 13 Local Geological Sites. ■ Disused limestone and aggregate quarries now provide important exposures of geological features along with semi-natural habitats.
Productive loamy soils on limestone plateau giving rise to a large-scale open landscape of arable cultivation with large, regular fields and few boundaries of tightly cut hedgerows or rubble limestone walls.	<ul style="list-style-type: none"> ■ Productive farmland, much of it managed in large units over 100 ha. ■ Predominantly arable (cereals, oilseeds, potatoes and other arable crops) with specialist pig and poultry farms and mixed farming to the east and south-west. ■ Large, rectilinear fields arising from 18th- and 19th-century enclosure of the limestone plateau. ■ Limestone walls more frequent on higher parts of the dip slope to the west, with hedgerows more common in the east and south-west.
Heavy clay soils in the east and south-west of the area supporting more grazing land in smaller, less regular fields, along with small areas of woodland and parkland.	<ul style="list-style-type: none"> ■ Parklands and country estates such as Rauceby and Belton can be found in the south-west. ■ Significant woodlands include a small group at the foot of the limestone dip slope near the junction with the fen edge at Potterhanworth and Nocton. ■ Less regular fields with more hedgerows, often closely clipped and gappy, and hedgerow trees.
Semi-natural habitats in small, isolated fragments, with small pockets of woodland on clay soils, fen at the foot of the dip slope and flower-rich limestone grassland, particularly along road verges.	<ul style="list-style-type: none"> ■ Priority habitats in the NCA include 770 ha of broadleaved woodland, 85 ha of lowland meadow, 49 ha of lowland calcareous grassland, 49 ha of reedbeds and 2 ha of lowland heathland. ■ The area's SSSI consist primarily of calcareous grassland on small sites, one of which is a verge along Ermine Street Roman road. SSSI have also been designated for geology, heath and neutral grassland.
Sparse settlement on higher land, with springline villages along the foot of the cliff and larger settlements to the east of the dip slope including Sleaford, Ruskington and Metherringham.	<ul style="list-style-type: none"> ■ Settlement is concentrated around the perimeter of the NCA. ■ Springline villages along the cliff foot include the aptly named Wellbourne and Fullbeck. ■ Villages to the east of the dip slope tend to be in elongated parishes that stretch between the wetter lowlands and higher, drier land.
Active and disused airfields prominent on the ridgetop.	<ul style="list-style-type: none"> ■ Disused airfields are still evident through hard standing, boundaries and derelict or re-used military buildings, although some loss of military features has occurred.

Landscape attribute	Justification for selection
Evidence of Roman influence, through roads and tracks, and of medieval settlement, through abandoned villages, ridge and furrow and moated sites.	<ul style="list-style-type: none"> ■ Long straight roads and tracks including Ermine Street, which follows the route of the key north–south Roman road, now the busy A15. ■ Historic Roman road network evident, with minor straight roads leading off Ermine Street to cross the limestone plateau. ■ Wide verges support a range of flowering species, creating important corridors for wildlife and an attractive setting for public rights of way. ■ Medieval earthworks in the form of ridge and furrow, evidence of abandoned medieval villages and moated sites are widespread.
Vernacular architecture and walling, especially in villages, of local warm-coloured limestone with dark brown pantile roofs.	<ul style="list-style-type: none"> ■ Historically there has been a plentiful supply of local building stone, as evidenced by active and disused quarry sites. ■ Stone-built vernacular architecture including villages, farmhouses and farmsteads.

Landscape opportunities

- Protect the scarp slope from inappropriate development, increasing woodland cover where possible.
- Retain long, panoramic views out over adjacent lower-lying land, especially from the scarp slope in the west and north towards Lincoln Cathedral.
- Protect, manage, enhance and extend the pockets of heathland, calcareous and neutral grassland linking existing areas where possible.
- Manage existing broadleaf woodland.
- Manage existing hedgerows sympathetically, cutting no more than every two years to allow them to fill out, and plant to fill in gaps.
- Restore and introduce hedgerows into key locations to reinforce field patterns.
- Manage existing plantation woodlands to ensure their long term survival as landscape features, increasing the content of native broadleaves where possible.
- Increase the area of native broadleaved woodland, especially along the scarp slope of the Edge (Lincolnshire Cliff) in the west and on the heavier soils of the east and south-west.
- Manage grassy verges to encourage greater species richness and to maintain them as a feature of the long straight roads.
- Restore and manage disused limestone and aggregate quarries to retain their geological interest, and expand their habitats of interest, including limestone grassland, heathland, open water and wetland habitats, providing access where possible.
- Protect stone-built vernacular architecture including farmhouses and farmsteads, and use appropriate materials and techniques when restoring them.
- Protect, conserve and interpret the many historic town houses, industrial buildings and other structures that reveal the rich Roman and medieval history of the NCA.
- Enhance the contrast between the open plateau and the wooded scarp slopes by encouraging more woodland establishment on the slopes.
- Encourage the establishment of permanent grassland to protect the evidence of medieval settlements and other ground features.
- Maintain and restore limestone rubble walls.
- Ensure that new irrigation reservoirs are constructed so that they contribute to biodiversity interest and fit in to local landform and landscape.

Ecosystem service analysis

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Food provision	<p>Soils</p> <p>Agricultural crops (arable and grassland)</p> <p>Semi-natural habitats (limestone and neutral grassland)</p>	<p>This is a productive arable area. The majority of farmland soils are Grade 2 (36 per cent) or Grade 3 (59 per cent). There are also mixed and livestock farms, particularly on heavier soils to the east.</p> <p>In 2009 cereals were the primary crop, taking up almost half of agricultural land, but oilseeds (12 per cent of the NCA) and cash roots (9 per cent) were also significant. Grassland and uncropped land accounted for a further 17 per cent of agricultural land.</p> <p>Grazing land occurs on the heavier soils to the east and in 2009 supported sheep (15,100) and cattle (3,300). 9,200 pigs were kept on a mixture of outdoor and indoor pig units.</p>	Regional	<p>This is a productive area for agriculture, producing cereals, oilseeds, root crops, pigs and poultry, contributing to employment, the local economy and supporting local services. The potential to increase food production is good, depending on advances in crop varieties, soil and water management and agricultural technology.</p> <p>The opportunities to increase the efficiency of food production is also good; farms are of a scale where investment in new technology, such as precision farming equipment, and infrastructure, such as rainwater harvesting systems and renewable energy, is likely to be financially viable.</p> <p>Improvements in soil quality are likely to be particularly important in this area in terms of improving productivity and environmental efficiency of farming. The free-draining nature of the underlying geology makes it particularly important to maximise organic matter and protect soil structure, to aid water retention and sustain crop growth during dry spells.</p> <p>Good soil structure and high organic matter content could also help to limit soil erosion, particularly wind erosion to which the open, windswept, larger fields on higher ground can be prone. Green manures could be beneficial in helping to build organic matter on farms without livestock, and by providing cover over winter to reduce erosion.</p> <p>As even good condition soils on the plateau are likely to be prone to drying out, having reliable on-farm sources of water will also be important and climate change may increase the demand for on-farm reservoirs and water storage tanks. Farms should implement ways of saving and re-using greywater and rainwater, to limit use of treated mains water and water abstracted from ground and surface sources. (See also text under water availability below.)</p> <p>The Renewable Energy Plant at Sleaford plans to re-use the ash from burning straw in the plant as fertiliser on agricultural land. Trials to establish the benefits and impacts of this could be a really useful contribution from this area to inform food production in other parts of the country.</p>	<p>Provide information, advice, training and other support to help farmers use new technology, such as precision farming, that reduces the negative environmental impacts of food production. Specific measures could include facilitating machinery rings, demonstration sites and farmer-to-farmer knowledge exchange.</p> <p>Provide information, advice, training and other support to help farmers enhance soil structure and organic matter (through best practice and measures such as minimum tillage, controlled farm traffic and green manures) thereby minimising soil erosion, run-off, drought damage to crops and need for water abstraction.</p> <p>Provide information, advice, training and other support to help farmers minimise water use and capture and re-use greywater and rainwater, thereby improving food production and reducing the need for water abstraction.</p> <p>Support research into the benefits and impacts of applying ash from straw-fired power plants to agricultural land, and disseminate to the agriculture industry in other areas.</p>	<p>Food provision</p> <p>Water availability</p> <p>Climate regulation</p> <p>Regulating water quality</p> <p>Regulating water flow</p> <p>Regulating soil quality</p> <p>Regulating soil erosion</p> <p>Biodiversity</p>

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Timber provision	Soils Woodland	Woodland cover is very low in this NCA at only 2,136 ha (approximately 4 per cent of the NCA). Where woodland does occur it tends to be in small blocks and shelterbelts and is generally not actively managed for timber. There are no major sawmills in the NCA.	Local	<p>Existing woodland occurs mostly in small, isolated fragments. Much of it does not receive active management and could benefit from some management for timber extraction.</p> <p>The potential to increase timber production is limited by the sensitivity of the open landscape to new woodland planting. However, consideration should be given to planting of new woodlands in appropriate places that help reinforce landscape character and provide 'stepping stones' to help wildlife move through an otherwise quite impermeable landscape. Such tree planting could provide timber on a small-scale.</p>	Explore opportunities for tree planting in locations where it will produce viable timber while helping to reduce wind erosion of agricultural soil, intercept run-off from agricultural land, connect isolated fragments of woodland and/or provide stepping-stones for woodland species.	<p>Timber provision</p> <p>Climate regulation</p> <p>Regulating water quality</p> <p>Regulating soil erosion</p> <p>Regulating soil quality</p> <p>Sense of place/inspiration</p> <p>Tranquility</p> <p>Biodiversity</p>

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Water availability	Watercourses Limestone aquifer Soils Farm reservoirs	<p>The Limestone Edge forms a watershed between the major river basins of the Trent to the west and Anglian rivers to the east.</p> <p>The Lincolnshire Limestone aquifer is regionally important and large demands are placed upon it to meet domestic, industrial and agricultural water supplies, as well as supporting base flows to rivers and supporting local surface water features.</p> <p>The Lincolnshire Limestone can be up to 40 m thick, and groundwater movement within the aquifer is generally west to east. In the west of the area the limestone outcrops at the ground surface allowing rainfall to recharge the aquifer. The limestone becomes confined as it is overlain by younger deposits to the east. Although abstraction takes place mainly from the confined region, the aquifer becomes too deep and the quality is considered to be too poor to exploit more than a few kilometres east of the outcrop area.</p> <p>The main rivers in the NCA are the River Slea in the south of the NCA and the River Witham and Fossdyke Canal in the far north of the NCA. In the Lower Witham channel (and associated tributaries) and Lower Bain there is water available for abstraction at high and medium flows, restricted water available at medium/low flows, but no water available for abstraction at low flows. Upstream of Leasingham there is no water available for abstraction except at very high flows.⁷</p> <p>The Witham catchment benefits from the Trent Witham Ancholme River Transfer Scheme, a key infrastructure link for managing water resources, to maintain summer water levels and meet abstraction needs.⁸</p>	Regional	<p>Quarry operators are encouraged to maximise the amount of groundwater recharge they provide so that water is retained locally.</p> <p>Rainwater harvesting is currently actively promoted, particularly amongst the agriculture and industrial sectors. A suite of booklets has been produced by the Environment Agency, Natural England, Cranfield University, NFU, and the UK Irrigation Association which cover many aspects of water use in the agriculture sector.</p> <p>Spray irrigators are provided with advice on water efficiency and irrigation scheduling. There are various agricultural water efficiency projects underway. Water security groups have been set up and consist of regional and area Environment Agency staff. The approach is to encourage farmers to improve water security. For example, letters have been sent to farmers including information on extending the irrigation season, the impact of climate change, sharing resources and high flow reservoirs.⁹</p> <p>New development should be planned and existing development adapted to incorporate sustainable urban drainage systems and water-saving features, to minimise demand on water from treatment plants.</p>	<p>Continue to work with quarry operators, agricultural contractors, farmers and other businesses to support implementation of water-saving measures, capture and re-use of greywater and rainwater and reduce demand for abstraction.</p> <p>Plan new development and adapt existing development to incorporate sustainable urban drainage systems and water-saving features.</p> <p>Provide information and advice for householders on how to minimise water consumption.</p>	<p>Water availability</p> <p>Food provision</p> <p>Climate regulation</p> <p>Regulating water quality</p> <p>Regulating water flow</p> <p>Regulating soil quality</p> <p>Regulating soil erosion</p> <p>Biodiversity</p>

⁷ Witham Catchment Abstraction Management Strategy, Environment Agency (2013; URL: [REDACTED])

⁸ River Basin Management Plan Anglian River Basin District, Environment Agency (2009; URL: [REDACTED])

⁹ Witham Catchment Abstraction Management Strategy, Environment Agency (2013; URL: [REDACTED])

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Genetic diversity	N/A	N/A	N/A	N/A	N/A	N/A
Biomass energy	Soils Woodland Biomass crops	<p>A 38MW straw-fired power plant was established in Sleaford in 2013. It is anticipated it will burn 240,000 tonnes of straw per year, sourced primarily from farms within a 50-kilometre radius. The intention is to recycle the ash as crop fertiliser.¹⁰</p> <p>There are two large capacity biomass boilers, supplying 312 kWh.¹¹</p> <p>The NCA has a generally medium potential for short rotation coppice (SRC). The potential miscanthus yield in the NCA varies between high potential yield to the immediate north, east and south of Sleaford to a band of low potential yield to the west of Sleaford running north to Lincoln. There are also a few areas of medium potential yield, for example around Waddington in the north-west of the NCA.¹²</p> <p>In 2010 the East Midlands had the highest levels of biomass production on farms in England – with 52 per cent of farms producing biomass to produce biogas, and 54 per cent of farms producing other forms of biomass.¹³</p>	Regional	<p>Existing woodland occurs mostly in small, isolated fragments. Much of it does not receive active management. Management for wood fuel extraction would, in some cases, be beneficial for wildlife.</p> <p>The potential to increase wood fuel production is limited by the sensitivity of the open landscape to new woodland planting. However, consideration should be given to planting of new woodlands in appropriate places that help to reinforce landscape character and provide 'stepping stones' to help wildlife move through the landscape. The most appropriate parts of the NCA for new woodland planting include the eastern edge, the escarpment and the south-west corner.</p> <p>There could be opportunities to include tree planting for biomass in new developments, where it could achieve multiple objectives of screening new developments, providing shade to help keep buildings cool during hotter summers and providing a renewable fuel to heat houses, offices and industrial buildings.</p>	<p>Explore opportunities for production of woody biomass from existing woodlands, where this is compatible with or beneficial to nature conservation objectives.</p> <p>Explore opportunities for new woodland planting to produce woody biomass, particularly along the eastern edge and south-west corner of the NCA.</p> <p>Explore opportunities to incorporate tree planting into new developments to provide a local source of fuel while also screening new development and providing shade to help regulate temperatures inside buildings.</p>	<p>Biomass energy</p> <p>Food provision</p> <p>Climate regulation</p>

¹⁰ URL: [REDACTED] (accessed 20 February 2014)

¹¹ Forestry Commission (2011)

¹² For information on the potential landscape impacts of biomass plantings within the NCA, refer to the tables on the Natural England website at: URL: [REDACTED]

¹³ Diversification and Renewable Energy Production on Farms in England – 2010 Dataset, Defra (2013; URL: www.gov.uk/government/publications/diversification-and-renewable-energy-production-on-farms-in-england-in-2010)

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Climate regulation	Soils Woodland Other semi- natural habitats (unimproved/ semi-improved grassland)	<p>The mineral soils over most of the NCA have a low carbon content (0–5 per cent) with carbon levels likely to be particularly low in areas of continuous arable cultivation. There are scattered pockets of soils with a higher carbon content associated with small areas of naturally wet very acid sandy and loamy soils (covering 2 per cent of the NCA) which contain organic topsoils and the loamy and sandy soils with naturally high groundwater and a peaty surface (also covering 2 per cent). These are likely to be found in river valleys.</p> <p>Higher soil carbon levels will be found under the small areas of existing woodland, heathland and semi-natural grassland, but due to the small areas involved this will make a limited contribution to climate regulation.</p>	Local	<p>Small increases in the carbon sequestration and storage potential of the area could appropriately be gained through small-scale woodland planting and increasing the organic matter content of agricultural soils. An increase in woodland and tree cover would also help with adaptation to climate change by reducing wind and water erosion of soils, reducing run-off and therefore water pollution and flooding, and by providing shade for livestock.</p> <p>Creation of permanent grassland, heathland and arable reversion to grassland could help increase carbon sequestration and storage and could be targeted towards areas of marginal arable production and where it could help to reduce soil erosion, flooding and water pollution, such as on sloping ground and along watercourses.</p> <p>There are good opportunities to reduce the carbon emissions associated with agriculture by using more efficient machinery and techniques, and by using waste straw which is not needed for increasing soil organic matter, for energy production in Sleaford Renewable Energy Plant.</p>	<p>Encourage measures to increase organic matter in agricultural soils.</p> <p>Explore opportunities for tree planting in places where it will help to reduce erosion, flooding and heat stress to livestock, and will not detract from landscape character.</p> <p>Explore opportunities to increase carbon storage and sequestration by creating areas of heathland and grassland where this will not affect the most productive arable land and will help to reduce soil erosion, water pollution and flooding.</p> <p>Provide information, advice, training and other support to help farmers reduce the carbon dioxide emissions associated with farming.</p>	Climate regulation Food provision Timber provision Biomass energy Water availability

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water quality	Geology Aquifer Precipitation Semi-natural habitats	<p>97 per cent of the area is within a nitrate vulnerable zone (NVZ) for both surface water and groundwater.</p> <p>The surface water chemical status of the River Witham and the Fosdyke canal is 'good', (the River Slea has not been subject to surface water chemical testing).</p> <p>The potential ecological status of the River Slea, the River Witham and the Fosdyke canal is only 'medium'.</p> <p>The groundwater chemical status in the NCA is generally 'good'.</p> <p>Issues in the area's rivers include heavy algal growth on the River Witham, making angling and boating difficult, causing water quality fluctuations and reducing biodiversity.¹⁴</p>	Regional	<p>All farms within the NVZ are required to comply with regulations around the application of organic and manufactured manures, including rates of application and provision of adequate storage of livestock manures. These regulations are to ensure that water quality is not affected by the application of nutrients.</p> <p>Water resources in the area are potentially vulnerable to diffuse pollution from agriculture and discharges from water treatment plants.</p> <p>Measures to address water quality include matching nutrient inputs to the needs of the crops; establishing strips of unfertilised permanent grassland alongside watercourses to help to trap sediments, nutrients and chemicals before they can enter the water system; and careful planning of times to spread organic and artificial fertilisers to ensure optimum take-up by crops.</p> <p>Summer droughts and more frequent and more intense rainfall events may arise from climate change. These are likely to have adverse impacts on the quality of watercourses, for instance by reducing the oxygen content of the water, or by increasing the amount of sediment entering streams and rivers.</p>	<p>Provide information, advice, training and other support to help farmers reduce diffuse and point-source pollution through best practice, updated infrastructure, using new and innovative techniques and by creating features such as buffer strips, settlement ponds or silt traps and riparian woodland.</p> <p>Provide information, advice, training and other support to help farmers enhance soil structure and organic matter content (through measures such as minimum tillage, controlled farm traffic and green manures) thereby minimising soil erosion, run-off, drought damage to crops and need for water abstraction.</p> <p>Provide training for agricultural contractors and sprayer operators on protection of water resources.</p> <p>Work with water companies to reduce discharge of pollutants from water treatment works.</p>	<p>Regulating water quality</p> <p>Food provision</p> <p>Water availability</p> <p>Climate regulation</p> <p>Regulating water flow</p> <p>Regulating soil quality</p> <p>Regulating soil erosion</p> <p>Recreation</p> <p>Biodiversity</p>

¹⁴ River Basin Planning: Summary of significant management issues – Anglian River Basin District, Environment Agency (2007; URL: www.environment-agency.gov.uk/static/documents/Research/anglianswmidoc_1953860.pdf)

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water flow	Geology Topography Precipitation Soils Semi-natural habitats	<p>The main catchment in the NCA is that of the River Witham. The Environment Agency flood risk map indicates that for much of the NCA flooding is not a major issue. There has been some flooding from the River Witham along the northern boundary of the NCA, particularly in Lincoln just outside the NCA to the north. The probability of river flooding has been reduced in Lincoln by the construction of a major flood storage reservoir (the Till Washland flood alleviation scheme and the Witham/ Brant Washland flood alleviation scheme upstream of Lincoln (outside the NCA), and the construction of concrete flood walls in the city.¹⁵</p> <p>Sleaford is vulnerable to flooding from the River Slea, and parts of the town and the surrounding area could be susceptible to groundwater flood risk.¹⁶</p> <p>The rivers Witham and Slea suffer from low flows at times,¹⁷ but the Witham catchment benefits from the Trent Witham Ancholme River Transfer Scheme, a key infrastructure link for managing water resources, to maintain summer water levels and meet abstraction needs.¹⁸</p>	Regional	<p>To manage the risk of flooding in Sleaford from the River Slea, extensive maintenance work along the rivers in this area has been carried out and concrete flood walls have been constructed in Sleaford. The Catchment Flood Management Plan states that there is a need to develop a surface water and groundwater study for Sleaford to investigate ways to manage flood risk.¹⁹</p> <p>Improved infiltration of rainwater on agricultural land could help to limit rates of run-off down the dip slope.</p> <p>Measures to improve soil structure and organic matter content will help to improve infiltration and slow run-off and also increase slow release of water to surface water bodies, thereby helping to maintain summer flow levels. Other measures on farms that could help to slow run-off and flow into rivers include buffer strips, hedgerow planting, water storage ponds and creation of riparian woodland and wetlands.</p> <p>New development should incorporate sustainable urban drainage systems to minimise run-off and stagger water release into watercourses. Measures such as permeable ground surfaces should also be incorporated into urban areas.</p>	<p>Explore opportunities to limit groundwater and surface water flooding in Sleaford.</p> <p>Provide information, advice and training for farmers on enhancing soil structure and organic matter content, to improve infiltration rates and slow run-off.</p> <p>Encourage farmers to create features and habitats that slow run-off into watercourses.</p> <p>Plan new developments to incorporate sustainable urban drainage systems and retrofit measures to existing development and urban areas.</p>	<p>Regulating water flow</p> <p>Food provision</p> <p>Timber provision</p> <p>Biomass energy</p> <p>Water availability</p> <p>Climate regulation</p> <p>Regulating water quality</p> <p>Regulating soil erosion</p> <p>Regulating soil quality</p> <p>Biodiversity</p>

^{15,16,19} River Witham Catchment Flood Management Plan Summary Report, Environment Agency (December 2009)

¹⁷ River Basin Planning: Summary of significant management issues – Anglian River Basin District, Environment Agency (2007; URL: www.environment-agency.gov.uk/static/documents/Research/anglianswmidoc_1953860.pdf)

¹⁸ River Basin Management Plan Anglian River Basin District, Environment Agency (2009; URL: [REDACTED])

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil quality	Geology Soil Soil flora and fauna Semi-natural habitats	There are six main soilscape types in this NCA: <ul style="list-style-type: none"> ■ Shallow lime-rich soils over limestone (covering 41 per cent of the NCA); ■ Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils (27 per cent); ■ Freely draining lime-rich loamy soils (23 per cent); ■ Loamy soils with naturally high groundwater (3 per cent); ■ Naturally wet very acid sandy and loamy soils (2 per cent); and ■ Loamy and sandy soils with naturally high groundwater and a peaty surface (2 per cent). 	Local	<p>Maintaining and increasing organic matter is of particular importance to the free-draining loess soils on higher ground, to help sustain plant growth during droughts, maintain structure and reduce soil erosion and run-off. Techniques such as controlled farm traffic and minimum tillage can help to maintain good soil structure and reduce compaction.</p> <p>The heavier less permeable soils on lower ground are more vulnerable to structural problems such as poaching, compaction, panning and smearing. On these soils it will be particularly important to optimise timing of field operations to avoid waterlogged conditions as far as possible. Careful management of grazing regimes will also help to reduce poaching and compaction.</p>	Provide information, advice, training and other support to help farmers enhance soil structure and organic matter (through best practice and measures such as minimum tillage, controlled farm traffic and green manures) thereby improving soil quality and minimising soil erosion, run-off, drought damage to crops and need for water abstraction.	Regulating soil quality Food provision Water availability Regulating water quality Regulating water flow Regulating soil erosion Climate regulation Biodiversity

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil erosion	Soils Soil flora and fauna Watercourses Vegetation (particularly grassland, any ground cover in winter, hedgerows and woodland)	<p>The shallow lime-rich soils over limestone, (covering 41 per cent) and light textured/ shallow variants of the freely draining lime-rich loamy soils (covering 23 per cent) are particularly at risk of erosion on sloping cultivated ground or where soil is exposed along footpaths/tracks or as a result of outdoor pig-rearing.</p> <p>The naturally wet very acid sandy and loamy soils (covering 2 per cent) are at risk of wind erosion and are also easily eroded if heavily trafficked or after heavy rain. Likewise, the loamy and sandy soils with naturally high groundwater and a peaty surface (covering 2 per cent) are at high risk of wind erosion (blowing) and peat erosion and carbon loss through peat wastage.</p> <p>The slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils and the loamy soils with naturally high groundwater (together covering some 30 per cent of the NCA) are not prone to erosion.</p> <p>Trees, hedgerows and walls play an important role in limiting wind erosion of lighter soils.</p>	Regional	<p>Soil erosion is a particular issue here, and is likely to be exacerbated by climate change which will bring more frequent and more intense rainfall and storm events, and also potentially longer periods of drought.</p> <p>The lighter soils on the free-draining plateau are vulnerable to wind erosion, particularly where fields are very large and lack protection from field boundaries or adjacent woodland. On sloping ground these soils are vulnerable to water erosion at times of heavy rainfall, particularly if without cover over winter.</p> <p>Hedgerows can help to reduce both wind and water erosion, so should be protected where they still occur and reinstated where possible.</p> <p>Enhancing organic matter and ensuring vegetative cover can also be beneficial, with green manures helping to achieve both, particularly on farms with no livestock and therefore no manure.</p>	<p>Provide information, advice, training and other support to help farmers enhance soil structure and organic matter (through best practice and measures such as minimum tillage, controlled farm traffic and green manures) thereby minimising soil erosion, run-off, drought damage to crops and need for water abstraction.</p> <p>Provide information, advice and training on measures to reduce soil erosion such as: planting of hedgerows or woodland; creation of buffer strips, infield grass strips or beetle banks; and establishing vegetative cover, particularly green manures, over winter.</p>	<p>Regulating soil erosion</p> <p>Food provision</p> <p>Water availability</p> <p>Regulating water quality</p> <p>Regulating water flow</p> <p>Regulating soil quality</p> <p>Biodiversity</p> <p>Geodiversity</p>

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Pollination	Semi-natural habitats (especially limestone grassland and meadow) Agricultural plant varieties Gardens and allotments Wild pollinator species	Pollination will be important for the oilseed crops that, in 2009, covered 12 per cent of the agricultural land. Nectar sources for pollinators will include the small fragments of limestone grassland and meadow, and the few hedgerows that have not been cut annually. Environmental Stewardship agreements between 2005 and 2014 included 42 ha of nectar flower mix, specifically designed to provide a long-lasting source of nectar for pollinators and other nectar-feeding insects.	Regional	Provision of nectar sources in primarily arable parts of the NCA will help to support pollinator populations. Valuable sources of nectar in arable areas could include hedgerows cut every two years or less often, flower-rich buffer strips, headlands and field corners, and specially sown nectar flower mix. Uncultivated areas with tall grass are important as over-wintering areas for pollinators. Existing areas of calcareous grassland, particularly along road and track verges will be an important habitat, providing not only food and habitat but also helping pollinators to move through the agricultural landscape. Insecticides can seriously harm pollinator populations so appropriate and economical use is very important. Measures such as integrated crop management, regular crop monitoring, and the use of biological and cultural controls can all help to minimise the use of insecticides.	Encourage farmers, particularly in primarily arable areas, to provide or leave flower-rich habitats as a nectar-source for pollinators and areas of rough grass for over-wintering. Provide information, advice and training for farmers on alternative measures for insect pest management and control. Provide training for sprayer operators on best practice to avoid harm to pollinator populations.	Pollination Food provision Sense of place/inspiration Biodiversity
Pest regulation	Semi-natural vegetation Beneficial predator species	Hedgerows, unimproved and semi-improved grassland, heathland and woodland may all support beneficial predator species in this NCA. Flower-rich, infrequently-cut road and track verges may be particularly valuable as habitats to support beneficial predator species and provide a pest control function as these are often adjacent to arable fields.	Regional	There is evidence to suggest that certain habitats such as hedgerows, flower-rich buffer strips and unimproved grassland can support populations of beneficial predator species which can help control common agricultural pests (for example ladybirds controlling aphids). ²⁰ Habitats which provide a nectar source, shelter and additional prey species all have the potential to increase beneficial predator numbers. Studies suggest that hedgerows cut every year have less value for invertebrates, so less frequent cutting of hedgerows in this area could help support higher numbers of beneficial predators. Appropriate cutting regimes for road and track-side verges may be equally important. Where pest regulation services are provided by semi-natural habitats and associated species, this could reduce the need for pesticides, thereby affording benefits for water quality, soil quality, pollinators and wider biodiversity. If the approach could be perfected for this area, to maximise the agronomic benefits, it could play a valuable role in terms of increasing production of arable crops while reducing negative impacts on the environment.	Support research into the potential for and value of natural pest control services in this NCA and disseminate useful findings to local farmers and agricultural contractors. Encourage less frequent cutting of hedgerows and appropriate cutting regimes for road and trackside verges. Encourage creation of beetle banks, buffer strips and areas of pollen and nectar mix on arable farms.	Pest regulation Food provision Pollination Sense of place/inspiration Biodiversity

²⁰ Ecosystem Services from Environmental Stewardship that Benefit Agricultural Production, Natural England (2012)

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of place/ inspiration	Geology	The high slopes of the ridge with its distinctive 'cliff' or western facing scarp edge, long views and open rural character with a lack of tree cover, contribute to a strong and distinctive sense of place, which is shared with the Northern Lincolnshire Edge and Coversands NCA to the north. At Lincoln on the northern boundary of this NCA the River Witham breaches the limestone ridge to flow to the Wash while between Grantham and the A17 the 'cliff' takes the form of a two-tier scarp where there is a second outer scarp of ironstone closer to the Trent. The higher areas are relatively open and dominated by arable farmland with large fields either lacking defined boundaries or with a mixture of limestone walls, discontinuous, tightly-trimmed hedgerows and shelter belts. To the east smaller, irregular hedgerow-bound fields are more common and combine with small areas of parkland. The ridgetops are sparsely settled with smaller villages associated with a springline along the foot of the western scarp and larger settlements, including Sleaford and Metherringham, located to the east of the dip slope.	Regional	Some of the key components of sense of place are vulnerable to lack of management, inappropriate management, deterioration and damage, such as stone walls, traditional buildings, archaeological earthworks and woodlands. Hedgerows are vulnerable to overly frequent and severe cutting, and conversely lack of management such as gapping-up and laying, becoming sparse, gappy and stunted as a result. Some of the historic routes, green lanes and their flower-rich verges are vulnerable to damage from off-road vehicles and fly-tipping. Development can have a negative impact on character where it is unsympathetic to existing features and styles.	Encourage and support positive management and protection of characteristic features of rural landscapes such as stone walls, hedgerows, woodlands and archaeology. Protect historic linear routes and seek ways to minimise vehicular damage and secure positive management to maintain flower-rich grassland. Provide information, advice and training to property owners and tradesmen in the maintenance and restoration of old buildings using appropriate materials and techniques. Encourage the use of local stone for building and walling. Provide high quality interpretation material using a range of media to increase understanding and appreciation of the landscape and its evolution. Protect far-reaching views.	Sense of place/ inspiration Sense of history Tranquillity Recreation Biodiversity Geodiversity
	Topography					
	Archaeology (particularly prehistoric burial sites and Roman routeways)					
	Cultivated land					
	Field boundaries					
	Parkland and woodland					

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities	
Sense of history	Prehistoric burial mounds	A sense of history is evident in the prehistoric burial mounds, remains of bronze-age linear routes and triple ditch system at Honington, and remains of Roman roads and tracks and a later dyke or canal, Car Dyke, surviving in visible form near Potterhanworth and Martin.	National	Conservation and management of historic routeways, particularly Ermine Street, is important for maintaining an important historic feature and the context of the surrounding landscape which has evolved in association with these routes. It also represents a valuable opportunity to preserve and enhance wildlife corridors of flower-rich limestone grassland which could be particularly valuable for nectar-feeding insects.	Protect and manage key prehistoric, Roman and medieval archaeological sites, particularly Ermine Street, Car Dyke, deserted medieval villages, ridge and furrow and moated sites.	Sense of history	
	Roman routeways						Sense of place/ inspiration
	Medieval sites						
	Ridge and furrow	The large fields forming part of today’s elevated open farmlands are a reminder of enclosure in the 18th and 19th centuries. More recent history is evident in the 20th-century RAF airfield at Waddington and RAF base at Cranwell.			Encourage developers to plan and execute redevelopment of disused airfields in ways that retain the essence and some of the features of the original airfield.	Tranquility	
	Traditional field boundaries						
	Historic buildings						
	Traditional villages						Aspects of history that are likely to be particularly evident to the general public include estate parklands and manor houses including Belton – north of Grantham and considered the crowning achievement of restoration country house architecture (1685–88) – and at Rauceby, Leadenham and Fillingham.
Sleaford is home to the largest industrial building on English Heritage’s at risk register – Bass Maltings. It is a large and dramatic complex of Grade II* red brick industrial buildings. It was built in the first decade of the 1900s, to designs by Bass, Ratcliff and Gretton’s chief engineer and architect, H.A. Couchman. It is possibly the largest malting house ever built. ²¹ Recent plans to develop the centre and save the iconic and historically important buildings had not yet come to fruition in early 2014.			The distinctive long straight roads dating from Roman times form the basis of the current road networks.	Provide high-quality interpretation using a range of media to improve understanding of the area’s history.			
			Airfields provide a strong sense of more recent history. New development on disused airfields should be designed and executed in such a way as to retain the footprint of existing structures as closely as possible and to limit visual intrusion and the loss of surrounding landscape features. Original features of the airfields should be retained as far as possible and interpreted to serve as a reminder of the role this area played in the World Wars.				

²¹ Strategy for the Historic Industrial Environment Report No. 1 – Maltings in England, Amber Patrick for English Heritage (2004; URL [redacted])

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Tranquillity	Topography Watercourses Parkland Semi-natural habitats, particularly woodland	CPRE has given the NCA an average tranquillity score of 3 (highest value 42 and lowest -66). 52 per cent of the NCA is considered undisturbed, 45 per cent disturbed and 2 per cent urban. The highest levels of disturbance are along major transport routes and around the larger settlements such as Sleaford. More remote rural areas on the cliff edge and the more enclosed lowlands to the east and south-west offer the highest levels of tranquillity.	Local	Screening of new transport routes and development with tree planting could help to reduce visual intrusion and light and noise pollution. Efforts should be made to preserve the tranquillity of existing undisturbed areas. Hedgerows, trees and woodland can all help to limit noise pollution and should be maintained or introduced in strategic locations.	Ensure appropriate location and design of new development and transport routes to minimise disturbance. Preserve the tranquillity of existing undisturbed areas. Seek opportunities to use hedgerow and tree planting to screen new developments and transport routes, and protect existing hedgerows and trees where these serve to reduce noise pollution.	Tranquillity Sense of place/ inspiration Sense of history Recreation Biodiversity
Recreation	Rights-of-way network Long-distance routes and historic trackways Nature reserves	There are 522 km of public rights of way (a density of 0.9 km per km ²) and 311 ha of publicly accessible land. The area lacks any country parks or National Nature Reserves, but has some publicly accessible parklands and long-distance routes such as the Viking Way and routes along historic trackways such as Ermine Street. Routes along the edge of the escarpment give dramatic views over the Trent and Belvoir Vales.	Local	The density of public rights of way is lower than in many NCAs. But what the area lacks in quantity it somewhat makes up for by the high quality of some of the routes alongside dramatic ancient trackways, with colourful flower-rich verges of calcareous grassland and dramatic views into the vales below the scarp and down the dip slope. Restoration of disused quarries presents a valuable opportunity to provide new access routes and open access land with high-quality restored habitats and interpretation.	Ensure that restoration of disused extraction sites incorporates open access and opportunities for quiet recreation where possible. Provide high quality interpretation, using a range of media, to explain the context and significance of paths along historic routeways. Create more links between urban populations and the surrounding countryside, finding links between existing accessible sites and semi-natural habitats, especially woodlands, for use by walkers, cyclists and horse riders. Explore opportunities to improve access to parklands and estates, where appropriate.	Recreation Sense of place/ inspiration Sense of history Tranquillity

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Biodiversity	Soils Waterbodies Semi-natural habitats (especially native woodland, unimproved grassland and hedgerows) Cultivated land	<p>There are over 955 ha (just under 2 per cent of the NCA area) of priority habitats within the NCA including 770 ha of broadleaved mixed and yew woodland, 85 ha of lowland meadows and smaller areas of lowland calcareous grassland, reedbeds and lowland heathland.</p> <p>There are eight SSSI covering 118 ha (0.2 per cent of the NCA), 30 per cent of which are in favourable condition, 21 per cent are unfavourable recovering and 49 per cent are unfavourable no change. There are also 152 local sites covering 2,130 ha (4 per cent of the NCA). There are no sites with European or international nature conservation designations.</p> <p>The area is a hotspot for farmland birds. The NCA was considered by Natural England specialists to be one of the top five in the country for skylark and one of the top ten for song thrush, in 2012. In the Witham target area (in the north-east of the NCA) Higher Level Stewardship prioritised measures that would benefit arable birds (particularly lapwing, grey partridge, yellow wagtail, tree sparrow, turtle dove and corn bunting) and bird species associated with wet grassland (particularly lapwing, snipe, redshank, curlew and yellow wagtail).²²</p> <p>Threats to biodiversity in the area include invasive non-native species, for example white-clawed crayfish are under threat from signal crayfish in the River Witham.²³</p>	National	<p>Habitats are highly fragmented in this landscape, leaving many species vulnerable to the impacts of genetic isolation and lack of habitat and food. The extent of fragmentation will also make sites and species more vulnerable to climate change.</p> <p>There is a really important role for habitat network creation in this area, building on the existing value of flower-rich verges, hedgerows and small patches of semi-natural habitats (calcareous and neutral grassland, heathland and woodland). Efforts should be made to plan effective networks of interconnecting habitats, buffers and 'stepping-stone' habitats and work with landowners to identify cost-effective ways of achieving them with minimal impact on food production.</p> <p>The restoration of disused quarries should include the establishment of priority habitats (heathland, grassland, woodland) along with open water and other freshwater habitats where groundwater levels are high enough.</p> <p>The rivers are a valuable wildlife resource and riparian habitats have good potential to act as wildlife refuges and movement corridors, as well as slowing the flow of water and protecting rivers from water pollution.</p> <p>Arable land is important for the farmland birds it supports. Management of arable land can have a big impact on its value for farmland birds and measures such as overwintered stubbles, fallow nest plots, wild bird seed mix and less-frequent hedgerow cutting can all be beneficial.</p>	<p>Seek opportunities to buffer and connect existing priority habitats, particularly calcareous and neutral grassland, woodland and heathland, in ways that minimise the impact on food production.</p> <p>Seek opportunities to restore riparian habitats such as woodland and wetlands, to protect water quality, reduce flooding and benefit biodiversity.</p> <p>The restoration of sites where minerals have been extracted should include the establishment of priority habitats (particularly heathland, grassland and woodland) along with open water and other freshwater habitats where groundwater levels are high.</p> <p>Encourage farmers to implement measures that are beneficial for farmland birds, such as overwintered stubbles, fallow nest plots, wild bird seed mix and less-frequent hedgerow cutting.</p>	<p>Biodiversity</p> <p>Water availability</p> <p>Regulating water quality</p> <p>Regulating water flow</p> <p>Regulating soil quality</p> <p>Regulating soil erosion</p> <p>Sense of place/inspiration</p> <p>Tranquility</p> <p>Sense of history</p> <p>Recreation</p>

²² HLS Target Area Statement EM16: Witham Target Area, Natural England (2008; URL: [REDACTED])

²³ River Basin Planning: Summary of significant management issues – Anglian River Basin District, Environment Agency (2007; URL: www.environment-agency.gov.uk/static/documents/Research/anglianswmidoc_1953860.pdf)

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Geodiversity	Geology Topography Soils Disused extraction sites	<p>Elevated, gently sloping plateau with a sharply defined north-south scarp of Jurassic Limestone to the west of the NCA.</p> <p>The area has one geological SSSI (Metheringham Heath Quarry) and one mixed interest SSSI (Copper Hill), both designated for their exposures of the Aalenian-Bajocian Stage boundary.</p> <p>There are 13 Local Geological Sites.</p> <p>There are good exposures of limestone at some points along the cliff and at disused mineral extraction sites.</p>	Regional	<p>The resources of limestone, ironstone and aggregates have been exploited over time, and disused quarries and extraction sites now provide geological exposures and geomorphological features that contribute to scientific research and understanding, as well as offering opportunities for interpretation, wider education and awareness-raising.</p> <p>Restoration of disused mineral sites should retain exposures that illustrate geological processes, as well as providing for the establishment of priority habitats and access where appropriate.</p> <p>Vernacular buildings, including farmhouses, barns, village houses, walls and churches are built with local limestone, making evident the links between underlying geology and historic development.</p>	<p>Provide high quality interpretation using a range of media at key geological sites to convey the origins of the geology and its importance to the area.</p> <p>Improve access to key geological sites, particularly for educational visits, where appropriate.</p> <p>Facilitate the recording and sampling of temporary sections and excavations exposing geological features.</p> <p>Ensure that restoration of disused mineral extraction sites retains exposures that illustrate geological processes.</p> <p>Maintain and restore field boundaries constructed from limestone rubble.</p> <p>Use local building materials and techniques when restoring vernacular buildings.</p>	<p>Geodiversity</p> <p>Sense of place/inspiration</p> <p>Sense of history</p> <p>Recreation</p> <p>Biodiversity</p>

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NORTH KESTEVEN LANDSCAPE CHARACTER ASSESSMENT



David Tyldesley and Associates

for

North Kesteven District Council

September 2007

Cover photograph

Vista from Harmston village on the Lincoln Cliff, north-west over the Witham and Brant Vales character sub-area.

NORTH KESTEVEN LANDSCAPE CHARACTER ASSESSMENT

FINAL DRAFT

prepared by

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for

North Kesteven District Council



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PART 1 – PURPOSE OF THE REPORT AND LANDSCAPE CONTEXT

1. Purpose of the Report

- 1.1 North Kesteven District Council (NKDC) has commissioned a Landscape Character Assessment (LCA) of the district which will be used to inform the Local Development Framework (LDF). NKDC is in the early stages of preparation of its LDF which will cover the plan period 2001-2021.
- 1.2 A detailed assessment of the character, distinctiveness and qualities of the landscape of North Kesteven is required in order to inform policies to be contained in the forthcoming LDF, in accordance with the requirements of Planning Policy Statement 1: Delivering Sustainable Development (PPS1) and The Regional Spatial Strategy for the East Midlands (RSS8).
- 1.3 PPS1 sets out the Government's commitment to the protection of the environment. PPS1 states that planning policies should seek to protect and enhance the quality, character and amenity value of the countryside and urban areas as a whole. In order to achieve this, planning policies should be based on up-to-date information on the environmental characteristics of the area.
- 1.4 RSS8 states that when preparing LDFs, LCAs are needed in order to underpin, and act as key components of, criteria-based policies to be used when assessing the suitability of land for development in rural or urban fringe areas. Policy 30 of RSS8 states that these should be prepared to coincide with the adoption of the LDF.
- 1.5 Planning Policy Statement 7 (PPS7) sets out the Government's objectives for sustainable development in rural areas. With regard to local landscape designations, the Government recognises and accepts that there are areas of landscape outside nationally designated areas that are particularly highly valued locally. The Government believes that carefully drafted, criteria-based policies in Local Development Documents (LDDs), utilising tools such as landscape character assessment, should provide sufficient protection for these areas, without the need for rigid local designations that may unduly restrict acceptable, sustainable development and the economic activity that underpins the vitality of rural areas.
- 1.6 There are no nationally designated landscape areas within North Kesteven. The early drafts of the current Local Plan included a local landscape designation, the 'Lincoln Cliff Area of Great Landscape Value'. This was subsequently abandoned in favour of the current 'Lincoln Cliff Landscape Character Area' policy. In accordance with PPS7, local landscape designations should only be maintained or, exceptionally, extended where it can be clearly shown that criteria-based planning policies cannot provide the necessary protection. This LCA considers how best the importance of this striking landscape feature can be conserved and managed in the context of the criteria given in paragraphs 24 and 25 of PPS7.
- 1.7 The Lincolnshire Structure Plan Policy LPA8 designates a series of 'Green Wedges'. These are defined further in the North Kesteven Local Plan 2007. This LCA assesses the appropriateness of the Local Plan policy and designation from a landscape perspective and makes appropriate recommendations.
- 1.8 The LCA includes, as a separate section which may form the basis of a Supplementary Planning Document (SPD), a Design Statement indicating how necessary development can be accommodated whilst ensuring that local character and distinctiveness are protected.

2. Methodology

- 2.1 The LCA was commissioned in January 2007. It follows the guidance given in “Landscape Character Assessment: Guidance for England and Scotland” prepared by the Countryside Agency and Scottish Natural Heritage in 2002. Essentially, 5 steps have been followed:

Step 1 Defining the Scope

- 2.2 The scope of the study was established with NKDC in the first week of January 2007 before any work was undertaken. The scope was predominantly defined by the agreed purpose of the LCA, as described in Chapter 1, and the scale and level of detail considered appropriate for this purpose (see steps 3 and 4).
- 2.3 Whilst no stakeholders (other than NKDC) have been involved in the LCA process, information was obtained on other assessments from neighbouring authorities (see step 2).
- 2.4 It was agreed with NKDC that the starting point for the LCA would be the joint Countryside Commission and English Nature report on “the Character of England: landscape, wildlife and natural features”, 1996 (the Countryside Character Approach), which identifies four character areas within North Kesteven (see Chapter 4). This was compared with the District Council’s own interpretation of the 4 national character areas in the Local Plan, which identifies a separate character area for the Lincoln Cliff scarp and dip slopes (see Chapter 4).
- 2.5 Using these existing landscape character areas as a starting point, this LCA then defines their boundaries, validates and refines them. It also sub-divides them into smaller sub-areas which, whilst sharing common characteristics with the main regional landscape character types, merit identification because of their distinctiveness and variations in character. The LCA identifies, for each of the landscape sub-areas, the key characteristics, a description of the landscape character (see step 4), analysis of its sensitivity to pressures for change, and provides guidelines for enhancement/restoration and accommodating new development.
- 2.6 It was agreed that mapping outputs in the LCA would be scanned drawings in pdf format for uploading onto GIS by NKDC.

Step 2 Desk Study

- 2.7 Preparatory work was undertaken by reviewing numerous sources of information as listed in Appendix 1 and in the References. A series of map overlays were prepared at 1:50,000 encompassing:
- geology and soils
 - topography
 - roads and settlements
 - rivers and drainage
 - vegetation
 - land use

- 2.8 This information was overlain on the Local Plan Proposals Map, at the same 1:50,000 scale, which illustrates other relevant information with land use policy implications, namely:
- washland
 - Landscape Designations
 - Green Wedges
 - Sites of Special Scientific Interest
 - County Wildlife Sites
 - Local Nature Reserves
 - Scheduled Monuments
 - Conservation Areas
 - Parks and Gardens of Special/Local Historic Interest
- 2.9 Once finalised, the multiple map overlays were combined to begin the process of identifying areas of common character. Aerial photographs were used (from the Live Search website) to help identify initial landscape character area boundaries, for testing in the field.
- 2.10 No Historic Landscape Characterisation has been completed for Lincolnshire.

Step 3 Field Survey

- 2.11 Field survey was planned to ensure all the draft landscape character types and sub-areas were visited. A purpose-designed field recording sheet was prepared and used to record as much information as necessary in order to describe the character, identify aesthetic and perceptual qualities, and to inform subsequent judgements and decisions.
- 2.12 Ordnance Survey base maps at 1:25,000 scale (OS Explorer Maps) covering the whole of the district and beyond were used in the field. The fieldwork was undertaken between mid January and the end of March 2007. Surveyors travelled mostly in pairs, but occasionally in threes or singularly, to record their findings on the fieldsheets and by annotating the 1:25,000 scale base maps. Photographs were also taken at each survey point, and elsewhere throughout the district.

Step 4 Classification and Descriptions

- 2.13 This step in the classification process is classifying and describing landscape character. A top-down approach was adopted as being appropriate at the local authority scale, by refining and subdividing existing character types previously identified by the national 'Countryside Character' approach and by NKDC as described in the Local Plan. This resulted in draft regional landscape character types which are broken down further into local landscape character sub-areas.
- 2.14 Table 1 in Chapter 4 indicates how the landscape character types and sub-areas relate to the areas identified in the wider 'Countryside Character' approach and in the NKDC Local Plan.
- 2.15 Chapters 6 to 9 provide the written descriptions for each of the landscape character types and sub-areas identified in this LCA. These are the result of several refinements following consultation with NKDC on initial findings, further field surveys and on-going discussions between the assessment team.

Step 5 Making Judgements based on Landscape Character

- 2.16 This step is not always taken in LCAs. However, as described in Chapter 1, one of the main purposes of this LCA is to form the basis of a SPD to indicate how necessary development can be accommodated whilst ensuring that local character and distinctiveness are protected, and where necessary enhanced. Judgements are made on the particular sensitivities of each landscape character sub-area to change.

3. Introduction to Landscape Character Assessment

- 3.1 Landscape Character Assessment (LCA) is a process used to help plan and manage landscape change. It has evolved over the last 30 years or so. At the outset it may be useful to explain some of the terms used in landscape character assessment. The definitions are consistent with terminology in good practice publications by the Countryside Agency and Scottish Natural Heritage (Landscape Character Assessment – Guidance for England and Scotland, 2002) and Landscape Institute (Guidelines for Landscape and Visual Impact Assessment, 2002). It helps to explain that landscape character assessment is not entirely subjective but based on a blend of objective assessment and subjective judgement of professional landscape planners. All of these various expressions are used in this report.
- 3.2 **Landscape Elements** – these are the individual components which make up the landscape including, for example in North Kesteven, hills, valleys, rivers, woods, trees, hedges, ponds, stone walls, buildings and roads. They are visible, physical components which generally are capable of being measured and quantified and they can easily be described in an objective way.
- 3.3 **Landscape Features** – these are particularly prominent or eye-catching elements such as a tree clump on a hill top, a church spire, conspicuous buildings such as Leadenham House on the Lincoln Cliff, telecommunication masts, and ridges that form the skyline.
- 3.4 **Landscape Characteristics** – these are components of the landscape, or combinations of them, that make a particular contribution to the character of an area. They will therefore include combinations of the physical elements and features but will also include aspects of landscape experience which are not of a physical nature. Thus, landscape characteristics may be **visible and physical** elements as already described above, or they may be **visible and spatial but not physical** characteristics such as scale, pattern, colour and texture. There may also be **non-visible characteristics** of the landscape which, although they cannot be seen, can influence our experience of a landscape and include sound, smell, temperature and our prior knowledge of the history or artistic or cultural associations with the landscape. The non-physical characteristics of the landscape are more difficult to describe objectively. They can rarely be measured or quantified but their contribution to landscape character is just as important as the physical elements.
- 3.5 **Landscape Character** – this is the distinct and recognisable pattern of elements, features and characteristics that occurs consistently in a particular type of landscape. It reflects particular combinations of, for example, geology, landform (the shape of the land), soils, vegetation, land use and human settlement. It creates the distinctiveness, identity and the sense of place which makes one landscape different from another. The recognition and understanding of landscape character is fundamental to contemporary landscape planning and landscape management which seek to manage change in the landscape in ways that will generally conserve, enhance and, where necessary, restore its character as an important contribution to sustainable development and quality of life.
- 3.6 **Landscape classification** – this is the process of identifying the character of different landscapes in any particular area and sorting them into distinctive **landscape character types**. The landscape character types can be mapped and described in a systematic way at various scales, ranging from national to local, a process referred to as landscape characterisation. In this LCA the broad landscape character types

have been further divided into smaller **landscape character sub-areas** (see paragraph 2.5).

- 3.7 **Landscape Characterisation** – this is the process of identifying areas of similar character, classifying, mapping and describing them. It is a fundamental part of landscape character assessment. England's national landscape characterisation is expressed in the Countryside Agency's Character of England Map (1996).
- 3.8 **Landscape Character Assessment** – this is the whole process of landscape classification, characterisation, understanding the history and evolution of the landscape, identifying pressures and trends for change in the landscape and often producing guidelines to advise on the management of landscape change. This process is widely endorsed and encouraged by the Government in national planning statements (PPS 1 Delivering Sustainable Development 2005, PPS 7 - Sustainable Development in Rural Areas 2004) and by the Countryside Agency and its successor Natural England for several years.
- 3.9 **Landscape Evaluation** – this is a different and separate process from landscape character assessment. It is the evaluation of different areas or landscapes, normally against a set of pre-defined criteria. The evaluation process may, or may not, classify or characterise the landscape in the way described above, but it always relies on judgements being made as to the relative worth or value of landscapes for different interests or groups or to underpin designations. Landscape evaluation in the past may lead to designations such as, in the case of North Kesteven, the Lincoln Cliff Area of Great Landscape Value (now abandoned), and elsewhere, National Parks and Areas of Outstanding Natural Beauty.
- 3.10 **Landscape Capacity** – this is the capability of a landscape to accommodate a particular kind of change, for example, increased woodland cover or new built development. It is usually expressed in relative, rather than absolute, terms. For some changes there may be identifiable thresholds or limits of acceptable change beyond which the character of a landscape would be changed in negative or positive ways. For most changes, however, capacity is a relative measure expressing how increasing levels of change increasingly affect landscape character. This LCA provides advice on how development can be accommodated, but is not a detailed landscape capacity study.
- 3.11 **Landscape Impact Assessment** – the process of assessing the effects of one or more proposed changes to the landscape, as a resource in its own right, how its character may be changed, beneficially or adversely, by changes to its elements, features or characteristics. Usually the effects (impacts) are judged as a relative degree of change and expressed in terms such as substantial, moderate or slight adverse or beneficial impacts etc. In this context, beneficial impacts would strengthen, enhance, restore or otherwise improve the distinctiveness of landscape character. Adverse impacts would diminish or eliminate distinctiveness, remove characteristic elements and/or add uncharacteristic elements and thereby damage landscape character. Landscape impact assessment has not been considered within this LCA (see also paragraph 3.13).
- 3.12 **Visual amenity** – the benefit or advantages gained from a view in terms of what is seen and may be enjoyed by an observer.
- 3.13 **Visual Impact Assessment** – the process of assessing the effect of one or more proposed changes to views that are experienced by people and how the changes

may affect the (visual) amenity of the view, beneficially or adversely. For example, a view may be impeded, narrowed or shut off (visual obstruction), views of unsightly features may be hidden (screened) or partly hidden (filtered), new features may be introduced (visual enhancement or intrusion), or features may be removed (visual reduction). Usually the relative degree of change is judged and expressed in terms such as substantial, moderate or slight beneficial or adverse effects on visual amenity. Visual Impact Assessment is usually undertaken alongside landscape impact assessment, and thus is not a consideration within this LCA.

- 3.14 The **sensitivity of the landscape** depends on a range of factors including its character, its capacity to accommodate a proposed change, its condition and integrity, trends or pressures for change in landscape character and whether it has been identified as a landscape of particular importance in policy terms (e.g. Areas of Great Landscape Value). The most sensitive landscapes are those with limited capacity to accommodate the proposed change, landscapes with a particularly typical or distinctive character which has historical continuity and integrity, rare landscape types, designated landscapes and landscapes that have been specifically designed or planned for visual amenity e.g. designed landscapes or parklands forming the setting of a country house.

4. Introduction to the Landscape Characteristics of North Kesteven

- 4.1 Essentially there are three broad landscape character types within North Kesteven, each elongated from north to south:
- To the west are the Trent and Witham Vales, as described in Chapter 6
 - To the east is The Fens, which are described in Chapter 9
 - In between is the Central Plateau, as described in Chapter 8.
- 4.2 On the western edge of the Central Plateau, overlooking the Trent and Witham Vales, is the steep scarp slope of the Lincolnshire Edge, known locally as the Lincoln Cliff. It is described in Chapter 7 as the fourth landscape character type in the district, principally due to the distinctive landform and geology which is in sharp contrast to the relatively flat landscapes elsewhere throughout the district.
- 4.3 Within these broad divisions are many local variations in geology, soil, slope, natural drainage and settlement. In all, 13 landscape character sub-areas have been identified. Table 1 categorises the four landscape character types and the 13 landscape character sub-areas therein.
- 4.4 The boundaries of the four landscape character types approximately follow the boundaries of the four national character areas that lie across North Kesteven as identified by the Countryside Agency (now incorporated within Natural England) within the Character of England (1996), as explained below:
- 'The Fens' character area is almost identical to the national delineation.
 - The Southern Lincolnshire Edge is very similar to the area identified in this LCA as the 'Central Plateau', with the exception that the steep scarp slope of the Lincoln Cliff is excluded (and becomes a separate landscape character type). Furthermore the national area Kesteven Uplands is included as a landscape sub-area within the Central Plateau and is re-named the 'Upland Plateau Fringe'.
 - The Trent and Belvoir Vales area is almost identical but is re-named the Trent and Witham Vales to reflect its location within North Kesteven district.
- 4.5 Table 1 below indicates the landscape classification within this LCA, and illustrates how this compares to the Character of England and the District Council's Local Plan:

Table 1

Landscape Classification			
Landscape Character Areas – Countryside Character Approach	Landscape Character Areas – Local Plan	Landscape Character Types – this LCA	Landscape Character Sub-Areas – this LCA
Trent and Belvoir Vales	Trent and Witham Vales	Trent and Witham Vales	<ul style="list-style-type: none"> - Heath Sandlands - Terrace Sandlands - Till Vale - Lincoln Fringe - Witham and Brant Vales
Kesteven Uplands	Kesteven Uplands	Central Plateau	<ul style="list-style-type: none"> - Upland Plateau Fringe - Limestone Heath - Rauceby Hills - Wilsford Heath - Slea Valley - Central Clays and Gravels
Southern Lincolnshire Edge	Lincoln Cliff Dip Slope		
	Lincoln Cliff	Lincoln Cliff	<ul style="list-style-type: none"> - Lincoln Cliff
The Fens	The Fens	The Fens	<ul style="list-style-type: none"> - Fenland

5. Evolution of the Landscape

5.1 Introduction

- 5.1.1 The overriding character of the North Kesteven landscape today is that it is flat or gently undulating, predominantly in agricultural use and generally open with few or discontinuous boundaries and small areas of woodland. Within this broad character there are many local variations, and the prominent Lincoln Cliff forms a distinctive backbone to the district.
- 5.1.2 The character of North Kesteven's landscape is derived from the underlying base rock, which over millions of years has been subjected to the twin processes of erosion and deposition resulting in a unique topographic form which has, in turn, influenced the pattern and distribution of soils, drainage, land cover and human activity. Successive generations of people have altered the natural landscape, and this continues today.

5.2 Physical Influence

Geological History

- 5.2.1 In geological terms Lincolnshire is made up of more or less parallel bands of sedimentary deposits running in a north-south direction. These deposits were laid down during the Triassic, Jurassic and Cretaceous and recent periods.
- 5.2.2 The oldest deposits are found in the western side of the County in the Trent Valley. The Keuper Series were laid down about 225 million years ago during the Triassic Period when an inland sea covered much of the north of England. The series consists of marls and sandstones. Much of these Triassic formations are overlain by Pleistocene and Recent deposits.
- 5.2.3 The Jurassic Period followed, 195 million years ago, lasting some 55 million years when shale, clays, sandstones and limestones were deposited. The Lincolnshire Edge, or Lincoln Cliff as it is known locally, is made up from deposits of this period. It is a continuous feature for approximately 50 miles from Grantham in the south to the Humber Estuary in the north, formed by the Middle Jurassic limestone. The River Witham breaches the ridge at Lincoln. The Kesteven Uplands were also formed by Middle Jurassic limestone.
- 5.2.4 Towards the end of the Jurassic Period the sea began to recede and as a result there was a break in deposition of material and erosion of the already existing deposits. The basic, underlying shape of Lincolnshire as we know it today was established by the end of the Cretaceous Period and subsequently altered only by erosion and development of river systems during the Tertiary Period, and the influence of the ice age in the Quaternary Period.

5.3 The Influence of the Ice Age

- 5.3.1 The present day form of the land, its cover of soils and the pattern of drainage is the result of the formation and movement of the ice sheets which developed over 150 million years ago, and moved across Lincolnshire in a southerly direction. The erosive action of the ice sheets was particularly effective in the softer clays of the Trent valley and the Lincoln Clay Vale, which were deepened by the ice. The ice also moulded and smoothed the shape of the Lincoln Cliff. The ice age included

several episodes of glaciation, interspersed with warmer inter-glacial periods in which meltwater streams incised new drainage patterns and the seawater rose.

- 5.3.2 In the final period of glaciation, in the Quaternary Period, over a million years ago, the Wash was plugged with a combination of ice and boulder till. This in turn caused the formation of a massive glacial lake in the Fens and the lower Trent valley. When this lake eventually drained it left behind a rich alluvium which makes today's fertile farmland. Glacial sands were also blown eastwards across the unvegetated frozen landscape, probably originating from sandstones to the west of the Trent. These coversands added to the complex pattern of meltwater deposition in the Lincoln Clay Vale, where boulder till, clay, gravels and alluvium formed an uneven covering.

5.4 Today's Geological Landscape

- 5.4.1 As a result of its geological history the landform of North Kesteven consists of three main areas, the central limestone cliff and dip slope (including the Kesteven Uplands), the Witham/Brant clay vale and the fenlands.
- 5.4.2 Throughout most of North Kesteven the Lincoln Cliff is relatively narrow, but broadens out at Leadenham where there is a double terrace, towards the Kesteven Uplands to the south. It has a regular height of about 60 metres above sea level, with a line of springs where the Oolitic limestone rests on the underlying clay. The gentle rolling dip slope comprises a sequence of Jurassic clays which became overlain by the drift deposits of alluvium, boulder clays, coversands and gravels. The limestone of the Kesteven Uplands supports well drained calcareous loams similar to the Lincolnshire edge but also has areas of slowly permeable and seasonally waterlogged clayey soils, developed on the glacial till and boulder clay.
- 5.4.3 The River Witham is the major watercourse in the District which rises in the Kesteven Uplands near Grantham and flows northwards up to Lincoln City where it cuts through the Lincoln Cliff. The Witham and Brant Vale to the west of the District has predominately heavy clay soils, but local variations in the solid and drift geology have a marked influence on landscape character, with low hillocks of boulder till forming shallow "islands" on the flat alluvial land. Further to the west there are fluvio-glacial deposits of sands and gravels creating sandy loams. To the west of Lincoln close to the Trent is a strip of wind-blown sand.
- 5.4.4 The Fens on the eastern edge of the District follows the line of the River Witham as it flows towards the Wash. As the sea level has changed since the last Ice Age, the balance of saltmarsh, bog and woodland has altered. The underlying geology is a complex combination of post-glacial alluvium and freshwater clays. Within North Kesteven the soils are dark friable fen peat. The original course of the River Witham once meandered through a flood plain of marshy pools and reed beds, but since the 17th century the area has been progressively drained. The River Witham now has an artificial canalised course which runs straight for miles and is bounded by high banks to contain the watercourse from the lower adjacent fields.

5.5 Human Influences

- 5.5.1 There is archaeological evidence that this part of Lincolnshire has been settled by humans for many thousands of years. The Mesolithic people were the first settlers in the area and are thought to have preferred the drier, relatively open sites of the Lincoln Cliff rather than the densely wooded valleys. The process of woodland

clearance was begun by the Neolithic farmers and continued by Bronze Age settlers, who probably occupied all but the heavy clay lands.

- 5.5.2 The Roman occupation made a very visible impact on the landscape of North Kesteven. Lincoln was a fortified city linked by Ermine Street and the Fosse Way to other major settlements across Britain. Ermine Street roughly follows the crest of the Lincoln Cliff and Ancaster became an important Roman town in the gap created by the River Slea. The Foss Dyke is the oldest canal in England constructed by the Romans around 120AD and still in use today. It connects the River Trent at Torksey with the River Witham at Lincoln and was originally used for the transport of wool and other agricultural products.
- 5.5.3 The Romans were the first to attempt to control the water levels in the fenland areas. The Car Dyke, which runs close to the western limit of the Fens and joins the Witham a few miles south of Lincoln, was constructed by the Romans from Lincoln to Peterborough. It has been thought that the purpose of the Car Dyke was probably to transport livestock, although it could also have been a catchwater drain which cleverly allowed water to flow in both directions depending on the state of the tide. It was also thought that the Romans used the fens for agriculture but more recent research suggests that they also engaged in industrial activity, particularly the production of salt, deposited by the high tides flowing through the lowlands at that time. These artificial waterways fell into disuse after the Romans left.
- 5.5.4 The Anglo-Saxon invasions of the 5th and 6th Centuries heralded a new era in land management, introducing more systematic methods of cultivation. They favoured the Lincoln Cliff with its loamy soils and springs. Patterns of woodland clearance occurred during this period which had a lasting influence and is often reflected in the present day parish boundaries.
- 5.5.5 Lincolnshire was then invaded by the Danish Vikings in the 8th Century. The area occupied by the Danes became known as Danelaw and was dominated by the five boroughs of Nottingham, Lincoln, Stamford, Derby and Leicester. The influence of the Viking occupation is evident in many of today's place names with the suffixes "by" "thorpe" and "kirk". A long distance footpath, The Viking Way, has also been established, running from Barton-upon-Humber to Oakham, to remember this time.
- 5.5.6 During the medieval period farming developed on the perimeter of the "Cliff" along the western spring line and to the clay vale to the east. The Domesday Book shows the cliff edge as an agricultural community and there are still signs of the medieval five-field system evident in furlong ridges in some areas. The farmer's homesteads were established in the well-drained, cliff edge villages, leaving the legacy of numerous fine houses and barns in today's cliff top villages. Manorial power was a great influence at this time with the church and manor being the most important buildings and often with a close physical relationship.
- 5.5.7 The upper reaches of the limestone plateau remained an expanse of uncultivated heathland and gorse. Indeed many parts of this area still bear the name of "Heath", and have few settlements within it. Parts of the heath are deeply steeped in history and legend owing to strong connections with the Knights Templar of the 12th Century. Temple Bruer, in the middle of the Heath between the A15 and A607, north of Cranwell, is one of the few Knights Templar sites left in England where any ruins remain standing. The Temple Bruer estate was ideal as a base for the practicing of military manoeuvres and sheep farming, to finance the Crusades. Lincolnshire became a rich County at the time, breeding Lincolnshire Longwool sheep. The great

change in emphasis from arable to sheep farming led to the setting up of villages which became what we now call deserted medieval villages.

- 5.5.8 The 16th and 17th Centuries were a time of population decline in rural areas. There was a general migration to towns, conversion back from pasture to arable and a rationalisation of agricultural holdings. During the 18th Century the enclosure movement had a great influence on land patterns. On the limestone plateau it resulted in the improvement and cultivation of the heathlands creating the elevated farmlands seen today. In 1846 Disraeli made a speech on the repeal of the Cornlaws in which he said:

“Why, the market is supplied with the wheat of Lincoln Heath, the intrinsic poverty of who’s soil is only sustained by the annual application of artificial manures, but which produced the finest corn in the Kingdom. What has protection done for them? Why, if protection has never existed, Lincolnshire might still have been a wild wold, a barren heath, a plashy marsh.”

- 5.5.9 During the 19th Century the erection of windmills on the Central Plateau, taking advantage of the flat upland location, was a major influence on the landscape of the district. Further windmills were erected on the fens. Today there are 14 mills remaining in various conditions, with the taller restored mills such as at Heckington and Scopwick being conspicuous features within the landscape.
- 5.5.10 The human history of the Fens has been a battle of man against the forces of nature to bring out the full agricultural potential of the land. Although the Romans were the first to attempt to control water levels by building flood defences and drainage channels, much of their work fell into disuse. In the Middle Ages monks played an important role in tending the land on the edges of the fen and a number of monasteries developed in Lincolnshire including ones at Bardney and South Kyme.
- 5.5.11 In the middle ages sheep were reared in the fens, primarily for wool which was England's most important source of wealth at that time. The fens were also used for growing hay and reeds, for fishing, and occasionally as ploughed land. In the late middle ages there was a decline in the wool trade and the fenlands became neglected. With the coming of the Industrial Revolution there was a need for increased agricultural production and in 1762 an Act of Parliament was obtained to authorise major drainage works in the area of the River Witham, which was the last area of fenland to be improved. This Act also included the setting up of six Internal Drainage Districts which, were to be controlled as independent areas separated from one another by a system of flood banks and sluice gates. Huge capital investment was made in the fens with the objective being to convert seasonally inundated grassland, only useful for six months, into land which could support farming all year round. Flooding was still a danger and because the fens are so low lying, pumps have always been necessary to raise unwanted water up to the River Witham. In the 18th Century windmills powered such pumps but after the 1820s steam power was often installed. This was more powerful and reliable, and made a great difference to the fens. Nowadays electric motors are generally used.
- 5.5.12 The primary use of the drains has always been water removal and storage but they were also an obvious means of transport. Farming families used boats to go into Boston or Sleaford for the markets to sell their produce. From that time the right of navigation has been maintained on the larger drains although drainage and irrigation are always the priority functions.

- 5.5.13 A major 20th Century influence on the landscape of North Kesteven has been the growth of airfields along the top of the limestone edge. This part of Lincolnshire was ideal for military airfields because the expanse of flat and well drained ground provided the ideal conditions for runway construction. Airfields were first brought into operation at various times in the First World War, including Bracebridge Heath, Anwick, Digby, Wellingore and Cranwell. New airfields were opened up all over the County during the Second World War and by 1945 there were 49, including within North Kesteven, RAF Waddington, Metherringham, Coleby Grange, Anwick, Cranwell, Swinderby and Wellingore.
- 5.5.14 Many airfields have since become disused, although the remains of runways and control towers can still be identified. However four of the airfields are still in active service: RAF Waddington dominates the surrounding countryside with its new hangar complex and is home to the “AWACS” E3 aircraft with its distinct rotating radar dish; the RAF College and Training school situated at Cranwell with its imposing central building; RAF Digby which is a listening station; and RAF Swinderby which is a flying school.

5.6 Ecology

- 5.6.1 Being within one of the most important counties for agriculture in the country, much of the North Kesteven area of Lincolnshire is dominated by farmland. In many areas the agriculture is large scale and intensive, with arable crops being the primary land use. The intensification of production since the Second World War stemmed from a need to meet demand as a self sustaining country in the post war years, and more recently by the need to farm land more intensively to enable agriculture to continue to be profitable in the modern economy with retailer control over much of the market.
- 5.6.2 Whilst such areas have a relatively low level of ecological interest when compared with landscapes of more semi natural and varied habitat types, there remains some very important habitats of biodiversity value within this agricultural landscape. These are either remnants of former habitat types, or are habitats that arise specifically as a result of the use of the land for agriculture, such as hedgerows, ditches and field margins. Typical habitats of biodiversity importance in the North Kesteven District include semi-improved grasslands, hedges, woodland copses, wetlands and streams. Of critical importance across the district is the connectivity of these valuable habitats, which is needed to enable species to move across otherwise unsuitable or unusable land.
- 5.6.3 Taking a landscape scale view of an area's requirements for nature conservation brings landscape and wildlife conservation more closely aligned and enables a more co-ordinated approach to the conservation, enhancement and restoration of the natural environment. When considering the character of the landscape, and what may be possible to retain, restore or enhance the important character of a particular landscape type, it is important to consider how such restoration or enhancement can also be undertaken to improve the connectivity of valuable habitats within the landscape. Similarly, biodiversity initiatives, including habitat creation and restoration projects, must consider the wider landscape setting, to ensure that they are in keeping with the wider character of the area and do not erode its distinctiveness or introduce uncharacteristic features.
- 5.6.4 Whilst taking a larger scale and co-ordinated approach will be most beneficial, it still remains necessary to bear in mind the specific and more local wildlife issues within the North Kesteven District. Taking account of the needs of individual species or

species groups that are locally notable in the District should feature in the progression of the larger scale landscape character enhancement work, working in partnership with the development of a sustainable agricultural economy in the area. In a district where the land use is predominantly agriculture, the decline of species such as brown hare *Lepus europaeus* and a number of farmland birds due to modern farming methods is of great concern, for example.

- 5.6.5 There is clear evidence that the agricultural landscape is slowly but increasingly evolving with the more recent emphasis on government payments for environmental enhancements on agricultural land. Environmental Stewardship, following from its predecessor Countryside Stewardship, is a system of paying farmers for managing, restoring and enhancing their agricultural land to the benefit of local biodiversity and the wider landscape.
- 5.6.6 Around the North Kesteven District a considerable amount of native mixed species hedgerow planting can be seen. Large field margins provide a refuge for ground nesting farmland birds such as grey partridge *Perdix perdix*, and also ensure an unsprayed zone where some of the rare arable weeds such as Cornflower *Centaurea cyanus* and corn marigold *Chrysanthemum segetum* can survive.
- 5.6.7 Other margins include a seed bearing crop planted purely as a feeding area for farmland passerines of local biodiversity importance, such as linnet *Carduelis cannabina*, bullfinch *Pyrrhula pyrrhula*, reed bunting *Emberiza schoeniclus*, corn bunting *Miliaria calandra* and yellowhammer *Emberiza citrinella*. These are a welcome addition to the large expanses of arable fields. A number of field margins hosting sunflowers are noted within the district, for example.
- 5.6.8 'Beetle banks' are also to be seen as distinctive banks of wilderness running up the middle of otherwise extensive and continual blankets of arable land, providing an oasis of invertebrate life that offers a natural control mechanism for crop pests. Consequently, the North Kesteven landscape is gradually losing some of its uniformity. It is regaining some of its former detail and also benefiting from new biodiversity enhancements that are adding diversity to the landscape.

Ecology of the Trent and Witham Vales

- 5.6.9 Prior to settlement in this area it is thought that the majority of the Vales were covered by oak woodland, with alder and lime. Woodland clearance is likely to have taken place since Mesolithic times (10,000 to 4,500 BC), with various periods in history seeing more prolific woodland clearance. A number of plantations exist amongst the broadleaved woodland blocks, and these are likely to be on land that was formerly broadleaved woodland, specifically cleared to make way for the commercial timber planting of spruce and pine. It is evident that a number of these plantations are reverting back to oak woodland, and this should be facilitated wherever possible to the benefit of both habitat and landscape restoration. Despite this significant historic loss, the Trent and Witham Vales remains the most wooded area of the North Kesteven district, and the residual woodland blocks are important and defining habitats for the area. Unfortunately, a number of woodlands suffer from harsh boundaries with agricultural land running tightly up to the outer tree line. In such situations the biodiversity value of the woodland is reduced by its lack of woodland edge habitat, where a significant amount of botanical and invertebrate diversity is usually found.

- 5.6.10 Hedgerows are a distinctive feature of the Trent and Witham Vale, and offer one of the most important opportunities for wildlife corridor restoration. The relative abundance of hedgerows in comparison with other parts of the district is notable in the landscape, and consequently in the numbers of farmland birds seen in the area. The native hedgerows are dominated by hawthorn, but occasionally a more diverse hedgerow occurs. The Midland hawthorn *Crataegus laevigata* is characteristic of the region, occasionally found at woodland edges or more rarely within a hedgerow that crosses a former woodland site. This species is distinguished from the more ubiquitous common hawthorn *Crataegus monogyna* by its flowers having two or three styles, which results in fruits of two or three seeds as opposed to the single style seen in common hawthorn flowers, producing single seeded fruits.
- 5.6.11 Large mature trees are often clustered around the halls and manor houses in the Vale, but also occasionally seen along the roadsides, offering vital habitat to mammal, bird and invertebrate life. Large old pollarded willows can also be seen along some of the river stretches, such as those along the River Witham to the south of Stapleford.
- 5.6.12 Grassland that is unimproved, or only partially improved is now quite rare in the agricultural landscape, but occasional pockets can be found in the District, particularly around the edges of parkland or where grassland has been traditionally managed with grazing or cutting without being relied upon for economic return by an agricultural business. In these remnant small fields, original boundary features such as stone walls or enclosure hedgerows may also remain. Rarely, the old ridge and furrow lines can still be detected, such as those on the outskirts of Whisby, and it is in such locations that more diverse neutral grasslands are likely to be found.
- 5.6.13 These rare fragments of grassland support a diversity of plant and invertebrate life, which varies with soil type. The Trent and Witham Vales host a variety of soil types reflecting the range of underlying geology. Seasonal inundation of water on lower land close to the Witham and Brant creates wet grassland habitat suitable for feeding and breeding waders such as lapwing and snipe. This has been reduced however by the constructed embankments running along much of the stretches of river through the Vales, preventing flood water spilling over into the adjacent grassland.
- 5.6.14 The Witham and its tributaries support a number of important biodiversity action plan species including the native crayfish *Austropotamobius pallipes* and the water rail *Rallus aquaticus*. Indeed there is a new long distance path and cycleway running along the disused railway adjacent to the River Witham called the Water Rail Trail. Natural large water bodies are not a characteristic of the area, but restored sand and gravel pits have introduced new wetland habitat to the Vale which attracts a quite a range of bird life. Whisby Nature Reserve is a former gravel pit that has been reclaimed and has now developed into an oasis for bird life and provides a valuable opportunity for people to see and learn about wetland wildlife.
- 5.6.15 Landscape scale biodiversity enhancement opportunities within the Trent and Witham Vales is likely to arise when extraction is completed at any of the sand and gravel quarries, and reclamation proposals are presented to the local authority. Consideration should be given to sensitive reclamation proposals that aim to restore to heathland and acid grassland mosaics in the area. The restoration of extraction sites to native woodland will also be very beneficial to the landscape in certain locations, particularly where isolated remnants of woodland can be reconnected. Whilst restoration of former extraction sites to wetland is frequently undertaken, this

may not represent the most suitable option when considering the wider landscape and local biodiversity habitat linkage needs.

- 5.6.16 The retention and replacement of traditional field boundaries, especially ancient and species rich hedgerows and parish boundaries will be important for landscape character, particularly around the heath sandlands in the north west of the District. The sensitive management of these field boundaries and creation of buffer strips alongside hedgerows will also be of benefit to a range of farmland birds, providing sites for feeding, nesting and cover, including species such as skylark *Alauda arvensis*, linnet *Carduelis cannabina* and yellow hammer *Emberiza citrinella*.

Ecology of the Lincoln Cliff and Central Plateau

- 5.6.17 The limestone geology is the defining factor for the presence of the characteristic species and habitats on the Lincoln Cliff and Central Plateau. Of key importance for this area is the grassland of calcareous substrates, which support a distinctive flora and fauna. There are small pockets and fragments of the once extensive calcareous grasslands on the upland plateau, hosting a high diversity of wildlife. These open areas are also important for bird species such as the hunting barn owl *Tyto alba* and also the ground nesting sky lark *Alauda arvensis*, which needs a good supply of invertebrates to feed its young. Because of agricultural intensification and a reduction in sheep grazing, the grasslands of greatest diversity are often found on road verges, where the land has suffered much less intensification. However, it is these grasslands that are also often subjected to insensitive cutting regimes, which can reduce floral diversity and disrupt invertebrate lifecycles. Open tracts of grassland can occasionally include a mosaic of grasses and heather shrubs, and there are numerous place names that include the word 'heath,' indicating that this habitat type was once much more prevalent, although the name 'heath' was often used in the area as a general description for open and rolling rough grazing land.
- 5.6.18 Woodland is not particularly characteristic of the northern part of this area, and is much more significant in the southern end of the Plateau, where boulder clay exists over the underlying limestone. These woodlands are of particular wildlife importance for their diversity of understorey flora, edge habitats and ground flora. The presence of ancient semi-natural woodland in this southern part of the Plateau is relatively significant. Small leaved lime *Tilia cordata* is occasionally found in the boulder clay woodlands.
- 5.6.19 Wood pasture is a distinctive and biologically diverse habitat that is found on the plateau around the important historic halls such as those at Rauceby and Aswarby. Wood pasture is typically a very stable habitat, with little change over many years, and is consequently very diverse, particularly in terms of specialist invertebrates, lower plants and species of bat utilising the veteran trees, standing and fallen deadwood, and grasslands.
- 5.6.20 Farmland habitats, including unimproved or semi improved grassland, hedges, ponds and small copses are important across the Plateau, although the large scale and more intense farming techniques of recent decades have eroded and lost some of the more traditional features of the farmland landscape on the Plateau. There is a mixture of field patterns and sizes on this higher area, as well as a mix of arable and grazing uses. Many fields have been combined and enlarged with boundaries lost to accommodate large arable production. However, a number of smaller and less improved fields remain with a mixture of boundary types.

- 5.6.21 Where fields have been enlarged, the presence of boundary features is less common in the landscape, and where they do exist the hedges tend to be harshly clipped, which can reduce their value as feeding habitat. The presence of limestone walling is more frequent on the Central Plateau than in other areas of the District, which provides a different habitat for lower plants, and shelter and nesting sites for small mammals and birds.
- 5.6.22 Farm ponds are a traditional part of the Plateau farmland on boulder clay, and the maintenance of clusters of ponds that are no more than a few hundred metres apart is particularly important for the success of amphibians and aquatic invertebrates using the pond networks. The restoration of shaded and shrinking ponds should form part of any landscape and biodiversity enhancement initiatives and Environmental Stewardship schemes in the area.
- 5.6.23 Landscape scale biodiversity enhancement opportunities along the cliff and out on the central plateau may exist amongst the larger expanses of grassland such as within the RAF camps where restoration to a more species diverse limestone grassland could be considered. Environmental Stewardship opportunities include sensitive field margin/field corner management for farmland birds, and the introduction of a range of habitat buffer strips, of scrub, woodland or grassland to protect the biodiversity value of important habitats that exist within an active agricultural landscape.

Ecology of the Fens

- 5.6.24 The North Kesteven fenland is a significant agricultural asset, with rich dark soils that were once part of the fenland peat. The fens have historically been subjected to extensive cultivation, and bare little resemblance to the former ancient peatland expanse. The fens rarely reach any higher than 10 metres above sea level, and historically peat formation occurred as the area became increasingly waterlogged. The landscape would have been a mix of open water, sedge and rush fen and boggy peat. The fen would have supported an abundance of wildlife, much of which would have been quite specialist to the fen habitat.
- 5.6.25 Using the land for agriculture required extensive drainage and straight drain lines are a feature of the landscape today. Following the initial drainage schemes several hundred years ago, the fen would have remained quite wet, with the land being used as grazing marsh and the harvesting of sedge for thatching and peat for burning would have been undertaken. Subsequent and more intensive drainage eventually lead to the land being suitable for growing crops, enabling farmers to take advantage of the rich soil with a high peat content.
- 5.6.26 The loss of the former wetlands has undoubtedly had a dramatic effect on the fen wildlife. The fenland within North Kesteven has few natural areas remaining due to the intensive nature of the agricultural improvement and it is now dominated by arable farmland. The once extensive fenland is now only found in remote fragments, and many of these are now designated as locally important wildlife sites. These fen sites host a number of rare and quite specialist species of plants, and, particularly in the wettest areas, along with invertebrates such as specialist snails and beetles.
- 5.6.27 Consequently, the fens are now essentially a farmed landscape and as such, farmland biodiversity is now an important asset to the landscape character of the modern North Kesteven Fen. The ecology of the Fens as farmland has also experienced considerable land use changes in more recent times, and some of its

characteristic farmland wildlife has reduced as a result. A number of the features within this landscape, particularly the hedgerows, ditches, drains and small watercourses, support a wide range of species including some that have undergone dramatic recent declines such as song thrush *Turdus philomelos*, dunnoek *Prunella modularis* and grey partridge *Perdix perdix*.

- 5.6.28 In contrast to other landscape units within the North Kesteven District, the Fens have little woodland coverage. The rising water rendered the land unsuitable for trees to survive, and any tree cover will therefore be a relatively recent feature in the landscape, since the occurrence of land drainage.
- 5.6.29 The straight lined drains are themselves important biodiversity habitats, with aquatic and emergent plant species that are now considered ditch line specialists. Such plants have become increasingly rare with the modern maintenance techniques for drainage ditches. Mechanical advances have resulted in increasingly more severe maintenance operations in terms of how much vegetation is removed from the ditch, and also the distance that can be covered at any one time. It is imperative that the fen drains are sensitively managed for biodiversity, as these are a network of linear habitats which require planned and sensitive maintenance in order for species to survive. Management in disjointed or alternate sections, and rotating which side of the drain is cut, will undoubtedly add to the resources needed for drain maintenance, but such planning and control is vital if species are to survive. Cyclic maintenance creates a much more diverse range of habitats, so that different species can exploit the different stages of succession in the drain.
- 5.6.30 Landscape scale biodiversity enhancement opportunities will be particularly focused upon areas where isolated, remnant and re-colonising fen type habitats can be linked together to increase the viability and potential expansion of these important biodiversity habitats. Wet habitats such as wet grassland should be encouraged as complementary habitat on more productive ground. Other Environmental Stewardship opportunities should be taken on agricultural land, including beneficial field margin management. River and drain management should also be a particular biodiversity enhancement priority within the Fens.
- 5.6.31 Gravel pit restoration on the fen edge can also contribute to landscape scale nature conservation, by considering reclamation to wetland habitat to complement and increase the wetland network across the fen. Whilst such reclaimed sites will never fully represent the former fenland habitat, much of the structural diversity and mosaic of wet grassland to open water can be included, to re-establish a network of habitat types that can be utilised by fenland flora and fauna and contribute to biodiversity expansion and re-colonisation across the Fens.

PART 2 – LANDSCAPE CHARACTER AREA DESCRIPTIONS

6. Trent and Witham Vales Regional Landscape Character Type

6.1 Heath Sandlands Landscape Character Sub-Area

Key Characteristics

- *Bounded by District boundary on all sides apart from the east where the boundary is marked by the land rising into the Terrace Sandlands landscape character sub-area.*
- *Flat, open, rural lowland.*
- *Mainly arable agriculture, though some rough pasture.*
- *Generally medium sized rectilinear fields with absent field boundaries.*
- *Small, isolated stands of Scots Pine, and incongruous conifer 'walls' around farmsteads.*
- *Birch, oak, bracken and gorse in wide roadside verges.*
- *Steep sided straight dykes along field boundaries.*
- *Small brick bridges for tracks over dykes.*
- *Radial road pattern converging on North Scarle.*
- *Very straight roads.*
- *North Scarle is a nucleated settlement with older red brick built buildings in the centre of the village and newer mixed development on the outskirts.*
- *Variable pattern of land uses around village and along roads including "horsiculture", poultry sub-areas and some light industrial sub-areas at Lodge Farm.*
- *A number of small lakes used for angling.*
- *Open views across to the Cottam power station on the River Trent.*



Detailed Description

Boundaries and Extent of the Landscape Character Sub-Area

- 6.1.1 This is a small landscape sub-area centred on the village of North Scarle. It is bounded by the District and County boundary on three sides which is an established line following field boundaries, except for the western boundary which is delineated by the A1133. To the east the sub-area boundary is less well defined, but can be identified by the rise in relief to the neighbouring sub-area, the Terraced Sandlands.
- 6.1.2 A similar landscape character continues westwards over the county boundary into Nottinghamshire in the Spalford and South Clifton area to the north and towards the River Trent to the west.

Topography and Landform

- 6.1.3 The change in elevation from the adjacent Terraced Sandlands is subtle, yet this area is distinct, having more in common with the East Nottinghamshire Sandlands across the county boundary. The landform comprises a low flat area of land of no more than 10 metres in height, evolved from wind blown deposits of sand edging the Trent floodplain.
- 6.1.4 The underlying clays have impervious qualities and ponds and small lakes are a characteristic feature, unlike most other areas of the district apart from the Fenland sub-area. At Whitfield Farm is a steep embanked reservoir, and a canalised drain, the Mill Dam Dyke, cuts diagonally across the sub-area, changing direction in the centre of North Scarle. Along some parts of its length it has very tall steep earth embankments with mature trees growing lining the opposite bank. There are a distinctive number of small brick bridges across the dyke leading farm tracks into the adjacent fields.
- 6.1.5 As the area is flat and low with frequent blocks of woodland in the middle distance there are few extensive views to be seen of the surrounding landscapes. The level terrain affords frequent open vistas towards the River Trent and views of the Cottam power station chimneys.



Mill Dam Dyke

Land Use, Land Cover and Vegetation

- 6.1.6 There is a varied and relative intensive pattern of land use and development along many of the roadsides to the west of North Scarle, which helps give the landscape a distinctive character. A number of light industrial sub-areas are found at Lodge Farm on the Wigsley Road and also a number of poultry farming units. There are further poultry farming complexes along the Spalford Road. Other uses include paddocks and stables and associated 'horsiculture' development and there are a number of caravans and mobile homes which appear to be associated with the fishing lakes of the sub-area.

- 6.1.7 Apart from this variable pattern of land holding and diverse range of land uses, the predominant use of the land is mixed agriculture, both arable and grazing. The arable crops mainly consist of cereal and sugar beet, grown in medium sized, rectilinear fields. Field boundaries are largely absent or marked by rough grassy margins and drainage channels. Along some of the boundaries where hedgerows do still remain, these are often gappy and in poor condition.
- 6.1.8 There are smaller fields surrounding North Scarle, particularly to the south, which are generally put to grazing pasture. The grass is often rough and tussocky and the fields are separated by low, neatly trimmed hedgerows. There are stronger lines of hedgerows along the roadsides and footpaths with occasional belts of trees. Along the Besthorpe and Wigsely roads there are wide verges with birch, oak, bracken and gorse revealing the underlying heathland characteristics of the sub-area. Similarly there are isolated stands of Scots Pine and 'leylandii', the latter usually surrounding farmsteads and frequently presenting a functional but visually prominent and incongruous feature within the landscape.
- 6.1.9 On the northern boundary of the sub-area is a disused airfield, crossing over into Nottinghamshire. Here there is a larger pattern of fields and open grassland with little tree cover. A large part of this particular area is used for large scale pig farming, and the land as a consequence is often muddy and featureless in appearance, and there is evidence that the pig grazing is managed on a rotational basis with some fields clearly in a fallow to recover from previous seasons' grazing and foraging. There is a further area of pig farming to the south of the sub-area alongside the county boundary.

Settlement Distribution and Road Pattern

- 6.1.10 There is a radial pattern of roads within this landscape sub-area, with six minor roads converging on the central village of North Scarle. In addition there is the Wigsley-Beesthorpe Road to the west of North Scarle and the Spalford Road to the north, both of which are extremely straight in character.
- 6.1.11 The main settlement is North Scarle which has a nucleated development pattern in the centre of the village where the roads converge, residential development then spreading out along the roads. The village is located upon slightly raised land and is subsequently visually prominent in this largely flat landscape.
- 6.1.12 There are no other settlements within the sub-area but there are a number of scattered farmsteads with many associated agricultural buildings. Piecemeal ribbon development, particularly along the Wigsley-Besthorpe Road is also a contributory element of the 'busy' character of this rural fringe of the district.



Views to North Scarle

Settlement Character

- 6.1.13 The centre of North Scarle has many of the original buildings in vernacular style constructed in red brick with pantiled roofs, contributing greatly to the local sense of place. The village church is constructed of lighter coloured stone and has a tower which is a prominent landmark in the area. There are also a number of other attractive buildings such as Glebe Farm and the old pub which add particular interest and charm to the village centre. Trees are very important feature in the village adding an attractive focus to views along the High Street and Church Lane. The Mill Dam Dyke is an interesting feature which cuts right through the village.
- 6.1.14 Interspersed with the traditional buildings and on the outskirts of the village there is newer development of mixed design in a variety of different building materials. Many of these are of a suburban style including a number of bungalows which do not reflect the established vernacular. There is also an area of former Local Authority housing constructed in dark red brick on the northern edge of the village which is visually distinct from other parts of the village.
- 6.1.15 In addition, the periphery of the village is fringed equine related development with several prominent stables and riding paddocks. The paddocks are generally well kept and bounded by wooden post and rail fences, but this is inconsistent with established local character.
- 6.1.16 Those buildings outside the village fringes are of mixed styles and ages including traditional farmhouses with associated buildings, newer individual houses and some visually detracting mobile homes and caravans associated with the fishing lakes.

Heath Sandlands	
Pressures for change & landscape detractors	Opportunities for enhancement
<p>Agriculture: Arable intensification leading to decline in the overall structure and condition of the landscape with many hedgerows either gappy or entirely absent.</p> <p>Large utilitarian agricultural buildings (e.g. poultry units), and multiple smaller units (i.e. pig sties) are prominent features in the landscape.</p>	<p>Maintain and strengthen the characteristic pattern of hedged fields by enhancing the overall structure and unity of the landscape through additional planting. Investigate establishment of a local grant scheme for field boundary reinstatement, and embed within Agri-environment scheme objectives.</p> <p>Pursue more sensitively designed large agricultural buildings, and screen in more effective manner through use of indigenous species, on and off site where appropriate.</p>
<p>Woodland: Lack of larger areas of woodland compared to neighbouring areas.</p> <p>Inappropriate tree species (e.g. Leylandii), alien to the rural landscape, have been used to screen farmsteads and other agricultural buildings.</p>	<p>Conserve and expand existing small copses and existing groups of trees along roadsides and dykes to safeguard this asset of landscape character, particularly reflecting heathland characteristics, by using Scots Pine.</p> <p>Suitable native tree species should be used and where possible replace 'Leylandii walls'.</p>
<p>Housing development: Further development of North Scarle with inappropriate, "suburban" style development, eroding established character.</p>	<p>Any further development should reflect the character and integrity of this rural settlement. Suitable materials should be used (e.g. local bricks) and the edges of new development should be softened with appropriate landscaping.</p>
<p>Ribbon and sporadic development: Piecemeal commercial and residential development has spread along some of the roadsides, including industrial units (e.g. Lodge Farm), a haulage company, static caravans associated with fishing lakes and 'horsiculture', resulting in an appearance characteristic of the urban fringe rather than a semi-remote rural area.</p>	<p>There should be more focused control over future development outside of settlement boundaries, to avoid this creeping urbanisation and to safeguard the local rural character. Land use planning may consider the need to consolidate space intensive uses in specific allocated areas rather than allow iterative continuation of ad-hoc development across the sub-area.</p>

6.2 Terrace Sandlands Landscape Character Sub-Area

Key Characteristics

- Gentle, subtle undulations in topography, dominance of woodland blocks and hedgerow trees, large and less managed hedgerows.
- A noticeable ridge of sand and gravel deposits circles the farmland south of Norton Disney Hall, which highlights the geological contrast with the River Witham vale to the east and the Trent vale to the west, and partially defines the character area boundary.
- Woodland, both broadleaved and conifer plantation is a dominant feature of the landscape and plays a key role in defining landscape character. Its presence greatly influences the length of views and sense of openness or enclosure. Vistas open out and close up dependent on the position of the woodland blocks in the landscape.
- Sandy deposit geology gives rise to pine and gorse dominated roadsides, and sand and gravel extraction has some impact upon the landscape. Land reclamation post extraction has created a large expanse of open water with significant wildlife benefits, and a prominent but possibly incongruous landscape feature locally.
- Avenues of trees occasionally line minor roads, increasing the intimacy and detail of the area.
- Settlement is scattered and road patterns are similarly winding and irregular, in contrast to the more regular and spinal network seen in the Witham and Brant Vales.
- The estate village of Doddington dominates the northern section of this area, with its stunning Elizabethan Hall and parkland central to this estate village.
- The presence of the MOD firing range at Beckingham has mixed influence on the landscape.
- A lack of arable farming in this pocket of the character area creates subtle and soft layering of grassy pasture, straggly and irregular boundary hedges and post and wire fencing.



Detailed Description

Boundaries and Extent of the Landscape Character Sub-Area

- 6.2.1 The extent of the woodland blocks across parts defines the extent of the sub-area, as the landscape gives way to flatter, lower and more open landscapes. The landform around the Norton woodlands is a considerable influence on its boundary line, with the higher ridge at this location being a prominent feature from which the sub-area is divided from the lower Witham and Brant Vale to the South and East.
- 6.2.2 The northern limit of this sub-area extends up to and skirts around the northern edge of Old Wood, to the north of Doddington. The boundary then follows a drain that cuts easterly across from Old Wood towards Saxilby Road, and continues to encircle the north eastern edges of Skellingthorpe. The boundary then follows the outer limits of

the parkland associated with the Skellinthorpe Hall to the north east of the village to meet the North Kesteven administrative boundary where it then follows the A46 down to include Wisby Nature Reserve. The sub-area here is separated from the fringes of Lincoln, where the spreading urban influence forms the Lincoln Fringe landscape character sub-area.

- 6.2.3 The A46 dissects the sub-area into a northern and southern half, but a southern fringe of this sub-area runs along the Roman road from the farms at Thorpe Grange to those at the Norton woodlands. This strip of farmland south of the A46 sits on a pronounced ridge feature around the Norton woodlands, which gently falls northwards to the west of Haddington. The ridge at Norton Big Wood and Norton Low Wood offers a distinct boundary between this wooded farmland and the low Witham and Brant Vales below.
- 6.2.4 Below the ridge, the Stapleford woodlands take the sub-area down to the A17, where the westerly floodplain and pasture land around Stapleford Moors completes the southern extent, where there is a clear difference between this more complex and layered landscape, to the larger scale of the Witham and Brant Vales to the east.
- 6.2.5 The western boundary is artificially defined by the Western administrative boundary of North Kesteven, and in extent reaches a little further west towards the Trent Valley. Within the northern section of this sub-area, the Western fringe of Eagle Hall wood takes the boundary line up to Swinethorpe, following the lower contours of the slope up to Eagle, and thereby dividing the lower lying North Scarle area into a separate landscape character sub-area. The western boundary line then runs along the western side of the remaining wooded blocks of Old Wood, to meet the northern boundary of this sub-area.

Topography and Landform

- 6.2.6 This is a sub-area of gentle undulations and terraces, and is slightly elevated from the surrounding sub-areas. Occasionally the elevation is more pronounced, such as that seen around the Norton Woodland ridge where heights of 34m are reached. A clear distinction is seen between this elevated terrace and the lower vale.
- 6.2.7 Drains are occasionally found, but these are much less a feature of the landscape than in other sub-areas across the district. The geology and rise and fall of the land within this sub-area contribute to more natural drainage, rendering artificial drainage less necessary.
- 6.2.8 Within the Terrace Sandlands is Wisby Nature Park, a complex of flooded gravel pits which has created a significant and extensive waterscape. However, this is only fully appreciated when close to the Nature Park, because the mature tree screens and location at the base of the Terrace Sandlands. The contribution to the landscape character is therefore minimal until seen from close proximity. In contrast, the reclaimed extraction site situated on the Norton Woodland ridge, between Norton Big Wood to the south and RAF Swinderby airfield, presents much more prominent waterscape. Whilst a naturally profiled and vegetated feature, attracting considerable birdlife interest, it stands out as an incongruous component in the generally 'heathy' landscape sub-area. It is however close to the A46 corridor, where the landscape is influenced by more significant development, and hence contributes to the disjointed and uncharacteristic feel of this corridor.

- 6.2.9 The Terrace Sandlands sub-area continually changes in openness and enclosure, heightened by the distinctive changes in direction when travelling along the roads within this sub-area. The woodland blocks throughout the sub-area often prevent any wide open views, but then breaks within woodland blocks regularly increase the depth of view. The Stapleford Woodlands in the southern part of this sub-area are particularly enclosing and make a clear boundary line to the sub-area at this point.
- 6.2.10 The landscape within the Terraced Sandlands has a more layered quality than adjacent sub-areas, and this stems from the gentle undulations, taller hedges and woodland blocks. Colour variation is also varied because of the range of hedge, roadside tree and woodland features. Smaller field patterns than the larger expanses of the Witham and Brant Vales create greater variation in colour and texture within a small area. The occasional leylandii hedging and screening is sometimes a pronounced and incongruous feature in the landscape, by way of its size, uniformity and dense uniform dark green colours. There are though colour variations in the plantations and broadleaved woodlands, fields and hedges. Individual houses dotted throughout the area are red brick, or often painted render on newer dwellings and farmsteads.
- 6.2.11 Key vistas within this sub-area are often those looking out onto other sub-areas, with the most impressive vistas being those from the Norton Woodland ridge over the lower vale. At the northern end of the Terrace Sandlands there are glimpses of Lincoln Cathedral. At the southern extent the view over the more pastoral landscape encircling the Ministry of Defence firing range offers a refreshing contrast from the more arable nature of the district in general.

Land Use, Land Cover and Vegetation

- 6.2.12 This sub-area is the most wooded character area within the North Kesteven administrative boundary, and those woodland sub-areas play a major role in defining its landscape character. Much of the woodland within the Terraced Sandlands is plantation woodland, and it is apparent that this exists in areas of former native woodland. The woodland blocks frequently consist of blocks of planted pines, with either fringes of broadleaved woodland, or, where the plantation is no longer managed as a commercial entity, broadleaved woodland is now reclaiming its former predominance. In a number of small blocks where broadleaved woodland has now substantively returned, their place names indicate a former more commercial use, such as Old Orchard and Markham's Plantation. Wide verges and individual roadside trees and lines of roadside trees are an important feature.



Tree-lined lane on Norton Woodland ridge

- 6.2.13 Arable fields dominate the area, but the smaller field pattern in comparison to the adjacent landscape character areas adds relative interest and creates less stark vistas from those in the lower floodplains of the River Whitham and River Brant. Livestock grazing is more frequent in this sub-area, but this still remains an occasional feature, except at the southern extent of the Terrace Sandlands sub-area where the Ministry of Defence land is predominantly rough grazing. Arable crops are mixed, but the production of root crops prevails in this sub-area.
- 6.2.14 The more complex landscape of the sub-area, with smaller fields, larger hedges and frequent woodland blocks provides good opportunities for biodiversity within the sub-area. Foraging owls are seen at dusk, taking advantage of the wildlife corridors harbouring small mammal prey, and the smaller field size gives greater cover for hares venturing into arable fields to feed, and the larger and less frequently trimmed hedges provide a larder of food for small farmland song birds.
- 6.2.15 The RAF airfield at Swinderby dominates local vistas around the A46, and this expanse of grassland is frequently used for public events such as the Antiques and Collectors Fairs, when tall white marquees are often a striking feature from the A46.
- 6.2.16 Sand and gravel extraction is occasionally intrusive, but more often it is the bund walls and screening that indicates the presence of extraction work. Extraction infrastructure is much more noticeable on the Norton woodlands ridge, and this detracts from an otherwise quite intimate and varied part of the landscape character sub-area.

Settlement Distribution and Road Pattern

- 6.2.17 The road network of this sub-area is of rather straight sections of road, frequently interrupted with sharp changes in direction, with few direct routes from one settlement location to another. The recently dualled A46 follows the route of the Fosseway Roman road between Newark and Lincoln.
- 6.2.18 Settlement is less nucleated within the Terrace Sandlands sub-area. It is relatively scattered, with greater aggregations at small villages which extend into the open

countryside with dotted farmsteads and larger dwelling houses close to these loose concentrations but still within open countryside. The smaller villages and hamlets, and frequent individual dwellings or group of two or three dwellings in otherwise open countryside is typical of this sub-area and in contrast to the adjacent Witham and Brant Vale sub-area where the settlement pattern is more clearly defined into larger villages.

Settlement Character

- 6.2.19 The most distinctive village within the Terrace Sandlands sub-area is the village of Doddington, which is centred around the historically important and architecturally impressive Elizabethan Doddington Hall, set in extensive parkland. Doddington Hall was built in 1600 by the Elizabethan architect Robert Smithson and is one of the historic jewels of Lincolnshire. The hall and its grounds have extensive influence on the entire village, with much of it being constituted by parts of the hall's estate buildings. Specimen trees fringe the village, which also has a noticeable abundance of mature holly trees. Houses and cottages are red brick, and are in generally good condition.



Doddington Hall, Doddington

- 6.2.20 Older villages consist often of neat red brick houses and cottages, and the larger individual houses in the wider countryside are very often red brick with ornate tall roof lines, reflecting the local vernacular of the small villages and hamlets. Other areas of dispersed and ribbon development are less uniform in nature and are often of painted render on the newer dwellings which are often quite prominent in the landscape when away from village settlements.
- 6.2.21 Individual houses and farms in the wider countryside very often also display stark boundaries, with tall leylandii hedging standing out amongst the surrounding fields of native and often overgrown or gappy hedges. These are negative components of the traditional countryside of this area.
- 6.2.22 Newer housing along the A46 corridor, particularly at Witham St Hughs, Swinderby, whilst not necessarily incongruous, lacks the established attractive characteristics seen in many of the older villages and hamlets.

Terrace Sandlands	
Pressures for change and landscape detractors	Opportunities for enhancement
<p>Minerals working: Sand and gravel extraction taking place within Terrace Sandlands is a detractor from the character of the sub-area, and has resulted in the creation of the large wetland area at the restored site between Norton woodlands and Swinderby airfield. While this undoubtedly is of biodiversity value, it is incongruous in the landscape with underlying heath characteristics.</p> <p>Active mineral sites are generally screened by bund walling, which are functional but not harmonious with the natural landform. Bund walling is and will be necessary to prevent much of the active workings detracting visually and aurally across the area.</p>	<p>Consideration should be given to the sensitive reclamation of former sand and gravel extraction sites, in accordance with wider landscape features. This should focus on heathland and acid grassland mosaics, hedgerow patterns and some restoration of former native woodland expanses where locally appropriate. Large water bodies should play a less major role in future reclamation schemes.</p> <p>Native and locally appropriate planting of bund walling will help it to blend into the surrounding landform and character, which is undulating and with varied hedge and tree cover. A more natural approach could be to plant some parts of a bund with trees or scrub, whilst leaving other parts as grassland.</p>
<p>A46 Corridor: The A46 corridor cuts through the character sub-area, and the land immediately to the north and south of this main route represents a corridor of increased activity, vulnerable to development pressure within the landscape. This corridor represents an area of more intensive disruption to the rest of the sub-area, with the former airfield at Swinderby, recent housing at Witham St Hughs and typical transport corridor related development that is not evident elsewhere in the sub-area. The corridor does include some significant detractors, with large modern commercial and storage buildings. These currently remain scattered in nature, interrupting longer views out to the wider countryside. This could be lost however, if large buildings continue to be developed along the A46 route.</p> <p>The A46 dual carriageway is a significant piece of transport infrastructure. The road itself is a considerable detractor in the landscape and severs the landscape to the north and south.</p>	<p>Further development along the A46 corridor should have regard to the more sensitive landscapes within the areas to the north and south of this major transport route, looking to blend design with the built and landscape character of the Terrace Sandlands.</p> <p>There is the opportunity for new housing and also smaller scale non-residential development to pay much greater regard to the need to reflect the character of the older villages to the north and south of the A46 within the Terrace Sandlands.</p> <p>Care needs to be taken to ensure that the landscape character remains linked to the north and south, with common themes retained on each side of the road. There is also opportunity for more woodland planting in the vicinity of this corridor, to reduce the impact of the road and replicate the more enclosed and wooded nature of the landscape to the north and south. This would be beneficial in reducing the severing nature of the road, whilst ensuring that its obvious straight form as a historic Roman road is retained.</p>

Terrace Sandlands	
Pressures for change and landscape detractors	Opportunities for enhancement
<p>MoD estate: As with many parts of the North Kesteven District, the Ministry of Defence heritage has left its impression on the Terrace Sandlands sub-area. The former Swinderby airfield is a focus for large local events such as outdoor shows and specialist markets, and consequently it frequently accommodates large white marquees, which can be very prominent in the landscape from some distance.</p>	<p>Whether the use of the former airfield is a detractor in the landscape, or a recognisable and locally distinctive part of this sub-area is likely to be a matter of opinion for both local residents and visitors. As an important venue for local and regional events, the use of the airfield is likely to continue. At each event consideration needs to be given to how landscape intrusion can be minimised. This could be stipulated as a requirement for any event held.</p>
<p>Treescape: Trees are a critical in defining the character of the sub-area, and mature avenues of roadside trees are particularly distinctive in the Terrace Sandlands. It is noticeable that many trees along roadsides are aging and beginning to go into senescence.</p> <p>Trees are important to the setting of a number of villages in the sub-area, particularly those influenced by parkland, such as at Doddington. Again it must be recognised that the parkland landscapes and specimen trees are mature, and further aging, if unmanaged, will result in a gradual change in the setting of villages and character of the landscape.</p>	<p>There is evidence across the sub area of an on-going tree management strategy which should continue to benefit from support.</p> <p>This sub-area has benefited from a noticeable amount of roadside planting, and some of these individual trees are starting to contribute to its character, replicating the mature avenues seen alongside the minor roads. This enhancement is very much in keeping with the sub-area, and should continue to ensure that the roadside trees as valued features within the sub-area present a good range of age and size, as to ensure the continuation of this important element of the sub-area.</p> <p>In such locations there is a need to give long term consideration to the future treescape, ensuring that new trees are planted that are in keeping with the village character, which will retain and continue the individual treescape of the villages into the future. Such considerations should be important elements when determining development proposals on the edge of settlements.</p>

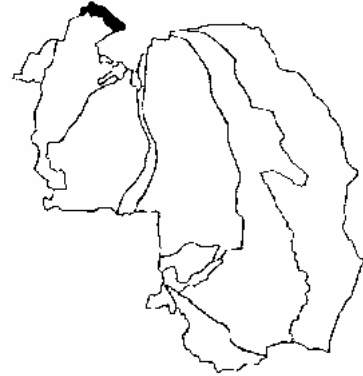
Terrace Sandlands	
Pressures for change and landscape detractors	Opportunities for enhancement
<p>Non-indigenous tree cover: Throughout the sub-area there are occasional tall leylandii hedges, which are usually found defining residential boundaries. These are visual detractors where they occur in the open countryside standing as dense uniform blocks, and do not enable the dwelling or other development to blend into or fit with its surroundings.</p>	<p>Whilst it will be difficult to secure the removal of existing leylandii hedges, it should be ensured that new residential developments do not incorporate such inappropriate landscaping and suitable native boundary planting can be stipulated as part of any planning permissions.</p> <p>Planning design policy should also be developed and implemented so that any development application for improvements to existing dwellings or developments might lever general enhancement of the site which could include leylandii hedge replacement with more suitable native boundary treatment.</p>

6.3 Till Vale

Landscape Character Sub-Area

Key Characteristics

- The Till Vale is flat and low lying with open expanses and panoramic views.
- Large arable fields with few hedge boundaries dominate the landscape.
- The large, channelled drains at the northern edge of this sub-area, and the northern limit of the North Kesteven district, are significant linear landscape features. It is here that boating activity is seen and adds a different land use to the otherwise arable farmed landscape.
- Important and clear views of the higher parts of Lincoln city are taken from the Till Vale landscape character sub-area, and Lincoln Cathedral is a prominent feature of the easterly skyline.
- Woodland is virtually absent, as are significant hedgerows, but lines of Lombardy poplars stand out in the landscape, creating elongated shadows across the arable fields.
- A few farmsteads include modern buildings that lack any distinctive character and the one main road through the sub-area is relatively straight and without boundary features, which increases the speed at which traffic travels though the sub-area.
- The sub-area could be enhanced by adding intermittent planting to the main road, and consideration could also be given to softening the edge of Old Wood, to create a more natural edge.



Detailed Description

Boundaries and Extent of the Landscape Character Sub-area

- 6.3.1 This landscape sub-area lies at the most north-westerly part of the North Kesteven district. The Terrace Sandlands sub-area extends northwards up to Old Wood and the village of Skellingthorpe, but beyond this, the landscape character changes markedly and it is here that the Till Vale character sub-area begins, continuing out of the district and into West Lindsey.
- 6.3.2 The southern boundary of this sub-area from the A46 at Decoy Farm is the northern limit of the parkland to the east of Skellingthorpe, and then the outer limits of Skellingthorpe village, following a drain line that circles the village to the east and north. The boundary then continues to take the drain line westwards to meet Old Wood. From here the obvious boundary is the edge of Old Wood, up to Lound Farm and then across the northern limit of Old Wood.
- 6.3.3 Other than the southern boundary line, the Till Vale character area is artificially bounded by the North Kesteven administrative boundary in all other directions, but the characteristics of this sub-area are seen extending northwards, and indeed the open views to the north are in clear contrast to views back towards the relatively more enclosed and wooded Terrace Sandlands.

- 6.3.4 The Skellingthorpe Green Wedge (GW4) clearly omits a significant green area which reaches from the village itself, beyond the A46 trunk road and into the Swanpool area, deep within the city's urban extent. This area, despite its current importance as a functional green wedge is allocated for development as part of the Western Growth Corridor strategic urban extension of the North Kesteven and Lincoln City Local Plans. The North Kesteven District element of the growth area is undeveloped apart from the A46 itself, and is part of the Till Vale landscape character area.

Topography and Landform

- 6.3.5 In contrast to the more elevated and varied contours of the Terrace Sandlands, the Till Vale is flat and low lying. Large channelled drains are a significant feature close to the administrative boundary of the North Kesteven district. The degree of openness in the Till Vale is an important characteristic of this sub-area, with panoramic vistas of considerable distance. With little foreground detail or interest, the colours are muted greens and browns. The colour of the landscape is substantially influenced by the time of year, because the large expansive fields provide significant blocks of colour, which change the overall scene with passing seasons.



Lines of Lombardy Poplars, seen from Saxilby Road

- 6.3.6 It is from the Till Vale sub-area that important views easterly towards Lincoln are taken, and Lincoln Cathedral is prominent in the skyline. The open nature of the landscape allows such long distance vistas, and an absence of woodland prevents shortened views.

Land Use, Land Cover and Vegetation

- 6.3.7 Large flat, arable fields dominate the landscape and the reduction in hedge boundaries is noticeable. The Till Vale sub-area has a number of lines of Lombardy poplars, which are a distinctive characteristic in the otherwise flat expanse. A small sewage treatment works is the only built development other than agricultural buildings.



Saxilby Road, looking north towards North Kesteven administrative boundary

- 6.3.8 Wildlife interest is reduced in this sub-area, owing to the arable monoculture and lack of natural boundaries that would normally form wildlife corridors across arable land. There is a noticeable reduction in song birds within this sub-area.
- 6.3.9 At the northern limit of the North Kesteven administrative boundary, the channelled Fossdyke is navigable and connects with a new marina in West Lindsey.

Settlement Distribution and Road Pattern

- 6.3.10 Settlement is limited to a few scattered farms, and the farmhouses and farm buildings are generally modern and indistinctive. The main road through the sub-area is Saxilby Road, which is relatively straight and without any boundary features, exacerbating a sense of openness and exposure. As a generally featureless road, the traffic movement on Saxilby Road can be fast and attracts attention through movement in the landscape.

Settlement Character

- 6.3.11 The few farms within this sub-area do not provide any significant sense of place and are typically modern and utilitarian, lacking in character or interest.

Till Vale	
Pressures for change and landscape detractors	Opportunities for enhancement
<p>Agriculture: The sub-area is likely to suffer little pressure for change from its current arable use. The landscape is uniformly large scale agriculture, with little small field pattern remaining.</p> <p>Pressure for the addition of further modern agricultural buildings is possible within this sub-area, as the primary land use continues to be large scale, intensive arable farming. The existing buildings within this sub-area are utilitarian, intrusive and lacking in distinctive character. In such an open landscape any attempt to screen buildings can be more detrimental to the landscape than the building alone.</p> <p>The lines of Lombardy poplars are very prominent in the open expanse of the Till Vale. The extent to which they contribute to landscape character will be a matter of opinion, and it may be argued that the lines of Lombardy poplars are now a characteristic feature of the Till Vale sub-area. They do add some focus and interest in an otherwise virtually featureless landscape.</p>	<p>The open nature of this sub-area is part of its defining character and what sets it apart from adjacent areas.</p> <p>Restoration to smaller field sizes is not realistic in this important area for arable production.</p> <p>Landscape enhancements therefore will be low key and should be carefully planned so as not to dilute the quite dramatic open nature of the landscape of the whole sub-area.</p> <p>Existing buildings do not need to set the standard of design in this sub-area, and much could be done to reduce the prominence of new buildings through appropriate siting, use of material and colouring, whilst still retaining their modern functionality. Siting and orientation of new agricultural buildings should seek to reflect the grain of the field pattern.</p> <p>Simple, low density planting to break up the profile of the development should be preferable to any dense screening, particularly where that would be dominated by non-native species.</p> <p>The removal of the poplars is not therefore considered to be a priority for landscape enhancement. With a relatively short lifespan, the poplars will not necessarily be a long-term feature, and there will be the opportunity for replacement with less visually uniform, more diverse planting features in the future. This could be considered as part of long-term woodland management for the North Kesteven District.</p>

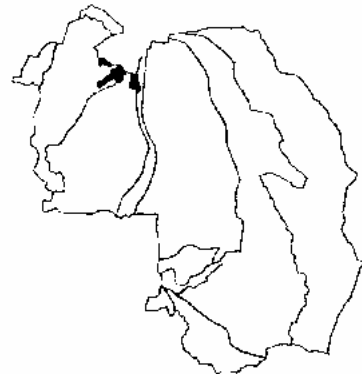
Till Vale	
Pressures for change and landscape detractors	Opportunities for enhancement
<p>Field Boundaries: Large tall hedges are no longer a feature of the Till Vale sub-area, and many of the large fields do not offer any indication of former boundaries at all.</p> <p>A lack of roadside hedging within the Till Vale is a characteristic contrast to other sub-areas.</p>	<p>Whilst the fields are very large within this sub-area, there is still scope for the reintroduction of limited boundary planting to create low and continual hedges that do not detract from the open character of the Till Vale, but make a positive contribution, adding visual diversity and corridor habitat value.</p> <p>Any additional roadside hedging could be concentrated towards the southern end of the sub-area, to soften the contrast between the Terraced Sandlands sub-area and the Till Vale sub-area, but not intrude or alter the open character of the Till Vale.</p> <p>Saxilby Road might benefit from further, carefully planned roadside planting. This should be intermittent and varied to add interest without detracting from the open nature of the vale. Occasional and small stands of tree planting would break up the uniformity of the highway, without losing the open character of the sub-area. Roadside trees would enhance the landscape if irregularly planted at a low density.</p>

6.4 Lincoln Fringe

Landscape Character Sub-Area

Key Characteristics

- *Developed urban areas on Lincoln City's periphery, but which fall with North Kesteven District Council.*
- *Comprise of small areas heavily developed with little 'landscape' distinctiveness.*
- *Present context for urban-rural fringe uses and issues.*



Detailed Description

6.4.1 Three areas within North Kesteven district which lie adjacent to the southern and western boundaries of the administrative area of Lincoln City have been identified as a separate landscape character sub-area. These are the predominantly developed areas which lie in between the four key Green Wedges, and which together define the interface between urban and rural areas. The Green Wedges are described in Chapter 10 and illustrated on Maps 1 and 2. The Lincoln Fringe landscape character sub-area demand only a brief character description given their developed nature. They comprise of the following three areas:

- Brant Road East, in between GW1 (Waddington to Washingborough) and GW2 (Witham Valley);
- Newark and Lincoln Road Estates, in between GW2 and GW3 (Hykeham and Whisby Pits);
- The Whisby Road area, inbetween GW3 and GW4 (Skellingthorpe).

6.4.2 **Brant Road East** is a small rectilinear parcel of low and flat land lying between the south western extremity of the Waddington to Washingborough Green Wedge and the Witham Valley Green Wedge areas. The northern extent is defined by the City boundary and the southern edge by the end of Station Road. It consists predominantly of post war low-density housing estates with primary school and a very small pocket of arable farmland. It has very limited landscape character value.

6.4.3 **Newark and Lincoln Road Estates** is a large area of low density post war suburban housing, interspersed with large schools / college and local services in North Hykeham. A single large supermarket occupies a significant site off Newark Road. This is a low and flat area which displays no strong sense of place or local distinctiveness. Its southern boundary meets with the northern extent of the Witham and Brant Vale, but apart from the visual interface of suburban and agricultural areas, the transition in uses is relatively sudden and reflects the value of the soils on the vale.

6.4.4 The **Whisby Road area** is an irregular shaped urban wedge which lies between the northern edge of the Hykeham and Whisby Pits Green Wedge and the Hartsholme area of the city. Its outer extreme to the west is delineated by the A46 trunk road. It is an area of mixed, large and small business, light industrial, commercial and leisure

uses. Often this is at a relatively low density with large parking or service yards. Car sales showrooms and large public houses and restaurants line the main routes, particularly on the A46. The A46 presents a clear and definite delineation between this urbanised area of the district and the openness of the Terrace Sandlands to its west.

Lincoln Fringe	
Pressures for change and landscape detractors	Opportunities for enhancement
These small areas are not particularly important in the context of the district's landscape character. Their urban uses define their character and change within those uses is to be expected. The interfaces between the urban uses and landscape character types as defined within this study are however significant and important. Those interfaces are well defined at the time of study with little harmful urban fringe extension or influence into adjacent agricultural landscapes or the green wedges.	Opportunities to strengthen the visual boundaries between the character areas and the Lincoln Fringe urban areas should be taken through enhanced, indigenous planting schemes where opportunity presents itself, such as through development within the fringe units. Use of coniferous hedging should normally be avoided.

6.5 Witham and Brant Vales Landscape Character Sub-Area

Key Characteristics

- *Defined in the east by the base of the Lincoln Cliff scarp slope, to the south by the district boundary, the Terrace Sandlands to the west, and the southern outskirts of Lincoln City to the north.*
- *Extensive low lying, generally flat valley of twin rivers Witham and Brant running from the south to north east of the sub-area.*
- *Pronounced landform or topographical variation absent from the sub-area.*
- *Twin, small rivers generally present a very subtle influence on their presence often only notable through riparian vegetation and flooded fields.*
- *Across the sub-area tree cover is limited, but has a disproportionately high influence on the landscape as the level terrain allows hedgerow and copse trees to foreshorten views across the vale, often allowing a strong band of tree and hedge between land and the large skies.*
- *Settlement pattern is defined by attractive, small nucleated and sometimes linear villages of red brick and pantile construction to the central and western extent of the sub-area.*
- *The impact of roads on the landscape is generally low once away from the A17 and A46. As across the study area elsewhere, overhead high and low voltage transmission lines can be prominent.*
- *Pressures for change in the Vale predominately relate to minerals operations, intensive agricultural practice and associated development, and to flood alleviation works*
- *There is widespread evidence of historic field boundary loss, particularly in the east.*
- *Landscape strengthening and enhancement is evident through boundary reinstatement and tree planting across the vale. Increased amounts of set-aside land are also visible within the central and western bands which help soften the landscape and have visibly enhanced biodiversity interest.*
- *Development within and to the edge of the Vale's settlements has generally been delivered having sound regard to local vernacular design and has integrated well with the historic environment.*
- *New development to the south of North Hykeham is prominent within the flat landscape as the vale meets the city.*



Detailed Description

Boundaries and Extent of the Landscape Character Sub-Area

- 6.5.1 The Brant and Witham Vales is a large landscape character sub-area defined primarily by its low, flat landscape of intensively farmed character in the north west of the district. It is delineated in the north by the southern urban extent of Lincoln City around North Hykeham. Its eastern boundary is clearly defined by the dramatic change in topography at the foot of the South Lincolnshire Cliff. It runs the length of the Cliff to the south where the district boundary runs east west, south of, but parallel

to the A17. It then extends to the west as far as Beckingham where it moves northwards skirting the more pastoral landscape around the MoD ranges, and then follows the eastern fringe of the sand and gravel low hills between Norton Disney and Swinderby Airfield in a more convoluted fashion than elsewhere. It then runs parallel with the A46 returning again to North Hykeham.

Topography and Landform

- 6.5.2 This landscape character sub-area displays a general uniformity in topographical and land use respects, but there is notable transition across its extent in three subtle bands running north to south, generally dividing the area into thirds. These can be seen to be the areas east of the River Brant, between the River Brant and River Witham and then west of the River Witham to the fringe with the Terrace Sandlands landscape character sub-area.



Extensive vistas are enjoyed over the Brant and Witham Vale from the upper cliff

- 6.5.3 The sub-area is largely defined by its distinct and extensive low lying and generally flat topography, enclosed by the Lincoln Cliff and the low ridge and sand and gravel ridged undulations aligned generally with the A46. It is a broad valley floor of two small rivers, the Witham and Brant, which both run from the southern edge of the sub-area (and district boundary) north-easterly to their confluence close to South Hykeham. From there the River Witham flows onwards beyond the sub-area boundary, arcing through the Lincoln Cliff gap and the heart of the city and then south easterly through the fens. There is a subtle banded variation in the elevation and undulation of the land, gradually increasing at the extreme east and west fringes of the sub-area. However, elevation is predominantly between 6m to 12m across the central belt, with a gradual terracing up to 15m-25m to the eastern fringe, and again a gentle rise in the west up to 20 metres in places, but here the landform is less regular than to the east.
- 6.5.4 The modest scale of the rivers, low elevation and relief and the extensive flood management infrastructure such as the river embankments along much of the River Witham, result in the river's visual influence on the landscape being less pronounced than might be expected. Views of the water itself are mostly confined to river crossings across the road network. More often the influence of the twin rivers is through continuous ribbons of denser riverside vegetation, particularly willow and other broadleaved trees which belie their course. This is particularly the case for the Brant in the northern part of the sub-area. Elsewhere, more significant structures

such as the sluice control at Blackmoor Bridge or by flooded meadows adjacent to the embankments help reveal the presence of important water courses in the landscape.

- 6.5.5 Elsewhere, surface water drainage is important in the east of sub-area, which displays a more fen-like character. Indeed south-east of Aubourn are two areas known as Aubourn and Marlborough Fens. Here there is a prominent network of straight, engineered drains and dykes creating a rectilinear network across the low-lying vale. Often these act as sole field boundary delineations and contribute to the openness of the landscape. This network is reinforced by a generally larger scale of fields than towards the west.
- 6.5.6 The scale of the landscape across the vale is varied. Often broad vistas, particularly in the east, are afforded by the flat relief, large field size and absence of field boundary hedges. This is also the case in swathes of the sub-area in the central and western bands, but here the picture is more complex. There is a gradual transition in scale of the landscape sub-area from large open and rectilinear in the east to a less regular and slightly more intimate scale to the west. This transition is however subtle and irregular, with small tracts of either larger or smaller scale areas being interspersed within the gradual change. There is an increase in the network of field boundary hedges from east to west of the sub-area, but again this is inconsistent, particularly around the water meadows and mineral workings around Norton Disney, Aubourn and South Hykeham. However, right across the sub-area the influence of hedge and tree cover is important, despite its low density. Lack of elevation or relief means that even relatively distant hedges, hedgerow trees, coppice and plantations define the extent of views, backed only by the Lincoln Cliff in the east and north.
- 6.5.7 Hence there is often a sense of openness to the landscape but rarely any feeling of exposure. It does offer a general level of tranquillity, afforded by the low settlement density, quiet network of rural lanes and protection from the influence of the busy A46 by plantation and the sand and gravel undulations defining the sub-area's western extent.



The northern Witham, backed by woodlands and the distant Lincolnshire Cliff. The influence of the rivers of the Vale is often masked by flood management embankments until vistas are afforded from bridges

- 6.5.8 Key vistas from within and out of the character sub-area are limited by the foreshortening effects of field boundaries, small woodland coverts and watercourse levees on an otherwise low and level area. However, views up to the Lincoln Cliff, defining the eastern boundary, are extensive from much of the area, although the impression of elevation is not as pronounced from below as it is from on the Cliff itself. Elsewhere the impact of the water vapour plumes from Trent and Humber power stations to the north is often marked, particularly in clear sky conditions. Within the vale, vistas tend to open and close dependent on the relative density of tree cover and embankment. Views of the settlements are normally restricted to the outer limits of built development and to the rich variety of parish church spires and towers, as the lack of relief prohibits views over or across the villages.

Land Use, Land Cover and Vegetation

- 6.5.9 Outside the settlements of the central band, the character area is dominated by agricultural land use. This is predominantly arable in nature, but there are significant areas of rough pasture and grazing, particularly towards the western band of the area. The grazing areas tend to be associated with riverside meadows where fluvial flooding occurs or is managed, or at the fringe of the character area adjacent to the MoD firing ranges in the south-west segment of the area close to its boundary with the Terrace Sandlands. Within the grazing pastures, field boundaries are of a mixture of low hedges and post and wire or post and rail fencing. Elsewhere across the area mixed hawthorn and blackthorn hedges with frequent mature hedgerow trees of ash and oak dominate once away from the ditched field delineations of the eastern band at the foot of the Cliff. Field pattern is regular and large in scale to the eastern 'fen' band and to the south of the central band around Brant Broughton. Here, field boundary is predominantly ditch with some hedgerow, often low and heavily clipped. As distance is increased away from the foot of the Cliff, the field pattern very gradually alters to a denser cover of hedgerow boundary and hedgerow trees around a network of smaller fields. Further west, towards the Terrace Sandlands and A46 corridor, the rectilinear subdivision of fields gives way to a more random pattern, reflected also by the lane network. Here, the field size is also more confused, with some larger areas devoid of strong field boundary, possibly belying past minerals working around Norton Disney in particular. However in that particular case the scale of the workings is well screened by the absence of elevated vantage points.



Wide vistas to the east across the Vale near to Norton Disney where the landscape texture is a notably rougher mix of arable and pastoral uses than within its eastern band

- 6.5.10 The predominance of arable farming is notable across the vale, and the relatively low concentration of significant agricultural complexes suggests large sub-areas with intensive modes of operation. Soils are notably dark in the eastern band and hedgerow depletion is evident suggesting further high intensity vegetable crop production.
- 6.5.11 Trees in the landscape are not restricted to hedgerow trees, although those are important contributors to local character. There is a wide scattering of generally quite small copse and woodland within the vale, mainly of mixed deciduous nature. In particular there is a notable concentration of smaller coverts in the central band in the vicinity of Aubourn and Bassingham, and along parts of the Brant riverside. In the northern parts of the area there are occasional poplar osiers and coppice, which are infrequent but are notable in their regularity of planting and tree profile. As with the hedgerow trees, these coverts and copses play an important role in breaking up the otherwise relatively featureless vale. Even from some distance the woodlands can punctuate the landscape and foreshorten views.
- 6.5.12 The intensity of the agricultural activity and its wider importance to the local economy is apparent through the presence and significant visual intrusion of intensive poultry barns and the industrial scale feed producer sub-areas adjacent to Hopyard Lane, north of Brant Broughton. Despite some attempt at bund walling and planting, these developments are prominent in the flat and open landscape in which they lie. These are significant visual interruptions and are also highly visible from upon the Cliff to the east.
- 6.5.13 To the western fringes of the area sand and gravel workings also present an interruption to the predominance of agricultural land use. These are located to the north and west of Norton Disney but from within the area the low lying land and use of bund walling helps screen the workings themselves. Views in to the works are sometimes possible however from the sand and gravel ridge which delineates the adjacent landscape area of the Trent Sandlands. Here the plant buildings are more prominent but tend to be viewed against the large mixed woodland plantations of Stapleford Wood and Norton Big Wood, lessening their harmful visual impact.
- 6.5.14 The influence of infrastructure within the area is restricted mainly to flood management works and to the crossing of the vale by the prominent high voltage power lines and their pylons. The impact of the water management works is limited because of their vegetated banks, although their engineered profile and foreshortening of longer vistas does have a de-naturalising effect on the character of the vale. The pylons and cable are, however, highly intrusive and the effect is emphasised by the march of the pylons and towers from the crest of the cliff at Boothby Graffoe north-west across the vale. The impact of this infrastructure on the landscape is significant at the area scale, but the pylons can be particularly dominating when viewed from closer range. The flat landscape means that the lines and pylons are rarely 'softened' against any significant backdrop, apart from the Cliff, which offers only a slight lessening effect.

Settlement Distribution and Road Pattern

- 6.5.15 Settlement on the vale is characterised by small and medium scale villages concentrated in the area between the twin river courses. Only Stapleford Norton Disney and South Hykeham lie to the west of the Witham, whilst there is significantly no notable settlement to the east of the Brant on the low lying remnant fenland.

Stragglethorpe, Brant Broughton, Carlton-le-Moorland, Bassingham and Aubourn all lie between the two rivers and are dependant on flood management embankments.

- 6.5.16 The influence of Lincoln City to the northern tip of the landscape sub-area is marked. Here the settlement of North Hykeham, contiguous with the City itself, defines the northern extent of the character sub-area in a relatively abrupt transition from open arable vale landscape to suburban and urban housing estates, commercial development and urban roads network. Elsewhere the influence of settlement is important within the central band of the sub-area, where five villages or hamlets lie between the two rivers. They are Stragglethorpe, Brant Broughton, Carlton-le-Moorland, Bassingham and Aubourn. These are villages of notable character but generally are unremarkable in a wider landscape sense because of the very low variation in elevation and relief.



The abrupt rural-urban interface at North Hykeham is typical of the city and countryside's meeting across much of the northern parts of the district

- 6.5.17 The orientation of road network reflects closely the rectilinear field pattern and generally aligns parallel with, or at right angles to, the flow of the twin rivers in a loose grid network. This grid becomes less pronounced to the north and west of the area. To the east of the Brant and Broughton Lane/Low Road which runs close to it, there are no north-south road links across the 'fen', only east-west links which ascend the cliff to its distinctive ridgeline settlements.

Settlement Character

- 6.5.18 The vale's villages are an important part of the landscape character but are never dominant in the landscape. Low relief prevents extensive vistas across the settlements, as does tree cover, which although not heavy, often serves to screen the interface between developed and agricultural land.



Low relief and tree cover often result in a 'soft' visual edge to vale villages. Stapleford

6.5.19 The settlement form of villages on the vale is either nucleated grids for the larger settlements, such as Carlton-le-Moorland, Brant Broughton and Bassingham, or linear in emphasis for the smaller settlements, such as Aubourn and South Hykeham. Red brick dwellings with pantiled roofs are predominant building materials, although most settlements also contain a significant proportion of dwellings of white painted render, as well as blue slate roofs. The villages do possess a strong sense of place, with post-war development generally being well integrated with the historic fabric and layout. This is particularly notable in respect to new development in Aubourn. A consistent feature within the vale is the variation and visual quality of the parish churches. With a mix of spires and towers the churches often present the first indication of settlement on the vale from approaching roads and lanes.

Witham and Brant Vale	
Pressures for Change and landscape detractors	Opportunities for Enhancement
<p>Agriculture: Intensive arable farming in eastern areas resulted in loss of hedgerows and hedgerow trees, weakening definition between fields and roadsides.</p> <p>There is a great deal of <i>positive</i> change visible across the vale in terms of landscape enhancements. There is widespread evidence of field boundary strengthening through hedgerow and tree planting.</p>	<p>Integrate relevant landscape character restoration objectives, such as field boundary strengthening into agri-environment schemes such as Farm Stewardship Schemes. Seek planning gain opportunities through development proposals.</p>

Witham and Brant Vale	
Pressures for Change and landscape detractors	Opportunities for Enhancement
<p>Landscape and ecological enhancements are also evident (with farmland species such as hares, partridge, fieldfare, larks, buntings and short-eared owls present) through a widespread adoption of agricultural set-aside practice within and around field margins, particularly between the Brant and Witham.</p> <p>Agricultural development in the form of large barns, silos and farmsteads and straw / hay bale storage can be significant in the landscape. Insensitive landscaping of such development through use of leylandii hedges and other non-indigenous species can present harmful and significant interruptions to the landscape.</p>	<p>Biodiversity enhancements across these areas are evident and should be further developed in line with LBAP priorities.</p> <p>These enhancements serve to provide needed variety in the texture and colour of the vale in contrast to the monotone, intensively cropped and improved land.</p> <p>Seek to integrate new agricultural development in line with sound countryside design principles, and screen with sympathetic landscaping schemes on and off site, utilising indigenous species. Seek to resist development of uses not requiring an open landscape location.</p>
<p>Housing Development: To northern fringe of the area where pressures for more sustainably located housing is resulting in new interface between Vale and North Hykeham.</p> <p>On-going need to address locally arising housing demand in smaller Vale settlements.</p> <p>Potential for growth in urban fringe uses or pressures</p>	<p>Continue to demand high standards of design in housing, reflecting sense of place and respecting field pattern and existing boundaries where possible. Variety in materials and building design will serve to reduce the impact of the new urban-rural interface and add character to the development.</p> <p>Carefully control 'traditional' urban-rural fringe uses with the new boundary areas where pressure will be acute for access and recreation and other 'space' demanding activity and landuse.</p>
<p>Infrastructure: Maintenance and upgrading of flood defence infrastructure and improvements particularly in the northern Vale.</p> <p>High voltage power lines cross the northern Vale.</p>	<p>Seek where possible to reduce visual intrusion of flood defence infrastructure through less 'engineered' embankments and allow more naturalised riverside vegetation to flourish</p> <p>Engage with National Grid company to investigate potential for 'undergrounding' strategy</p>

Witham and Brant Vale	
Pressures for Change and landscape detractors	Opportunities for Enhancement
Minerals operations: Sand and gravel in west of Vale, on-going operations and plant noise, associated bund walling and transportation, all serve to have some negative impacts upon the Vale landscape.	Seek aspirational 'net gain' restoration schemes, secured under planning consents which serve to restore landscape character features and strengthen character and biodiversity value consistent with established character.

7. Lincoln Cliff Regional Landscape Character Type

7.1 Lincoln Cliff Landscape Character Sub-Area

Key Characteristics

- *The Lincoln Cliff Scarp landscape sub-area follows the limestone escarpment running north-south. The escarpment continues beyond the North Kesteven district both to the north and south.*
- *A dramatic topographical feature in the context of the wider district.*
- *After the physical slope itself, it is the villages, the countryside between the villages, and the considerable and varied treescape that form the key characteristics of the Lincoln Cliff Scarp.*
- *Villages along the scarp are generally located on its crest. Much of the building material is limestone, with some red brick. Large limestone walls curve around the network of winding village lanes and red pantiled roofs stand out against the yellow limestone.*
- *Church towers and spires from the scarp villages are a prominent feature on the skyline along the slope.*
- *Large mansion houses and halls are a striking and consistent feature along the ridge villages, taking advantage of extensive panoramic views over the Witham and Brant Vale.*
- *The scarp itself is often intimate and enclosed in character, mainly influenced by the villages, tighter field pattern extending in linear bands up the slope, boundary integrity and significant tree cover.*
- *The landscape has variety in texture and colour, with the patches of broadleaved woodland playing a major role in the colour variations, alongside glimpses of the yellow limestone of the scarp villages.*
- *Variations in scarp slope direction affords greater visual interest in the form and lines of the landscape, particularly at Wellingore's 'buttress'.*
- *The 'double cliff' at Leadenham is an important characteristic at the southern end of the landscape, where the escarpment splits and presents a flat intermediate area of land between a lower and upper slope. Whereas many of the ridge line villages sit high on the slope, Leadenham village nestles on the flat terrace between the lower and upper slopes at this point. The upper slope is not clearly apparent from the lower vale, and similarly the lower slope is hidden when this double feature is viewed from the plateau above.*
- *The northern end of the Lincoln Cliff Scarp varies in character, and represents a contrast to many of the features of the slope generally. Here the slope is a mixture of arable and pasture fields, more open in nature with a considerable reduction in tree cover.*



Detailed Description

Boundaries and Extent of the Landscape Character Sub-Area

- 7.1.1 The boundary of the Lincoln Cliff landscape sub-area is generally defined by the ridge and foot of the scarp slope itself. At the southern end of the sub-area a wider line is taken to encompass the important setting of the Leadenham 'curve' and a double slope feature in the escarpment.
- 7.1.2 The northern end of the sub-area is artificially defined by the North Kesteven administrative boundary. In fact the green finger of the scarp continues further north into Lincoln city, but its character is altered somewhat by the use of the land as a golf course.
- 7.1.3 The eastern boundary of the sub-area, where the top of the scarp meets the plateau and adjoins the Limestone Heath landscape sub-area, is generally concurrent with the A607 as far as Navenby. Local deviations from this road are seen on the sub-area map where the landscape character does not conform to the line of the road.
- 7.1.4 At Navenby the Pottergate Road takes the eastern boundary of the landscape sub-area down to the eastern side of Leadenham. The escarpment continues out of the North Kesteven district to the south and the sub-area is therefore bounded at its southern end by the administrative boundary.
- 7.1.5 The returning boundary line at the base of the slope from south to north is not so obviously defined, without the benefit of a road close to the change in topography and character as is to be found on the higher eastern boundary line. The western delineation starts at the administrative boundary below Leadenham, and here the sub-area sees its broadest point, to take in the double terrace of the escarpment at Leadenham, and also to enclose the important setting of the historic Leadenham village.
- 7.1.6 The boundary then follows the bottom of the slope to Wellbourn, where the line skirts along the western fringe of this village and its historic features, situated on the lower part of the slope. Following the base of the slope to Wellingore, the sub-area and boundary then expands to include the buttress curve in the limestone escarpment on which Wellingore village is located. The boundary then follows the base of the slope again as it curves back towards Navenby. The narrower and steeper slope of the cliff seen in the northern half of the sub-area is then reflected in the boundary line proceeding north, following the bottom of the slope but capturing the settings of the ridge line villages of Boothby Graffoe, Coleby and Harmston.
- 7.1.7 The lower part of the slope then broadens out at the northern end of the sub-area, and the sub-area therefore opens out to take in the lower and gentler part of the slope. It is here that a clear boundary is defined at the divide between Lincoln's suburban fringe and the agricultural landscape of the cliff, and the North Kesteven administrative boundary is rejoined at this point.

Topography and Landform

- 7.1.8 The sub-area is one of the most obviously distinctive within North Kesteven, consisting of the more-or-less unbroken slope or 'cliff' between the lower vale and higher plateau. It is defined by its topographical characteristics and its transitional

qualities. The change in elevation from the low lying Witham and Brant Vale in the east, to the plateau of the Limestone Heath to the west, occurs entirely within the narrow sub-area. At a height of between 80 and 100m, the cliff is a considerable feature when compared to the low lying Witham and Brant Vale at around 10m elevation. This rise in level occurs over a small distance, mainly over less than 1.5 km, with the slope taking a flat 's' form, gently concave at its foot, with steep middle sections and a gently convex upper reach to its ridge. Running in a north south direction, this limestone escarpment is a renowned and locally valued landscape feature. From the westerly facing slope views of considerable distance are possible over the low expanse of the Witham and Brant Vale and beyond into North Lincolnshire and Nottinghamshire.

- 7.1.9 Views both towards the cliff and in particular, views out over the vale from the cliff, are of considerable scale. The views from the cliff present possibly the most important vistas within the district. When travelling from the plateau in the west, the treescape and gently convex ridge obscures the view of the lower vale until emerging from the trees and beyond the crest itself. The view then opens up dramatically to reveal the expanse of the low vale.



View west from the Cliff above Wellbourn

- 7.1.10 Curves in the line of the scarp, most noticeably at Wellingore and Leadenham, present buttress features to the limestone escarpment strongly rising above the vale below before curving back to the general north south direction. At these points the hedgerows running down the slope appear to fan out to the base, and the villages of Wellingore in particular can be more clearly seen, although still somewhat veiled by swathes of trees. The buttress at Wellingore retains a single slope, whereas further south at Leadenham the cliff presents a very distinctive upper and lower slope, with an intermediate flat terrace, appearing as a narrow and hidden shelf in the escarpment.

Land Use, Land Cover and Vegetation

- 7.1.11 Land use along the slope is predominantly pasture land, usually with good condition and generally continuous hedgerows. Occasional arable fields are seen on the lower

slopes where the scarp raises, gently at first, from the mainly arable and larger fields of the vale below. Field boundaries are bolstered by additional post and wire fencing to create safe enclosures for livestock. Most of the actual farmsteads are located either at the top or the bottom of the slope, although a small number are present on the slope itself. The use of the pasture land for horses appears to be slowly increasing, and this brings additional landscape detractors.

- 7.1.12 Trees are a major landscape feature within the Lincoln Cliff Scarp sub-area. The majority of the scarp woodland is broadleaved, which provides attractive variations throughout the year. This is in contrast to much of the woodland within the Terraced Sandlands landscape sub-area, which is one of the other more wooded areas within the North Kesteven district, but where the large plantation woodlands influence the character of the sub-area and its colour. In some places the treescape is continual across the top of the slope, and in others there are regular woodland clumps, creating a very varied skyline. Hedgerows are thicker and slightly taller than those seen on the lower Witham and Brant Vale, and most fields are elongated down the slope, with the effect of a continual ladder of hedgerows running from the higher slope down into the vale. Where the scarp takes a curve and splays out into the vale, small woodlands occur in the hollows as the scarp returns to its north-south line.
- 7.1.13 Consequently the Cliff itself is much more varied than its eastern or western surrounds, particularly to its southern reaches, often offering enclosure and intimacy. This is primarily because of the varied and significant treescape, which in turn presents a varied skyline, but also as a result of the quite intimate and nucleic nature of the scarp villages. After the topography itself, the treescape and villages are very important defining characteristics for this landscape sub-area.
- 7.1.14 The trees and villages are important in terms of the colour and texture of the landscape sub-area. Mature trees are frequently clustered around into the villages, and tree cover spills down the slope amongst a network of significant hedgerows. 'Layers' or bands of trees can be viewed from the top to the bottom of the slope, with significant tree cover at the top of the scarp, and scattered clumps, or hedgerow trees frequently occurring as the slope flows downwards. Amongst the trees glimpses of the villages are often seen, and the yellow limestone walls, red pantile roofs and tall chimneys stand out from within this softening cover. The extent and detail of each village is often not seen until entering the villages themselves. Much is hidden from more distant vistas, although when viewed from the vale, the various spires and towers from village churches emerge from the trees and pierce the skyline to indicate where the villages lie. Again the great variation in churches and their towers and spires, as seen across the North Kesteven district generally, adds to the interest and sense of place.
- 7.1.15 Whilst the Waddington airbase is located on the higher plateau and outside the Lincoln Cliff Scarp landscape sub-area, it does influence the landscape character and feel when in its vicinity along the cliff ridge in the north. At the very northern end of this landscape sub-area, as the slope runs towards the city of Lincoln, the scarp is allocated as green wedge within the North Kesteven Local Plan 2007. Here the slope itself is devoid of settlement and runs northwards as a narrow finger of green bounded by suburban settlement both at the foot of the slope and on the plateau. Along this green finger the field pattern becomes more varied, and more arable agriculture is introduced alongside the pastures, and acts as an important landscape backdrop and informal recreation asset to the Lincoln city fringes.

- 7.1.16 Similarly at the southern end of the sub-area the agricultural use of the land becomes more mixed on the flat terrace between the upper and lower slopes of the cliff at Leadenham, taking advantage of the richer soils that occur above the limestone on this intermediate plateau. The treescape around Leadenham is quite distinctive, and contributes to the double slope feature in that it hides either the lower or upper slope from view when a view is taken from the other. Specimen trees around the major houses and halls of the cliff, such as fir and cedar are occasionally dramatic and highly attractive landscape features of the cliff.

Settlement Distribution and Road Pattern

- 7.1.17 The settlement pattern across the Lincoln Cliff Scarp sub-area is distinctive, comprising clustered villages along the ridge. The villages are in fact quite regularly spaced along the slope, although the elevation of each village does vary, with some concentrated almost on the plateau and others, particularly Welbourn and Leadenham located further down the slope. Navenby extends into the higher plateau at the top of the slope slightly beyond the ridgeline, and Waddington is almost entirely situated on the plateau with only its most westerly fringe dipping onto the slope itself and hence being included in this landscape sub-area. Leadenham is uniquely located on the flat terrace between the upper and lower slopes of the cliff. The village of Leadenham is larger than most of the other villages along the slope, and Leadenham Hall benefits from a well located position at the top of the lower slope.
- 7.1.18 Road patterns within the scarp villages are a tight network of small lanes, reflecting the nucleic nature of the villages. Across the scarp as a whole, the roads are a regular and repeated pattern of routes running straight up and down the cliff in an east-west direction from Broughton Lane in the vale to the main A607 road to Grantham, which runs along the top of the slope at the plateau's edge. These roads run at regular intervals wherever a village occurs on the slope, to connect each village with the two main roads to the west and east of the Lincoln Cliff Scarp. Connections between the villages other than the main A607 road are virtually absent. At Wellingore the A607 dips down from the plateau to the lower part of the slope, where it is known as Cliff Road.
- 7.1.19 The road pattern prevents any significant vehicular travel across the scarp itself, with the roads running parallel to it at, or close to, its foot and across the crest, linking its settlements.

Settlement Character

- 7.1.20 The ridgeline villages are often of relatively high density, with clusters of houses knitted together around a network of small lanes. Mature and aging trees are a significant feature of the scarp villages, adding to their sense of history and character. The density of trees renders many of the villages very inward focused, and this is amplified by central features such as small village greens.



Typical high estate walling in Leadenham village

- 7.1.21 Much of the older sections of the scarp villages are predominantly built from limestone, although some red brick is evident. Red pantile roofs or blue slate roofs are usually topped with tall chimney stacks. Limestone walls curve alongside the village lanes, often obscuring the full extent of housing clusters.
- 7.1.22 Areas of post war housing within the ridgeline villages are occasionally slightly unsympathetic to the older village core character. It is evident however from some of the very new development, where greater attention is now being paid to dwelling design that a strengthening of character is being achieved.
- 7.1.23 A number of the scarp villages also hold fine large historic houses, such as Wellingore Hall which usually stand with more prominent views over the vale, and consequently can be seen emerging from the trees when the slope is viewed from the lower vale. It will be important that future development respects the importance of such buildings and their settings and significant landscape features.

The Lincoln Cliff	
Pressures for change and landscape detractors	Opportunities for enhancement
Increased Sensitivity to Change In comparison with other character units within the North Kesteven District, the Lincoln Cliff is particularly sensitive to the visual impact of new development, and is unlikely to accommodate any significant non-residential development without causing harm to landscape character, unless the design of the development was exceptional and an exposed location justified. The striking topography, pattern and character of the villages, within their wider countryside setting would be significantly harmed through poorly located new development.	Careful consideration of new development within the ridgeline villages will be necessary, to ensure that new buildings serve to enhance the distinctiveness and sometimes significant charm of the villages. Retaining their close and nucleic character will also be important, whilst protecting important open spaces therein. Significant extensions to the villages, which would spread out into the undeveloped countryside in between should be avoided, to maintain separation and identity. Extension, if necessary, should be towards the east and the Limestone Heaths character area.

The Lincoln Cliff	
Pressures for change and landscape detractors	Opportunities for enhancement
<p>Settings of Ridgeline Settlements The ridgeline villages are very distinctive in terms of setting and built environment, and some of their character has been eroded by newer development that does not sit well with the historic traditional dwellings.</p>	<p>Residential development where opportunities arise within the tight village envelopes can be accommodated with considerable attention to design detail and reflection of local character.</p>
<p>The settings of Leadenham and Wellingore in particular are very important to the character area. Any significant expansion of Leadenham which would be likely to harm its setting and relationship with the cliff's 'middle shelf' should be resisted, and any expansion of Wellingore on to the scarp slope would dilute its prominent and distinctive character and form.</p>	<p>All cliff villages, but particularly Leadenham and Wellingore, require specific consideration in future spatial planning policy to ensure that it does not expand in such a way as to harm or dilute their setting and interrelationship with the topography of the cliff and associated tree cover.</p>
<p>Treescape Treescapes across the cliff are critical landscape features. Wellingore, Navenby and Leadenham villages are particularly reliant upon their surrounding treescape in terms of setting and views in and out of the villages. Their on-going management to ensure longevity and retention of their visual importance is critical to landscape character and value. Unsympathetic and 'urbanising' use of leylandii type hedges, particularly to the northern ridge villages.</p>	<p>Long term planning for the continuation of the trees framing the area's villages is necessary. Ensuring that a continued and mixed age structure prevails in the woodlands by favourable management, and similarly ensuring a continued line of planted village trees, or specimen trees such as cedar, to replace the older ones as they are lost, is an important management and enhancement objective for this sub-area.</p> <p>Leylandii type hedging should be avoided and where possible removed. But other non-native species such as cedar, encouraged where appropriate and closely related to the villages themselves.</p>
<p>Green Wedge Function The section of Green Wedge at the northern end of the Lincoln Cliff Scarp landscape sub-area is a distinctive wedge that has the topographical and vegetation cover characteristics and interest of the scarp generally, but without settlement. The openness here is very important to the character of this area of the cliff. However, its location immediately south of the city of Lincoln and immediate proximity to North Hykeham and Bracebridge Heath is likely to place it under considerable pressure for future residential development.</p>	<p>The retention of this area of considerable landscape importance as a Green Wedge, allowing protection against the pressure from suburban expansion to meet housing demand, should remain a core element of future spatial planning policy.</p>

The Lincoln Cliff	
Pressures for change and landscape detractors	Opportunities for enhancement
<p>Infrastructure The ridgeline of the character area is likely to prove an attractive location for telecommunications equipment, such as mobile phone masts. The sensitivity of the ridge means such development could be particularly harmful to the landscape character and integrity.</p>	<p>The addition of prominent telecommunication infrastructure across the Lincoln Cliff is a further pressure that is likely to erode the special character of this sub-area and therefore requires specific and firm policy protection in spatial plans to ensure insensitive development can be resisted in order to protect landscape quality. Careful consideration should be afforded to measures such as 'sky-lining', mast sharing and positioning of infrastructure on existing buildings rather than new masts.</p>
<p>Field Pattern and Boundaries The field boundary hedgerows running up and down the slope are a striking feature of the character area when viewed from the lower vale. In some locations however, these hedges are 'gappy' and poorly managed.</p>	<p>Distinctive hedgerow patterns should be restored and gaps filled in wherever possible. The Local Authority might consider the possibility of introducing a hedgerow management and restoration grant scheme for landowners to undertake the necessary restoration planting within the character area.</p>

8. Central Plateau Regional Landscape Character Type

8.1 Limestone Heath Landscape Character Sub-Area

Key Characteristics

- *This is a large landscape character sub-area situated in the centre of the District between the ridge of the Lincoln Cliff and the Central Clays and Gravels to the east..*
- *Its position on the upper reaches of the cliff's dip slope gives it a feeling of relative elevation and exposure.*
- *It is predominantly an empty, open landscape with wide views to the skyline in all directions.*
- *The landform is a gently undulating plateau which dips gently towards the east.*
- *Generally the whole area is dry, with no obvious surface drainage as a consequence of the underlying limestone geology.*
- *Scattered woodland copses pepper the whole of the sub-area, which although relatively small are prominent features because of the openness of the landscape.*
- *Roadside hedgerows are often found with mature trees within.*
- *Limestone dry stone walls are apparent along roadside and some field boundaries, but are generally in poor condition.*
- *Fields are very large and rectilinear. Field boundaries are often absent, broken or delineated by a strip of rough grass or remnant hedgerow or wall.*
- *The soil colour is a striking reddish brown colour with visually prominent stone content giving it a rough texture.*
- *Intensive arable agriculture dominates land use with wheat and root crop common.*
- *The central plateau area is generally unsettled except for isolated farmsteads and occasional ribbon development along the A15. Larger settlements are situated on the edge of the sub-area characterised by having historic cores with limestone buildings but often surrounded by significant levels of 20th Century development.*
- *Utility Infrastructure, which although sparse, makes an impact on the landscape including prominent pylons and the main A15 running north to south.*
- *RAF installations have made a significant impact on the landscape sub-area with several large bases and training centres.*
- *Mineral working is a feature of the sub-area with several large limestone quarries.*
- *Pressures for change on the Plateau predominately relate to minerals operations, decline of field boundaries, particularly walls, and intensive agricultural practices.*
- *Opportunities for landscape strengthening and enhancement mainly lie in field boundary reinstatement, particularly of dry stone walls and for more appropriately designed development on the outskirts of settlements.*



Detailed Description

Boundaries and Extent of the Landscape Character Sub-Area

- 8.1.1 The Limestone Heath is a large landscape character sub-area situated in the centre of the District, characterised by its elevation and openness and large intensively farmed fields. The sub-area is delineated in the north by the top edge of the scarp slope (i.e. Lincoln cliff) before it drops down into Lincoln City. To the west the top of the scarp slope again makes an obvious topographical boundary, running from Bracebridge Heath south to Leadenham. The eastern boundary with the Central Clays and Gravels landscape character sub-area roughly follows the line of the railway and the B1188. The south-western boundary follows the A17 west of Sleaford before turning southwards just north of North Rauceby to join the B6403 Ermine Street just north of Ancaster.
- 8.1.2 There is a continuation of this landscape sub-area to the north of Lincoln (i.e. to the north of the Lincoln gap in to West Lindsey District). The character sub-area displays a great deal of uniformity in topographical and land use respects.

Topography and Landform

- 8.1.3 The landform consists of an open, gently undulating plateau with the gradient sloping down from west to east (approx 80m down to 25m). The ridges and dips run in an east-west direction following shallow 'dry' valleys, and this is particularly apparent when travelling along the A15 which falls and rises with the topography. Towards the west, the ridge of the Lincoln Cliff makes a prominent skyline with woodland copses outlined against the sky. There are extensive 360° views throughout the sub-area afforded by the generally low relief, large field size and absence of field boundaries. The sense of relative elevation is obvious and the general lack of tree cover or other features accentuates the feeling of exposure and emptiness.
- 8.1.4 Generally the whole area is dry with no natural waterbodies and no obvious, surface drainage due to the underlying pervious limestone, though some streams rise on the eastern fringe of the sub-area.
- 8.1.5 A key vista is the view from the northern end of the landscape sub-area on the edge of the scarp, in the Canwick area, where there is an excellent view of Lincoln City and the Cathedral.
- 8.1.6 The soil within the landscape character sub-area is notable for its reddish-brown colour with and obvious limestone fragments content giving a rough texture. The intensive arable use of the fields and absence of boundaries results in this becoming seasonally significant within the landscape.

Land Use, Land Cover and Vegetation

- 8.1.7 The landscape sub-area is dominated by agricultural land use. The farming practice here is almost entirely arable farming, consisting of cereal and root crops grown in large rectangular shaped fields. Some fields appeared to be in 'set-aside', characterised by a rougher and unkempt appearance.

- 8.1.8 Notably, there are many mature trees within the roadside hedgerows often with ivy clad trunks indicating that they maybe becoming over-mature. The roadside hedgerows are often tall (approx. 1.5 -2m in height) with broad grass verges in front. The hedgerows along the field boundaries tended to be lower, sparser and less well kept. Dry stone walls are a feature of this area, making use of the local limestone resource, both along the roadsides and occasionally along field boundaries though many are in poor repair.



Copse near Ashby de la Launde

- 8.1.9 There are a number of small copses, mostly broadleaved, throughout the sub-area which because of the general openness of the landscape are prominent and make important features. The copses often abut the many scattered farmsteads and agricultural buildings.
- 8.1.10 There is little evidence of industry or commercial activity except on the outskirts of the larger settlements such as Waddington and Bracebridge Heath. There are several active stone quarries at a number of sites including Scopwick, Dunston and Harmston Heath, which is operated as a waste disposal site. These are generally well screened by earth bund walls and landscaping and therefore not immediately obvious in the landscape. There is also evidence of a number of small scale abandoned quarries and minerals workings which have become naturalised and overgrown.
- 8.1.11 Obtrusive infrastructure elements are present in the two lines of large pylons and high voltage electricity cables running across the landscape to the eastern fringe of the area and also across its south-west quadrant. Radio masts at RAF Digby are also prominent but relatively concentrated in area. The flat and open landscape does not afford any softening landscape backdrop and so their prominence is emphasised and visually significant from relatively long distances.



Open landscape and dry stone wall boundaries near Scopwick Heath

- 8.1.12 RAF establishments are a current and important historic feature of the area within the open, exposed and largely flat landscape being highly suitable for airfields. They include the large air base at RAF Waddington which has a number of very large aircraft hangars; the RAF camp and radio installations at RAF Digby; and the training centre with its imposing central building and gates at Cranwell. There is also evidence of abandoned airfields and associated buildings.

Settlement Distribution and Road Pattern

- 8.1.13 There are very few settlements in the central parts of this landscape character sub-area and the lasting impression is of an empty landscape. There are a few isolated farmsteads and agricultural buildings and occasional sporadic ribbon development along the A15. The settlements that are present are on the fringes of landscape sub-area including Waddington, Bracebridge Heath and Branston. These are large villages close to the edge of Lincoln City and as a result have absorbed significant housing development over recent years.
- 8.1.14 The road pattern is distinctive with the straight main road (A15) running from north to south (Lincoln to Sleaford) dividing the character sub-area in two and acting as a central communications spine, with straight and parallel minor roads dissecting the area into a grid pattern, running generally north-east to south-west. This distribution becomes slightly more diluted towards the southern parts of the area where the minor road network loses some of its straight line emphasis, but generally retains the grid character. Minor roads are characterised by wide grass verges, normally to one side of the metalled highway.

Settlement Character

- 8.1.15 The few settlements in the area have historic cores characterised by dwellings built of limestone with pantiled roofs. However, newer development is very mixed both in design and the materials used. Branston has a large attractive historic village centre set in a dip of the landscape but is now surrounded by newer development. The only other settlements of any size in the sub-area are Ashby de Launde and Bloxham which are attractive estate villages with old manor houses and distinctive cottages. Both are framed by attractive treescapes to give an enclosed, intimate setting in

contrast to surrounding open landscape. Ashby de Launde has a prominent church steeple and water tower.

Limestone Heath	
Pressures for change and landscape detractors	Opportunities of Enhancement
<p>Agriculture: Intensive agricultural activity has led to the removal or neglect of field boundaries of hedgerows or limestone walls.</p> <p>Walls are a particular feature of the sub-area but many are now in a poor state of repair or have been lost altogether.</p>	<p>Replacement hedgerow planting where these have been lost or degraded.</p> <p>Reinstatement and repair of the dry stone walls. Consider introduction of a district-wide walling repair grant scheme or introduce as a core element of farm agreements within DEFRA agri-environment schemes.</p>
<p>Housing development: Housing development on the edge of settlements has sometimes resulted in intrusive features because of the open and exposed nature of the surrounding landscape.</p> <p>Inappropriate, non-vernacular materials have been used in recent housing developments (e.g. red bricks and tiles)</p>	<p>Better design solutions should be encouraged through the planning process which seeks to deliver more sensitive interface between the settlement and open character of the landscape sub-area. Rigid building lines, uniform building design should be avoided, and better landscaping of indigenous tree belts and appropriate boundary treatment, such as dry stone walling, should be encouraged.</p> <p>Appropriate local material mixes should be used such as limestone for walling and clay pantiles for roofing, particularly at settlement edges.</p>
<p>Infrastructure: A number of power lines and pylons traverse the unit and are particularly dominant because of the openness of the landscape.</p> <p>There are several large limestone quarries e.g. Blankney, Brauncewell and Metherringham and an inert waste landfill site at Harmston which are potential detractors from the landscape.</p>	<p>The visual impact of pylons is difficult to counteract at the present time but long-term under-grounding solutions should be investigated in partnership with the electricity distribution companies and National Grid Company.</p> <p>Whilst the mineral extraction sites are generally well screened, additional tree planting would improve their setting and reduce harmful visual impact.</p>

Limestone Heath	
Pressures for change and landscape detractors	Opportunities of Enhancement
<p>MoD: The large RAF establishments in the unit make a major visual and aural impact on the landscape, with massive aircraft hangars, large concrete runways, tall radio masts and large perimeter fences.</p>	<p>There are steps that could be taken to improve the dominant appearance of the RAF establishments, such as additional tree and hedge planting around some buildings and around and away from the perimeter fences. Habitat friendly limestone grass management regimes should be investigated within base boundaries.</p>

8.2 Rauceby Hills Landscape Character Sub-Area

Key Characteristics

- *A small landscape sub-area situated to the south-west of the District. It is delineated to the north by the wide gentle valley that the A17 follows. To the south the area is marked by a drop in gradient to the Slea Valley. To the west is the District boundary while to the east there is lower land surrounding Sleaford.*
- *The whole sub-area is higher than the surrounding areas with the highest part to the north (70-65m) and falling gently to the south to around 35m.*
- *The general impression is of a well managed agricultural countryside with open views to the north and south.*
- *The area is free draining with no obvious surface water due to the underlying limestone.*
- *There are a number of small copses of mixed woodland throughout the area and a single large area of woodland, High Wood, in the centre of the area.*
- *Avenues of mature trees and substantial hedgerows running along the lanes leading to North and South Rauceby, give an enclosed feeling to the area.*
- *Fields are large and rectangular in shape and away from the lanes field boundaries are often absent or marked by small hedgerows.*
- *Adjacent to the villages of North and South Rauceby smaller field and paddocks remain.*
- *Land use is predominately intensive arable agriculture.*
- *Between the two villages lies Rauceby Park, a large country estate, with sheep grazing within parkland and mature woodland.*
- *Apart from the two villages the area is largely unsettled except for occasional farmsteads.*
- *General absence of utility infrastructure.*
- *Pressures for change relate generally to intensive agricultural practices.*
- *Opportunities for landscape strengthening and enhancement lie in greater hedgerow planting along some of the field boundaries.*



Detailed Description

Boundaries and Extent of the Landscape Character Sub-Area

- 8.2.1 This is a small landscape sub-area situated to the south-west of the District characterised by wooded copses and avenues of trees within an agricultural landscape. It lies in between the Limestone Heath to the north and east, and the Slea Valley to the south. The A17, set in a wide, open valley, forms much of the northern boundary. The A15 Sleaford Bypass forms the eastern boundary between the A17/A15 Holdingham Roundabout and the southern boundary is delineated by the fall in gradient to the Slea Valley.

- 8.2.2 The B6403 Ermine Street/High Dyke forms the western boundary of the sub-area, which is also the North Kesteven district boundary. A similar landscape continues beyond this into South Kesteven.

Topography and Landform

- 8.2.3 This sub-area is a transitional zone between the limestone heathland to the north and the rolling claylands to the south. Landform is more undulating than the flatter plateau to the north, comprising a series of flat ridges and valleys formed around two small streams which flow west-east down to the River Slea beyond Sleaford to the east.



Views north towards Cranwell

- 8.2.4 From a high point of 82m at Sudbrook House on Ermine Street in the west, the land falls gradually southwards to around 35m at the northern edge of the Slea Valley, just east of the Ancaster Gap. A similar level is achieved along the A15 Sleaford Bypass.
- 8.2.5 From the high ground in the west there are extensive views across the limestone heathland to Cranwell Airfield in the north and down to the Slea Valley to the south. Similarly there are long distance views across the sub-area from the A15 Sleaford Bypass. Within the heart of the sub-area, however, there are numerous small, medium-sized and large copses/woodlands which occasionally enclose the landscape and foreshorten views.
- 8.2.6 This is generally a mid-scale landscape, with predominantly regular medium-sized fields although these become smaller to the east. The general impression is of a well-managed and settled agricultural landscape.

Land Use, Land Cover and Vegetation

- 8.2.7 Land use is almost entirely agricultural, with a mix of arable and some pasture. Notably there are a number of fields set to root crops. Generally the fields are large and rectangular in shape often with no field boundaries. Rauceby Hall lies within parkland to the east of the village, with much of the surrounding farmland being

managed by the estate. The parkland is grazed by and is characterised by many mature broadleaved trees within it.

- 8.2.8 The transitional nature of the landscape is illustrated by the merging characteristics of sandy thin limestone soils and limestone walls in the west, typical of the heathland, and the wide verges, thick mature hedgerows with trees and numerous woodland copses more typical of the central claylands.
- 8.2.9 One of the most distinctive features of the area are the avenues of trees lining the lanes in the immediate vicinity of North and South Rauceby (Church Lane, Waterwell Lane and Thorpe Drive). There is a mix of mature and some younger trees within the avenues, suggesting succession management, and are mostly sycamore and horse chestnut and grow on both sides of the lanes alongside well managed hedgerows and distinctively broad grass verges. Avenue trees are closely spaced, occasionally screening the surrounding open fields and affording an impression of enclosure which is absent from the other sub-areas in the central plateau. Further away from the villages the landscape becomes more open as the trees are less densely planted.



Avenues of trees and hedgerows approaching North Rauceby

Settlement Distribution and Road Pattern

- 8.2.10 The minor road Tom Street / Raucby Drove runs through the centre of this sub-area, from the A17 southwards through North Rauceby and South Rauceby, and suggests origins as a droving route more apparent in the Upland Plateau Fringe sub-area to the south.
- 8.2.11 Two further minor roads connect this main north-south route to Ermine Street to the west, one running from North Rauceby and the other from South Rauceby. There are no roads connecting these villages to the east, and much of the area is undeveloped only being accessed by small farm tracks or footpaths.
- 8.2.12 A number of farms are dotted throughout the sub-area, mostly located along long access drives leading from the minor roads through the central and western half of the area, as well as from trunk roads in the north, east and south. Generally this space road network runs on a north-south and east-west emphasis.

Settlement Character

- 8.2.13 North Rauceby and South Rauceby are distinctive estate villages of considerable charm. They are linear in form and have grown alongside the Tom Street and Rauceby Drove through this sub-area.
- 8.2.14 South Rauceby is the larger of the two villages, extending along three minor roads. The parkland and Hall lie to the east of the village, the parkland extending northwards almost to North Rauceby and presenting a very considerable contribution to local character.
- 8.2.15 Both North and South Rauceby are small settlements with many attractive historic buildings. North Rauceby is a linear 'street' village with most development having a direct frontage to the main street. As well as a number of historic cottages built of limestone with pantile roofs, there is also newer development including small bungalows and former Local Authority housing with locally untypical mansard roofs. There is a fine spired church in the centre of the village which appears disproportionately large for the small scale of the village. The spire is however an important landmark in the surrounding landscape. There is also a stone cross in the centre of the village.



The church at North Rauceby

- 8.2.16 South Rauceby has a main street similar to that of North Rauceby in that development generally has a direct frontage on the street. The setting on this part of the village is distinctive with land rising to the north and falling away to the south of the main street. In the centre stands a historic brick mill tower which has been converted to residential use. In addition there is some housing to the south of the main street along Cliff View which to a significant extent is enclosed by woodland. Further to the south-west is the small, modern housing estate of Southgate Spinneys, consisting of large detached dwellings. This estate is surrounded by woodland and largely hidden from the road.
- 8.2.17 Rauceby Hall is a country house set in parkland and surrounded by an imposing limestone boundary wall. There are mature, broadleaved trees scattered throughout

the parkland. The hall and much of the estate building stock dates from the mid 1800s.



Main Street, South Rauceby

Rauceby Hills	
Pressures for change and landscape detractors	Opportunities of Enhancement
<p>Agriculture: Intensive agricultural activity has led to the removal or neglect of hedgerows between fields.</p> <p>Limestone walls are a particular feature in the west of the area but many are now in a poor state of repair or have been lost altogether.</p>	<p>Replacement hedgerow planting where these have been lost or degraded.</p> <p>Reinstatement and repair of the dry stone walls. Consider introduction of a district-wide walling repair grant scheme or introduce as a core element of farm agreements within DEFRA agri-environment schemes.</p>
<p>Housing development: The modern housing estate of Southgate Spinneys does not follow the traditional linear street pattern within South Rauceby. However it is well screened and its modern layout is not apparent.</p>	<p>There is unlikely to be any major development pressure in this area. However, any infill housing should respect the distinctive pattern of the “street villages” and utilise local materials such as limestone and clay pantiles in a sensitive way. ‘Backland’ type development should be resisted on character grounds.</p>

Rauceby Hills	
Pressures for change and landscape detractors	Opportunities of Enhancement
<p>Infrastructure:</p> <p>The A15 Sleaford bypass is visible from within the sub-area although makes no obvious adverse impact on its character. However some of the structure planting alongside the road has not assimilated well into the landscape and remains somewhat unnatural in appearance.</p>	<p>Along the A15 any future landscape planting should ideally follow a natural pattern of occasional small copses and groups of trees rather than a linear planting scheme.</p>

8.3 Wilsford Heath Landscape Character Sub-Area

Key Characteristics

- *Small sub area on the south western edge of the District.*
- *Bounded by the District boundary on three sides, with the western boundary being the B6403 (Ermine Street).*
- *Relatively flat, high in elevation (between 90-92m) and falls away to the north towards the Ancaster gap and to the east where the land becomes more undulating. To the south and west the land rises gently.*
- *A generally level, agricultural landscape.*
- *The whole area is dry with no obvious surface drainage due to the underlying limestone.*
- *There is a single large coppice of broadleaved woodland to the centre of the area with a other smaller copes closer to the areas boundaries.*
- *Fields are large and generally used for intensive arable agriculture.*
- *The area is mostly unsettled except for a few farms and associated buildings..*



Detailed Description

Boundaries and Extent of the Landscape Sub-Area

- 8.3.1 This is a very small sub-area situated on the south west edge of the District. It lies to the south of the extensive limestone heath, of which it bears many similar characteristics, being separated from it by the Rauceby Hills and Slea Valley.
- 8.3.2 It is bounded on three sides by the North Kesteven District boundary. The northern edge of the sub-area abuts the valley through which the River Slea and the A153 pass through the Ancaster Gap. The western boundary is formed by the A6403 which follows the route of Ermine Street a Roman road (also know as High Dyke). Beyond the boundary the heathland characteristics continue westwards through Willoughby Heath and Barkston Heath. Immediately outside the district boundary is RAF Barkston Heath airfield, a typical land-use within the Limestone Heath as described in Section 8.1.
- 8.3.3 To the south, the boundary of the sub-area again follows the District boundary. Just beyond the boundary the landscape has typical heathland characteristics before merging into the more undulating clay uplands beyond. The eastern boundary with the Upland Plateau Fringe marks the gradual change from the open, exposed, expansive heathland to the smaller scale, more intimate and varied landscape of the claylands to the east.

Topography and Landform

- 8.3.4 The landform consists of an open, flat plateau, being generally between 90–92m in height. From the eastern edge of the area the land falls into a valley and views can be seen across the adjoining rolling farmland.



Heath Lane, Wilsford Heath

- 8.3.5 Generally the whole character area is dry with no waterscape or surface drainage due the underlying pervious limestone.
- 8.3.6 This is a large to medium scale, largely open landscape with generally extensive views, occasionally foreshortened by woodland copses both within the landscape sub-area and beyond. Large, regular fields in the west gradually become smaller and more enclosed, though still regular and rectilinear to the east.

Land Use, Land Cover and Vegetation

- 8.3.7 The sub-area is dominated by agricultural land use. The farming practice is almost entirely arable farming, grown in large, rectangular fields, though there is some pasture in the east. Three farms, Valley Farm, Wilsford Heath Farm and Glebe Farm, are spread evenly across the sub-area.
- 8.3.8 This area has been previously quarried for limestone. A large quarry in the centre of the sub-area is well screened by a large broadleaved woodland which is now a Site of Special Scientific Interest (SSSI). Just beyond the southern boundary lies Quarry farm, a further indicator of the former land-use.
- 8.3.9 There are many mature trees (mainly Ash) lining the few straight roads with wide grass verges and mature hedgerows. There is also a smaller, triangular shaped area of woodland on the northern boundary called Duke's Covert.
- 8.3.10 The northern half of the sub-area is more obviously influenced by man. There is a covered reservoir and mast to the east of the area. Adjacent to Ermine Street, at Cooper Hill, there are large hanger-type buildings associated with the airfield immediately to the west, together with another aerial mast.



Reservoir, Wilsford Heath

Settlement Distribution and Road Pattern

8.3.11 As a small landscape area there is a very limited road network. The only lanes therein form a cross, with King Street running from north to south which follows the course of a Roman road, and Heath Lane which runs from east to west. There are no significant settlements in the area and only few isolated farmsteads.



Looking west to hangar type buildings on the B6403

Wilsford Heath	
Pressures for change and landscape detractors	Opportunities for Enhancement
<p>Agriculture: Intensive agricultural activity has led to the removal of some hedgerows and walls between fields.</p>	<p>Replacement hedgerow planting where these have been lost or degraded.</p> <p>Reinstatement and repair of the dry stone walls. Consider introduction of a district-wide walling repair grant scheme or introduce as a core element of farm agreements within DEFRA agri-environment schemes.</p> <p>An increase in grassland and pasture would help to restore a more mixed pattern of land use, returning to a more visually varied and traditional landscape.</p>
<p>Employment development: The location of the sub-area close to the B6403 and the airfield has encouraged development pressures along the western boundary. A precedent has been set by the Cooper Hill development which arguably could expand in the future.</p>	<p>Pressure for ribbon development along the B6403 should be resisted to avoid landscape harm caused by interruption to the open and largely unspoilt landscape of the sub-area.</p>
<p>Infrastructure: The area appears to present a good technical setting for telecommunications masts on the open heathland, and this sub-area may come under further pressure for this type of development.</p>	<p>Any future telecommunications development should be very carefully sited so as not to impact on the openness of the landscape.</p>
<p>Minerals Operations: Active quarrying appears to have ceased in this area at present. However the limestone resource on which the landscape is based presents the potential for future minerals extraction pressures.</p>	<p>Any future mineral working would need to be carefully sited and screened to prevent further erosion of the predominately agricultural character of the landscape. In doing so full regard to the national importance of the SSSI should be afforded.</p>

8.4 Slea Valley Landscape Character Sub-Area

Key Characteristics

- *Small, linear shaped landscape character sub-area situated in the south west of the District. It is delineated by rising land to the north and south on either side of the shallow valley. To the east it meets the lower more open land surrounding Sleaford. To the west the area meets the District boundary.*
- *The area is low at the valley bottom (approx 20m) and rises gently on both sides to 25 m before rising to the adjoining landscape character sub-areas.*
- *The area is dominated by the main road, the A153, and the railway line which follow the line of the valley along its whole length.*
- *A watercourse known as the Beck, which later becomes the River Slea, also follows along the length of the valley but is not an obvious feature in the landscape.*
- *In the centre of the valley are several small lakes reflecting past gravel working.*
- *The land use is generally arable agriculture, though there is evidence of set-aside and grazing.*
- *Few hedgerows but some dry stone walls.*
- *The valley sides are generally open with little woodland cover. There are some distinctive willow trees lining the Beck at Wilsford and some stands of poplar.*
- *On the valley floor to the centre of the area, around Sleaford golf course, unimproved heathland with pine trees and gorse bushes is present.*
- *The village of Wilsford stands partly in the valley but also rises up into the Upland Plateau fringe. It has attractive limestone buildings with a distinctive church.*
- *The other main settlement is around Rauceby Station where there is new development within the former Rauceby Hospital, characterised by woodland including distinctive fir trees.*



Detailed Description

Boundaries and Extent of the Landscape Character Sub-Area

- 8.4.1 This is a narrow sub-area running east-west between Sleaford and Ancaster. It is defined by the narrow valley of the River Slea as it flows eastwards through the gap in the limestone escarpment at Ancaster and through the centre of Sleaford.
- 8.4.2 The narrow valley is defined by a combination of landform, land-use, vegetation pattern and soil type. The sands and river gravels form a distinct corridor through the Central Plateau Landscape Character Type to the west of Sleaford.
- 8.4.3 The Northern boundary with the Rauceby Hills sub-area in parts follows the line of the railway and the A153 (where the River Slea runs south of these) but mainly follows a line slightly north of the river as an approximate boundary of the south-facing valley.

- 8.4.4 The southern boundary with the Central Clays and Valleys sub-area in parts follows the railway line or is drawn tightly around distinctive land-uses within the valley, namely the golf course and the former Rauceby Hospital site, or extends slightly to the south of Wilsford and the A153 as an approximate boundary of the north-facing valley (between Wilsford and Ancaster).
- 8.4.5 The western extent of the sub-area follows the North Kesteven district boundary to the east of Ancaster, whilst the eastern end is defined by the railway as it arcs around the western built-up edge of Sleaford.



Sleaford Golf Course, Slea Valley

Topography and Landform

- 8.4.6 The highest part of the sub-area is at the extreme south-western tip, at approximately 80m. Here the valley is at its steepest, falling steeply to the low point of the valley at 27m at Wilsford. In general the River Slea (known as the Beck in the western part of the sub-area) follows a gently meandering course at around 25-30m.
- 8.4.7 In contrast to the western end of the valley, the central and eastern sections are much flatter and possibly providing a functional floodplain value. In the middle section of the valley, between the road and the railway, are several small lakes created as a result of former gravel working.
- 8.4.8 Due to the surrounding landform, views out from within the valley are limited at the western end. Neither the railway nor the River Slea are significant visual features within the valley at its western end. These become more obvious however, as does the A153, where the valley widens out through its central and eastern sections. The A15 Sleaford Bypass cuts across the valley on an embankment over the railway and river, making it a significant feature within the floodplain but providing extensive views along the valley.
- 8.4.9 Views south of the river within the centre of the sub-area are enclosed by the dense vegetation within the golf course and by development around the former Rauceby Hospital.

Land Use, Land Cover and Vegetation

- 8.4.10 The dominant land use is arable agriculture, mainly consisting of cereal and root crops. There are however large open fields to the north-east of the area which are used for grazing. There are also a number of fields put over to set-aside which has resulted in an coarser appearance and texture to the landscape and less uniform in appearance.



Shallow but distinctive slopes of the Slea Valley

- 8.4.11 The golf course in the centre of the area has an intensively managed appearance of fairways and greens, although there is clearly remnant heathland characteristics of coniferous trees, birch and gorse bushes associated with dry sandy soils. Those remnants enjoy designation as a Site of Special Scientific Interest.
- 8.4.12 The main areas of woodland are associated with the two settlements. There are a couple of small copses close to Wilsford, together with large riparian willow trees alongside the Beck. Around the new development at the Rauceby Hospital site there are mature woodlands comprising both broadleaved and conifer species.
- 8.4.13 In general the fields are large and open often with no discernable field boundaries. However, to the western end of the area some of the field boundaries consist of mature hedgerows. There are occasional but visually prominent shelter belts of poplars. Dense roadside planting alongside the A15 Sleaford Bypass is now well established, although its landscape impact is slightly incongruous with established landscape character despite its functional performance.
- 8.4.14 The most obvious infrastructure features are the main road and railway which dominate the area. There are three level crossings along the A153 where the railway crosses the road.



The Slea valley with fields in set-aside and arable use

Settlement Distribution and Road Pattern

- 8.4.15 The linear road pattern dominates the area with main A153 running from Sleaford in the east to Grantham in the west. There are a number of minor roads adjoining the main road cutting across the landscape from north to south.
- 8.4.16 The main two settlements are Wilsford, which is an attractive village with many old limestone buildings, and the new development at the Rauceby Hospital site which was still under construction at the time of survey. There is a small railway station at Rauceby hospital.

Settlement Character

- 8.4.17 The linear village of Wilsford is partly within the Slea valley but also rises up into Upland Plateau fringe. Completely by-passed by the A153, Wilsford has an attractive high street containing many limestone buildings with red pantiled roofs. It has a distinctive spired church at the northern end of the village which is a prominent feature within the rural hinterland. There is some newer development spreading up the hill to the south of the settlement. On the eastern edge of the village are the impressive stone buildings of Hall Farm which have now been converted to multiple residential dwellings.
- 8.4.18 Significant new development now surrounds the former Rauceby Hospital and consists of a complex of distinctive red brick buildings. The new development is a mixture of three-storey town houses and two storey properties with shallow front yards and gardens. The landscaping of the area which has yet to be completed will link the new development to the old hospital buildings by establishment of an avenue of deciduous trees.



New development at the Rauceby Hospital site

Slea Valley	
Pressures for change and landscape detractors	Opportunities for Enhancement
Agriculture: Intensive agricultural activity has led to the removal of hedgerows between fields.	Replacement hedgerow planting where these have been lost or degraded.
Employment development: The location of A153 running along the centre of the sub-area may possibly put development pressure along its length.	Pressure for ribbon development along A153 should be resisted
Housing development: The large new housing development under construction at Rauceby Hospital may put pressure for further development in this area.	

8.5 Central Clays and Gravels Landscape Character Sub-Area

Key Characteristics

- *Landscape sub-area runs the entire length of the District.*
- *The narrowest part is in the north, widening southwards beyond Sleaford to meet the Upland Plateau Fringe. The western edge is defined by the Limestone Heath and Slea Valley, whilst the Fens lie to the east along its full extent.*
- *A gently undulating lowland, edged by areas of woodland in the north.*
- *Fields are generally smaller and more varied in shape than on the adjacent limestone plateau with some grazing land as well as arable.*
- *Surface water drains into small streams running from west to east and drainage ditches run by the sides of the fields.*
- *Well kept hedgerows along roadsides and sometimes between fields.*
- *Dark brown coloured soil.*
- *Small copses of broadleaved woodland throughout the sub-area and larger areas of woodland on the eastern edge.*
- *Three distinctive lines of settlements – the limestone villages following the spring lines coming off the limestone plateau; the line of villages on the clay strip; and the villages edging the fens to the south.*
- *Road network orientated with the main roads running from north to south (Lincoln to Sleaford) with smaller roads running west to east.*
- *Pressures for change in the sub-area relate to inappropriate development on the edge of villages and the loss of hedgerows and tree cover.*
- *Opportunities for landscape enhancement mainly rest with increased hedgerow and tree planting and maintaining the character of the villages.*



Detailed Description

Boundaries and Extent of the Landscape Character Sub-Area

- 8.5.1 This landscape character sub-area is characterised by gently undulating lowland, edged with areas of woodland in the north, and elsewhere scattered throughout. It runs the length of the District with the narrowest part in the north, widening southwards beyond Sleaford to meet the Upland Plateau Fringe. The western edge is defined by the limestone heath and Slea valley, west of Sleaford, whilst the Fens lie to the east. The western boundary is roughly indicated by the line of the railway north of Dunston, and southwards along the B1188 to Sleaford, and the A153 west of Sleaford. In the northern section the eastern boundary with the Fens is very distinctly marked by the line of the Car Dyke and areas of mixed woodland. In the southern section the eastern boundary is less distinct and merges more gradually with the fens.
- 8.5.2 The same landscape character can also be distinguished on a low clay strip of land which is separated from the main area by a finger of fenland set to its west. Here the settlements of Martin, Timberland, Walcott and Billingham are found. This strip of

land is further defined by the Car Dyke to the east. The southern boundary is delineated by the Billingham Skirth, a dyke edged with a substantial earth bank.



Fields in the clay vale edged by Potterhamworth Woods

Topography and Landform

- 8.5.3 The landform consists of a gently undulating lowland clay vale, underlain with boulder clay and gravel deposits. The gradient slopes gently down from west to east (approx 20m down to 5m). The northern section of the sub-area although generally a very open landscape is sheltered by the height of the limestone plateau edge adjoining it. Towards the centre of the sub-area, the landform is more open and merges with the adjacent fenland, such as in the Ruskington area. South of Sleaford, the land falls gradually down from the Upland Plateau Fringe at approximately 40m in the west before merging with the adjacent fenland in the east.
- 8.5.4 Surface water emerging from springs at the limestone plateau edge drains into small streams which run from west to east. Often these streams run through villages as a central feature. Drainage ditches by the side of the fields are indicative of the change in porosity from the dry landscapes of the Plateau. The soil is heavy clay and generally dark brown in colour.
- 8.5.5 This is generally a mid-scaled landscape. There are some very large fields but also fields of mixed shape and size. Although generally flat and of low relief, this sub-area differs from its immediate neighbours, it does not have the same emptiness and exposure of the limestone heath nor the uniform flatness of the Fens. The general impression of this sub-area is of a gentle, agricultural landscape which is well managed and settled.

Land Use, Land Cover and Vegetation

- 8.5.6 Land cover is generally arable with many fields of cereals and root crops. However there are some scattered fields of rougher grassland, sometimes seen to be put to sheep grazing.
- 8.5.7 There are hedgerows along most roadsides which are generally thick and neatly trimmed, often with mature trees within. There are also some hedgerows along field

margins though this varies throughout the sub-area and often field boundaries are absent.

- 8.5.8 Some small woodland copses are scattered throughout the sub-area, mostly broadleaved. On the edge of the sub-area in the north are some large areas of mixed woodland which clearly differentiate the change from the clay fringe to fenland. These areas of woodland are associated with the adjacent villages such as the Potterhanworth Wood and the Nocton Wood. These are prominent and interesting features in the landscape.
- 8.5.9 There are a few scattered agricultural buildings mostly associated with farmsteads and occasional poultry units. The only industrial and commercial uses are located on the edges of the larger settlements such as Metherringham and Ruskington, which has a large food processing factory on its southern edge and is conspicuous in the landscape.
- 8.5.10 The main infrastructure feature in the sub-area is the main line Lincoln-Sleaford railway line, which skirts the western boundary along, with its associated features of bridges, level crossings and signal boxes. High voltage power lines and pylons cross the area but whilst massive, are generally less prominent in the landscape than in the more open landscapes of the Fens or the Limestone Heath.

Settlement Distribution and Road Pattern

- 8.5.11 A line of villages comprising Potterhanworth, Nocton, Dunston, Digby and Scopwick, follow the spring lines rising from the limestone heath plateau and, as a result, present a linear distribution of settlement. Metherringham and Ruskington are the largest villages in the sub-area, which both have a significant level of modern development around their historic cores.



Scopwick Green, an example of a spring line village

- 8.5.12 This distinctive settlement pattern is reflected once more on the separate strip of very slightly raised land consisting of the villages of Martin, Timberland, Walcott and Billingham and the Fen fringes.

- 8.5.13 A further line of villages can be identified to the south of the sub-area, on the B1394 along the western boundary, namely Heckington, Great Hale, Little Hale, Helpringham and Swaton. Heckington is the largest of these, which originated at the intersection of minor roads but which has grown northwards towards the A17 bypass.
- 8.5.14 There are other scattered villages which do not fit into an obvious pattern, particularly the estate village of Blankney and the hall and parkland at Aswarby.
- 8.5.15 The road network is orientated with the main roads running from north to south (Lincoln to Sleaford) with minor connector routes roads running west to east. The B1188 north of Sleaford was once a major trading route known as the 'Low Road', following a sinuous route along the edge of the heath. This contrasts sharply with much straighter routes, in particular the Mareham Lane Roman road, running northwards from Bourne to Sleaford. This was also a major trading route during medieval times. Clearly the road pattern in this character area is of historic significance.

Settlement Character

- 8.5.16 The spring-line settlements all have similar characteristics, with the original buildings constructed of honey coloured limestone walls with pantiled roofs. The streams often running beside the central village streets with adjacent greenspaces are an attractive feature of these villages. Newer mixed development has been built on the outskirts of the villages, although much of this has been in-keeping with the local vernacular.
- 8.5.17 Blankney has a distinctly different and strong identity as an estate village with dwellings built in dressed and coursed limestone in an pseudo-Elizabethan or Tudor-style with mullioned windows and elaborate chimneys. Aswarby is different again, being dominated by the hall and parkland.
- 8.5.18 The settlements along the clay to the east of the sub-area and south of Sleaford are different in character from those following the spring lines, though display similarities within themselves. The original buildings are generally built of brick with plain tiled roofs. Red brick Methodist chapels are a particular feature of some of these villages. Newer development is more mixed in material and design.



The main village street in Blankney

8.5.19 There are a number of prominent landmarks throughout the landscape sub-area including the Heckington 8-sailed windmill, the church tower at Dorrington and the water tower at Billingham, each of which presents strong historical reference points within the landscape which should be protected from visual interruption.

Central Clays and Gravels	
Pressures for change and landscape detractors	Opportunities for Enhancement
Agriculture: Intensive agricultural activity has led to the removal of hedgerows between fields.	Replacement hedgerow planting where these have been lost or degraded. An increase in grassland and pasture would help to restore a more mixed pattern of land use, returning to a more visually varied and traditional landscape. Agri-environment scheme objectives should be tailored in part to reflect landscape character aspirations.
Housing Development: Some newer development within the villages has been unsympathetic to existing building vernacular and has used inappropriate materials which dilute sense of place.	Maintaining the distinctive character of the villages in this unit is very important and new development should use materials, and design principles that respect and reflect the existing traditional limestone building stock so that they are sympathetic to place and established vernacular.

Central Clays and Gravels	
Pressures for change and landscape detractors	Opportunities for Enhancement
<p>MoD Uncertain future of the disused RAF Hospital at Nocton Hall. Development pressure may arise as a brown field site.</p>	<p>This site is not allocated for development in the local plan. Careful consideration should be afforded to the impacts of proposed development on the landscape at such sites, and where permitted work with and to enhance established landscape character.</p>

8.6 Upland Plateau Fringe Landscape Character Sub-Area

Key Characteristics

- *South westerly fringe of the district.*
- *Topography is more varied than most other elements of the district.*
- *A series of interlocking, rolling low hills and gently rounded ridges with small river valleys with steep lower reaches.*
- *Series of small water courses in convex valley sides run from higher ground at the district boundary with South Kesteven in an eastward direction towards the fenlands.*
- *Watercourses are often difficult to see in the landscape, but provide the only significant organic, sinuous lines in the landscape.*
- *Significant series of small wooded areas, some semi—natural, some more recent, within a landscape dominated by intensive arable agriculture.*
- *More intimate network of hedgerows and hedgerow trees than elsewhere across the district, particularly to the western fringe.*
- *A sparse grid like road and lane network with wide verges and varying levels of field-side enclosure of hedges or small open ditches.*
- *Significant network of green lanes and footpaths generally reflecting the road network pattern.*
- *Series of very small traditional agricultural settlements with fine parish churches and minimal unsympathetic development.*
- *Manor halls and estate villages are influential elements of the settlement pattern.*



Detailed Description

Boundaries and Extent of the Landscape Character Sub-Area

- 8.6.1 The extent of the area is partially defined by the south western district boundary from the southern edge of the Ancaster Gap, south and east to the A52, 1 km east of Threkingham. From the two boundary points the internal delineation of the character area runs in a relatively direct south-east to north-west diagonal line.
- 8.6.2 As with many transitions across the district between landscape character areas, the change from the Central Clays and Gravels to the Upland Plateau Fringe is gradual and difficult to define using specific landscape features. Key elements in that transition are the gradual increases in elevation and general increase in the density and enclosure of intimacy of field pattern and size. The characteristics of the area extend beyond the district boundary which has little relation to any marked landscape changes. Views to the south of the area across *South Kesteven* reveal definite and strong consistency as far as vistas allow.
- 8.6.3 As with the gradual change in character from the Slea Valley to the north and the Central Clays and Gravels character sub-area to the east, the variation within the area is subtle and displays very gradual change. The increase in elevation from the

low margins in the east, typically around 20m, to higher ground of up to 80m at the district boundary is a defining characteristic.

Topography and Landform

- 8.6.4 Landform is subtly varied with a complex series of relatively pronounced valleys and low hill ridges running from higher ground to the west and south in an easterly direction, where the hills gradually merge into the landscape of the Central Clays and Gravels. When crossing the area from north to south the traveller will rise and fall over a series of the flat hill tops and steeper lower valley sides, but such variation is far less pronounced in an east-west direction when rises are less dramatic. This pattern is not always obvious on the ground, but contour study reveals a distinctive pattern to the changes in elevation.



The gently rolling arable hills and valleys of the Upland Plateau Fringe

- 8.6.5 Small streams, increasingly fed by small drainage ditches in the east, drain the landscape towards the fens in the east. Other significant surface water is largely absent apart from the artificial dammed lake which forms part of the designed parkland of Culverthorpe Hall in the northern part of the area. A significant number of small field ponds are found elsewhere across the character area, but are not significant landscape features.
- 8.6.6 This is a landscape of medium scale, where occasional views from elevated points are possible, for example looking northwards from the crest on the A15 at Newton Grange Farm, but elsewhere topography and hedge and tree cover limit any openness. Enclosure from small woodlands and thick, treed hedges and the relief of the valley sides is notable, particularly in the far south and west, contrast to the character areas to the east and north. The eastern fringe of the area does however offer some more open countryside where there is evidence of hedgerow removal and the relief is generally less undulating.
- 8.6.7 Colour and texture within the landscape depends heavily upon the season. Nevertheless, this is a textured landscape with strong visual contrast between the hedges, streams, linear tree lines and patchwork of small woodlands. The winter period emphasises this mixture and 'roughness', particularly in respect to the mix of fields which may be ploughed or under winter cereals or legumes.

Land Use, Land Cover and Vegetation

- 8.6.8 Farming is the predominant land use and this is primarily arable in nature reflecting the good quality of soils. There is a strong patchwork of fields, normally defined by well maintained, often thick hawthorn hedges. Hedgerow trees, particularly ash and oak are common across the southern and western area but the condition and extent of these lessens to the north and east where field size gets larger and ditches become as common a field boundary as hedgerow. This field network is predominantly rectilinear in form and shape across the whole character area. The land use therefore presents a regular and managed appearance with sinuous or organic lines limited to the small water courses. The field size tends to be much reduced adjacent to the characteristic agricultural and estate hamlets, and presents the only significant divergence from the predominance of intensive arable practice. Here smaller fields are more pastoral and reflect a historic subdivision of the Enclosures Act and are often given over to low intensity livestock farming, such as winter grazing for sheep. As a consequence, the landscape setting of the hamlets is often better preserved than where arable uses prevail.
- 8.6.9 The treescape is not dominant in the landscape but is nevertheless a very important contributor to overall character. Particularly in the south-west segment there is a series of small copses and woods which are important in creating its more intimate patchwork than elsewhere in the district. These dense stands of mainly deciduous species are typically of beech, birch, poplar and oak, but mixed plantation is also found to the far south west adjacent to the district boundary. They are not regularly positioned, but tend to be located away from the stream valleys, on the flat tops, or upper slopes of the uplands. The woods are, or have been managed and are enclosed on the whole by hedge and fence and take rectilinear rather than organic form. The woodlands appear to owe their existence primarily to encourage game, and such uses are still apparent in and around the estate villages, particularly around Aunsby and Culverthorpe.
- 8.6.10 Agricultural infrastructure is ever present in the landscape but rarely dominating, although the agricultural character of some of the smaller settlements is obvious, with traditional farm buildings juxtaposed with modern and much larger scaled sectional barns and sheds. This is most apparent within the hamlet of Culverthorpe where old and new dominate the settlement. Conversely small agricultural hamlets such as Haceby and Walcott have maintained a scale of small traditional farming practice very untypical of the district as a whole.
- 8.6.11 Industry, commercial activity and minerals workings are almost entirely absent in the character area. This is a quiet and tranquil landscape with only the A52 and A15 being significant transport infrastructure therein. Apart from the powerlines and pylons which dissect the area between Aunsby and Aisby, overhead wires are generally not as intrusive as elsewhere in the district and other communications infrastructure is generally unobtrusive.

Settlement Distribution and Road Pattern

- 8.6.12 With Osbournby lying just outside the character area, settlements within it are without exception of a small village or hamlet scale, some with strong associations with manor houses or farms. The settlements do not display any regular distribution, but tend to be located away from the higher plateaux-like tops, and are generally located on the mid slopes of the shallow valleys. Walcot, Newton, Haceby, Dembleby and

Kelby follow this general pattern. Threackingham, the furthest east of the area's settlements is also its largest village, taking a strategic position at the intersection of crossroads of five lanes and roads, including the A52 and the ancient roman road of Mareham Lane. Historic evidence and records of a medieval market and fair is important to its local heritage. The relative importance of the village as a consequence of its size relative to others within the area should not be overplayed however as a significant degree of its built form is of late 20th century or more recent vintage and is predominantly residential in nature. There is no service centre of significance within this character area.

- 8.6.13 The network of hard surfaced roads and lanes in the character area is relatively sparse, but does display an informal grid like pattern. Its orientation is distinctly north south and east west, with the later network of minor lanes, and the A52 following either valley bottoms, but particularly from the A52 northwards, taking a line along the flat ridges of the hill tops, such as between Aunsby and Ainsby, and Swarby and Culverthorpe. North-south routes tend not to follow any obvious topographical features, but maintain a generally straight orientation. The character area does accommodate a significant network of green lanes and tracks which tend to reinforce the grid pattern of routes and afford significant opportunities to access this tranquil countryside area. The only notable deviation from the grid form of communication routes is around the designed landscape of Culverthorpe Hall, and within and immediately around the villages and hamlets themselves.
- 8.6.14 The network of broad roadside verges and delineation between road and field is also important to the area's character. Often wide grassy verges to one side of a lane are of a significant proportion, at least reflecting the width of the road itself. Normally these are bounded by hedgerows of varying condition and free from trees. However often they are regularly interspersed with mature deciduous trees of lime, ash, oak and there is significant evidence of new planting of verge trees in the Dembleby and Haceby areas. Towards the north and east of the character area roadside hedges are occasionally absent with only shallow drainage ditches separating the roads from the increasingly large arable fields. Normally this would be along one side of the road only.



Characteristic wide verges with recently planted trees in a gently rolling landscape

Settlement Character

- 8.6.15 Settlements within this landscape character sub-area display a strong agricultural or estate character. Villages and hamlets almost without exception are of an attractive and unspoilt character with historic layouts intact, usually loosely clustered around the series of very fine parish churches and enclosed by a tighter network of small pastures. Farmhouses and agricultural buildings are often the most significant buildings in the settlements apart from the churches. Mature deciduous trees are strong components of the 'villagescapes', often around the church or rectory. The historic hamlet of Haceby, for example, is little more than a loose cluster of traditional Ancaster limestone and pantiled roofed farm buildings, farm workers' dwellings and a small but fine church. Its landscape setting is typical of the area with a fringe of pasture contrasting to the wider arable landscape, and a strong framing by mature and some younger plantation and hedgerow trees. This combination is reflected on slightly larger scales throughout the area, notably at Walcot and Newton, south of the A52. North of the A52 settlements within the area are again very small and strongly agricultural in nature. 20th century development is more prevalent on the peripheries of the hamlets of Dembleby and Kelby, but at a very minor scale. Culverthorpe Hall and its parkland setting is a significant feature in the landscape, with designed water bodies, and formal grounds separate from its extensive estate buildings infrastructure.



Haceby Church

- 8.6.16 Outside the hamlets and villages settlement is largely absent apart from occasional scattered farms, often set away from the road network and slightly more prevalent in the southern parts of the character area.
- 8.6.17 This is a landscape which is highly influenced by agricultural and small scale forestry management. The built environment is not dominant in the landscape as a consequence of the rolling topography and tree cover, particularly around the settlements and their very small scale. As elsewhere across the wider district, ecclesiastical architecture, and particularly the church steeples and spires are the only strong indication of built development in the landscape, but this influence is important and characteristic. There is a strong sense of place within the character area, tranquil and deeply rural but one which relates more closely in landscape terms to the regional character areas of the Kesteven Uplands to the south and west beyond the district boundary than within the rest of North Kesteven itself.

Upland Plateau Fringe	
Pressures for change and landscape detractors	Opportunities for Enhancement
<p>Agriculture: The agricultural landscape is well maintained and local character not obviously pressured from agricultural practice.</p> <p>Occasional poplar coppice is incongruous to the landscape.</p>	<p>Replacement hedgerow planting where these have been lost or degraded.</p> <p>Careful control should be maintained where possible over agricultural buildings to ensure they relate well to existing farmsteads and scale is appropriate to the setting and prominence of the site.</p> <p>Coppicing of species such as Lombardy poplar should not be encouraged through grant regimes and addressed within any wider woodland management strategy.</p> <p>Agri-environment scheme objectives should be tailored in part to reflect landscape character aspirations.</p>
<p>Housing Development: The area is likely to witness little housing development under the current Development Plan. However, the high quality of the agricultural hamlets will be particularly sensitive to poorly designed development.</p>	<p>Maintaining the distinctive character of the agricultural hamlets in this unit is very important and new development should use materials, and design principles that respect and reflect the existing traditional limestone building stock so that they are sympathetic to place and established vernacular.</p>
<p>Verge treatment: The distinctive wide verges of the area are important to character, as are the 'avenue' trees therein.</p>	<p>Roadside verge management should be afforded careful consideration by the Local Highways Authority. Mowing and management regimes should be established to maintain their visual importance and to allow their habitat function and connectivity to develop. Tree management and supplementary planting to maintain the distinctive avenues should also be taken appropriate account of.</p>
<p>Green Lanes: The network of green lanes across the area is significant. These should be maintained suitable for public use as a historical and recreational asset as well as for their contribution to visual interest within the landscape.</p>	

9. The Fens Regional Landscape Character Type

9.1 Fenland Landscape Character Sub-Area

Key Characteristics

- *The Fenland landscape sub-area occupies the whole of the eastern part of the District from the Lincoln gap to the boundary with south Kesteven near Swanton.*
- *Low lying with very flat relief.*
- *Occasional small islands of slightly higher land.*
- *Very large, rich arable fields divided up by drainage channels*
- *A hierarchy of rivers drains and ditches creating linear patterns across the landscape.*
- *The geometric road pattern follows the drainage pattern with small roads raised above the level of the fields, running from west to east.*
- *Generally extensive vistas to level horizons and huge skies, apart from in the north easterly direction where the Lincolnshire Wolds provide a marked "Upland" horizon.*
- *Sparse woodland cover though some occasional trees surrounding farmsteads and some shelter, belts particularly of poplars.*
- *Intensively farmed and managed it is almost entirely a man-made landscape.*
- *Except for scattered farmsteads and farm buildings the sub-area is unsettled.*
- *Prominent power lines and large-scale agricultural buildings.*



Detailed Description

Boundaries and Extent of the Landscape Character Sub-area

- 9.1.1 The Fenland landscape character sub-area runs along the whole of the eastern part of the District. It is characterised by its low lying and very flat landscape with very large fields divided from one another by drainage channels. A hierarchy of rivers, drains and ditches provide a strong linear pattern on the area which is also followed by the road pattern.
- 9.1.2 To north and east the area is bounded by the River Witham. At the northern end the fenland area narrows as it meets the Lincoln gap creating a funnel shaped area of fenland. To the west the Car Dyke and woodland fringes make a distinctive boundary north of Billingham. There is also a finger of fenland extending up towards Digby, after which the southern boundary follows the edge of the Central Clays and Gravels sub-area which is marked by a line of numerous villages from Anwick to Swanton on the southern district boundary.



Fenland and dyke adjacent to the Bardney Road

Topography and Landform

- 9.1.3 The fens have a very strong and distinctive character and despite its absence of variation might be considered to present a sense of drama and melancholy.
- 9.1.4 The landform consists of very flat alluvial land with the gradient below 10m down to sea level itself. The land has been reclaimed and drained from the natural marshes and wet woodlands from which the 'reclaimed' fens of today actually take their name. The Fenlands have been drained and farmed over a period of hundreds of years and therefore present an almost totally man-made landscape. It is crossed by an extensive and intricate series of arrow straight drainage channels (dykes), emptying eventually to the River Witham, which itself has been engineered and straightened over most of its course as it frames the eastern edge of the character area.
- 9.1.5 Although the sub-area itself is very open, the northern element is edged by the Lincolnshire Wolds to the north-east and the limestone edge to the west creating a funnel shaped enclosure in this section. There are key vistas of Lincoln Cathedral as the Witham valley narrows through the Lincoln Gap. This section also has distant views of the power stations on the River Trent and their sometimes dramatic vapour columns. However, further south the views eastwards become extensive to a level horizon and to the west the adjacent landscape sub-area is similarly low-lying clay vales, and so the resultant impression of a vast flat landscape is even greater. The large scale of the landscape with open panoramas and enormous skies can create a strong sense of isolation which is compounded by the lack of settlements in the area.
- 9.1.6 There are two 'islands' of slightly higher land within this landscape which are edged by large drainage channels, including the major Billingham Skirth and the Kyme Eau. North Kyme and South Kyme, the only settlements of any size in the sub-area, are located on these islands.
- 9.1.7 The finger of fenland which runs to the west of the clay strip of the central clays and gravels area has very similar characteristics to the main area of fenland in that it is very flat land with large, rectilinear fields and very little tree cover. There is however

a more sheltered impression afforded by its marginally higher land to the east and west.

- 9.1.8** The soil throughout the whole of the landscape sub-area is of the highest grade, peaty and very dark brown in colour and presents a nationally significant agricultural resource.

Land Use, Land Cover and Vegetation

- 9.1.9** The land is almost exclusively set to arable farming, managed within the very large, distinctively flat fields. The relatively low concentration of significant agricultural complexes suggests large farm holdings with intensive modes of operation.



Dorrington Fen showing the typical dark soil of the Fenland

- 9.1.10** Tree and woodland cover is scarce with minimal significant woodland cover. There are occasional individual trees and some trees belts around the isolated farmsteads. These are often distinctive and often consisting of poplar trees visible for significant distance over the flat and otherwise interruption free landscape. Hedgerows are almost entirely absent as the fields are separated by functional drainage dykes. Most of the dykes are well managed and cleared, however some have become colonised with sedge and reed, presenting a valuable habitat resource and biodiversity interest.
- 9.1.11** Industry and commercial use is largely absent in the sub-area itself though the sugar beet factory at Bardney (outside of the District boundary) is very prominent in the wider landscape. Like other areas of the district the impact of electricity infrastructure is also significant with rows of pylons very dominant in the open landscape and presenting a powerful man-made statement across the horizon in the south of the sub-area.

Settlement Distribution and Road Pattern

- 9.1.12** The road pattern consists largely of narrow, straight roads, running in an east-west direction, and is heavily influenced by the drainage patterns of the area. They are raised above the level of the land on earth embankments and edged with

characteristic drainage channels. The largest road in the sub-area is the A17 which cuts across its southern half and takes an uncharacteristic sweeping line. The only significant road running from north to south is the A153 which joins the B1395 south of North Kyme. Apart from the dramatic skyline, movement of vehicles along these roads will often be the only dynamic element in the landscape.

- 9.1.13 The only two settlements of any significance in this part of the Fenland are North and South Kyme which are located on slightly higher islands of land raised above the surrounding fens and edged by drainage channels. There are a small number of scattered small, hamlets based either on farmsteads or along the edge of the River Witham such as Tattershall Bridge and Walcott Dales.

Settlement Character

- 9.1.14 The character of the built environment within the Fenland area is varied in style and age. Combined with the paucity of settlement within the character area it is suggested that there is no strong settlement character which relates clearly to the exceptionally distinctive landscape.



Kyme Tower to the west of South Kyme village

- 9.1.15 The two Kyme villages were able to be established because of their slightly raised position above the fenland levels. North Kyme is a linear village which has the A153 running through it. It has a small market place with an important medieval stone cross. South Kyme is an attractive village with many original brick buildings. The Kyme Eau, a canalised section of the River Slea flows through the settlement presenting a striking and distinctive Fenland element to the village itself. To the west of the village is the Kyme Tower, a remnant of a medieval castle which is a distinctive local landmark. Close by are the remains of a priory which dates from the 12th century and the attractive Victorian parish church which add reference points, historical interest and visual prominence to the settlement and landscape.

Fenland	
Pressures for change and landscape detractors	Opportunities for Enhancement
<p>Agriculture: The large scale and intensive nature of the agriculture practised on the fens has resulted in a strongly distinctive but uniform landscape with few focal points or strong variations in character.</p> <p>Large scale agricultural buildings and storage of agricultural machinery and produce can be very prominent in the open landscape. In some cases species such as leylandii have been used to screen agricultural development or to provide shelterbelts and these have become functional but clearly incongruous features in the landscape.</p>	<p>Some enhancement measures could be introduced which would not detract from the distinctive and open nature of the fen landscape and its large-scale vistas, for example small stands of tree planting along roads or ditch-lines where trees are already a local feature, but may have been under managed.</p> <p>Additional tree planting, using native species, could soften the impact of agricultural buildings in the landscape. Only native tree and shrub species should be used in shelterbelts. In particular species such as alder and willow, mainstays of the original landscape and habitats of the fens should be re-introduced.</p>
<p>Drainage and Flood Infrastructure: The dykes and embankments have frequently been 'improved' to aid flood protection and in some cases close management and maintenance has resulted in the further reduction of aquatic and marginal vegetation.</p>	<p>Natural vegetative cover could be allowed to grow up in certain areas, e.g. along embankments, dykes or field margins where it would not interfere with flood management or drainage priorities. This would result in additional visual interest in the landscape, and could also increase the biodiversity value of the area, particularly in respect to linking woodlands and the larger watercourses.</p>

10. North Kesteven Green Wedges

Key Characteristics

- Define the interface between the rural character of the north and north-west of the district with the urban and sub-urban fringes of Lincoln city and north Hykeham.
- Fragmented tracts of land across certain areas of the City and District Boundary.
- Control over development is restrictive.
- Definition of green wedges is not made on landscape value alone. Policy areas created in response to opportunities for enhancement, recreation, to resist urban coalescence and maintain urban character, as well as for their landscape character.
- Green wedges create a substantive buffer between the city and the district, but do not cover the whole interface between the city and district.
- The northern reaches of the Lincoln Cliff in north Kesteven, between North Hykeham and Washingborough is overlain by a continuous series of connected green wedge sections, 'Witham Valley Green Wedge', 'Waddington-Bracebridge Heath Green Wedge', 'Canwick-Bracebridge Heath Green Wedge', and Canwick-Washingborough Green Wedge'.
- Other green wedge tracts are located around North and South Hykeham overlying the Witham valley, at Hykeham Pits (with RSS proposals to extend into Whisby Pits area), and between Skellingthorpe and the city,
- The site for the strategic urban extension – the Western Growth Corridor is omitted from the Green Wedge network.
- Landscape character is markedly different across the Green Wedges.

Policy Concept

- 10.1 The North Kesteven Green Wedges are a well established Local Plan policy response to the need to resist the spread and coalescence of urban areas of the north of the district and City of Lincoln neighbourhoods into important undeveloped areas on the city's fringe. In addition they are utilised to safeguard valued landscape, nature conservation and recreational assets in the close vicinity to the city. Green Wedges are a joint policy approach and as such extend across administrative boundaries outside the district.
- 10.2 The four Green Wedges wholly or partly within North Kesteven are identified on Map 1 and are described in detail below. From a landscape perspective these areas have, and do, offer a strong and effective policy tool in protecting the setting of the historic city. They afford protection from development and coalescence of important breaks in development across suburban tracts of the greater city area and present in the case of GW1 and GW3, very important recreation and habitat assets. In particular, the protection of the northern parts of the Lincoln Cliff within the district is particularly important to local amenity and to the setting of the city of Lincoln itself. Given the likely removal of undeveloped tracts of land close to the city under the proposals for the Western Growth Corridor, (abutting GW4 – Skellingthorpe), the value of the remaining Green Wedge areas within the district may be seen to take even greater value and local importance. *Very careful consideration should be given before any reduction in Green Wedge policy areas are sanctioned within spatial plan reviews.*

GW1 - Waddington to Washingborough Green Wedge

- 10.3 A single and continuous tract of land which generally follows the scarp slope of the Lincolnshire Cliff northwards and then eastwards through the Witham valley 'gap' from the northern edge of Waddington to the western fringe of Washingborough. The western extent of the wedge is clearly defined by the built area of the Bracebridge estates, and in the north by the district boundary which generally cuts across the lower sections of the Cliff slope as it becomes the Witham Gap. Its eastern extent is less well defined by topography, with less discernable justification of extent to the north of Bracebridge Heath and around Canwick. The landscape of the wedge is dominated by the steep scarp of the cliff, although more level ground is incorporated along its base on the upper reaches of the Witham Vale, and then again at its crest as it merges with the Heath Plateaux. High points of the wedge reach to around 75 metres close to Waddington on the Grantham Road, and around 65 metres around Canwick. Hence with lower elevations of only 5 metres in the Witham Vale, the wedge therefore consists primarily of a significant and relatively dramatic topographical feature which is of high landscape significance. Views from it, and vistas towards it, particularly from the city itself are significant and important. In particular, vistas towards Lincoln Cathedral and across the Vale could be considered as being of more than district significance.
- 10.4 Land use within the wedge is mixed. The southern sections reflect the typical characteristics of the Lincoln Cliff Landscape Character Sub-area (see Chapter 7) and the Witham and Brant Vales Landscape Character Sub-area (see section 6.5), and display a mix of predominantly large field monoculture but with rough grazing pasture on steeper fields, particularly on the approaches to Lincoln. Field boundaries are generally defined by gappy hedgerows with few trees, particularly on the scarp although the ridgeline to the immediate west of Bracebridge Heath has a strong mature hedge definition. The boundaries along the lower reaches of the southern wedge are often defined only by ditches.



The Cliff top merges with the Heath in areas with little topographical definition and wide open arable fields.

- 10.5 As the wedge arcs north easterly into the Witham Gap, the uses become more closely associated with recreation and urban fringe development. Pockets of low woodland, school playing fields and equestrian uses are present, whilst a golf course covers the majority of the lower slopes north of Canwick. The area west of Washingborough then reverts to arable agriculture as the topography becomes less

pronounced. The central section of the wedge lies on elevated but generally level arable land between Bracebridge Heath and Canwick and is of very limited topographical or other character interests but does present significant views towards the Minster as it abuts the cliff ridge along the upper part of Lincoln city's South Common area.

- 10.6 The Viking Way long distance footpath is an important recreational asset to the wedge, particularly given its accessibility from the wider urban area. Networks of footpaths dissect the cliff in straight west to east lines offering several 'circular' routes and affording significant views west and north.



Important vistas to Lincoln Cathedral are prevalent from the northern area of the green wedge

- 10.7 By definition, settlement or significant buildings are absent from the wedge.

Green Wedge 1	
Pressures for change and landscape detractors	Opportunities for Enhancement
<p>Agricultural Development The openness of much of this green wedge is valuable in presenting a key setting for Lincoln and affording expansive views in an otherwise low lying district. Development of major buildings is unlikely to pass policy test but pressure for agricultural development, less well controlled within the planning system may arise with highly intrusive outcomes.</p> <p>Large fields in monoculture practice are dominant in the northern parts of the wedge, and further loss of field boundary should be discouraged.</p>	<p>In determining prior notification proposals for agricultural development, the planning authority should seek to use its full influence in discouraging large or poorly designed agricultural 'sheds' within the wedge, instead seeking to relocate to less intrusive areas of a farm unit, and ensure building design and appropriate landscaping is delivered to a high standard.</p> <p>Farm Stewardship scheme objectives should seek to resist further loss of field boundary, and seek to encourage reinforcement of field pattern where opportunity arises.</p>

Infrastructure The area would be vulnerable in landscape terms to new infrastructure proposals, particularly telecommunications and electricity distribution networks. There is a risk of 'skylining' in many parts of the wedge from several vantage points which would detract from its valued landscape characteristics.	The Planning Authority should seek to maintain a positive dialogue with the utility companies and statutory undertakers to ensure prominent infrastructure is not located in the upper areas of the wedge, and wherever possible, to seek for a reduction or removal of existing infrastructure.
Public Rights of Way The network is reasonably extensive in the green wedge, but opportunity for expansion, and particularly improved linkages around the urban fringe is a valid objective for the County Council and Local Authority. The prominence of paths across the cliff side can be prominent from the lower parts of the area.	Seek to focus the expansion of the PRow network across the green wedge, utilising appropriately designed entrance points, surfacing, gateways, styles and signage.

GW2 - Witham Valley Green Wedge

- 10.8 The roughly triangular area lies within the well defined wedge of green space between North Hykeham, and the lower reaches of Bracebridge estates along Brant Road, and extends southwards away from the city limits down the Witham Valley and westwards to the north eastern point of South Hykeham. The southern and south eastern boundary of the wedge does not follow a strong topographical or land use delineation.
- 10.9 The river, (and its tributary drains) present the only topographical features of interest, but as within the wider vale, is generally screened from view by flood defence embankments. Sparse bank-side vegetation of scrub, hawthorn and willow occasionally break up the artificial profile of the river's embankment. Otherwise the land is low lying and flat.
- 10.10 Intensive arable farming prevails across the wedge, typical of its Brant and Witham Vale character, and this use often reaches to the very edge of the urban and suburban extent of North Hykeham and southern parts of Bracebridge estates. Field boundaries again reflect those of the wider Vale, often being defined by drainage ditches in the south east area, with increasing hedgerow cover further west. The few areas which are not under crops are associated with some rough grazing and playing fields to the eastern edge of North Hykeham, and sewage treatment works adjacent to the river in its northern part, and again on a smaller scale close to South Hykeham.



Urban fringe uses and green wedge to North Hykeham's new southern boundary

- 10.11 Settlement within the wedge is essentially absent, but large areas of intensive housing development in the North Hykeham area has resulted in a new rural-urban interface. This is sometimes stark, but more recent development does display some strong and locally sympathetic design characteristics which do not soften this marked change, but does afford some strengthening of local distinctiveness particularly when viewed from Mill Lane and from South Hykeham.

Green Wedge 2	
Pressures for change and landscape detractors	Opportunities for Enhancement
<p>Agricultural Development The openness of much of this green wedge is valuable in presenting a key limit to greater Lincoln. Development of major buildings is unlikely to pass policy test but pressure for agricultural development, less well controlled within the planning system may arise with intrusive outcomes.</p> <p>Large fields in monoculture practice are dominant in the northern parts of the wedge, and further loss of field boundaries should be discouraged.</p>	<p>In determining prior notification proposals for agricultural development, the planning authority should seek to use its full influence in discouraging large or poorly designed agricultural 'sheds' within the wedge, instead seeking to relocate to less intrusive areas of a farm unit, and ensure building design and appropriate landscaping is delivered to a high standard.</p> <p>Farm Stewardship scheme objectives should seek to resist further loss of field boundaries, and seek to encourage reinforcement of field pattern where opportunity arises.</p>
<p>Infrastructure The area is within part of the Witham Valley where flood risk is significant. Flood infrastructure influences the landscape mainly through shielding the river from view. This is unlikely to</p>	<p>Flood defence infrastructure management should seek to afford a more naturalised appearance to river embankments, where acceptable from a safety and functionality perspective. Less 'engineered' profiles</p>

change in the future, but further engineering works will remain a possibility.	and allowance of natural riparian vegetation would enhance landscape credentials and habitat value.
Public Rights of Way The network is less extensive in the green wedge, and opportunity for expansion, and particularly improved linkages around the urban fringe is a valid objective for the County Council and Local Authority.	Seek to focus the expansion of the PRoW network across the green wedge, utilising appropriately designed entrance points, surfacing, gateways, styles and signage.

GW3 - Hykeham and Whisby Pits Green Wedge

- 10.12 The Green Wedge stretches in a westerly direction from the city boundary roughly between Whisby Road and the Newark Road. Its Local Plan delineation ends where it abuts the A46 trunk road running in a north-easterly direction, but proposed alterations within the RSS Lincoln Sub-Area review suggest it will in future extend beyond this line to cover the area known as Whisby Pits. It is evident that the original element of this wedge does perform a function of partition between the areas of North Hykeham and the Hartsholme districts of the city. However the key characteristics of the area are considered to be more significant than its role as an important interface between city and countryside. This is emphasised by the proposed expansion which relates more to the consistency and nature of its landscape characteristics, recreation and biodiversity value than to any obvious separation or wedge function.
- 10.13 The area is strongly characterised by an extensive water and woodland environment which very obviously owes its existence to past (and some current) minerals workings (sand and gravel). It would not be unreasonable to refer to the area as a 'blue wedge' such is the dominance of water and the clear delineation of the area around the lakes. The area is by definition very low lying and flat topography, with only the embankments of the A46 trunk road and railway rising significantly above the wider area. Whilst an extensive waterscape it is also a complex one, defined by a series of over twenty individual lakes and lagoons of varying size and perimeter form. The larger lakes are located east of the A46 and south of the Lincoln-Nottingham railway line, whilst those within the northern and western areas tend to be smaller, tightly interlinked with complex series of promontories and narrow banks separating individual waters. Generally the further east within the wedge, the larger and more rectilinear the water bodies become. A feature of the central and western lakes and ponds is their irregular shape and proliferation of islands. A landscape consequence of this is that from eye level the extent and form of the lakes is confused, and identification of true bankside from island is difficult.



Dominance of water and wire in the Hykeham and Whisby Pits Green Wedge

- 10.14 Within this confused interplay of land and water is an extensively treed landscape. This is predominantly of self generating alder and birch, and is characterised by differing ages of succession, probably reflecting the length of time since the cessation of minerals workings. As a consequence of the trees within the wedge and the level nature of the area the outlook from spaces within the wedge is of a horizontal banding of water, woodland and large skies. Interruptions to this characteristic vista are however significant, particularly as a consequence of the significant high voltage transmission lines and pylons which cross the west of the area, and from the larger industrial and distribution buildings which bound the site at several points. In addition there are some areas still under minerals activity and the industry's infrastructure is prominent in certain areas. Despite the significant naturalisation of large parts of the wedge, this is a busy landscape, with human intervention obvious most of the time.
- 10.15 The wide mix of uses across the wedge is of note and may be seen as occasionally incompatible. Areas around some of the lakes and the water itself present a clear and varied recreation resource of boating, sailing, angling, informal recreation and habitat interest. This is notable at the Whisby Nature Park Centre. Sometimes this is a managed landscape, particularly to the east close to housing estates, whilst elsewhere it is far more naturalised. Accessibility across the site is however restricted. Caravan homes and mobile caravan storage is also concentrated to the fringes of the wedge. Elsewhere minerals and industrial uses persist, reminding the visitor of the origins of the landscape as it is today.



Industrial and mineral workings continue in the green wedge

Green Wedge 3	
Pressures for change and landscape detractors	Opportunities for Enhancement
<p>Mixed uses Diverse pressures for use of land and water are apparent in the wedge. In particular the spread of housing, continued minerals activity and broad range of recreational uses are significant influences on the landscape character. Some uses are particularly negative features, including existing electricity infrastructure and holiday home parks of regimented lines of caravans and holiday homes. The wedge nevertheless has very strong landscape, recreation and biodiversity importance all of which are interdependent and vulnerable to pressure for increased use or development.</p>	<p>It is suggested that a Green Wedge Management Plan type approach be adopted to set out clear vision, objectives actions and deliver solutions for the continued sustainable evolution of the resource. This should have regard to stakeholder aspirations and seek to achieve win-win type outcomes to identified issues and problems.</p>

GW4 - Skellingthorpe Green Wedge

- 10.16 The wedge presents a buffer between the western Lincoln suburbs of Birchwood and the village of Skellingthorpe which lies only 1.5km to the west but still retains its integrity as free standing large rural village. The Local Plan designation is proposed to be expanded in accordance with the proposed RSS revisions within the Lincoln Sub-Area strategy. It takes a convoluted form, generally consisting of an irregular south-east to north west wedge between the village and city, with a narrowing to the north before taking a hammer-head form along the north western district boundary running in a north-west to south-east orientation along the Fosdyke main drain. The heavily wooded western suburbs, and the A46 trunk road delineate the eastern

extent of the wedge, with a convoluted line defining the remaining sides utilising field boundaries, lanes, surface water drains and the limits of the built area of the village itself. The omission from the green wedge area of the area proposed for the Western Growth Corridor east of the A46 is notable. In terms of its primary function, this area would have been expected to be overlain by a green wedge designation as an important green incursion into the core of the urban area.

- 10.17 Apart from the elevation of the embanked A46 towards the northern section of the wedge, the area is of negligible topographical variation. It is low lying and level. Drainage ditches characterise the northern sections.



Intensive arable farmland to the north of the Skellingthorpe Green Wedge with vistas to the Cathedral

- 10.18 Land use within the wedge is predominantly of intensive arable agriculture, typical of the wider landscape character of the upper Trent and Belvoir Vales. Mostly fields are of a medium to large size with boundaries of gappy hedges with a few hedgerow trees. Towards the edges of Skellingthorpe field size reduces slightly and some evidence of mixed arable and dairy farming. A small area of parkland, surrounding a modest country house is found to the east of the village. However, the heavily wooded landscape to its eastern fringe is locally distinctive and serves to provide a very substantial visual and perceptual barrier between the city suburbs and the open countryside of the village's setting. Away from this physical barrier, the views out of the village and wedge toward the city are important, particularly in respect to vistas of the Cathedral.

Green Wedge 4	
Pressures for change and landscape detractors	Opportunities for Enhancement
Agricultural Development The openness of much of this green wedge is valuable in presenting a key limit to greater Lincoln. Development of major buildings is unlikely to pass general spatial policy tests but pressure for agricultural development, less well controlled within the planning system may arise with intrusive outcomes.	In determining prior notification proposals for agricultural development, the planning authority should seek to use its full influence in discouraging large or poorly designed agricultural 'sheds' within the wedge, instead seeking to relocate to less intrusive areas of a farm unit, and ensure building design and appropriate landscaping is delivered to a high standard.

Green Wedge 4	
Pressures for change and landscape detractors	Opportunities for Enhancement
Large fields in monoculture practice are dominant in the northern parts of the wedge, and further loss of field boundaries should be discouraged.	<p>Farm Stewardship scheme objectives should seek to resist further loss of field boundaries, and seek to encourage reinforcement of field pattern where opportunity arises.</p> <p>Objectives for the Till Vale character sub area are pertinent to this wedge.</p>
Infrastructure The area is adjacent to major drains infrastructure (Fossedyke) where water management is important. Flood infrastructure influences the landscape can be prominent because of the wedge's open nature. This is unlikely to lessen in the future, and further engineering works will remain a possibility.	<p>Flood defence and navigation infrastructure management should seek to afford a more naturalised appearance to waterway corridors, where acceptable from a safety and functionality perspective. Less 'engineered' profiles and allowance of natural riparian vegetation would enhance landscape credentials and habitat value.</p>
Public Rights of Way The network is less extensive in the green wedge, and opportunity for expansion, and particularly improved linkages around the urban fringe is a valid objective for the County Council and Local Authority.	<p>Seek to focus the expansion of the PRoW network across the green wedge, utilising appropriately designed entrance points, surfacing, gateways, styles and signage.</p>
Treescape The dense birch woodland which bounds the south-eastern fringe of the green wedge around the A46 corridor is an important landscape element, particularly in forming a visual and perceptual barrier between Lincoln city and its rural hinterland.	<p>The birch woodlands of the wedge should be positively managed to allow appropriate succession and maintain and strengthen its visual, habitat and recreational roles.</p>

Continued relevance and value of the Green Wedge policy approach

- 10.19 The Green Wedge policy of the 2007 North Kesteven Local Plan seeks to maintain a robust level of control over development within the green wedges, permitting only development which is not harmful to its multiple functions of landscape value and protection of the city's setting, urban containment, habitat importance and recreational value. Exceptions to this presumption against harmful development must to be justified as being in the public interest and be accompanied by a series of appropriate mitigation and compensatory measures. The policy appears to be as 'firm' as is reasonably possible given the mainly local importance of these functions. The regional, if not national imperative to protect the setting of the historic city of Lincoln should not be underplayed however.

- 10.20 As adopted, the policy may actually be considered to be less aspirational than could be the case. It focuses on the necessary control over development role of the Green Wedges, but ignores the opportunity to incorporate any element of positive enhancement which this study would support. A broadening of the policy approach, perhaps within emerging LDF policy, could set a more positive and permissive regime for small scale development which could help enhance its informal recreational, educational, habitat and landscape functions, and the linkages therein.
- 10.21 As set out within the main descriptions for each of the Green Wedges which fall within North Kesteven, the character of those individual wedges is extremely diverse. All have intrinsic landscape interest and importance, even where not necessarily of exceptional value in a traditional 'scenic' sense. Their importance is emphasised by a series of inter-twined factors and pressures which varies across the series. In particular the wedges which overlap the Lincoln Cliff are particularly valuable in respect to a combination of their exceptional topographical interest, habitat and recreational value, and in maintaining vistas towards the city, and especially the Minster. The lower lying 'dry' wedges of the Witham Vale and Skellingthorpe perhaps afford less of a resource from a habitat perspective, but do present very important buffers of open countryside close to existing or proposed areas of significant expansion, such as the Western Growth Corridor proposals. These represent very important constraints on urban expansion where the character of the underlying character sub-areas would be highly vulnerable to the scale of potential growth which simple adherence to good countryside design principles (as set out in Part 3) could not protect adequately. The 'wet' wedge of Hykeham and Whisby Pits Green Wedge affords an exceptionally diverse landscape asset, which although recently 'man-made' in the main, presents a very important asset to the district and city in respect to its habitat, recreation and landscape qualities, as well as urban constraint. Pressure for waterside development, over intensive recreational uses and residual pressure for minerals working present a series of challenges to the landscape which demands a special integrated approach in policy.
- 10.22 Another important consideration in determining the future relevance of the green wedges as a policy tool is their trans-authority function. The wedges within North Kesteven are but part of a wider series of wedges which protect the city's landscape setting and other important social and well-being functions within the City itself and West Lindsey District. Their key functions should be applied consistently and robustly if they are to be effective (as they have been) regardless of which administrative area they fall within, and maintenance of a clear and specific policy for the defined spatial units is helpful in this regard.
- 10.23 A considerable advantage of the retention of the Green Wedges as a policy approach is the potential for long-term and co-ordinated enhancement and management schemes to be prepared and implemented, with the assurance of those spaces enjoying equivalent long-term protection from harmful development. Hykeham and Whisby Pits Green Wedge in particular presents a valuable, diverse and extensive resource of landscape features, recreational opportunity and habitat function which is likely to benefit from long-term vision and management initiatives to secure enhancement and protection of their multi-functional benefits.
- 10.24 This study recommends that general landscape considerations across the wider district would benefit in the long term from application of a *landscape character* orientated policy approach. However, the specific pressures and functions associated with the Green Wedge network framing Lincoln city suggests that the retention of the network in policy, to *at least* its current spatial extent, remains valid,

and is likely to be increasingly important as pressure grows over the medium term in respect to Lincoln as one of the region's principle growth areas, making a step change in housing provision. The policy approach should however be seen as not just a restrictive or protective tool, important as the function is, but also as positive element in pro-active enhancement and improved management of the sites within the wedge network. Interesting work carried out by the Countryside Agency and English Nature (Delivering a New Urban Fringe - 2006) illustrates the positive and multi-beneficial uses which can be achieved through a positive management approach.

PART 3 – DESIGN STATEMENT

11. Design Statement – Landscape and Countryside Design in North Kesteven

General Principles

- 11.1 This section addresses landscape considerations which should be met in respect to development which is appropriate, or likely to be permitted, within the open countryside.
- 11.2 This report records the diverse landscape character of the district. It is clear that the whole of the North Kesteven landscape is sensitive to change. The wrong type of development in the wrong location, or a badly designed development, or even a badly designed landscaping scheme for an otherwise well sited and designed development, can damage the integrity of its landscape character, often disproportionately to the scale of the development that caused the change. The need for good design is certainly not confined to only the 'best' landscapes, such as the Lincoln Cliff formally designated as an Area of Great landscape Value. All landscapes, throughout North Kesteven, are important to those people who live or work in them or visit them. It is a fundamental aspect of sustainable development to hand on a healthy, well cared for and locally distinctive landscape to future generations, whilst meeting the needs of our rural communities and businesses today.
- 11.3 Where it is appropriate to carry out development in the countryside particular care is required to ensure that built development and associated landscaping and land use changes fit well with the character of the different parts of North Kesteven. Such considerations should be taken by any individual, commercial interest, statutory undertakers, government or other public body, including the Ministry of Defence, where proposing, designing, commenting on or controlling development, land use change and rural activities. In most cases, development in the open countryside will benefit from being carefully designed and utilising the skills of architects, landscape architects, engineers and planners as necessary.
- 11.4 Whilst respecting established character and vernacular tradition should be encouraged, innovative design that fits well in the North Kesteven landscape can be also be viewed positively. The Council should not wish to inhibit modern and innovative designs where they are appropriate, particularly in respect to sustainable design and construction. However, for most development it will be helpful to check that it is compatible and complementary to the key characteristics of the North Kesteven landscape character sub-areas. Wherever possible, new development should help to strengthen, reinforce or where necessary, restore distinctive landscape character.
- 11.5 For most proposed development or changes in the countryside, specific and careful consideration of the aspects set out in the checklist below will help to facilitate improved design. The table offers a systematic and broad structure to the assessment of how development might fit into the landscape, bearing in mind the local landscape character and its sensitivity to change.
- 11.6 Developments that are subject to Environmental Impact Assessment (EIA) will require an Environmental Statement to be submitted in accordance with the *Town*

and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999. These statements should include a thorough assessment of landscape and visual impacts in accordance with the recommended procedures set out in national guidance such as 'Environmental Impact Assessment: A Guide to Procedures' (January 2000) wherever the effects are likely to be significant. Given the sensitivity of some parts of the North Kesteven landscape, it is likely that all EIA developments will need to include landscape and visual impact assessments in the relevant environmental statements, for which the Landscape Character Assessment can set a clear baseline.

- 11.7 Where non-EIA development is proposed, projects that are likely to have significant landscape and / or visual impacts should be subject to similar assessments in accordance with the EIA guidance even where a statutory environmental statement is not required. The District Council should be able to advise on the need for, and scope of, such assessments in advance of the preparation and submission of a planning application.
- 11.8 Key points for consideration in assessing how a good landscape character fit can be achieved for new development are set out as follows:

Landscape Design Considerations

Location and siting	<ul style="list-style-type: none"> • Would the proposal be sited in a way that provides the best fit in the landscape so that it would look as if it belonged there, for example is it well related to other buildings or features in the landscape? • Would it present an isolated and incongruous interruption where there is open character to the landscape? • Is it well related to landform in a way that buildings have traditionally related to the topography?
Aspect and orientation	<ul style="list-style-type: none"> • Would the proposed buildings be consistent with the way other buildings are orientated, for example inward looking to a crew yard or village green, outward looking to a view from a ridge, or fronting or at right angles to a road or lane?
Scale	<ul style="list-style-type: none"> • Would the proposal be appropriate in scale to its setting, for example would it dominate other buildings or landscape features around it, detract from views of a church spire, or look incongruously too big or too small?
Layout	<ul style="list-style-type: none"> • Would the layout of the proposal be compatible with the surrounding development, traditional layouts and / or landscape character, for example would any existing buildings and the proposed buildings be well related to each other? • Would there be a rational explanation as to why they are laid out in the way they are, would the layout reflect that typically found in the area or vicinity, would it relate well to the layout, inter-relationships and juxtaposition of buildings and / or other features in the setting?
Design	<ul style="list-style-type: none"> • Would the proposed design be compatible with the landscape and/or settlement character, for example would it be in harmony with other features or strikingly discordant? • Would it reflect the traditional approach to design, for example in mass, shape, height, width, depth, openings, fenestration, roof pitch, doorways, porches etc?

Materials	<ul style="list-style-type: none"> • Would the proposal be built in external materials that reflect those traditionally used and which make up an important characteristic, avoiding stridently contrasting or other inappropriate materials, colours and finishes, would the colour, texture and reflection of the materials of buildings or infrastructure make the development more conspicuous or out of place? • Does it avoid using reflective materials for large agricultural building's external walls and roofs?
Access	<ul style="list-style-type: none"> • Would the proposed means of access fit well with the landscape setting and the new and existing development? for example would it be a dominant feature, would it require excessive 'cut and fill' because it was not well related to landform, would it be built of appropriate surfacing materials that blended with the surroundings and other land surfaces? • Would it avoid using features which serve to 'urbanise' the setting, such as using concrete kerbs and utilitarian lighting? • Would highway design requirements, including signage be disproportionately intrusive in relation to the scale of development?
Boundaries	<ul style="list-style-type: none"> • Would the proposal require new boundaries to be erected and, if so, what would be the most appropriate type? • Would a hawthorn hedge, plateau limestone walling, estate fencing or brick wall be most appropriate, would any fencing be compatible with the traditional style of agricultural enclosure in the landscape around it? • Which type of gate would best fit in with other landscape elements? • Would it avoid utilising flimsy fences, 'ranch-style' fences, close-boarded fences and crude post and plank fences and, unless the scale and design of the development particularly justify it, very large, over-ornate metal fences and gates? • Is field hedging locally characteristic in species or pattern, and can it be strengthened? • Should hedgerow trees be encouraged and dying or diseased trees replaced, or retained for habitat value? • Can field boundary margins be managed better for landscape value and habitat enhancement?
Landscaping	<ul style="list-style-type: none"> • What kind of landscape treatment would best fit the location and achieve the <i>purpose</i> of the landscaping scheme? - is the objective to help to : <ul style="list-style-type: none"> ➤ Screen the development from particular views, or ➤ Reinforce existing landscape features to improve the fit of the development in the landscape, or ➤ Provide a largely cosmetic landscaping scheme?
Plant species	<ul style="list-style-type: none"> • Would the mainstay of the landscaping scheme or any boundary or other treatment comprise species of trees and shrubs that are locally indigenous, native species already dominant in the area? Not only will this afford best landscape fit, it will be preferable from an ecological point of view and those species will grow well in the location. • Several farm complexes around the district utilise effective, but visually incongruous and prominent Leylandii type screening. These present an alien feature in the landscape and present non-seasonal sometimes massive intrusions in the landscape. Does the proposal avoid use of Leylandii and similar species? • Non-native coniferous species should not be encouraged through the planning or land management controls and interventions. • Can a new landscape scheme serve to replace incongruous features, such as Leylandii hedging?

Landscape links and 'stepping stones'	<ul style="list-style-type: none"> • Would it be possible to use new planting to help to link the proposal to existing landscape features such as woodlands, copses or hedgerows? • Could lost landscape features be replaced, can the development contribute to the provision or restoration of landscape features which are important to wildlife as corridors or stepping stones, such as ponds, hedges, trees, woodlands, wetlands or semi-natural grasslands? • Can local Biodiversity Action Plan objectives be facilitated through landscaping schemes?
Vistas and Outlooks	<ul style="list-style-type: none"> • Would development or landscaping serve to interrupt or otherwise obscure important vistas or inter-visibility between landmarks? • In particular, would views from and up to the Lincoln Cliff to and from the west, and vistas of the characteristic church spires across North Kesteven be afforded proper protection? • Can landscaping in particular serve to reinforce important vistas, such as tree avenues, or focusing the eye towards important buildings or views?
Drainage	<ul style="list-style-type: none"> • Would it be possible to create new sustainable drainage systems that will improve water quality and help create new wetland habitats? • Does ditch maintenance or creation complement landscape character and pattern, and afford biodiversity opportunity, particularly on the Fens and across the Witham and Brant Vale? • Can dew ponds be (re)introduced to the Limestone Heath?
Ancillary Development	<ul style="list-style-type: none"> • Would the proposal include, or lead to pressure for, ancillary buildings or structures, and if so will they clutter the site or spoil the overall design and layout, would they fit well in the landscape, has sufficient consideration been given to their design and integration? • Has the need for likely future requirements such as storage and expansion been taken account of?
Outside Storage	<ul style="list-style-type: none"> • Would the proposal require goods, materials, vehicles, trailers etc to be stored outside, would the development be likely to generate clutter, if so would these things be controlled, well screened and discretely located?
Lighting	<ul style="list-style-type: none"> • Consider fully, and control as necessary level and direction of external lighting to new development. • Does the scheme minimise 'light pollution' and safeguard the characteristic dark skies of the district away from the Lincoln area? • Avoid the use of internally illuminated signs within rural settings and important built environments.
Visual Amenity	<ul style="list-style-type: none"> • Would the proposal adversely affect the visual amenity of people who live, work, visit or pass through the area, would important viewpoints be affected, how conspicuous would the development be and what could be done to reduce this?

11.9 Beyond agriculture and certain minerals and highway developments, some of the most significant forces for landscape change beyond the confines of established settlements in the district are associated with the Ministry of Defence's presence in the district and with new environmental infrastructure, particularly flood defence works. These may present a need for more specific and innovative approaches in respect of landscape conservation. Likewise, the particular importance of the Lincoln Cliff demands specific consideration in terms of landscape conservation.

Ministry of Defence Sites

- 11.10 The presence of the Royal Air Force installations, operational and disused, across the district is significant in landscape terms, but are often an important part of the local community, have strong historic value, and also be of significant economic importance. By their nature, the airfields at Waddington and Cranwell, and the communications/radar community at RAF Digby will remain significant interruptions in the otherwise agricultural landscape, and their buildings are some of the largest in the district. Perimeter treatment will be determined by security requirements rather than aesthetic considerations whilst they remain operational. Infrastructure within the sites can be massive, extensive or just prominent by way of their design and function, absence of sub-division, floodlighting and large expanses of hard surfacing are prominent characteristics. Furthermore, as Crown land, new, additional development within the airfields themselves may not be subject to any effective planning control.
- 11.11 Such matters suggest that there is a need for a long term and collaborative relationship to be established between the MoD estates operations and the Local Planning Authority in respect to further development, or on occasion decommissioning of facilities. In all such cases, seeking solutions which have a good landscape fit, or minimise incongruous intrusion into the landscape should be core objectives. Opportunities for landscape enhancement, or minimising of impact could be addressed in respect to:
- Securing significant *off-site* landscaping, in line with the appropriate character area profile could be long-term mutually beneficial solutions to the impact of the airbases across the district. Whilst security considerations will prevail, off site block planting may help reduce the visual interruption to established character
 - Enhancement of the installations as habitats which are not otherwise fostered in the intensively farmed landscape should be examined where they do not hinder functionality. In particular, management of sites for natural grassland and wild flower habitats, rich in invertebrate interest may be worthy of investigation, and evidence suggests that this has been successfully carried out elsewhere through use of appropriate seeding and mowing regimes.

Utility Infrastructure

- 11.12 Flood defence infrastructure is sometimes a prominent feature in the west and north of the district. In the Fens of the eastern part of the district they are fundamental elements of the landscape and its valued character, with ditches, embankments and their linear patterns central to its uniqueness. Elsewhere, pressure for new flood defences is likely to increase with proposed major mixed use expansion in the Lincoln City area as a key example.
- 11.13 Flood defence is clearly an important and topical issue, and protection of life and property essential. However it has also resulted in some landscape harm, particularly in respect to flood embankments across the Witham and Brant Vale character area. Here the importance of the twin rivers within the landscape is often reduced considerably by embankments, and also by the maintenance of those embankments as a result of systematic clearance of riverside vegetation from them. Such measures have been evident in the landscape for many years, but consideration should be given to reducing its impact upon the landscape and to the natural systems and habitats which would otherwise colonise the riparian

environment. Whilst flood defence in the form of embankments will remain in populated areas, the risk and intensity of flooding can be off-set through restoration of functional flood plains. Such measures, for example across the Witham and Brant Vale could present very considerable opportunities for landscape enhancement and habitat enrichment, and examination of planned management of water meadows and flood plains should be considered between the Environment Agency, the Local Authority and land owners.

- 11.14 Across considerable tracts of the district high voltage transmission infrastructure presents a major interruption to the landscape. No practical landscaping measures could serve to meaningfully reduce their impacts, apart from under-grounding. The national importance of these lines is fully acknowledged, as is the economic burden associated with under-grounding of cables. However their impact upon the Lincoln Cliff and its environs is significant. The Local Planning Authority should seek to maintain pressure on the National Grid Company to consider the potential for under-grounding the cables between the Witham and Brant Vale to a point east of the Cliff ridge, so as to avoid the very significant sky lining of the infrastructure in this area. Elsewhere similar consideration should be given to the removal of overhead wires from the Bracebridge Heath and Washingborough areas which otherwise offer superb views of Lincoln Cathedral.

The Lincoln Cliff

- 11.15 The Lincoln Cliff, along with the fens, presents perhaps the most important individual landscape asset within the district. The prominence of its scarp slope, the setting it affords for its fine limestone villages and the views afforded from it are important both locally and at a sub-regional level. This importance has been recognised by local landscape designation - Area of Great Landscape Value within previous iterations of the development plan, but this approach is no longer supported by Government or the council. Instead PPS7 supports a Landscape Character based policy approach when considering development proposals or land management matters which have landscape implications, and subsequently the council has adopted the 'Lincoln Cliff Landscape Character Area' policy within the North Kesteven Local Plan 2007 in place of the previous local designation.
- 11.16 The detailed description of the cliff and its characteristics is set out within Chapter 7. Landscape threats and opportunities are addressed within the chapter, but it is important to reiterate the importance not only of its inherent characteristics which combine to present such an important and valued landscape asset, but to protect its setting from harmful visual intrusion beyond its actual character area delineation. In particular, development at the foot of the Cliff within the Witham and Brant Vale should be carefully controlled to avoid harmful interruption of the important break in topography and land use change as the scarp rises abruptly from the vale landscape. Similarly development proposals within the ridgeline settlements of Waddington, Coleby, Bracebridge Heath, Harmston, Navenby, Wellingore and Leadenham should be afforded utmost scrutiny to ensure that the character of those settlements and their crucial landscape setting is neither obscured nor diluted through unduly prominent or poorly designed development.
- 11.17 Spatial policy within the emerging LDF should therefore consider making explicit the need for protection of the *setting* of the Cliff, as well as its component features, particularly in respect to development on the edge of the ridgeline settlements and agricultural or communications infrastructure development, on the scarp or within its setting. In this respect the setting of the Cliff might reasonably be expected to

encompass *significant* areas of the Witham and Brant Vales to its immediate west, which are so critical in presenting a clear vista towards the break in topography and its rich and much valued appearance, from Green Wedge 1, and also the western fringe of the Limestone Heath from where large structures may, in theory, 'skyline'. The geographical extent of where the impact of development proposals on the setting of the Cliff could be harmful will be influenced by the scale and nature of the proposals themselves. Subsequently, it is not proposed that a 'Cliff setting' delineation be made on the Proposals Map of the LDF as this would be difficult to prepare and potentially sensitive to communities and interests beyond the existing character area policy extent. Nevertheless, the on-going conservation of the Cliff within its wider setting might be artificially limited by reliance on the current tightly defined character area policy delineation which may not deliver the broader criteria tests that a Landscape Character Assessment based policy could for development *beyond* the its current spatial delineation.

- 11.18 Spatial policy must therefore present a clear set of criteria for conservation and enhancement of all landscape character types in the district, but which also presents a separate element specific to the Lincoln Cliff. In doing so elevated levels of protection can be properly afforded, reflecting the findings of this report, and making clear that development away from the character area itself, but affecting its setting, will be subject to close scrutiny. This need not result in any dilution of the levels of development control possible under the present policy approach, and should, in practice be more effective and responsive to the distinct landscape characteristics of the Cliff itself.
- 11.19 In addition, land management regimes, through direct council action, partnership working, informal agreements and voluntary action, should ensure the special landscape features of the Cliff, such as field orientation, boundary maintenance, woodland management and succession and utility infrastructure provision seeks to strengthen its very special character and enhance its amenity value.

Preparation of Supplementary Planning Documents.

- 11.20 To help to deliver the landscape planning objectives of this report, more detailed guidance should be prepared in the form of Supplementary Planning Document(s). The guidance should be developed from a solid landscape conservation orientated policy, or suite of policies within the emerging Local Development Framework, ***which refer to and are anchored within the findings of this or future Landscape Character Assessment(s)***. Key elements of supplementary guidance might usefully be based upon the Character Area specific 'threats and opportunities' tables contained within each of the preceding Character Area profiles. Of course, such SPD is dependent on Landscape Character orientated policies being adopted within subsequent spatial plans for the district.

12. Settlement and Landscape Design Guidelines

Housing Development in Settlements

- 12.1 The following section of this report sets out guidance in respect of how general development, and especially housing development, may achieve 'best landscape fit' within or adjacent to settlements where growth may be accommodated as set out within the North Kesteven Local Plan 2007.
- 12.2 The 2007 Local Plan sets out a strategy for the location of new development based upon a settlement hierarchy. This identified a twin track approach, with a 'Lincoln Policy Area' and a 'Rest of District' area. Each is divided into four separate tiers of settlement therein, each of which can be seen to perform a different role and present different suitability and sustainability credentials in respect to accommodating necessary growth. First Tier and Second Tier settlements are the largest and identified as most appropriate for accommodating growth.
- 12.3 The first of the twin areas is the 'Lincoln Policy Area'. This includes the settlements of the district closely related to Lincoln's built-up area. Primarily this consists of North Hykeham and South Hykeham Fosseway, which are the priority location for development in the Lincoln Policy Area. Its Second Tier Service Villages are; Bassingham, Bracebridge Heath, Branston, Heighington, Metheringham, Skellingthorpe, Waddington, Washingborough and Witham St Hughes.
- 12.4 The second area is the 'Rest of the District' where the influence of Lincoln City is less significant. Sleaford (including Rauceby Hospital) is identified as the first choice location for development in the area. Its Second Tier Service Villages are; Billingham, Heckington, Navenby and Ruskington.
- 12.5 In both areas the Third Tier consists of Villages. These represent the third choice location for development and the Council will consider small-scale residential infill development of up to 3 houses in these areas. The Fourth Tier consists of Hamlets and these Hamlets are not generally considered as suitable locations for development.
- 12.6 The following section examines those settlements where development is most likely to take place (i.e. First and Second Tier settlements) and examines the implications that new developments may have on the existing character and landscape setting of them and sets out strategic level design guidelines.

Lincoln City Policy Area

North Hykeham and South Hykeham Fosseway

- 12.7 The existing extent of built development at North Hykeham and South Hykeham Fosseway is, in a physical sense, an extension of the Greater Lincoln urban area. It falls within North Kesteven but is an integral element of the city. There are few if any clearly distinguishing physical features or breaks in development which afford a separate identity to be established by the area within North Kesteven.
- 12.8 In sustainability terms the designation of the area for significant allocation of housing is appropriate and in-line with government guidance and established sustainability thinking. Furthermore, much of the area designated within the Local Plan now has the benefit of planning permission and development over larger areas between the Newark Road and Mill Lane is partially completed or underway at the time of preparing this report. Within this allocation there is a significant element of greenfield development proposed or underway falling *within* the Witham and Brant Vale landscape character area.
- 12.9 Landscape Character implications of this significant growth point are relatively clear. An area of currently intensive arable farmland with occasional pockets of pasture between Mill Lane and Newark Road will be lost to development of housing and employment development. The relatively level relief of the area means that, in landscape terms its impact from on the Vale itself will be concentrated at the interface between the new development and the open countryside, rather than the detail of layout, design and density therein. Such issues may be more important visually from areas elevated on the Lincoln Cliff, but the relative distance between vantage points and the area of growth is unlikely to present significant issues for layout and design.
- 12.10 Therefore, in landscape terms it will be most important that the interface between the Vale and the new development is afforded careful attention. Whilst a significant loss of open countryside close to the city has been accepted, and its intrinsic countryside character lost, there are positive opportunities for the creation of a well designed rural-urban fringe in this area. The main interface between the new development and the open Vale runs along the track which links Mill Lane and Newark Road. The eastern section appears to be bounded by a bund wall which may have flood defence function, but will also afford a significant visual screen between the new development and the Vale. Such bunding appears not to be provided to the western parts of the development boundary. Here it will be important to reinforce existing landscape character. As established, the boundary treatment in this part of the Vale is predominantly mixed hawthorn and blackthorn hedging with occasional hedgerow trees, sometimes combined with deep ditches. Hedge height varies and is dependent on maintenance regimes. This important characteristic should be strengthened across the extent of the development's edge, and careful attention paid to ensuring hedgerow trees are appropriate species such as Ash and Oak.
- 12.11 In this area of development it is likely that individual housing units will be visible from some points across the northern Vale. Building design, scale, orientation and massing will therefore be important in a landscape context as well as from an urban



design perspective. To better integrate what is likely to be an abrupt delineation between town and countryside, it may be preferable to ensure that house design is varied along the development perimeter, particularly in terms of building line, ridge height, roofing materials and main walling materials. However, such variation need not be dramatic, and local building vernacular should still be reflected. Small differences between elements of perimeter development could significantly enhance the new urban-rural fringe. Recent development at Hambleton Avenue, east of Mill Lane can be seen to have implemented successfully such an approach. Attention to detail in matters such as eaves, gable verges and fascia treatments, window proportion, window fenestration and materials will also help soften the new urban fringe.

- 12.12 In addition to building design, the characteristic Vale hedges and hedgerow trees should be reinforced at garden boundaries, and consideration given to ensuring that curtilage enclosure to the southern, or open countryside boundaries, is carefully controlled by the LPA. This may require the removal of Permitted Development Rights for the erection of boundary enclosures. Irregular boundary treatment of various designs of timber or concrete fences, Leylandii type hedging or absence of enclosure altogether could have a very detrimental visual impact at the fringe of the landscape character area.
- 12.13 The development offers potential for improved access to the open countryside from the urban area. However a number of public rights of way are to be lost, or their character severely compromised through implementation of the allocations. It should be an objective of the development, and future LDF policy to enhance the Public Rights of Way from the urban area into the surrounding countryside.

Bassingham

- 12.14 Bassingham is a medium sized village on the Witham and Brant Vale where the Local Plan suggests some housing development may be appropriate, subject to it having acceptable impact on character and falling within the village curtilage (as defined on the local plan Proposals Map).



- 12.15 The agricultural heritage of the village is obvious within its built composition, with a number of farm buildings, modern and historic, scattered across the settlement. There would appear to have been a gradual erosion of the dominance of farming within the settlement however with farm buildings and farmyards lost to 'infill' residential development over recent years. Most, but not all post-war development is located towards the north of the village in small estate developments. The elements of the village which have most character fall within a Conservation Area covering a large part of the southern parts of the settlement.
- 12.16 Bassingham is located entirely on the eastern side of the river Witham, close to its banks, but never extending to its west. This strong locational characteristic should be recognised and maintained in considering the location of new development in Bassingham, and in any case may be necessitated by flood defence considerations.
- 12.17 The village has a form often distinctive of other 'Vale' settlements, being of an irregular north-south, east-west grid street pattern, with a complex series of lanes

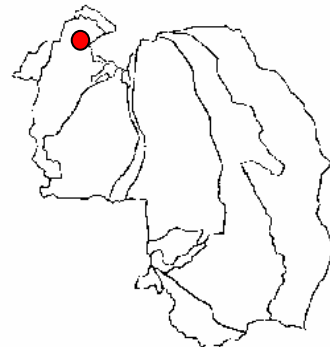
running parallel and at right angles to one another. It is of generally low to mid density with most property being of a detached or semi-detached two storey scale, set in gardens to front and rear. There is not a clearly defined central element to the village, and its physical centre has shifted generally north and east with the intensification of post war residential development in these areas.

- 12.18 The village has seen significant levels of growth in comparison to its relative size in the past fifty years, doubling in population to around 1,300. Its form, whilst still clearly discernable has been eroded to some extent by extensive infill and 'backland' development in areas which would most likely have been farmsteads and paddocks within the village itself. This has had the twin effect of increasing the built density of the village, and also eroding the street pattern through development of closes and cul-de-sacs with which dilute the grid street pattern curved layouts, such as at Holmes Field.
- 12.19 Building materials, particularly of the most important and characteristic buildings are red brick and clay pantile, although some welsh slate is also used. Artificial tiles and more uniform brick types are more prominent in post war developments. In the older parts of the village, such as High Street and Newark Road buildings tend to be built tight to the pavements, but generally the housing stock across the settlement is provided with gardens to front and rear. Consequently there remains a 'green' ambience to much of the village, and mature trees play an important part in creating this character.
- 12.20 In landscape character terms, it is considered that opportunity for further development of residential property within the village curtilage is now severely limited. With the exception of perhaps very small developments of single dwellings, its capacity for growth within the envelope has been exceeded in character terms. Infill and 'backland' development can be seen to have had a considerable, and possibly negative effect on the character of the village over the past 50 years, particularly in respect of its agricultural heritage and open character. Where less densely developed areas remain today, their character is considered to be of heightened importance, such as within the Conservation Area, or flanking the west of the village by the Witham, and further housing development therein needs to be controlled very carefully in order to retain the essential character of the village.
- 12.21 It is therefore proposed that in terms of character the most appropriate way to accommodate necessary new housing within Bassingham would be to allow a single, or a number of smaller extensions to its current built form. Such extension should reflect the grid road layout and be developed at low to medium density. The open spaces within the extension would be important and should be carefully integrated with the subsequent rural-urban boundary. Tree planting and landscaping, and hedged boundary treatment should be important elements of comprehensive design schemes. Such an approach is likely to be in partial conflict with national guidance, and lower density development contrary to established sustainability thinking. However, in *landscape character* terms this may afford the best approach to meeting local housing need. Whilst the landscape of the vale is locally distinctive, the setting of the village would be unlikely to be harmed through such an approach if holistic design approaches are taken, and it is unlikely that sites on its northern, north-west or north-east edges would detract from important landscape elements. The field between Thurlby Road and Croft Lane may offer a suitable site in this respect. Development to the south of the village or between the Witham and existing built extent should continue to be resisted. Where windfall sites become available, the form and density of development should be carefully considered and the orientation

of dwellings afforded careful consideration, with sinuous or curved developments being resisted.

Skellingthorpe

- 12.22 Skellingthorpe is a large village, located towards the northern limit of North Kesteven in the Terrace Sandlands. It also serves as an outlying village on the fringes of Lincoln city, and is hence a focus for new housing within the Local Plan. Skellingthorpe has a population of approximately 2750 people, which includes an increase of approximately 120 people in the last two decades.
- 12.23 The village is clustered around a trefoil of main roads, Saxilby Road, Jerusalem Road and Lincoln Road, all of which join at the centre of Skellingthorpe. The minor road network of Skellingthorpe is very much set around a web of cul-de-sacs and closes, most notably to its western and southern sides where the most modern housing is located. Linear development is found along the three main roads spurring out of the village, representing some older and pre-war dwellings, but these are still modern in comparison with the more historic core of Skellingthorpe. The older village nucleus is nestled around St Lawences Church at the northern end of the village, although even this more historic cluster is now very mixed, with modern development and a range of building styles and materials seen amongst the more distinctive historic cottages and long standing community buildings.
- 12.24 Considerable expansion has taken place to create the more modern southern half of Skellingthorpe, which lies between Jerusalem Road and Lincoln Road. The variety of house styles and materials used is seen throughout the village, representing several decades of expansion in its southern half. This area also includes a considerable number of modern bungalows. A smaller and notably new extension lies to the west, centred on Old Chapel Road.
- 12.25 Around the older northern end of Skellingthorpe village, and also scattered amongst the array of more modern housing, are a number of historic, characteristic or important buildings. These include traditional farmsteads with attractive brick buildings with pantiled roofs, and also the steep slate roofs of the taller and more distinctive farmhouses.
- 12.26 With such a range of dwelling types, any distinctive built characteristics running through the village as a whole are limited. However, it is the treescape of the village that is one of its most notable characteristics, and this is particularly significant at the village fringes. Tree lines also skirt around the various playing fields and open spaces, and mature trees enhance many of the avenues and cul-de-sacs. A number of Tree Preservation Orders exist within and around the village, and the treescape of Skellingthorpe should therefore be regularly checked to ensure suitable maintenance and regular replacement or additional planting to maintain the feature.
- 12.27 A disused railway line runs in an east-west direction through the middle of the settlement, providing an important green corridor and recreational route. This is a significant feature within the village landscape and creates an important tree line. This line also has the effect of severing the residential areas to the north and south of



it. However it is clear that the addition of any further roads across the disused railway line would be detrimental to its function and landscape value. Movement across this line in terms of walking, cycling and riding, should however be encouraged, with opportunities sought for footpath and cycleway linkages into the settlements to the north and south.

- 12.28 Skellingthorpe has a number of important greenspaces within the residential areas, which include playing fields, sports fields and smaller informal open areas. These are particularly important in a village such as Skellingthorpe where traditional village layout has been diluted, and relatively rapid growth has taken place in the post-war period. Protection and enhancement of these internal greenspaces is therefore very important when new development is considered.
- 12.29 It is likely that there will be some opportunities for infill development and the reuse of brownfield land within Skellingthorpe, and this should be encouraged, particularly where redundant buildings can be reused, or replaced where such buildings are unsightly modern structures. It is however very important that, because of their relative scarcity, this should not impose on any older or characteristic buildings that define the original village, or similarly should not impose on any of the few traditional dwellings or farmsteads scattered amongst the wider settlement. Other important buildings are particularly distinctive and include St. Lawrence's Church, the Methodist church, St Lawrence's School and a number of public houses such as The Plough Inn. The old Manor House, and the secluded Skellingthorpe Hall and its grounds buildings are also very important and treasured assets of the village.
- 12.30 New development should seek to blend with the more traditional older buildings in Skellingthorpe, in order to highlight and replicate the most attractive aspects of the village. By adding carefully designed dwellings that reflect the older parts of the village, a greater sense of character and identity can gradually be developed. Modern, bland and repetitive styles should be avoided. Larger housing developments will need to introduce individual house designs and concentrate on an attractive and varied street scene, reintroducing neat hedgerows and swathes of roadside verges and small greens.
- 12.31 With considerable distance between the old northern centre of the village and the southern expansion, it is clear that any further sprawl of the village out to the south should now be discouraged. The southern boundary is partially defined by a significant woodland belt running across the south-east edge of Skellingthorpe. This forms a distinctive boundary and is particularly important as it contributes to a green divide with attractive landscape character between Skellingthorpe village and the Lincoln city fringe settlements. Village character and identity would be considerably eroded if new development was allowed to breach this green divide and creep towards the A46. This would result in a loss of all distinction between Skellingthorpe village and Birchwood on the Lincoln City fringe.
- 12.32 If deemed necessary, village expansion on greenfield land could most appropriately fit to the west of the Old Chapel Road and Canberra Way development, where three large arable fields are currently present. However, this would greatly depend upon the agricultural value of the soil in this area as development should not result in the loss of high quality farmland and other options may therefore need to be considered.
- 12.33 If development was pursued in this location, it would keep new development close to the heart of the village, and would also bring development up to a notable belt of trees and woodland pockets, which would form a distinctive and well established soft

edge to the village, echoing the characteristic woodland edge of the southern arc of the village. A suitably large landscape and habitat buffer will need to be retained between any new development and the old railway line to the south if any new development in this potential expansion area is pursued.

Witham St Hughes

- 12.34 The 'new' settlement of Witham St Hughes, located within the Terraced Sandlands, is one of the most recent areas of significant development within the North Kesteven District. The village is adjacent to Swinderby Airfield and just south of the A46, and has been developed partially on brownfield land associated with the airfield, along with extensions out into surrounding agricultural land. This has brought considerable new housing close to the small clusters of older dwellings around the western edge of the airfield north of Green Land and also to the north of Moor Lane, which in effect has created an extended village around the new housing of Witham St Hughes.



- 12.35 Street pattern is contemporary, with sweeping cul-de-sacs and small communal greens to the road side. Roads are wide and usually with pavements, conforming to modern access and safety requirements. In many places the extremities of the new settlement have retained and adhered to original field boundaries, with hedgerows and a number of hedgerow trees located around the often outward looking edge of the village.
- 12.36 Houses are predominantly brick, but colour varies between distinctive reds and yellows. Design is varied, with each phase of development representing a particular style, with slight variations amongst the phased groups. Overall themes throughout the village include the predominance of replicated town houses, with a considerable number of three storey dwellings, most commonly in short terraced lines serving to increase net dwelling densities. Roofs are generally gable ended, but a small number of units have hipped roofs. Roof materials are either grey or red tiles, and this in combination with the bright red or yellow brick work creates a vivid colouration to Witham St Hughes generally, which can be seen at some distance across the flatter land to the south of the village.
- 12.37 Some of the new development within Witham St Hughes has paid notable attention to design detail, with interest added from occasional ornate brickwork, feature rendered sections or feature gables and entrance porches. Other development is more uniform and lacks more intricate detail, but whilst it does not make such a positive contribution, development generally blends with the overall style of the new settlement.
- 12.38 The new elements to Witham St Hughes are of a relatively high building density. Further opportunity for expansion to the settlement within the current village envelope is therefore limited. Whilst the current plan period does not propose any expansion to Witham St Hughes, should the village be considered for expansion in the future, thought will need to be given as to whether it is appropriate to make further expansion into the surrounding 'greenfield' land, much of which is on high grade

arable soils. There are a number of options for expansion, and preference may be dependant upon an appraisal of the most sustainable opportunity available.

- 12.39 It will be important to consider the impact upon the village edge in any further development decisions. The retention of mature trees or existing hedgerows will make a positive contribution to the landscape setting of the village, and it is therefore considered that the tree and hedgerow resource in and around the new settlement is of primary importance. The current village boundary should not retain established hedges or trees if expansion occurs. Furthermore it will continue to be important to retain and add to the tree resource throughout the village generally, to soften and reduce its impact in the wider Terraced Sandlands landscape, particularly when viewed from the south along Moor Lane. Preventing harsh and abrupt lines of houses on the edge of the village will also be important.
- 12.40 The edge of the village benefits from a mixture of house styles and roof heights for most views into the village, and this approach should continue into any new development. Any further expansion should also pay careful regard to the setting of the existing dwelling clusters to the north of both Green Lane and Moor Lane. Whilst linkages should be encouraged, particularly in the form of green corridors, integration should not be to the detriment of the existing dwellings.
- 12.41 Future development design should continue to reiterate the general themes running through the village as recently developed, but ensure that some locally characteristic building detail is added to prevent uniformity and blandness and to create a more distinctive character for the new settlement. Given its backdrop of Swinderby airfield and both reclaimed and active sand and gravel workings, it is particularly important to retain a high quality of design, and develop a character or identity for the village of Witham St Hughes. This could also be achieved with any additional community or amenity development, which should seek to serve as focal points for the village and encourage high quality design by demonstrating best practice. Furthermore, expansion, particularly into previously developed sites should also take account of the opportunity to help restore landscape setting, in line with the landscape character of the Terraced Sandlands.

Bracebridge Heath

- 12.42 Bracebridge Heath is a large village about two and a half miles south of Lincoln and has been designated as a Second Tier Service Village falling within the Lincoln Policy area. It is positioned on top of the Lincoln Cliff scarp slope, within the Limestone Heath Landscape sub-area. It overlooks the City and the Witham Valley to the north, separated from the urban boundary by an area of relatively open land designated as Green Wedge policy area, though there is some ribbon development along the London Road. To the west of the village are open views across the Brant and Witham Vale. Flat agricultural land surrounds the village to the south and east.




- 12.43 Although physically separate from the City it is very much a settlement of urban character which has experienced a great deal of growth. The most notably housing development in recent years has been at the old St Johns Mental Hospital building

which closed in 1990. The hospital buildings themselves have been converted into flats and offices with about 1,000 new dwellings built in the surrounding grounds to the east of the village. There is a great mix of housing types throughout the village including a large post war estate to the west of Grantham Road which consists of regimented detached plots with many bungalows. There is newer development to the south and east (including development within the hospital grounds) which has more organic layouts. The houses are built from a variety of materials including brick and limestone block with grey and red/orange tiles. There is not an obvious use of local building materials or any evidence of following the vernacular building styles.

- 12.44 The actual location of new development around the existing urban area would need to be very carefully considered as the existing gaps of undeveloped land are of great landscape importance. The undeveloped gap to the north of Bracebridge Heath separates it from the City giving its individual identity and there also open views northwards towards the Cathedral. New development in this area would therefore be avoided. An expansion to the south would erode the effective physical separation between Waddington and Bracebridge Heath which is important to their individual identity. The Lincoln Cliff runs along the western boundary of the village and any expansion in this direction would impact on the landscape value of this feature. This leaves the eastern side of the village which is surrounded by flat, largely featureless agricultural land.
- 12.45 The main landscape character implication for the further growth of this settlement is its very exposed and open position on the limestone plateau. Generally new housing developments have been built close to the edge of the surrounding fields with the boundaries consisting of low hedges with some trees creating a very stark interface between the countryside and the settlement. Any future additional development on the village edges would benefit from softer edges and greater tree and hedge planting around the settlement fringes. It is also important to reinforce the existing landscape character in the surrounding countryside. The boundary treatment in this part of the limestone heath area generally consists of hedgerows with some roadside trees and dry-stone walls. These characteristics should be strengthened across the extent of the settlement's edge and careful attention paid to ensuring that new hedgerow and tree planting use appropriate native species. Dry-stone walls could be used as a particular feature of boundaries to enhance the local distinctiveness of this area.
- 12.46 In this area individual houses will be visible from some distance across the limestone heath and therefore building design, scale and materials are important in a landscape context as well as an urban design perspective. Although there is not a strong local vernacular style in this settlement certain elements present within the existing village could be followed. The general pattern in the centre of the village is two storey dwellings with ridge lines parallel to the road, built of red brick and red tiles. The detailing on these dwellings such as traditional windows with vertical proportions and traditional lintel design could be used in new development to reflect this character. It may be preferable to ensure that house design is varied along the exposed edges, particularly in terms of building line, ridge height and roofing materials to break up the impact of new development.

Branston

- 12.47 Branston is a large village located about 3 miles south east of Lincoln. It falls within the Limestone Heath Landscape Character Area. The original village centre is located in a low valley and largely consists of buildings built of local limestone. All Saints Church built of local limestone has a tall spire and is a prominent landmark within the village. Topography is particularly important here with the sweeping valley down into the centre of the village. A wooded valley running through village centre, with many mature trees and open space makes an important feature in the village and is designated and protected as Visual Amenity Area in the Local Plan. Branston Hall Hotel set in a large parkland area also represents an important feature of the village.
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- 12.48 Newer development has grown up surrounding the centre on higher land making it quite exposed in the surrounding agricultural landscape. A great deal of new development over recent years has occurred largely to the east of the Lincoln Road (B1188) and to the east and west of Station Road which leads towards Heighington. The newer development is very mixed in style and building materials.
- 12.49 The location of new development should avoid the north of the village as it would take up land that separates Branston from Heighington which has similar peripheral estates. Maintaining the separation between the two settlements is important to their individual identities. The existing development along the Lincoln Road to the east of the village could be termed as ribbon development being largely a line of detached houses as it follows the ridge line along the western side of the road. To the east of the Lincoln Road the landscape is open and undeveloped with fine views to the Cathedral. It would be important to maintain this openness and it would not be appropriate to build on this ridge line. To the south of the Lincoln Road, behind the existing ribbon development, lies Branston Park, which would be generally protected from development. Therefore the most suitable area for development beyond existing boundaries would be along the western edge of the village, north of Moor Lane where the existing boundary of the modern housing estates is very abrupt, straight and exposed. New development if carefully designed could fringe this harsh boundary and make a more attractive gateway into the village from the east. Development should not however be considered south of Moor Lane as it makes an effective boundary to the settlement.
- 12.50 The main landscape character implications for the further growth of Branston are its very exposed and open position on the limestone plateau and its undulating topography. Generally new housing developments have been built close to the edge of the surrounding fields with the boundaries consisting of low hedges with some trees creating a very stark interface between the countryside and the settlement. Any future additional development on the village edges would benefit from softer edges and greater tree and hedge planting around the settlement fringes. It is also important to reinforce the existing landscape character in the surrounding countryside. The boundary treatment in this part of the limestone heath area generally consists of hedgerows with some roadside trees and dry-stone walls. These characteristics should be strengthened across the extent of the development's edge and careful attention paid to ensuring that new hedgerow and tree planting use appropriate native species.

- 12.51 This village has a strong local character in the village centre which could be reflected in new development. Very little of the recent development in the village has followed the local vernacular and it is important that future development redresses this and strengthens local characteristics and features. The shapes of windows and other architectural details on the traditional buildings, as well as the use of local limestone and clay pantiles, could be reflected to a greater extent in new development.

Heighington

- 12.52 Heighington lies five miles to the south east of Lincoln within the Lincoln Policy Area. It is positioned on the lower slopes of the landscape escarpment and falls within the Central Clays & Gravels Landscape Character Unit. To the north and east of the village the land gradually merges towards the fenland landscape surrounding the River Witham.



- 12.53 The village centre of Heighington largely consists of historic limestone buildings, clustered around the junction of the two roads. It is now however surrounded by much more recent development mostly dating from the last 20 years. It is closely situated, on the north western side, to Washingborough with no visually perceptible gap in between.
- 12.54 The location of new development should generally avoid the south-west of the village as it would occupy land that separates Heighington from Branston which has similar peripheral estates. However there may be limited potential for development in the triangle of land between the railway and the Potterhanworth Road to the south of the village. Development however should not be considered to the west of the railway as it creates a strong boundary to the settlement. Other suitable areas for new development in landscape terms are considered to be very limited given the proximity to natural spring lines to the north of the village which would need to be taken into consideration in respect of their visual and hydrological importance and to the south of the village where the landscape is gently undulating and forms an attractive visual setting for the village. This leaves the eastern side of Heighington where there very minor expansion may be accommodated in landscape terms. Boundary treatment would be particularly important on this eastern edge of the settlement as the surrounding landscape is very flat and open as it falls towards the fenland. Whilst there should be some native hedge planting to soften the development boundary, additional tree planting may look incongruous.
- 12.55 This village has a strong local character in the village centre which could be reflected in new development. However, very little of the recent development in the village has actually reflected the established local vernacular and it is important that future development redresses this and strengthens local characteristics and features where possible. Traditional window design and proportioning, as well as other architectural detailing on the buildings, along with the use of local building materials such as limestone and clay pantiles should be incorporated to reflect the character of the historic core of the village.

Metheringham

12.56 Metheringham is a medium sized village situated 10 miles south-east of Lincoln and is designated as a Second Tier Service Village within the Lincoln Policy Area. It is positioned on the lower slopes of the limestone escarpment on the boundary of the Limestone Heath and the Central Clays & Gravels landscape sub-areas. The landscape immediately to the south and east of the village is very flat being a transitional fringe of the fenland. The village rises gently towards the west at the foot of the plateau.



12.57 It has a central village core of older buildings designated as a Conservation Area with many buildings constructed in limestone with clay pantile roofs. Its heritage is as a farming community but now is predominantly a commuter village for Lincoln. A great deal of housing has been built in the post-war years, a high proportion of which has been provided to house RAF personnel serving at the nearby bases. The newer development is very mixed in style and materials. There is an old flour mill, known as Old Meg, which is now disused which is a distinctive local landmark. To the east the land becomes significantly lower with a finger of low fenland reaching up to Moor Lane, which is actually above the level of the surrounding land. Further eastwards along this road towards the village of Martin lies the Metheringham Airfield which although disused since 1946 it still has the remains of runways and buildings.

12.58 The areas suitable for future development are limited in landscape terms. The village is bounded to the west by the B1188 which forms a strong boundary to development. To the south Metheringham is very closely juxtaposed to the neighbouring village of Blankney and its associated historic parkland. To the east is the railway which also forms another strong boundary. The northern area therefore offers itself as being most suitable area for further development in respect to potential landscape impacts. Currently, the northern edge of the village is very straight and uniform and new development may offer an opportunity to soften this harsh boundary and offer additional visual interest. For instance new dwellings could be clustered in small groups interspersed with planting, which would effectively merge the settlement boundary more subtly into the surrounding countryside. Native tree and hedge species should be used and dry-stone walls could also be used as part of the boundary treatment, as these are a particular feature of the area. As Metheringham has been so greatly expanded over the years the original character of the built environment has been watered down. New development should therefore incorporate some of the design features and building materials found in the historic core of the village to strengthen the overall visual appearance of the village and reinforce its local distinctiveness.

Waddington

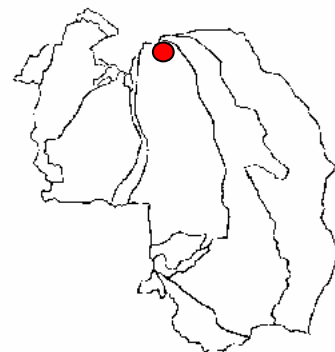
- 12.59 Waddington is located along the A607 to the south of Lincoln and in the Lincoln Policy Area. It is positioned close to the Lincoln Cliff falling mainly within the Limestone Heath landscape sub-area with the western edge falling within the Lincoln Cliff landscape sub-area.
- 12.60 This village is dominated by the RAF base which is located between the A15 and A607. To the west of the A607 is the main centre of the village with older buildings situated towards the edge of the Lincoln Cliff. In the older part of the village the lanes run from east to west between the High Street and Hill Top Road. There are a number of notable historic buildings, some of which are listed. The historic core of the village is designated as a Conservation Area. Part of the special character of the village is the way in which walls and buildings define the curving form of the lanes (e.g. Far Lane and Manor Lane). Stone and pantile is generally characteristic of the area, as is the use of windows with a strong vertical emphasis. Hilltop Lane, on the western boundary of the village, is an integral part of the Conservation Area defining the edge of the old village and emphasises its setting held on the ridge top. This lane offers a contrast between the eastern edge which is tightly defined by stone walls and high banks, and the open western edge which provides dramatic views from the Cliff top to the Witham and Brant Vales area to the west.
- 12.61 The High Street forms the spine of the village. The southern section of the village has a curving form defined by walls and buildings with trees making a significant contribution. The northern section opens up from the junction with Bar Lane. The intricate pattern of roof lines adds to the distinctive character of the village. For the most part development is set up to the pavement and where it is set further back it is often enclosed by stone walls.
- 12.62 There is a great variety of building types and materials within the village. The older buildings are built of local limestone with red pantile roofs but newer development is much more varied. On the RAF base as well as the large runways and aircraft hangars there is also a large residential barracks area. The houses are generally brick built with grey slate roofs. There are also larger buildings, residential and offices, which have a sandy coloured exterior (possibly limestone) with brown tiled roofs.
- 12.63 Potential sites for new development are very limited. The western side of the village along the Cliff edge would be ruled out for development because of its visual intrusion in the landscape and its impact on the Conservation Area. Further development along the northern edge would also be restricted as it is important to maintain the separation between Waddington and Bracebridge Heath. To the east is the RAF base, which presents an effective barrier to any further development on this side. This leaves the southern boundary where possibly minor expansion to the settlement could occur. However this boundary is very exposed to the surrounding open, agricultural landscape and new development would be very conspicuous. Therefore any housing development there might be grouped in irregular clusters and interspersed with appropriate planting to break-up any straight, harsh edges. Dry-stone walls are a particular feature of this Limestone Heath character area and these could also be used in the boundary treatment of new development to reflect local distinctiveness. Whilst Waddington has a variety of building styles within its



settlement boundary, it would be preferable if new development incorporated some of the design features and used the same building materials as found in its historic core. For example development could be built close up to the pavement edge, or if dwellings are set back from the road their curtilages could be enclosed by stone walls. The varied roofscape found in the centre of the village could also be reproduced in new development, which would help to break up its visual impact from the surrounding open landscape.

Washingborough

- 12.64 Washingborough lies 3 miles south-east of Lincoln within the Lincoln Policy Area. It is positioned on the lower slopes of the Lincoln Cliff as it slopes down towards the River Witham. It falls within two of the landscape character units the Central Clays & Gravels and the Fenland.



- 12.65 There is an attractive historic core to the village with an old church and many limestone buildings, mainly situated on sloping ground before it levels off to the floodplain. The starting point of Car Dyke lies to the north of the village adjacent to the Washingborough Road. The gradient of the land is very flat to the north of the village leading up to the Witham and to the east towards the Fens.
- 12.66 The railway was built through the village in the 1840s and significant housing growth followed at this time, mainly brick built with slate roofs in contrast to the older limestone dwellings.
- 12.67 To the east and west of the village centre there is considerable newer development mainly consisting of post-war housing estates. The newest housing is along the outer eastern edge of the village. These serve to significantly dilute the historic character of the village.
- 12.68 In the village core the predominant materials are natural stone walls and pantile roofs. There are also some red brick buildings with slate roofs. There are a number of listed buildings within the village and most of the older part of the village is designated as a Conservation Area. A number of the older buildings are linked by walls and hedges which define the curve of the road and emphasise the falling road level. The local topography affords a prominent roofscape, within which incongruous materials can be prominent in the landscape from some distance, particularly from the north. Buildings fronting directly to the pavement edge serve to give tight definition and sense of enclosure throughout the settlement.
- 12.69 Washingborough is sited very closely to the neighbouring village of Heighington to the south with no clear gap in-between, there would therefore be no scope to site development in this area. To the north the low lying land adjacent to the Witham would not be suitable for development for hydrological and landscape reasons. To the west the village is contained by the railway line which makes an obvious boundary to the settlement. Therefore the most suitable situation for new development would be to the east of the village. There could be opportunities to regain some of the character and distinctiveness of Washingborough, that has been lost to a great extent by the dominance of the rather indistinctive modern housing, if

suitably designed dwellings were developed on this eastern edge. However this land slopes downwards from 25 metres to less than 5 metres in elevation and so any development would be very prominent in the surrounding landscape and could be viewed across the Witham vale from the City of Lincoln. The existing development boundaries along this eastern edge of the village are very straight and make a strong visual barrier. It would be preferable if new development could utilise the sloping characteristics and create a more organic boundary, edged with appropriate tree and hedge planting to soften the visual impact and to provide habitat and amenity value. Design features and local materials found in the historic core of the village could be incorporated into new development, and split level dwellings on the steeper parts of the slope could be considered which would add further to the visual interest.

‘Rest of the District’ Policy Area

Sleaford

- 12.70 Sleaford is the only free-standing town in the District and is the first choice location for development in the part of the district that does not fall within the Lincoln policy area. Situated centrally within the surrounding farmland it has always been very important as a central market town and a number of agriculturally based industries have developed over the years. The River Slea, which is navigable through the centre of the town, was important in developing this trade, though the railways eventually overtook the river's importance. The town centre of Sleaford has many attractive and historic buildings including St Denys' church, with its prominent stone built spire, and Cogglesford water mill. More recently the town has greatly expanded with many new private housing estates on its periphery in a great variety of building styles and materials. Since 2000 the town centre has seen significant developments and improvements including "The Hub", a centre for craft and design, housed in a redeveloped seed warehouse incorporating contemporary design features. In addition restoration of the Bass Maltings on the southern side of the town is underway, considered to be one of the finest examples in England of an industrial-scale flour maltings, and are grade II* listed buildings.



- 12.71 Sleaford is set at the convergence of three landscape character types. The Central Clay Vale wraps around the north, east and south of the town, while to the west the Slea Valley and the edge of the Limestone Heath, fringe the built up area. Generally the landscape is low and flat surrounding the town and the settlement edge is quite exposed from the surrounding countryside. The railway to the eastern edge of the town forms a strong settlement boundary beyond which the open agricultural land of the clay vales slopes gently down towards the fenland. This side of Sleaford is particularly open and featureless with little tree cover. Likewise towards the south of the town the landscape comprises flat, open agricultural fields with little tree cover. To the north, beyond the A15, the land rises significantly towards the limestone heath, towards the village of Leasingham. On the western side of Sleaford the land is undulating, incorporating the rise and fall of the Slea Valley and the edge of the Rauceby Hills in the near distance. There are a few scattered copses in this area giving greater interest and variety to the landscape.

- 12.72 The Local Plan allows for windfall housing and employment developments in Sleaford, provided they meet the requirements of the search sequences set out in national and strategic planning guidance. Priority will be given to previously developed land and buildings within the settlement curtilage. Generally speaking, the development of land within the built up area of Sleaford would not impact greatly on the wider landscape character of the surrounding countryside, though it would obviously be important to retain the open amenity areas within the built up area particularly the areas alongside the River Slea and the Sleaford Wood.
- 12.73 Where previously developed land is not available within the urban area, consideration will therefore be given to proposals for development which represent extensions to the settlement. Should development on the periphery be considered necessary there are a number of areas where, from a landscape perspective, that should be avoided. The Slea Valley would most likely be ruled out because of possible flooding implications and also because of its landscape value, offering distinct topographical interest and belying the town's navigational heritage. Indeed the whole of the western edge of Sleaford beyond the line of the railway has greater landscape interest than the other peripheral areas and therefore should not be prioritised for development. There are, however small pockets of land beside the junction of the two railways where the Local Plan makes recommendations for the integration of two sites into the settlement boundary. As the railways provide a strong boundary to the built up area, new development could be accommodated on these sites without impacting on the landscape of the Slea Valley.
- 12.74 The eastern side of Sleaford is also considered unsuitable for development because its flat, exposed nature would mean that any new building would be conspicuous from a considerable distance. In addition the railway makes a strong and defensible settlement boundary and any development that is enclosed or separated by railways or major highways should be resisted, on infrastructure connectivity grounds as well as landscape.
- 12.75 Along the northern edge of Sleaford there is a gap between the settlement edge and the A15 which although partly developed around the A153 roundabout is still generally open and agricultural. However because of its location between two large road interchanges, with their associated service station development, this area has urban-rural fringe characteristics. It is therefore not unreasonable to consider that this land could be developed in the future with little impact on landscape character. Development should not however cross the A15 as it presents a natural settlement boundary between the built-up area and the open countryside of the Limestone Heath.
- 12.76 To the south of Sleaford, although the land is generally flat and open, the settlement boundary is much less strongly defined. It would therefore be possible to make small extensions into this area without serious impact on the surrounding landscape character. There would of course be many other considerations to bear in mind to facilitate the sustainable development of new areas. For instance preference should be given to sites with good access to town centre services, which would rule out remoter areas away from the main public transport routes.
- 12.77 If new development is allocated on the outer fringes of Sleaford account would need to be taken of the landscape characteristics of the surrounding countryside. Hard, straight settlement edges, the result of regimented rows of similar style housing should be avoided. Buildings should be set out in a more varied way, interspersed

with appropriate planting. Different roof levels and orientation of buildings can help to create this variety. Landscaping should use indigenous species and include larger off site group planting to break up the building line.

- 12.78 The centre of the town has a very strong, character with many buildings dating back to medieval times. Many are constructed of local limestone notably St Denys church and the Sessions House, though there are also many attractive red brick buildings with clay pantiled roofs. However the surrounding housing estates have not generally reflected this character or followed the vernacular building design found in the surrounding villages. As a result the general impression of the outskirts of Sleaford is one of suburban areas built in a variety of styles, layouts and materials and consequently any strong local character is not apparent. New development could reflect the character and building style of the town centre by incorporating some of the design features and using local materials. Pastiche of traditional buildings, however, should be avoided and buildings of a contemporary design reflecting some of the recent development in the town centre may be appropriate within the built-up area of Sleaford.

Navenby

- 12.79 The village of Navenby is located on the important landscape feature of the Lincoln Cliff Escarpment. Navenby is settled around the A607, which runs through its centre and forms an attractive and varied High Street through the village. The western side of the village has extensive views across the Witham and Brant Vale, which extend across a significant tree and hedge covered slope to the bottom of the cliff. The minor village roads are aligned in an east-west direction, running from the central north-south spine of the A607.



- 12.80 Apart from some new development in the 1960s, Navenby village encountered little change throughout the 1970s, with a static population of approximately 900. Navenby now has a population of approximately 1800, having doubled its number of residents in the last 25 years. Extensions to the village in the south east include modern bungalows and terraced townhouses, with the latter having been added along Green Man Road on the northern boundary, which has resulted in a very sharp linear edge to the village at its northern extent.
- 12.81 The main historic part of the village lies to its western edge, and 'rolls over' the cliff and partially down the scarp slope. This is the typical setting for many of the villages that lie along the Lincoln Cliff, and as a typical cliff village, Navenby makes a vital contribution to defining the landscape character of the Lincoln Cliff Escarpment.
- 12.82 The village of Navenby has distinctive characteristics that should be enhanced by, and taken forward into any new development. Attractive street frontages of red brick or limestone cottages, with each aligned parallel to the road are typical of the village, with the addition of the red pantiled or grey slate roofs that are found throughout the North Kesteven District. In a number of places the building line is directly onto the pavement edge. It is important for this characteristic feature to be reflected in any new residential development elsewhere in Navenby. Replication of the distinctive building line should be carefully adhered to when infill development is considered.

- 12.83 Tall brick chimney stacks are a consistent and distinctive characteristic on most of the older dwellings within Navenby. Lines of attached dwellings often have varying roof heights, and this is an attractive feature that can be carefully replicated in new development. A number of sympathetically renovated and converted barns can be seen in the village, and the reuse and careful restoration of redundant buildings is to be encouraged, to retain historic buildings that contribute to defining the character of Navenby. New houses should be of individual design, and should reflect, respect and enhance the surrounding traditional building character, whilst where appropriate taking new design features forward in a sympathetic manner.
- 12.84 Navenby High Street creates an inwardly focused settlement that is oriented towards this distinctive central spine. The High Street is a key element of the village character and gives Navenby individual identity with its varying street width and consequential varying building line. The prominence and then retreat of the characteristic buildings, along with their varying roof heights adds great variety and interest, and draws attention to the detail of each individual building. The facades of the High Street buildings are therefore particularly important to retain, and should be carefully considered where any new development is required. New development should generally be resisted on the High Street, and should only include sensitive restoration or repair of existing buildings.
- 12.85 One of the most important characteristics of the villages located on the Lincoln Cliff escarpment is the countryside and treescape that lies in between the dotted line of villages as they follow this prominent linear feature in the landscape. From the lower vale, the villages are glimpsed through the trees on the lower and middle slope, with key prominent buildings and church spires cutting through the woodland on the higher skyline. Navenby epitomises this with views of St Peter's Church and the Old Rectory on its western fringe.
- 12.86 Villages are scattered relatively uniformly along the cliff with woodland, hedgerows and rolling fields aligned up the slope in between. For the landscape character of the village of Navenby and the wider Lincoln cliff, it will be of paramount importance to ensure that the village does not further merge with the closely neighbouring village of Wellingore. The two villages are virtually adjoined, mainly as a result of recent development at the northern tip of Wellingore where mainly modern bungalows have been added. The dwellings located within the triangle of the A607 and Pottergate Road are within the boundary of Navenby Village, but appear to be part of the northern tip of Wellingore. In order to prevent further integration, which would be damaging to the landscape character of the Lincoln Cliff, the southern arc of Navenby and indeed the northern arc of Wellingore should not be further extended, and the village boundaries should be tightly defined by the existing houses, preventing any further encroachment. With the two villages virtually connected, any further expansion is likely to be highly detrimental to village and wider landscape character. It is essential that any additional dwellings are resisted as further infringement by even an individual house is likely to be significant.
- 12.87 The western edge of the Navenby is of importance to village character in that it contains much of the historic elements of the village, and also in that its' wooded edge, which spills over the slope of the cliff, is a defining characteristic of the wider Lincoln Cliff landscape. The older buildings in this part of Navenby are however inter-dispersed with some more modern houses and bungalows, and it is therefore imperative that this part of the village is particularly protected from inappropriate

development. Any future infill or restorative development in this part of the village should be carefully designed to blend with and enhance the existing built heritage.

- 12.88 The village edge is clearly defined and delineated by a strong treescape, and this should not be altered by any further development on this western boundary. There is obvious opportunity for landscape enhancement towards the southern end of this western boundary, where the trees and mature hedges currently disappear. At this south westerly end of the village newer housing has been developed in the post war period along 'The Rise,' but this lacks the significant tree cover that sweeps around the western fringe of the older parts of the village. Navenby village and the wider landscape character would therefore significantly benefit from the continuation of tree and hedge cover around the village fringe at this point.
- 12.89 If it is considered that if expansion onto greenfield land is necessary to accommodate required new housing, a limited amount of further development may be acceptable in landscape terms around Heath Road to the south east of the village where the most recent new houses have already been located. This should not however extend any further south than the existing limit, but rather should extend towards the east. It will be important to contain any such expansion to a limited extent, in order to develop a suitable village edge in this location, which would benefit from replication of the softer boundary line of the western side of Navenby, rather than the geometric form seen to the north east.

Billinghay

- 12.90 This village is sited on the edge of the Fens, about 10 miles east of Sleaford and 17 miles south of Lincoln. It falls within the Central Clays & Gravels landscape unit. It is a linear village sited at the junction of the A153 and the B1189.



- 12.91 The village lies at the southern end of the low and narrow ridge of land extending from the Lincoln Heath at Metheringham which supports a line of settlements including Billinghay. The early development was around the Old Bridge over the Billinghay Skirth and the older part of the village is located near this watercourse and now designated as a conservation area. The buildings are densely grouped, generally two stories in height and are located on the pavement edge. Buildings are often linked together with walls and fences. Red/brown brick is the predominant building material and roofs are slate or pantile. There are also some buildings of a more yellow brick type. Roofs are often gable ended with at least one and often two gable chimneys. Windows generally have a vertical emphasis. The Market Place is a triangular space created by the junction of Bridge Street, Church Street and Victoria Street. The focal point of the centre of the space is the War Memorial. The Billinghay Project has created a number of street scene improvements to the village including re-paving around the war memorial, and replacement fences and seating. The historic village core has an urban nature with few trees or open spaces and the buildings on or close to the pavement edge. Small variations in building line give prominence to gable walls. On Walcott Road verges, trees and hedges contrast with the density of the village core with hedges linking the buildings. Mature trees along the Billinghay Skirth are important as they give a backdrop to the village streets.

- 12.92 The Market Place, at the centre of the Conservation Area is about seven metres above sea level with the land falling to the surrounding fenland to the south, east and west which is around one to two metres above sea level. The village is, therefore, a prominent feature in the wider landscape, particularly in views from the east, west and south. The church has a tall steeple which is a prominent feature in the landscape.
- 12.93 Newer development has taken place mainly to the south and west of its core. Development to the east would be restricted because of the low level of the land and the Billingham Skirth and its accompanying flood embankment forms a natural boundary to the village. There may be some potential for development north of the Walcott Road or possibly south along Mill Lane as both of these areas are of a sufficient height above the fenland. However, further ribbon development along the Walcott Road should be avoided and any additional housing areas and associated road patterns should relate to the village centre.
- 12.94 As the village is effectively an island of higher land it is very prominent making building design, scale and materials particularly important in a landscape context as well as from an urban design perspective. The strong local vernacular style present in the old part of the village should be reflected in any new development particularly the use of the red/ brown brick and clay pantiles or slate roofs. As there is a general lack of tree cover in this area planting trees of suitable native species would help to soften the edge of new developments and strengthen the landscape character of the Central Clays and Gravels landscape unit.

Heckington

- 12.95 Heckington is a large village on the edge of the Fens located just off the A15 about 5 miles east of Sleaford. It falls within the Central Clays & Gravels landscape unit but is sited close to the boundary with the Fenland sub area.
- 12.96 It was originally an agricultural settlement and is surrounded by flat, fertile farmland. The village itself is slightly higher than the surrounding land and so is very prominent in the landscape. It has an attractive historic core with mainly brick built buildings with some rendered and whitewashed. There is also the distinctive 8-sailed windmill on the eastern edge of Heckington and a spired church which are important local landmarks. There are newer housing estates on the edge of the village which are very mixed in character and in the building materials used.
- 12.97 The core of the village is designated as a Conservation Area. The High Street forms the central spine of the village. The enclosure of the street is important with buildings built up to the pavement. In this area the building materials are predominately red brick and slate with some whitewash/render and stone. In some areas red clay pantiles are used for roofing.
- 12.98 The location of new development within this village must be very carefully considered because of the flat and exposed nature the surrounding farmland. In particular the eastern boundary is exposed as the land gently falls towards the fenland.



Development would be inappropriate here as it could be particularly conspicuous from the surrounding countryside. To the south of the village is the railway line which offers an effective boundary to the settlement and although there is some development beyond this line, it should not be further consolidated. In addition it is important to limit development to the south in order to maintain the visual gap between Heckington and Great Hale, although there is already some ribbon development along the Hale Road. The Sleaford Road runs roughly parallel to the north of the railway and there may be some limited possibilities to site development between this road and the railway. The only other possibility for new development would be along the northern edge of the village where there has already been recent housing development. There may be some limited scope for additional development in this area but should not extend any further towards the A17, as this would set an inappropriate settlement boundary in terms of scale and proportion in relation to services and village function.

- 12.99 As the surrounding landscape is so flat the design of new developments and its boundary treatment is very important. It may be preferable to ensure that dwelling design is varied along the exposed edges, particularly in terms of building line, ridge height and roofing materials to break up the impact of new development. Boundary treatments are particularly important and hard straight edges of housing development should be avoided. Ideally the boundaries should be softened with suitable hedge or tree planting. An uneven boundary may make less impact in the landscape than a straight, regimented boundary line.

Ruskington

- 12.100 Ruskington is a large village situated 4 miles north of Sleaford and largely contained between the B1188 to the west and the railway line to the east. It falls within the Central Clays & Gravels landscape character unit.



- 12.101 The attractive village centre has a strong landscape presence with a stream running through the centre, the Ruskington Beck, parallel with High Street. The building materials used mainly consist of limestone or red brick. The gabled roofs are a particular feature and generally russet coloured pantiles have been used. The buildings in the older streets are sited close to the pavement edge giving an enclosed feeling to the village centre.
- 12.102 There are newer estates to the north and south of the village centre. The surrounding large housing estates are of mixed styles which do not reflect the characteristics of the local villages. There is a large food production factory south of the village.
- 12.103 The surrounding landscape is low lying farmland with very little tree or hedge cover. To the east of the village the gradient of the land slopes gently down to the fenland. Ruskington is very exposed and prominent in the landscape, and therefore any future development should be designed to minimise its visual impact or improve the existing landscape setting of the settlement. Although there are small housing areas beyond the railway line to the east of the village, it generally offers an effective boundary to the settlement which should not be further breached. To the north-west the Beck

enters the village and there is open land either side of this watercourse which should be maintained for both visual and hydrological reasons.

- 12.104 As the form and orientation of the village is generally linear running from east to west, the northern and southern boundaries are the widest and offer the most scope for development, whilst the eastern and western boundaries are smaller. Currently the southern boundary of the village, immediately to the east of the B1188, presents a very straight and exposed boundary to surrounding farmland with little vegetation apparent to screen it. If additional housing were to be sited here it would be an opportunity to break-up this rather harsh edge by housing development that may be grouped in small clusters and interspersed with tree planting using native species. It is considered that this southern edge would be more suitable for development than the northern edge as this has a softer and attractive appearance and is already screened by some mature trees. All settlement boundaries should be softened with suitable hedge or tree planting so that they merge more subtly into the surrounding agricultural landscape and add to the landscape character of the Central Clays and Gravels landscape unit. An uneven boundary may make less impact in the landscape than a straight, regimented boundary line. Also it may be preferable to ensure that house design is varied along the exposed edges, particularly in terms of building line, ridge height and roofing materials to break up the impact of new development.
- 12.105 The new development surrounding the village centre of Ruskington is currently very mixed in character but would be beneficial if future development reflected some of the characteristics seen in the older dwellings to strengthen the local distinctiveness. For example, dwellings could be built closer to the pavements within parallel street patterns, rather than in a late 20th century organic and curved street layout. Building materials are also very important to character and where possible limestone and clay pantiles should be used.

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Geology and Natural Areas – Lincolnshire Wildlife Trust

Aerial Photographs from 

Figures and Maps

See separate attachments

Appendix 1

Example of Field Sheet used in study

See Separate attachment

Field Recording Sheet

Date	Location	Joint Character Area	Grid ref	Recorder(s)
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Provisional landscape character type	
Provisional Landscape character Unit / Name	

Landform:	
<p>I.e. predominant features, inter-linkages or contrasts, height, aspect, gradient, slope profiles.</p> <p>Prominent Vistas or vantage points</p> <p>Skyscape?</p>	<p>For example; plateau, low hills, undulating lowlands, fen, scarp/dip slope, ridge, terrace, basin, plain.....</p>

Land cover / Land use:	
Predominant vegetation, Vegetation mix	e.g. Grazing / grassland / moor / heath / woodland / arable /wetland
Agriculture	e.g. Arable / Livestock (type)/Mixed/ Equine / energy crops/ cereals/ brasica / root veg / other... aquaculture , Scale, agribusiness, medium , small, smallholdings
Settlement	e.g. Absent / Town / Village / Hamlet / Isolated dwellings / farmsteads....

Settlement Pattern	e.g. Nucleated, scattered, linear, sprawl, traditional / historic / recent (time period) / prominent in L/S,/ enclosed by L/S, hilltop, valley sides, valley floor....
Built environment	Prominent buildings / building materials / architectural composition / roofscapes/ spires / towers / scale, distinguishing features open spaces, green wedges/ interrelationship with C/S
Woodland/tree cover	e.g. Conif. Plant'n / mixed plantation / Broadleaf woodland / Semi natural wood'd, tree clumps, Copse, Shelterbelt, hedgerow trees/ Specimen trees, avenues....
Waterscape	Coastal, estuarine, river valley, (scale – flow), canal, fen, ditches, dykes, reservoir, marsh, wet woodland, watermeadows, Scale.... Drainage pattern, berthing / marina
Enclosure / Field Boundaries	Size, shape, regular, irregular, lost boundaries/hedges (type, condition, age), scale, fencing, ditches, post and wire, drystone walls
Infrastructure	Pylons / o/h lines / water infrastructure/ flood defence / dykes/ energy generation Bridges /transport infrastructure /roads /rail / Airfields / Ports/

Recreation / Other uses	Playing fields / Golf courses / industry / storage
----------------------------	--

Shape / Orientation / Colour / Texture / Dynamics	
Scale	
Emphasis (vertical, horizontal, sloping, rolling)	
Openness	
Texture	
Colours Monochrome, muted, colourful, garish	
Human Intervention Natural / seemi natural / low key/extensive / intensive	
Movement	
Uniform/Diverse/simple/complex	
Condition managed, degraded, tended, planned, formal	
Linear features, lines (straight, angular, curved, sinuous)	
Noise / sound	
Smell	

Other comment

Appendix 1

Example of Field Sheet used in study



Settlement Pattern	e.g. Nucleated, scattered, linear, sprawl, traditional / historic / recent (time period) / prominent in L/S,/ enclosed by L/S, hilltop, valley sides, valley floor....
Built environment	Prominent buildings / building materials / architectural composition / roofscapes/ spires / towers / scale, distinguishing features / open spaces, green wedges/ interrelationship with C/S
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Field Recording Sheet

Date	Location	Joint Character Area	Grid ref	Recorder(s)
------	----------	----------------------	----------	-------------

Provisional landscape character type	
Provisional Landscape character Unit / Name	

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I.e. predominant features, inter-linkages or contrasts, height, aspect, gradient, slope profiles. Prominent Vistas or vantage points Skyscape?	For example; plateau, low hills, undulating lowlands, fen, scarp/dip slope, ridge, terrace, basin, plain.....

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Settlement	e.g. Absent / Town / Village / Hamlet / Isolated dwellings / farmsteads....

Recreation / Other uses	Playing fields / Golf courses / industry / storage
-------------------------	--

Shape / Orientation / Colour / Texture / Dynamics	
Scale	
Emphasis (vertical, horizontal, sloping, rolling)	
Openness	
Texture	
Colours Monochrome, muted, colourful, garish	
Human Intervention Natural / seemi natural / low key/extensive / intensive	
Movement	
Uniform/Diverse/simple/complex	
Condition managed, degraded, tended, planned, formal	
Linear features, lines (straight, angular, curved, sinuous)	
Noise / sound	
Smell	

Other comment



Figure 1
1:200,000 scale



Landscape Character Types and Sub-Areas

- District Boundary
- Trent & Witham Vales
 - 1 Heath Sandlands
 - 2 Terrace Sandlands
 - 3 Till Vale
 - 4 Lincoln Fringe
 - 5 Witham & Brant Vales
- Lincoln Cliff
 - 6 Lincoln Cliff
- Central Plateau
 - 7 Limestone Heath
 - 8 Rauceby Hills
 - 9 Wilsford Heath
 - 10 Sleas Valley
 - 11 Central Clays & Gravels
 - 12 Upland Plateau Fringe
- The Fens
 - 13 Fenland

Landscape Character Types and Sub-Areas

District Boundary

Trent & Witham Vales

- 1 Heath Sandlands
- 2 Terrace Sandlands
- 3 Till Vale
- 4 Lincoln Fringe
- 5 Witham & Brant Vales

Central Plateau

- 7 Limestone Heath
- 8 Rauceby Hills
- 9 Wilsford Heath
- 10 Slea Valley
- 11 Central Clays & Gravels
- 12 Upland Plateau Fringe

Lincoln Cliff

- 6 Lincoln Cliff

Green Wedges

- GW1 Waddington to Washingborough
GW2 Witham Valley
GW3 Hykeham and Whisby Pits
GW4 Skellingthorpe

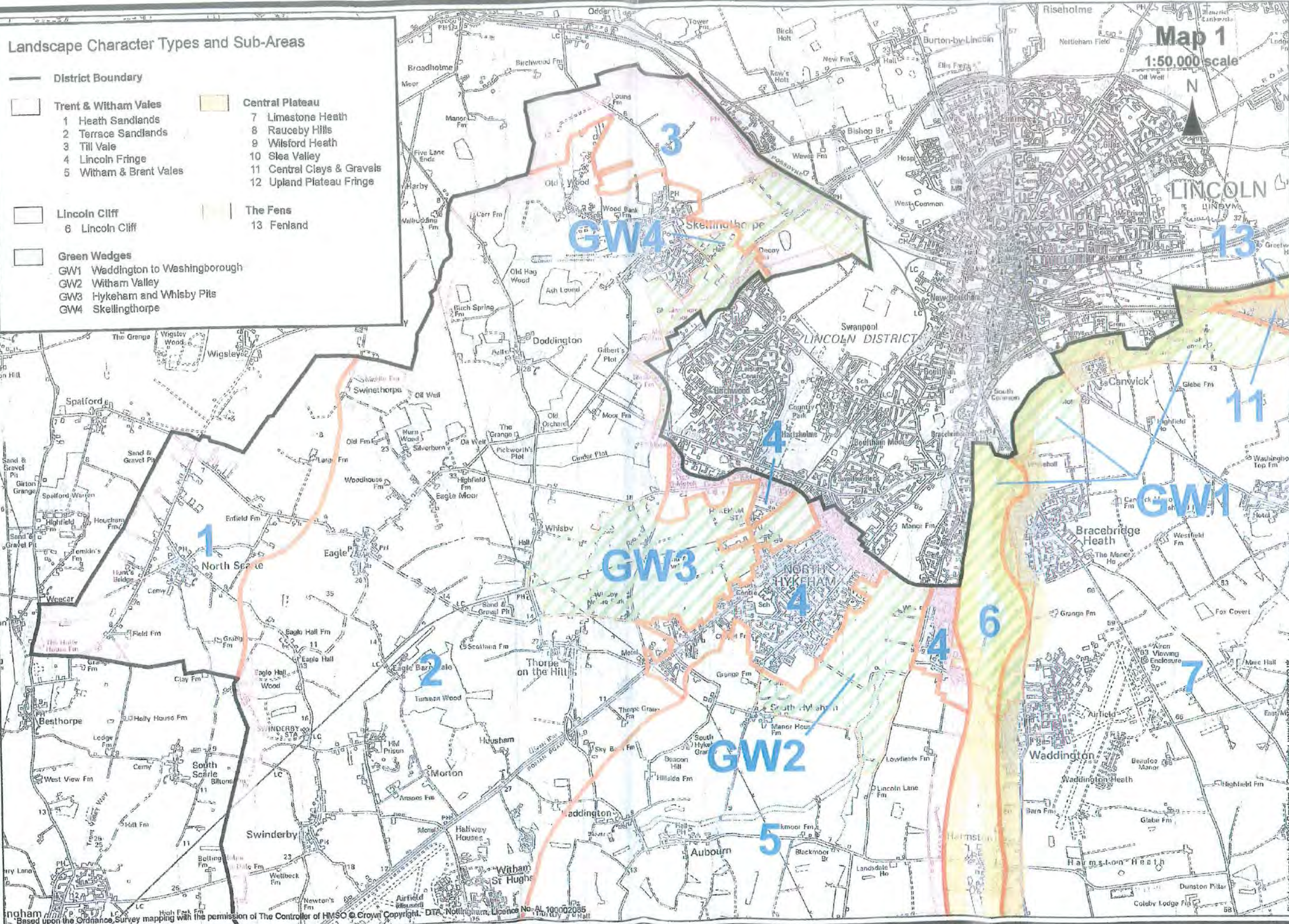
The Fens

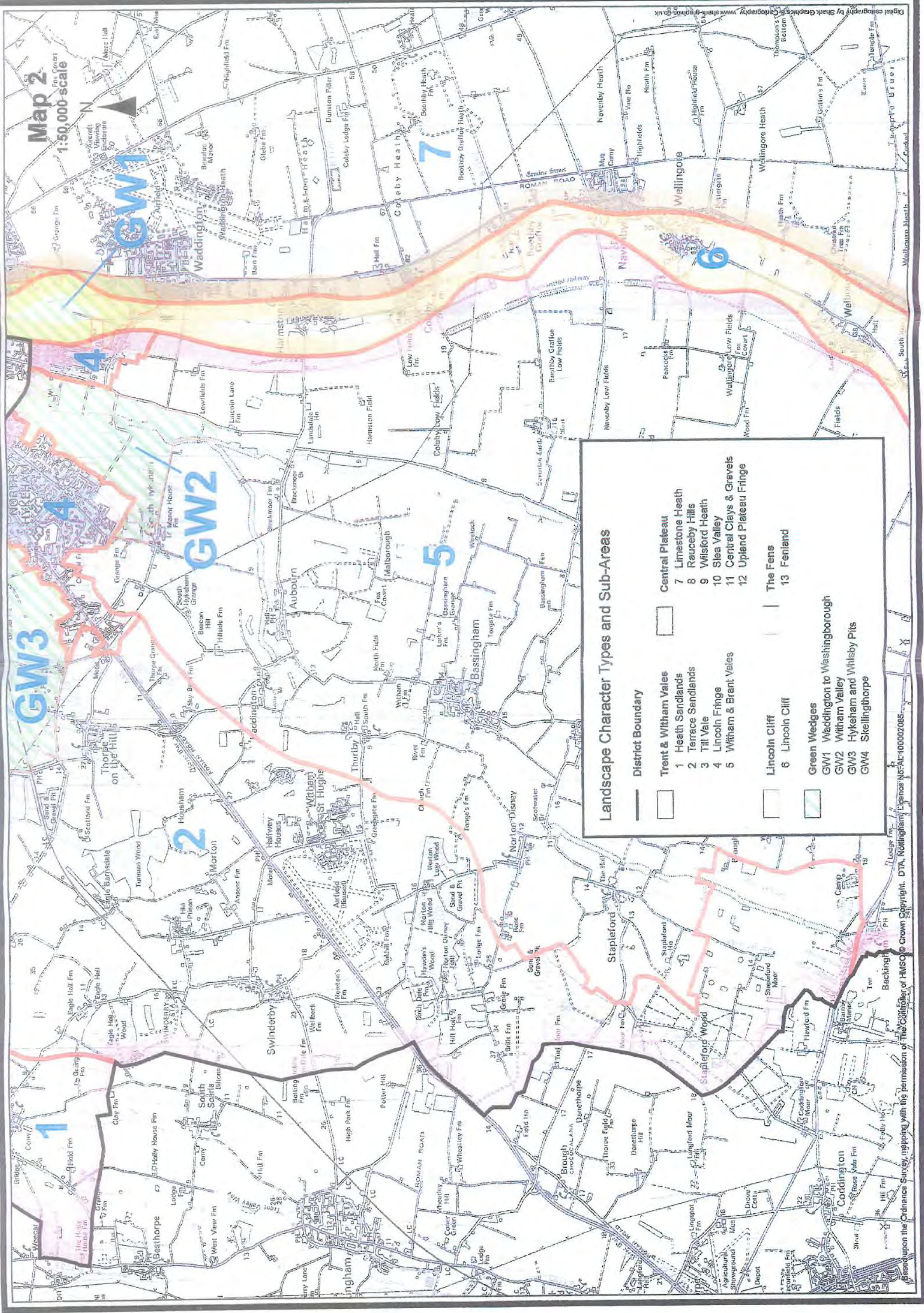
- 13 Fenland

Map 1

1:50,000 scale

N





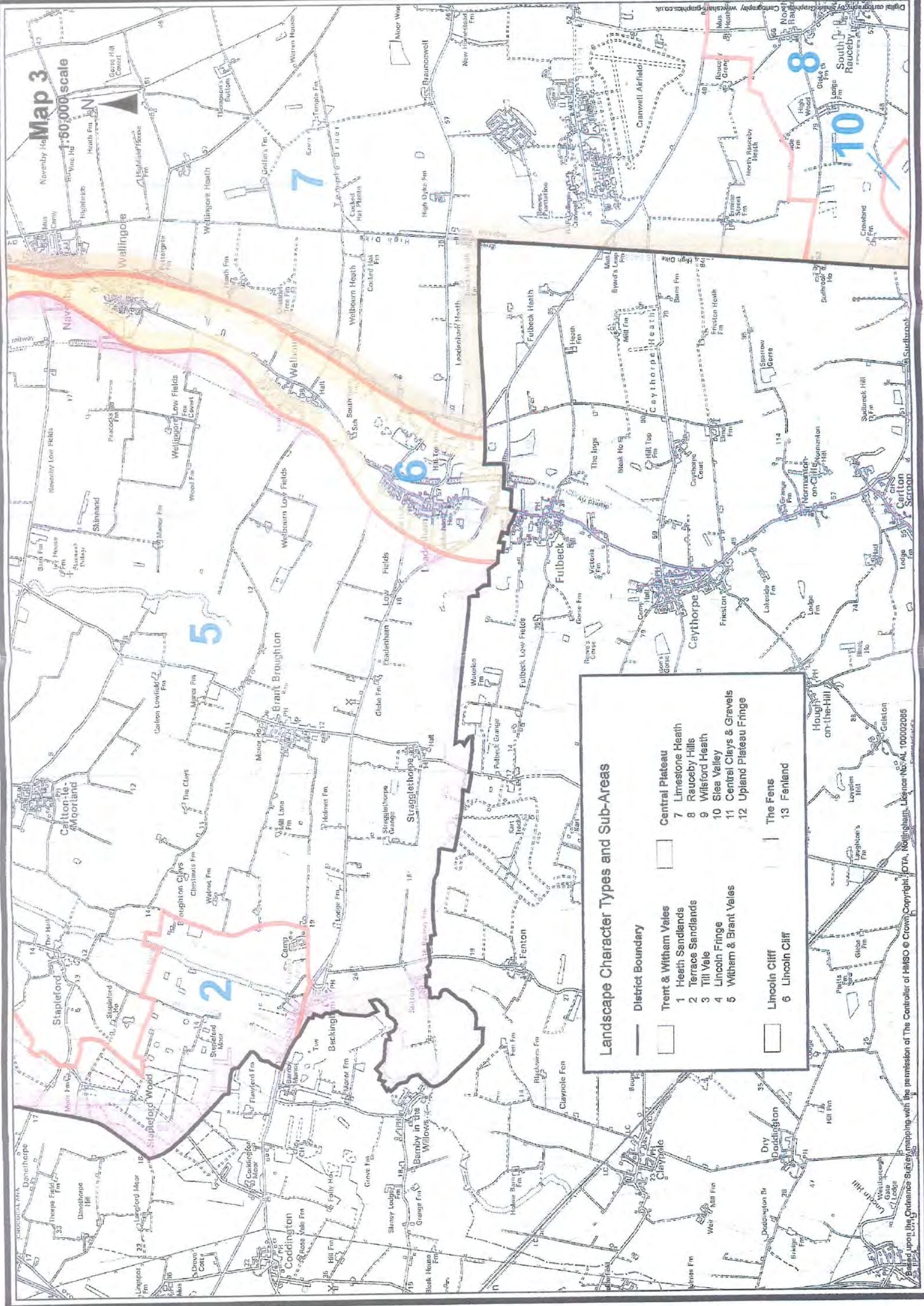
Landscape Character Types and Sub-Areas

	District Boundary
	Trent & Witham Valleys
	Central Plateau
	Green Wedges
	The Fens
	Lincoln Cliff
	Lincoln Clay
	Lincoln Fenland
	Green Wedges
	GW1 Waddington to Wellingore
	GW2 Witham Valley
	GW3 Hykeham and Whisby Pits
	GW4 Skellingthorpe

- 1 Heath Sandlands
- 2 Terrace Sandlands
- 3 Till Vale
- 4 Lincoln Fringe
- 5 Witham & Brant Valleys
- 6 Limestone Heath
- 7 Raucyby Hills
- 8 Wilsford Heath
- 9 Sleas Valley
- 10 Central Clays & Gravels
- 11 Upland Plateau Fringe
- 12 The Fens
- 13 Fenland

Map 3

1:50,000 scale

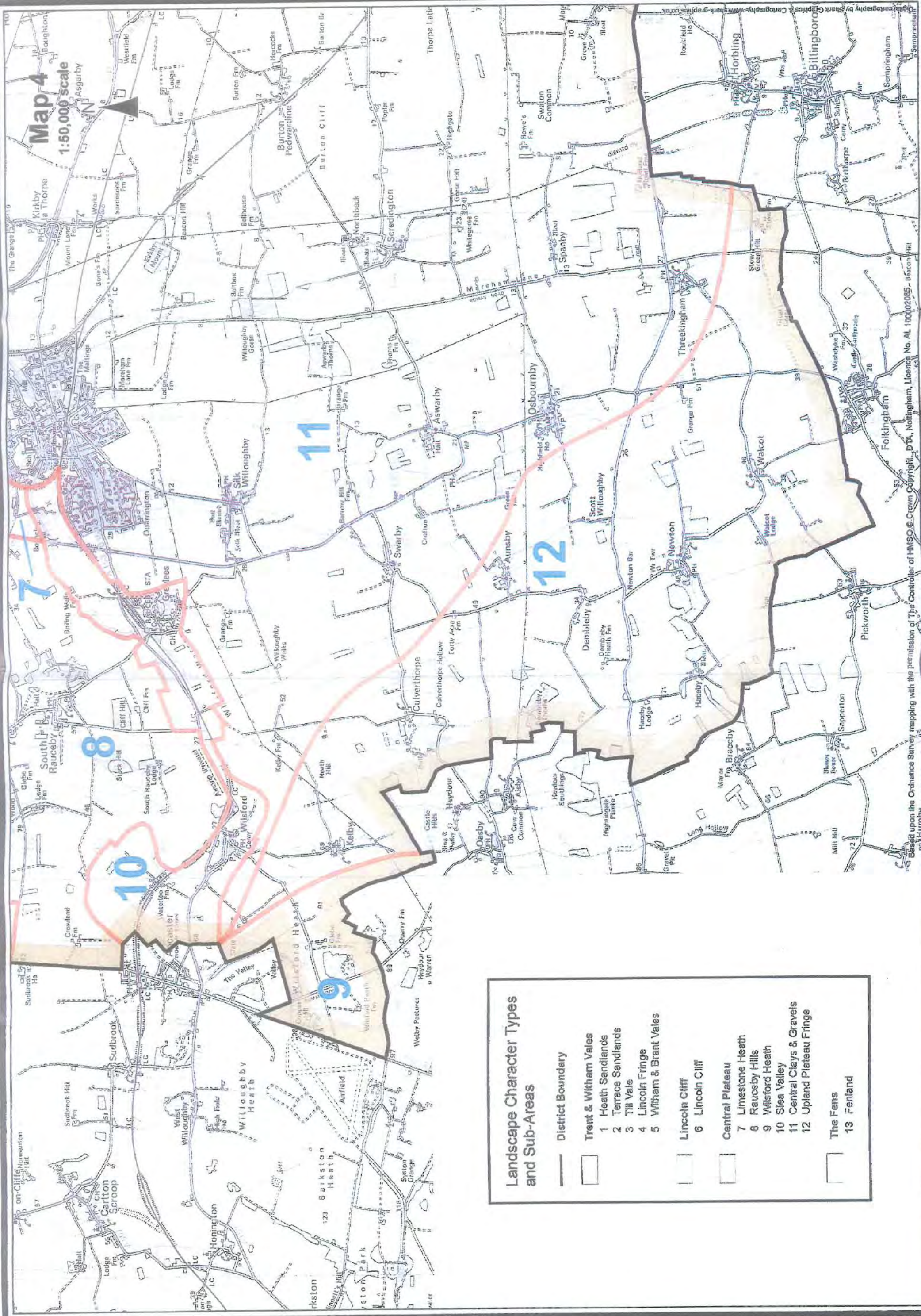


Landscape Character Types and Sub-Areas

- District Boundary
- Trent & Witham Vales
 - 1 Heath Sandlands
 - 2 Terrace Sandlands
 - 3 Till Vale
 - 4 Lincoln Fringe
 - 5 Witham & Brant Vales
- Lincoln Cliff
 - 6 Lincoln Cliff
- Central Plateau
 - 7 Limestone Heath
 - 8 Rauceby Hills
 - 9 Wilsford Heath
 - 10 Slea Valley
 - 11 Central Clays & Gravels
 - 12 Upland Plateau Fringe
- The Fens
 - 13 Fenland

Map 4

1:50,000 scale



Landscape Character Types and Sub-Areas

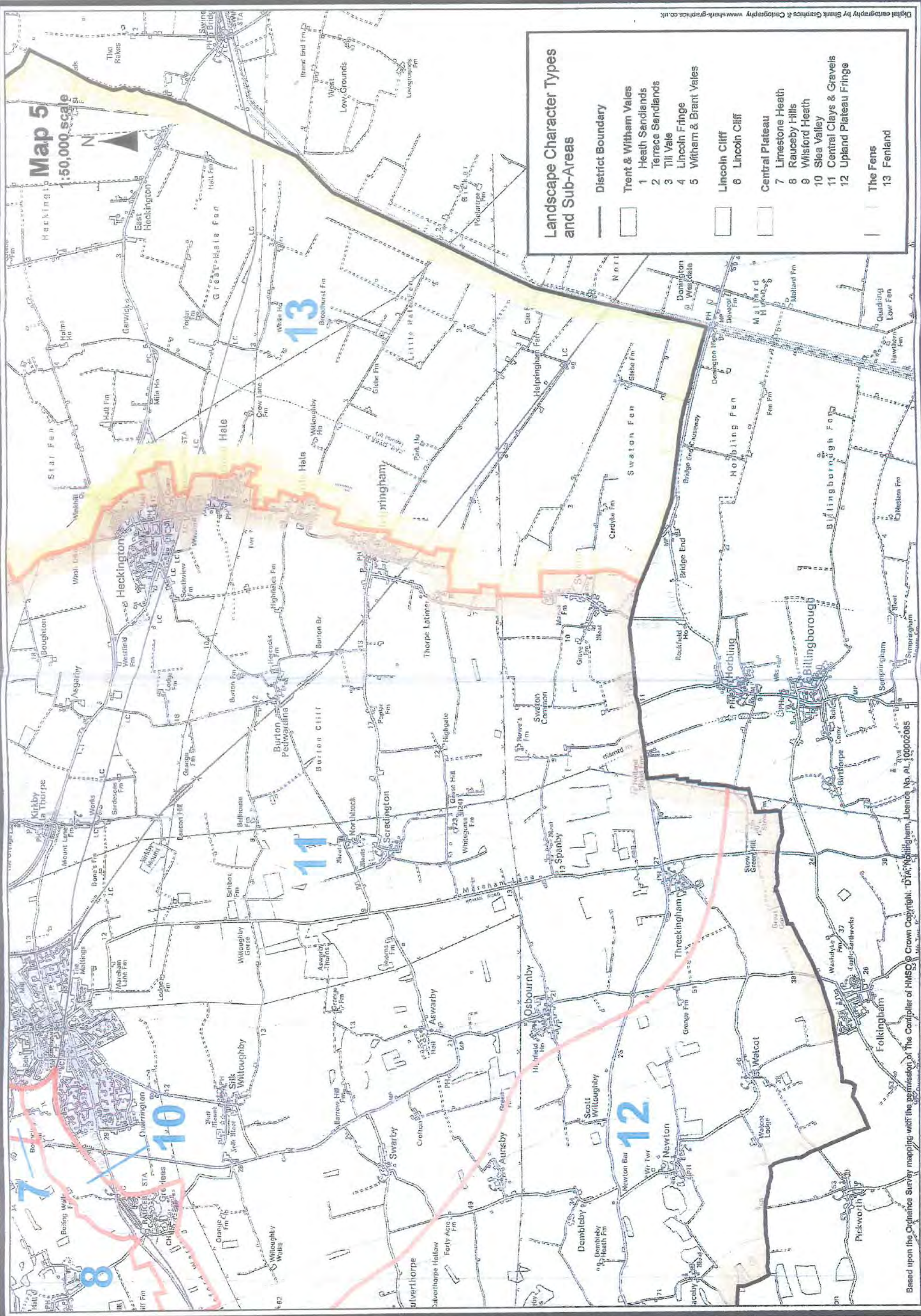
- District Boundary
- Trent & Witham Vales
 - 1 Heath Sandlands
 - 2 Terrace Sandlands
 - 3 Till Vale
 - 4 Lincoln Fringe
 - 5 Witham & Brant Vales
- Lincoln Cliff
 - 6 Lincoln Cliff
- Central Plateau
 - 7 Limestone Heath
 - 8 Raucby Hills
 - 9 Wilsford Heath
 - 10 Sleas Valley
 - 11 Central Clays & Gravels
 - 12 Upland Plateau Fringe
- The Fens
 - 13 Fenland

Map 5
1:50,000 scale



Landscape Character Types and Sub-Areas

- District Boundary
- Trent & Witham Vales
 - 1 Heath Sandlands
 - 2 Terrace Sandlands
 - 3 Till Vale
 - 4 Lincoln Fringe
 - 5 Witham & Brant Vales
- Lincoln Cliff
 - 6 Lincoln Cliff
- Central Plateau
 - 7 Limestone Heath
 - 8 Rauceby Hills
 - 9 Wisford Heath
 - 10 Slea Valley
 - 11 Central Clays & Gravels
 - 12 Upland Plateau Fringe
- The Fens
 - 13 Fenland



Landscape Character Types and Sub-Areas

District Boundary

Trent & Witham Vales

1 Heath Sandlands

2 Terrace Sandlands

3 Till Vale

4 Lincoln Fringe

5 Witham & Brant Vales

Lincoln Cliff

6 Lincoln Cliff

Central Plateau

7 Limestone Heath

8 Rauceby Hills

9 Wisford Heath

10 Sea Valley

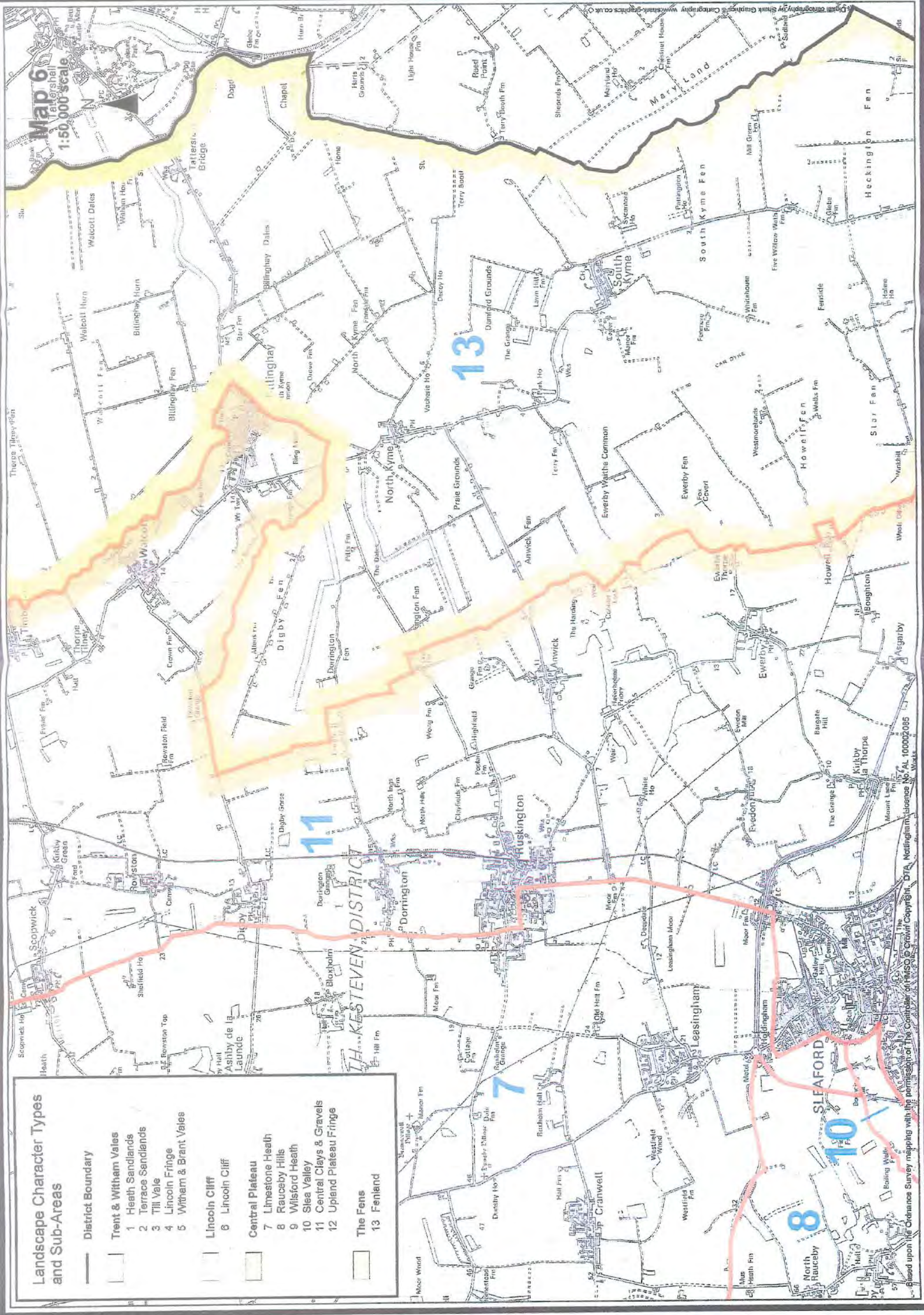
11 Central Clays & Gravels

12 Upland Plateau Fringe

The Fens

13 Fenland

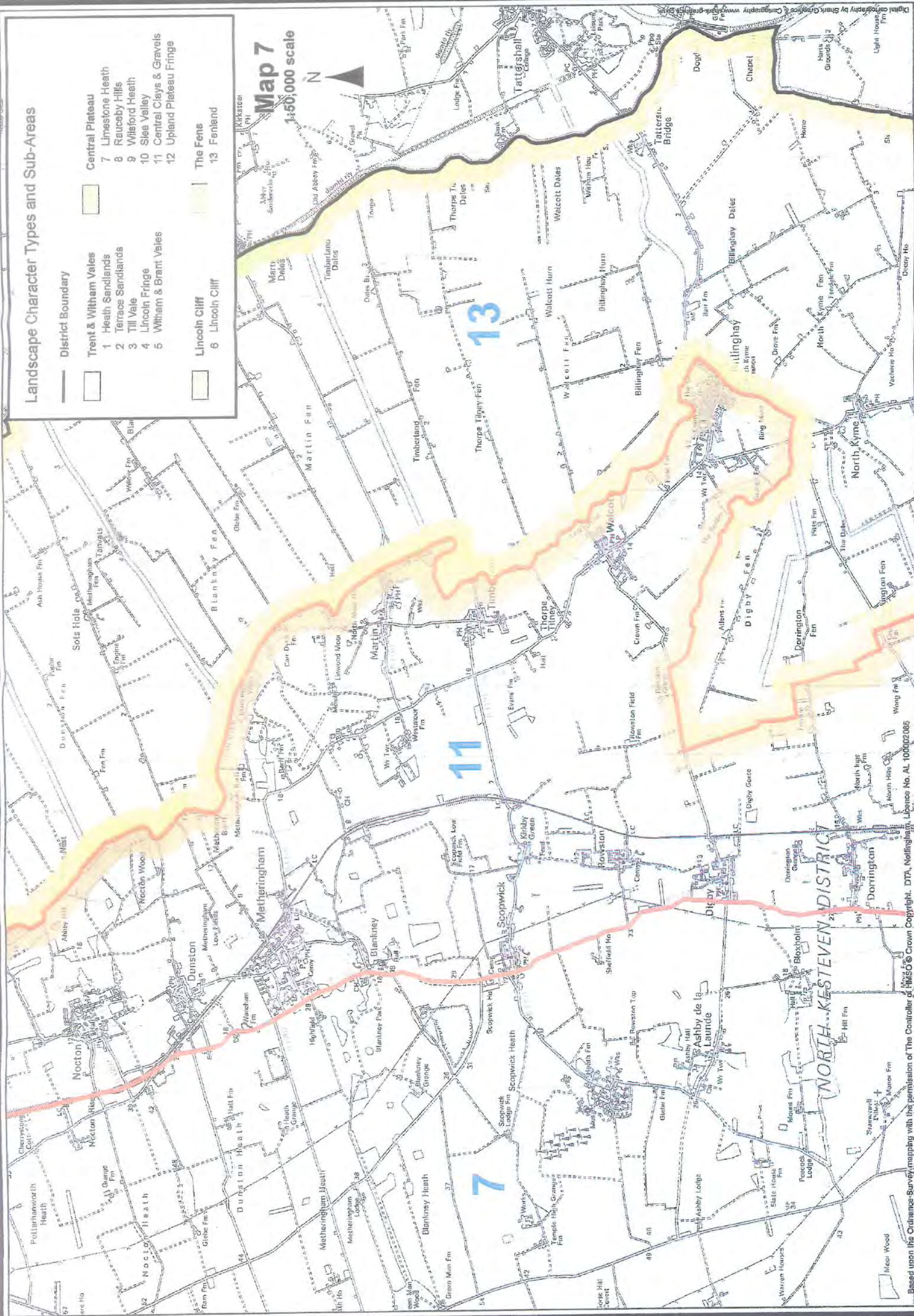
Map 6
1:50,000 scale

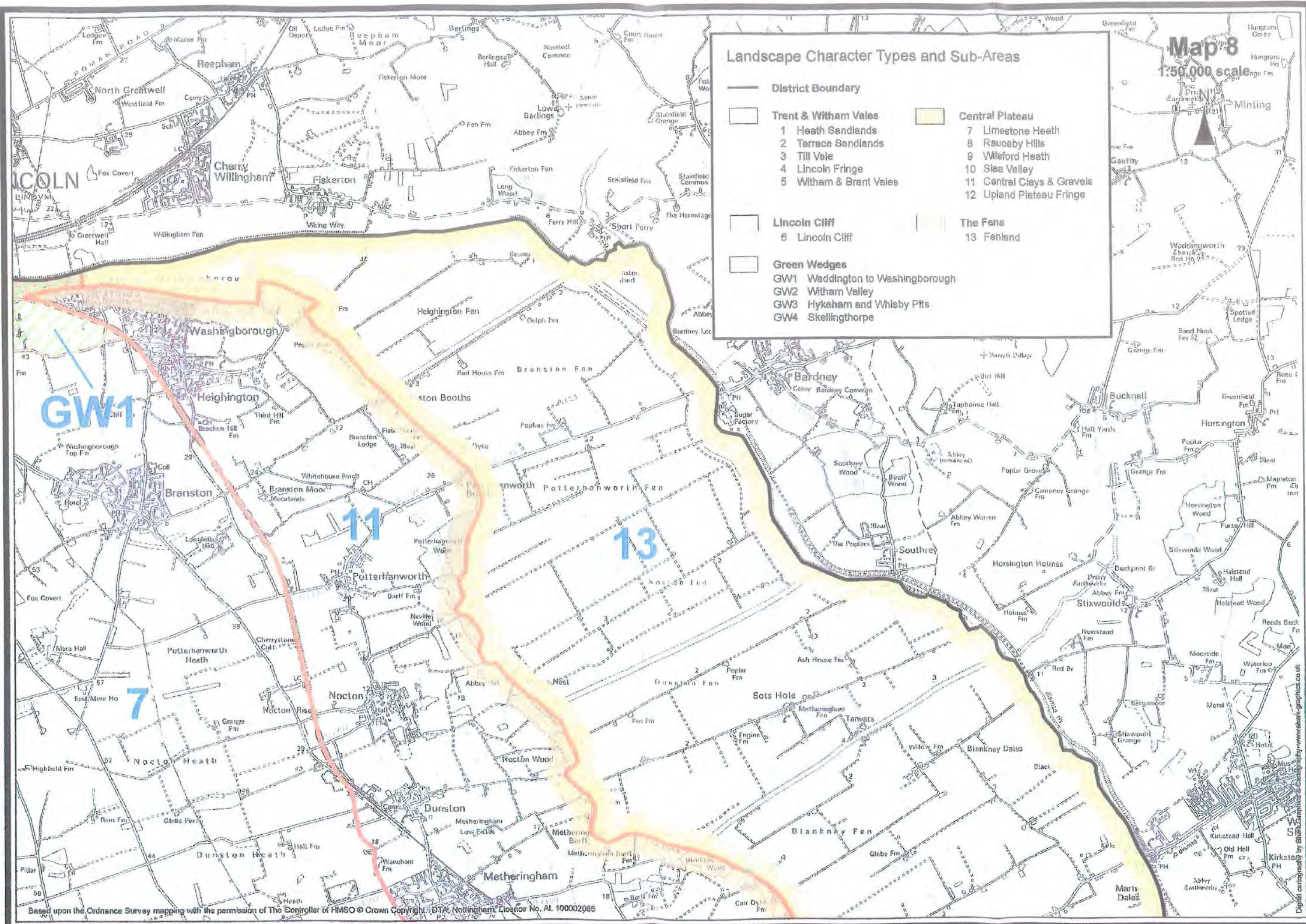


Landscape Character Types and Sub-Areas

- | | |
|------------------------|----------------------------|
| — District Boundary | Central Plateau |
| □ Trent & Witham Vales | 7 Limestone Heath |
| 1 Heath Sandlands | 8 Raucoby Hills |
| 2 Terrace Sandlands | 9 Wisford Heath |
| 3 Till Vale | 10 Slea Valley |
| 4 Lincoln Fringe | 11 Central Clays & Gravels |
| 5 Witham & Brant Vales | 12 Upland Plateau Fringe |
| □ Lincoln Cliff | The Fens |
| 6 Lincoln Cliff | 13 Fenland |

Map 7
1:50,000 scale





Map 8

1:50,000 scale

- Landscape Character Types and Sub-Areas**
- District Boundary
 - Trent & Witham Vales
 - 1 Heath Sandlands
 - 2 Terrace Sandlands
 - 3 Till Vale
 - 4 Lincoln Fringe
 - 5 Witham & Brant Vales
 - Central Plateau
 - 7 Limestone Heath
 - 8 Raucedon Hills
 - 9 Wileford Heath
 - 10 Slea Valley
 - 11 Central Clays & Gravels
 - 12 Upland Plateau Fringe
 - Lincoln Cliff
 - 6 Lincoln Cliff
 - The Fens
 - 13 Fenland
 - Green Wedges
 - GW1 Waddington to Washingborough
 - GW2 Witham Valley
 - GW3 Hykeham and Whisby Pits
 - GW4 Skellingthorpe

GW1

11

13

7

The Historic Landscape Characterisation Project for Lincolnshire



The Historic Character of The County of Lincolnshire

English Heritage Project No. 4661 Main

The Historic Landscape Character Zones

John Lord and Alastair MacIntosh
Lincolnshire County Council

With contributions from

Adam Partington

September 2011

The Lincolnshire Historic Landscape Character Zones

The Confluence

CON1. The Don Floodplain

CON2. The Isle of Axholme

CON3. The Axholme Fens

The Northern Cliff

NCL1. The Lincoln Satellite Settlements

NCL2. The Northern Cliff Farmlands

NCL3. The Cliff Edge Airfields

NCL4. The Broughton Woodlands

NCL5. The Normanby Scarpe

The Northern Marshes

NOM1. The Humber Bank

NOM2. The Immingham Coastal Marsh

NOM3. The Grimsby Commuter Belt

The Wolds

WOL1. The Brocklesby Heath

WOL2. The Caistor Spring-Line

WOL3. The Upper Wolds

WOL4. The Dry Valleys

WOL5. The Western Wolds Foothills

WOL6. The Spilsby Cresent

The Clay Vale

CLV1. The Witham Abbeys

CLV2. The Limewoods

CLV3. The Central Clay Vale

CLV4. The Ancholme Carrs

CLV5. The Kelsey Moors

The Trent Valley

TVL1. The Northern Cliff Foothills

TVL2. The Fosse Way

TVL3. The Valley Fens

TVL4. The West Grantham Farmlands

The Southern Cliff

SCL1. The Southern Cliff Heath

SCL2. The Fen Edge Settlements

SCL3. The Kesteven Parklands

The Grazing Marshes

GRM1. The Middle Marsh

GRM2. The Salterns

GRM3. The Mablethorpe Outmarsh

GRM4. The Saltfleet Storm Beach

GRM5. The Skegness Holiday Coast

The Fens

FEN1. The Witham Fens

FEN2. The Eastern Fens

The Wash
WSH1. Reclaimed Coastal Fringe
WSH2. The Tofts
WSH3. Cross Keys Wash
WSH4. Reclaimed Coastal Fringe
WSH5. Bicker Haven
WSH6. Townlands

Character Zone Template

Name of Area: The name given to the character zone by the project team and the code given to the character zone.

ARS sub-province: Taken from, Roberts, B. K. and Wrathmell, S., *An Atlas of Rural Settlement in England* (London: English Heritage, 2000).

Countryside Agency Countryside Character Area: Taken from, Countryside Commission, *Countryside Character Volume 3: Yorkshire and the Humber* (Cheltenham: Countryside Commission, 1998).

Total area: In square kilometres.

Percentage of Regional Character Area: The proportion of the character zone area compared to the total area of the Character Area of which it forms a part, expressed as a percentage.

Percentage of project Area: The proportion of the character zone area compared with the project area as a whole expressed as a percentage.

The statement includes a map to indicate the location and extent of the character zone within the project area.

Description

This is a written description of the present character of the zone under discussion. It is based on statistical analysis of HLC data, background research and site visits. It is intended to be an overall description of the essential elements that, taken together, create the distinct character of a zone. The description is intended to be objective, free of value-laden terminology and accessible to the general public, as well as those within the planning and heritage sectors.

The description includes a consideration of some or all of

- Topography
- Land use
- Settlement patterns
- Communications
- Above-ground heritage assets

Historic Landscape Evolution

Complementing the description of the present landscape, this section endeavours to describe the historical processes and events that have shaped the character of the zone. The description is arranged chronologically, where possible, and describes past landscapes, their surviving elements and their impact on subsequent landscape features. It is intended that this should act as a guide to understanding historical developments within the landscape, and is not an exhaustive guide to the history or archaeology of the zone.

Legibility

The concept of legibility is applied to all records in the HLC database. It is a measure of the extent to which past landscapes can be identified in later ones. For example, it may be possible to identify areas of former ridge and furrow cultivation by the characteristic S-shaped field boundaries left when it was enclosed. This section attempts to describe the survival of past landscapes into the present, and to show the specific features in the modern landscape which demonstrate a high degree of legibility.

Character Zone CON1

The Don Floodplain within The Confluence Character Area

ARS sub-province: CTRNT

Countryside Agency Countryside Character Areas:

39 Humberhead Levels

41 Humber Estuary

Total area: 61.3 km²

Percentage of Regional Character

Area: 19.2%

Percentage of Overall Project

Area: 0.88%



Description

This is an zone of broad, flat arable land to the west of the River Trent. It is bounded to the east by the high ground of the Isle of Axholme, and to the south by the line of the Stainforth and Keadby Canal. Although the River Trent forms the main western boundary of the zone, it is not readily visible due to the high flood bank along much of its length.

Unlike the other drained landscapes in the Confluence Character Area, the roads and lanes found in the Don Floodplains are sinuous and indirect, giving a much less planned feel to the rural landscape. They are also noticeably raised above their surroundings due to the historic risk of flooding.

Despite the name of the zone, the River Don no longer flows through it, having been diverted as part of the seventeenth-century drainage system. The former course of the Don can be traced across the zone, most interestingly at the settlements of Garthorpe and Fockerby, which used to be separated by the river. This is also the case at Eastoft, where the river once formed the county boundary with Yorkshire, and at Luddington, which also sat on the course of the Don.

These villages, along with Amcotts on the River Trent, are the main settlement foci of the zone. Although some modern buildings have been constructed in each of them, their built character remains largely unchanged from the late nineteenth century, and each settlement retains a well preserved historic core.

Away from these nucleated settlements, there are several isolated farmsteads, some of which have been significantly altered by late twentieth-century additions, such as prefabricated barns. The general built character of the zone is one of red-brick buildings with pantile roofs, and much of the more recent construction follows this pattern.

The rural landscape is flat and open, with few vertical intrusions. Modern developments in the zone, such as the pylons running north from Keadby, have a significant visual impact

proportional to their vertical height. Views across the landscape encompass great distances, and there is a strong sense of isolation away from the main settlements.

Historic Landscape Evolution

The development of the character of this zone has been driven by the rivers flowing through it, both current and historical. All of the settlements in the zone were established on the course of a river, and were built on areas of higher ground. Before the zone was drained in the seventeenth century, the inhabitants made their living from the excellent seasonal grazing provided by the annual inundation, and from the many natural resources provided by the marsh. These included wildfowl, fish and reeds. The rivers Trent and Don provided the means by which surplus produce could be traded elsewhere.

As part of his attempts to drain the fenland of the Isle of Axholme, Sir Cornelius Vermuyden caused the River Don to be straightened and diverted from its historic course. Those settlements on the former course were left stranded, and the seasonal inundations of the marsh were much reduced, leading to a marked decline in productivity.

When the land had been drained, it was divided up into new planned fields, with straight boundaries created by the ditches and drains necessary to keep the land dry. The drained and enclosed land was later subject to warping, a process whereby the land is deliberately inundated with river water in order to deposit new sediment and to raise its level. As part of the new farming regime instituted after drainage and enclosure, new farmsteads were built in the eighteenth and nineteenth centuries by landowners in the midst of their new holdings.

The farmland of the zone is extremely productive, due to the rich peaty soil, and the history of farming in the zone since the seventeenth century reflects the desire of landowners to maximise both the output of the land and the efficiency with which it can be harvested. In the twentieth century, the mechanisation of farming and harvesting processes increased rapidly, and the landscape has changed to reflect this. Many field boundaries have been removed to create larger fields that can be worked more efficiently by tractors and harvesters. There is also a tendency towards the dereliction of isolated farm complexes, most especially in the ancillary buildings, perhaps resulting from their obsolescence in the face of the decline of mixed farming practices.

The main settlements have grown, albeit slowly, during the last century, creating ribbon developments on the peripheries along the main roads. Vacant plots within the historic cores of the settlements have also been filled in by modern housing. These processes are, however, on a small scale compared to other settlements in the wider area of the Confluence.

Legibility

The processes of drainage and enclosure removed almost all traces of previous land use. Some small areas of ancient enclosure can still be found at the edges of the historic settlements, especially at Luddington, and these are indicative of the small areas of open strip fields that once existed on the higher ground. Some of the main field boundaries in the zone follow the course of the old River Don, which can be traced for much of its former length across the zone.

Much of the post drainage landscape is still recognisable, primarily in the network of drains and dykes that were created. The planned enclosure field patterns remain intact in much of the western half of the zone. In the rest of the zone, where modern fields have replaced the planned enclosures, enough of the rectilinear boundaries remain to provide high legibility of the seventeenth-century landscape.

Character Zone CON2

The Isle of Axholme within The Confluence Character Area

ARS sub-province: CTRNT

Countryside Agency Countryside Character Area:
39 Humberhead Levels

Total area: 49.7 km²

**Percentage of Regional Character
Area:** 15.5%

**Percentage of Overall Project
Area:** 0.71%



Description

The Isle of Axholme is an area of high ground set amidst a drained fen landscape. Historically, the Isle was formed by the courses of three rivers, the Trent, the Don and the Idle. The Don and the Idle have both had their courses altered, and the former fen land has been drained. In the modern landscape it is now more appropriate to refer to the central area of high ground as 'the Isle' rather than the whole area once defined by the three rivers. The island character of the high ground is especially clear when the area is viewed or approached from the surrounding countryside. The hills of the Isle rise to approximately thirty metres above the surrounding fens, and are visible across the wider character area. The zone forms an inverse 'T' shape beginning at Crowle in the north, then heading south through Belton and Epworth to Haxey, with the arms of the 'T' spreading westwards to Westwoodside, and eastwards to Owston Ferry. The nearby town of Wroot has also been included in the character zone.

The historic settlements of the Isle are very well preserved, although there has been some infill development of vacant plots with modern housing. There are also several modern developments to be found on the edges of each settlement, along with ribbon developments stretching along the connecting roads between them. The village cores are characterised by the use of red brick as a construction material, although a significant proportion of houses are painted or whitewashed. Pantile is the most common roofing material on older buildings, while modern houses tend to favour grey tiles.

The Confluence Character Area as a whole is marked by clear contrasts between the high ground and the low, reflecting the limited availability of dry land in the area before drainage. Where the character of the drained fen is largely planned, with origins in the agricultural improvements of the early post medieval period, the Isle reflects a much longer period of use and occupation. The clearest example of this is the nationally significant survival of medieval open field farmland. This type of farming produces a very different landscape than more modern techniques. The fields are divided into strips, which are long and thin with a curvilinear form. The strips are not separated by hard boundaries, such as hedges or ditches, and, as adjacent strips can be owned by different farmers, different crops can be grown in them, often creating a patchwork effect.

The ownership of strips is transferable, and there has been some consolidation of strips in modern times, as adjacent strips come into the possession of a single owner. This can have the effect of allowing more traditional farming techniques to be employed leading to a dilution of the historic character of the open fields. In some cases, this consolidation has been accompanied by the erection of fences and the conversion of the land to pasture, in order to facilitate the keeping of horses. This process is broadly similar to the historic enclosure of open fields that occurred across much of the rest of the county in the medieval period.

Aside from the open strip fields, the rural landscape is largely characterised by large, modern fields, exhibiting significant loss of boundaries since the nineteenth century. There is limited survival of planned enclosure around Crowle, in the north, but elsewhere most of it has been consolidated into larger fields. There is widespread survival of ancient enclosures throughout the Isle, but especially around the southern settlements, centred on Haxey.

The Isle is largely free of woodland, reflecting the historic pressure on available land. However, the large numbers of suburban-style domestic gardens provide a certain amount of tree cover within settlements. The Axholme Line Nature Reserve, an overgrown railway cutting that traverses the zone, also provides an area of woodland habitat, contributing significantly to the biodiversity of the zone.

Historic Landscape Evolution

The development of the Isle has been governed by the lack of permanently dry land on which to build and to grow crops. The Confluence Character Area as a whole is divided into the high ground, upon which are found all the historic settlements and the former open fields, and the drained fenland, which is, essentially, a post medieval landscape.

Prior to the drainage of the surrounding land, the inhabitants of the Isle communities used the fens for seasonal grazing, hunting, fishing and gathering reeds. During the periods of inundation, it is likely that cattle and sheep would have been pastured in some of the ancient enclosures found on the high ground. Cultivation of crops was limited to the open fields surrounding the Isle villages. This system provided sufficient food and resources for the Islanders, along with a surplus of some goods for trade with neighbouring areas via the network of rivers through the zone.

Each of the settlements seen in the zone today, with the exception of Wroot, is recorded in the Domesday survey of 1086. Most of the settlements appear, from their names, to be predominantly Danish rather than Anglo-Saxon. Settlements in the north of the Isle are nucleated in character, while those in the south, particularly Haxey, Westwoodside, Upperthorpe and Craiselound, are dispersed hamlets.

Although the surrounding fens were drained and enclosed, the open fields and commons on the Island survived, in some cases until the present day. The common grazing land on the high ground was enclosed in two Acts: Epworth, Haxey, Owston and Belton in 1795; and Crowle and surroundings in 1822.

Much of the built form of the Isle settlements is from the eighteenth century or later, and there are many village based farmsteads. Another significant feature of the Isle is the high proportion of non-conformist religious buildings, all the more notable because of the historic connection of the Isle to John Wesley and the early years of Methodism.

Subsequent development on the Isle is largely the result of twentieth-century processes. The settlements have grown significantly since the nineteenth century, with two distinct types of modern development in evidence. The first of these is linear ribbon development along the main roads between settlements, generally dating from the 1920s and 1930s. After the Second World War, new housing was constructed in planned estates set back from the main

axis of each village. This pattern continues to this day, along with occasional infill of vacant plots within historic settlements.

Legibility

Perhaps more than any other part of the county, the Isle of Axholme retains many strong elements of its historic formations within its present landscape. The clearest example of this is the survival of the ancient open fields around Belton, Epworth and Haxey. These are unique within Lincolnshire and very rare in the country as a whole. The open fields retain much of their historic character, although crop-rotation is no longer practiced. There are several threats to the open fields, which have the potential to damage or destroy them. The first is the ongoing process of private enclosure, brought about by the consolidation of strips. This may result in the adoption of more modern arable farming techniques, effectively removing the characteristic stripy appearance. It may also be undertaken for the purposes of pasturing livestock, in which case not only is the land-use changed, but new fences are built to create paddocks. Another potential threat to the open fields is the expansion of neighbouring settlements by the construction of new housing estates.

The extensive survival of ancient enclosures throughout the zone is indicative of historic farming practices, such as the over-wintering of livestock or the enclosure by agreement of parts of the open fields. Although there is some survival of planned enclosure, much of it has been lost as fields have been consolidated in the past fifty years. The resulting modern fields have little legibility of preceding landscape types and are generally very irregular in shape.

The historic settlements of the Isle are well preserved, with distinct historic cores. The historic settlement pattern is potentially at risk from ribbon development, which threatens to link separate settlements, especially around Haxey.

Character Zone CON3

The Axholme Fens within The Confluence Character Area

ARS sub-province: CTRNT

Countryside Agency Countryside Character Area:

39 Humberhead Levels

45 Northern Lincolnshire Edge with Coversands

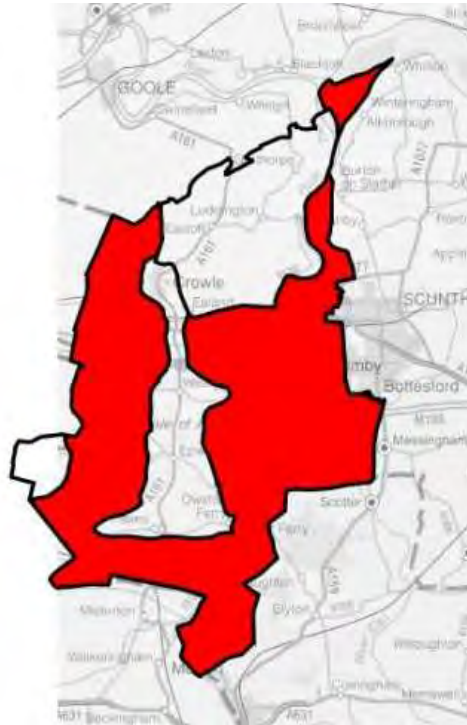
Total area: 209 km²

Percentage of Regional Character

Area: 65.3%

Percentage of Overall Project

Area: 3%



Description

The Axholme Fens lie in the extreme north-west of the historic county of Lincolnshire and are found entirely within the boundary of the North Lincolnshire unitary authority. It is bounded by the Northern Cliff Character Area to the east, the Humber to the north, and the county boundary to the south and west.

The zone is made up of drained fen and marshland resulting in a flat arable landscape with broad views across long distances. These views are mostly unrelieved by vertical intrusions, as there is little woodland to be found in the zone. Field boundaries are predominantly formed by the hierarchy of drainage ditches, or by the long, straight roads that traverse the landscape.

There are relatively few settlements to be found in the zone, apart from those at historic crossing points along the course of the River Trent. These can be seen at places such as Owston Ferry, with its counterpart on the opposite bank, East Ferry. Aside from toponymic evidence such as this, crossing points can be inferred from the course of roads.

Much of the settlement in the zone is found in the form of isolated farms set in the midst of the drained fen fields. These are often accompanied by historic farm buildings, which are increasingly subject to dereliction. There may also be modern farm buildings such as barns and warehouses, which are often much larger than the associated farm dwellings and are typically made from different building materials, such as concrete and corrugated iron.

The wetland heritage of the zone is still very much in evidence. There are numerous long, straight drainage ditches, which feed into purpose built drains, straightened rivers or canals, before flowing into the Trent. There are also many nature reserves in the zone, including a new area of wetland that has been created at Alkborough Flats.

The landscape on the east bank of the Trent is very like that on the west bank, but the influence of the nearby city of Scunthorpe is much more powerful. There is more industrial development, principally at Flixborough and Gunness. The city itself is a visible presence on the eastern skyline, especially at night when streetlamps are lit.

Historic Landscape Evolution

Prior to drainage, the fens provided many resources to the inhabitants of the neighbouring Isle of Axholme, including fish, fowl and seasonal grazing land. The fens were inundated by the nearby rivers each winter, and when the flood water receded it left behind rich sediment that encouraged the growth of grass. The rich grazing thus provided was used during the summer by the settlements on the island, and also by neighbouring settlements in Nottinghamshire.

When the fens were drained, much of their former productivity was temporarily lost. The drainage was intended to replace the former common fenland grazing with quality arable land, which was enclosed in a rectilinear fashion and distributed between the Crown and the drainage engineers, led by Cornelius Vermuyden. The common grazing land was thus reduced to a third of its former size, reducing the ability of the Islanders to obtain a living from it. Furthermore, the inundations which had once deposited rich silt upon the pastures, encouraging the rapid growth of grass, were deprived of much of their power, further decreasing the productivity of the land that was left.

The initial results of drainage were less than satisfactory, but later improvements to the drainage system during the eighteenth and nineteenth centuries, including more effective pumping technologies, led to greater productivity from the new enclosures. In addition to this, the introduction of warping, a technique by which the land was deliberately flooded by river water, increased the fertility of the land and also raised its height by depositing several feet of silt over the course of decades, thus decreasing the risk of flooding and allowing year-round cultivation.

The landscape has been altered in the years since the Second World War. Much of the zone has been subject to the loss of field boundaries, resulting in much larger fields. It is unlikely that this has affected the visual character of the landscape to any great degree, as the boundaries lost have typically been ditches rather than hedges.

Legibility

Although the historic wetland character of the zone has been largely swept away by drainage and other processes, the landscape of today is a direct descendent of it. In order to create the modern arable landscape, the historic fen was drained by means of a hierarchy of ditches, many of which remain in their original form. Despite the loss of boundaries in the twentieth century, enough remain that the landscape retains a strong rectilinear character. There are also extensive areas of surviving drainage landscape throughout the character zone that appear to be unchanged from the nineteenth century.

Some areas of wet pasture were left after enclosure in the form of designated turbaries, which were not used for the purpose of cutting turves and have subsequently become communal open space or nature reserves. The name 'turbary' has also been preserved to this day on maps.

Settlements have remained largely unchanged, although there has been a tendency towards infill development, and also some dereliction of public buildings such as chapels and pubs. Isolated farms are still found throughout the zone, many with derelict outbuildings or modern facilities attached.

Character Zone NCL1

The Lincoln Satellite Settlements within The Northern Cliff Character Area

ARS sub-province: CLNSC

Countryside Agency Countryside Character Areas:

44 – Central Lincolnshire Vale

45 – Northern Lincolnshire Edge

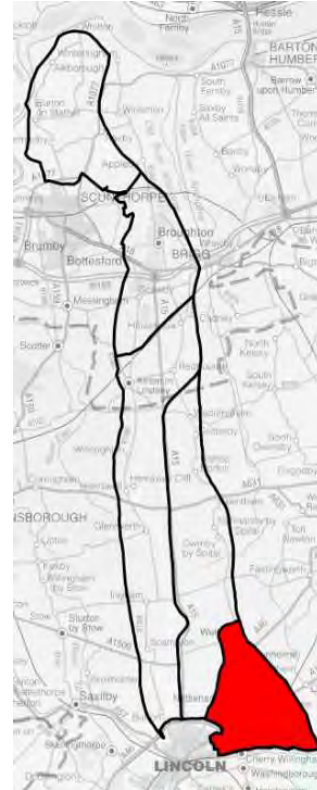
Total area: 44 km²

Percentage of Regional Character

Area: 13.1%

Percentage of Overall Project

Area: 0.6%



Description

The settlement pattern of this character zone owes much of its present character to its proximity to the City of Lincoln. The historic settlements of Welton, Dunholme, Nettleham, Sudbrooke, Reepham, Cherry Willingham and Fiskerton have all been heavily developed over the twentieth century, to the extent that several of them are now approaching the size of small towns rather than villages.

This development is largely residential in nature, with associated infrastructure such as schools and recreational facilities. Housing developments from the early to mid twentieth century were generally built along the roads connecting one village to another, typically taking the form of detached or semi-detached housing on large plots. These houses are typically of irregular design, reflecting the greater individuality with which houses used to be designed. Later development, from the nineteen-eighties onwards, is in the form of discrete housing estates, with sinuous street patterns and uniform, brick-built, detached housing. These estates are often set back from main roads behind the 'ribbon' development of the earlier periods of expansion.

Despite the recent expansion of these villages, their historic cores tend to be well preserved. High streets retain many historic buildings, especially pubs and churches, and areas of open space, such as the village greens of Welton and Dunholme, are tranquil and well-kept. Although there has been some infill of vacant plots by modern houses, there are many examples of surviving eighteenth- and nineteenth-century cottages, constructed of red-brick with pantile roofs.

As well as the dominant nucleated settlement pattern of villages, there is a secondary pattern of small isolated farmsteads. The farmhouses are typically eighteenth or nineteenth century in origin, and in many cases they have associated outbuildings, such as barns or stables, that date from the same period. However, in many cases these outbuildings have fallen into disuse and can be found in varying stages of dereliction. Some have also been

replaced by large modern farm buildings constructed of concrete, breeze blocks and corrugated iron.

The rural landscape of this zone is characterised by flat fields with wide views across large areas. The pattern of fields is generally rectilinear, reflecting the regular planned enclosure of this landscape during the eighteenth and nineteenth centuries. The planned enclosure pattern survives largely intact around the villages of Nettleham, Scothern and Welton, but elsewhere has been superseded by larger modern fields formed by the amalgamation of smaller historic fields, such as the planned enclosures.

Historic Landscape Evolution

The nearby City of Lincoln was a major Roman settlement, and it is likely that this zone formed part of its hinterland. Although there are no Roman remains to be seen above ground today, the modern Wragby Road, the A158, follows the course of a former Roman road.

After the Roman occupation, new settlements were established by Anglo-Saxon and later Danish settlers. These were the forebears of most of the current settlements, which are mentioned in the Domesday survey of 1086. Like most other Midland's settlements, these would have been set among two or three large open strip fields, with common grazing on land that was unsuitable for cultivation, such as dry upland heath. In this zone, it is likely that such land was found immediately adjacent to the Roman road, which may explain why the historic settlements are found at some distance from the road itself.

The medieval landscape may also have been influenced by the proximity of religious foundations, such as Barlings Abbey, whose holdings extended into the zone. It is possible that farms such as Scothern Grange and Reepham Grange were once operated as farming estates on behalf of these abbeys. On the dissolution of the monasteries in the fifteen-thirties such farms would have been sold to local gentry, and it is possible that the name 'grange' is indicative of this process.

The zone was subject to planned enclosure in the eighteenth and nineteenth centuries. This process removed the medieval system of open field farming and common grazing, and replaced it with enclosed fields, which were allocated to the village landowners according to the extent of their former holdings. These fields have a characteristic rectilinear form, with straight boundaries and right angled corners, resulting from the division of the former landscape by professional surveyors. The pattern of isolated farms seen in the modern landscape is partially a result of the enclosure process, as those farmers who formerly lived in the villages moved outside to be closer to their new holdings.

The twentieth century saw further change to the landscape of the zone. The primary change being caused by the amalgamation of fields, either to facilitate the use of mechanised techniques or by the purchase of adjacent farmland by farmers looking to increase their holdings. As described above, the villages in the zone expanded greatly with the addition of many new houses. This expansion was primarily caused by the need to provide housing for those who worked in the City of Lincoln, but choose not to live within its boundaries, although there is also a sizable number of bungalows in the zone, which suggests the presence of a significant retired population.

Legibility

Although somewhat masked by peripheral modern development, the medieval nucleated settlement pattern remains largely intact. However, it is possible that some villages may in the future be merged with each other if care is not taken to prevent development stretching along connecting roads.

The extensive survival of planned enclosures provides a high degree of legibility of the eighteenth-century landscape. This is enhanced by the presence of Sudbrooke Park, which was established in the eighteenth century and retains much of its original form.

Character Zone NCL2

The Northern Cliff Farmlands within The Northern Cliff Character Area

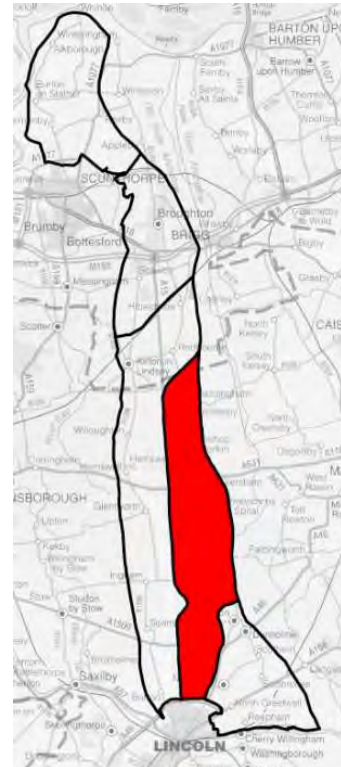
ARS sub-province: CLNSC

Countryside Agency Countryside Character Areas:
45 Northern Lincolnshire Edge with Coversands

Total area: 79.3 km²

Percentage of Regional Character
Area: 23.6%

Percentage of Overall Project
Area: 1.14%



Description

The general appearance of the zone is governed by its topography. The landscape is generally flat with a shallow eastward slope that drops approximately twenty metres. The westward boundary of the zone is formed by the A15, which is a long straight road which runs due north from Lincoln. The minor roads in the area are generally aligned from west to east, and are often very straight with wide grass verges.

The settlements in this area are nucleated in nature, and are arranged in an irregularly spaced line from Hackthorn in the south to Waddingham in the north. They are all connected to the A15 by straight minor roads, and to each other by a sinuous, meandering north-south road that runs the length of the zone. The line of nucleated settlements is situated on a series of streams that run from west to east across the area and are fed by a spring line to the west. The settlements are a mixture of historic buildings from the eighteenth and nineteenth centuries and more modern houses of individual design. There has been little outward expansion of the settlements from their historic footprints, and most recent additions have tended to be built as infill developments of vacant plots. This has resulted in an unplanned, organic feel to the settlements in which many different architectural styles contribute to their character.

Most of the historic settlements survive to this day, but there are several areas where earthwork remains indicate the presence of historic settlements that have since been abandoned. At Caenby, Hackthorn and Riseholme, there are small settlements set within areas of earthworks. At West Firsby the entire village has disappeared.

A secondary settlement pattern of isolated farmsteads can be observed set within the rural landscape, away from the main nucleated settlements. These farmsteads range in size from single farmhouses to large complexes of ancillary buildings such as barns and animal pens. The older buildings are typically built of limestone or brick while newer additions tend to be constructed of concrete and corrugated iron. Many of the farm outbuildings have fallen into disrepair as they have become obsolete.

The rural landscape is characterised by long, straight field boundaries, set at right-angles to each other. The fields themselves are a roughly equal mixture of very large, prairie-style fields and smaller fields with a strict rectilinear form. These two types make up the bulk of the agricultural land in the zone, and are typically found at a distance of 200 to 300m away from the settlements. The fields immediately adjacent to the villages are typically irregular in shape, with curvilinear boundaries, and are often used for pasture.

The rural landscape is relieved at regular intervals by the presence of small, rectilinear woodland plantations which are generally on the same alignment as the fields and roads. Some of these are long and thin and were probably planted as shelterbelts to prevent the erosion of topsoil during ploughing.

Historic Landscape Evolution

Although there is evidence for occupation of the area in the Prehistoric and Roman eras in the form of cropmarks and scattered finds, no extant visible remains are now apparent, apart from the A15, which follows the line of a Roman road and forms the western boundary of this character zone. The nucleated settlements appear from their names to be a mixture of Anglo-Saxon and Danish foundation.

The medieval, farming landscape would have been a mixture of arable and pastoral areas. The surviving areas of ancient enclosure indicate that the open strip arable fields would have been situated in close proximity to the settlements. The dry heath to the west of the zone was used for grazing sheep. Some of the isolated farms in that area probably have their origins as grange farms operated on behalf of local religious houses. Parts of the southern portion of the character zone were used for sheep farms at this time, for example the Grange-de-Lings area, which was associated with Barlings Abbey.

The heath and parts of the open fields were fully enclosed during the eighteenth and nineteenth centuries. This was undertaken either by private agreement between local landowners, or by Act of Parliament. The resulting landscape was one of small rectilinear fields, which were bounded by hedges or stone walls. In some cases the owners of the new fields built farmsteads set among their holdings. Some of the isolated farmsteads seem to be associated with deserted village earthworks, and it is possible that these are remnants of the earlier settlement cores as opposed to isolated farmsteads established as a result of the enclosure movement.

During the twentieth century, landscape change was brought about by the need to increase the efficiency of farming techniques. New mechanical farming aids, such as combine harvesters, could be employed more effectively on larger fields, and many hedges were removed in order to facilitate the use of such techniques.

Legibility

The irregular fields immediately adjacent to the settlements are indicative of early enclosure of an ancient, strip farming system, an interpretation supported by the widespread survival of ridge and furrow earthworks in these fields.

The historic settlement cores still retain much of their historic character. Modern buildings tend to be individually designed and constructed and are sympathetic to the scale and aesthetic of the historic villages.

The modern landscape displays field consolidation indicative of mechanised agricultural practices. This has led to the partial re-establishment of a more open landscape, reminiscent of the pre-enclosure common grazing use of the landscape in this area.

Character Zone NCL3

The Cliff Edge Airfields within The Northern Cliff Character Area

ARS sub-provinces:

CLNSC

CTRNT

Countryside Agency Countryside Character Areas:

44 Central Lincolnshire Vale

45 Northern Lincolnshire Edge with Coversands

48 Trent and Belvior Vales

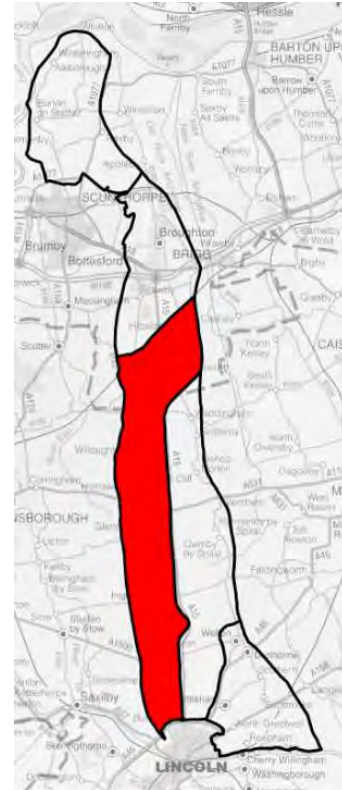
Total area: 104.9 km²

Percentage of Regional Character

Area: 31.2%

Percentage of Overall Project

Area: 1.5%



Description

There is some survival of planned enclosure landscapes across the character zone, particularly in the north. The modern fields, produced through a process of consolidation in the twentieth century seem to retain much of the rectilinear character of the underlying planned enclosures. Most of the modern fields and planned enclosures have a strong east to west orientation, evident from the long boundaries that have survived the process of consolidation. Close to the historic settlements on the western edge of the character zone there is a preponderance of surviving ancient enclosures characterised by small field sizes.

The settlements in this character zone are all in the western half of the zone, arranged along the base break of slope of the cliff. They are nucleated in nature and are typically arranged in an irregularly spaced north to south alignment. None of the settlements have expanded much beyond their historic cores and have little peripheral modern development. Most of the isolated farmsteads in the character zone are found in the eastern half. There are four areas of historic village earthworks representing deserted or shrunken settlements within the zone.

Much of the road network reflects the strong east to west alignment of the fieldscapes, apart from the road in the centre of the zone, which is aligned north to south and follows the top of the Cliff. The east to west aligned roads are generally characterised by their straight, planned nature, although there are few which are much more sinuous. The eastern edge of the character zone is formed by the north to south aligned A15 road, which generally follows the line of the Roman road, Ermine Street.

This character zone has a particularly high number of military airfields (9.9% of the total land area of the zone) which are either in use or retain enough of their visible character to be confidently assigned to this category.

Historic Landscape Evolution

Although there is evidence for occupation of the zone in the Prehistoric and Roman eras, in the form of crop marks and scattered finds, no extant visible remains are now apparent,

apart from the A15, which follows the line of a Roman road and forms the western boundary of this character zone. It is clear that the Roman road continued to be an important landscape feature in the post Roman era, as many of the parish boundaries within this character zone follow the road. It is possible that the road which follows the top of the cliff edge (the B1398) also has its origins in an earlier era, as a long distance track way which followed a prominent ridge line.

There is evidence for occupation of the zone during the early medieval period with estates sharing the names of current settlements and deserted settlements being recorded within the Domesday survey. It is likely that the parish boundaries and the historic settlement cores were established during this early medieval period. The area immediately adjacent to the Roman road was probably used as common grazing land during this period, being away from the settlement cores and beyond the open field system used for arable crops.

Much of the zone was subject to planned enclosure in the eighteenth and nineteenth centuries, and much of this survives now, along with its associated isolated farmsteads. Some of the isolated farmsteads seem to be associated with deserted village earthworks, and it is possible that these are remnants of the earlier settlement cores, as opposed to isolated farmsteads established as a result of the post medieval enclosure process. The post Second World War period saw the consolidation and enlargement of many of the fields within the character zone by the removal of some of the field boundaries.

Although many of the airfields within this character zone have their origins in the First World War, some were constructed during the early years of the Second World War. The earlier airfields were significantly expanded and altered immediately before and during the Second World War. The majority were disposed of by the RAF in the aftermath of the Second World War, apart from Scampton and Kirton-in-Lindsey, which continue in RAF use to the present day. The designation of RAF Scampton as a V-bomber base in the mid-1950s necessitated the lengthening of the main runway to the north-east, which resulted in the diversion of the A15 to the east, away from its original Roman course.

Legibility

Legibility of the medieval landscape is evident in the survival of the settlement pattern and long east to west orientated field and parish boundaries. The historic settlement cores still retain much of their historic character with most modern development being small scale.

Legibility of the post medieval landscape is evident in the extensive survival of planned enclosure and isolated farmsteads across the character zone.

The modern landscape shows field consolidation indicative of contemporary agricultural practices. In some ways this field consolidation close to the A15 has led to the partial re-establishment of a more open landscape, reminiscent of the pre-enclosure common grazing use of the landscape in this zone.

Character Zone NCL4

The Broughton Woodlands within The Northern Cliff Character Area

ARS sub-provinces:

CLNSC

CTRNT

Countryside Agency Countryside Character Areas:

44 Central Lincolnshire Vale

45 Northern Lincolnshire Edge with Coversands

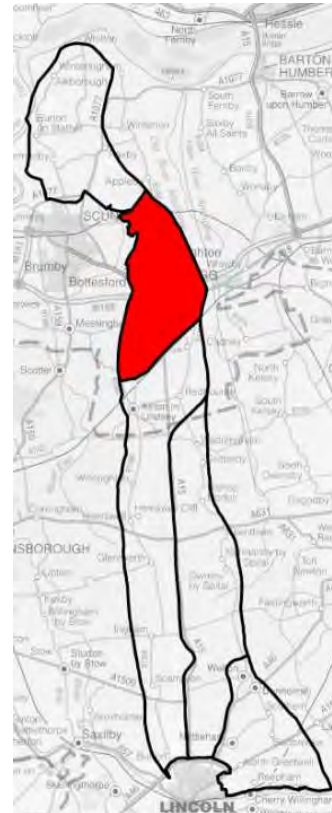
Total area: 49.3 km²

Percentage of Regional Character

Area: 14.7%

Percentage of Overall Project

Area: 0.71%



Description

Despite its proximity to Scunthorpe, this zone retains a strongly rural character. This is due to a large, wide belt of woodland, mainly on the west side of the Roman road, which acts a screen between Scunthorpe and the towns and open countryside to the east. The woodland is made up of a mixture of tree types, with several blocks of conifer plantation, such as Rowland Plantation, scattered around a large central area of ancient broad-leaved woodland.

The two main settlements in the zone, Broughton and Scawby, are at the northern end of a line of settlement that runs along the east side of Ermine Street from Nettleham in the south. However unlike the smaller villages to the south, both Broughton and, to a lesser extent, Scawby have grown into commuter towns to accommodate workers from nearby Scunthorpe. Older housing stock is constructed in red brick, with local pantile roofs. The more modern estates of detached and semi-detached housing are more generic, using building materials that are found throughout the country. Away from the two towns, rural settlement is limited to a handful of isolated farmsteads, usually found at the end of long farm tracks.

The zone is traversed by several important transport links. The main north to south road is a continuation of the Roman Ermine Street, which runs the length of the Northern Cliff Character Area. Between Broughton and Scawby, the M180 runs from east to west, connecting Scunthorpe to Grimsby and Immingham on the Lincolnshire coast. The southern boundary of the zone roughly corresponds with the line of the Manchester, Sheffield and Lincolnshire Railway which is still in use.

The rural landscape is an approximately equal mix of medium-sized rectilinear fields and large modern fields. The former make up the central part of the zone around the two main settlements, while the latter are found towards the edges of the character zone.

Historic Landscape Evolution

The farmland of the zone is an outgrowth of a typical medieval open field farming regime, with nucleated settlements surrounded by their open fields. It appears that Scawby maintained two fields, with common grazing to the west of the Roman road and down on the Ancholme Carrs to the east. It is likely that Broughton would have followed a similar regime. During the eighteenth century these parishes were enclosed by Act of Parliament, creating a new landscape pattern of rectilinear fields with long, straight hedge boundaries. Instead of being farmed by residents of the villages, as before, the new fields were worked by farmers who lived among their fields in isolated farms. As part of the new landscape several woodland plantations were created and these also have straight, planned boundaries.

The planned landscape remained largely unaltered until the middle of the twentieth century, when new mechanised arable farming techniques were introduced after the Second World War. These methods required larger fields in order to achieve maximum efficiency, necessitating the removal of hedges to create the large modern fields seen on the edges of the zone today. It is possible that the planned enclosures survived in the centre of the zone as the land was less suited to arable farming. It is also possible that hedges have been reinstated in the central area, giving the impression of survival.

Broughton appears to have begun growing beyond its historic boundaries in the late nineteenth and early twentieth centuries, perhaps as a result of the expansion of the iron works at Scunthorpe. There are some unusual examples of early twentieth-century semi-detached housing on the north side of South View with plots of up to twenty metres in length, resulting in long, thin gardens to the rear. This layout is reminiscent of Land Settlement Association allotments and housing, but there is no record of Land Settlement Association activity in this part of Lincolnshire.

Legibility

There is little evidence of Prehistoric activity forming a major component of the modern landscape. There are some examples of earthworks in the woods around Broughton, but these are not readily identifiable from maps, and do not affect nearby boundaries. Roman activity is represented by the presence of the main north to south road, Ermine Street. The presence of this road governed the establishment of later settlements, which exist in a line parallel to it. There is no standing archaeology or other landscape objects to indicate Roman activity.

The medieval landscape is not readily discernible in the character zone. The two settlements have grown significantly beyond their historic boundaries, and this has largely removed any traces of the former open fields. Specifically, the ancient enclosures, which might have retained ridge and furrow earthworks, have been built upon or ploughed over. Some parts of the pre-enclosure landscape are identifiable from names, such as Broughton Common. It is likely that much of the ancient woodland found in the zone is of late medieval origin, but the boundaries of the historic woodland have been blurred somewhat by the creation of later plantations at the edge, and by modern developments encroaching upon it, such as the Forest Pines golf club.

The enclosure landscape is well represented throughout the zone, with the survival of large areas of planned enclosure. There are also several examples of rectilinear copses, indicative of planting at this time. Nineteenth-century isolated farmsteads are found throughout the zone, and these are a typical outgrowth of the post enclosure farming regime.

Character Zone NCL5

The Normanby Scarp within The Northern Cliff Character Area

ARS sub-provinces:

CLNSC

CTRNT

Countryside Agency Countryside Character Areas:

39 Humberhead Levels

41 Humber Estuary

45 Northern Lincolnshire Edge with Coversands

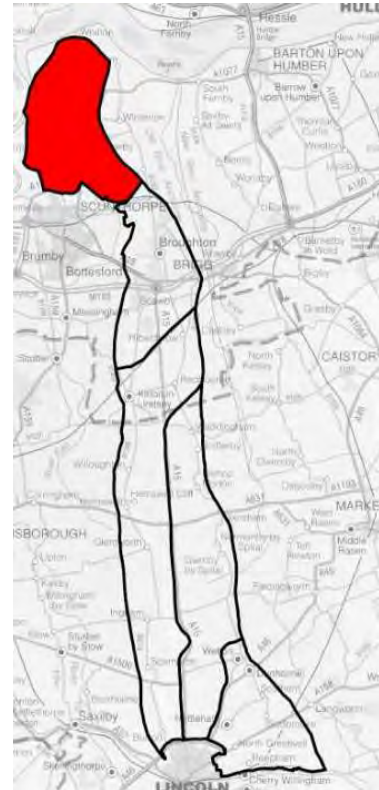
Total area: 58.9 km²

Percentage of Regional Character

Area: 17.5%

Percentage of Overall Project

Area: 0.84%



Description

Unlike the rest of the Character Area, this zone is marked by the presence of two distinct scarps which are outcrops of very different material. The western scarp is made up of a typical mudstone, overlying the same limestone formation that forms most of the length of the Northern Cliff Character Area. The eastern cliff is partly made up of ironstone, a resource which has caused the wholesale transformation of the zone by direct and indirect means over the past 150 years.

The western scarp is particularly pronounced between the villages of Alkborough and Flixborough, which are found at the top of the cliff. Immediately to the west of these villages, the scarp drops away by approximately sixty metres, providing broad views over the Confluence Character Area. The eastern scarp runs approximately parallel to the western scarp between the settlements of West Halton and Low Risby.

The zone has a nucleated settlement pattern, and most villages exhibit a well preserved village core. Despite the proximity of the zone to Scunthorpe, there is very little modern development in most settlements. The exception to this is Burton-upon-Stather, the largest village in the zone, which includes a variety of twentieth-century housing developments, including 1920s' ribbon development along the main roads, and extensive private and social housing estates. The general nucleated pattern is interrupted away from the main settlements, with a substantial number of brick-built isolated farmsteads.

The rural landscape is dominated by large modern fields of generally irregular shape. However, elements of the modern fieldscape, such as relict boundaries and drainage ditches, create a strongly rectilinear pattern. There are also several pockets of well preserved planned enclosure spread throughout the zone. Ancient enclosures occur in close proximity to some of the settlements, including the deserted settlements of Sawcliffe and High Risby.

Much of the zone once formed part of the Normanby Estate, some of which survives in the form of Normanby Hall Country Park, owned and administered by North Lincolnshire Council. This area of landscape parkland is surrounded by estate woodland, providing a recreational space that is cut off from the industrial influence of Scunthorpe. Aside from the estate woodland at Normanby, most of the woodland in the zone is found in rectilinear plantations of varying sizes.

There are large areas of disused open-cast ironstone workings in the eastern half of the zone, some parts of which now form large bodies of standing water. The workings are connected by a purpose-built railway that continues out of the character zone into the steelworks at Scunthorpe.

Risby Warren, on the eastern side of the character zone, is a notable survival of unenclosed land. It is a designated Site of Special Scientific Interest (SSSI), and represents the largest intact area of heathland in the county. The area is accessible to the public via a network of paths and bridleways. It is strongly influenced by the heavy industry of Scunthorpe to the south, and is traversed by two parallel power lines supported by large pylons.

Although the zone is predominantly rural, some recent industrial development has taken place in the south of the zone at the Foxhills Industrial Park. This is a typical 1980s' industrial estate, with large office buildings and warehouses spread along a sinuous branching network of roads. A wind farm has been constructed in the same area, just south of Normanby Park, and this development is visible across the character zone. Taken together, these industrial developments are indicative of the growth of Scunthorpe to the south, a trend that will continue to influence the surrounding rural landscape.

Historic Landscape Evolution

As with other parts of the Northern Cliff Character Area, the landscape that exists to day is largely an outgrowth of the medieval open field farming regime, in which the nucleated settlements would have been surrounded by their great fields and, beyond these, the common grazing land. Several settlements are strung out along the top of the western scarp with former heathland to the east.

The settlements of the western scarp are set in an area of sandy soil that proved ideal for rabbit warrens. Elsewhere in the county, these features were removed by later enclosure, but here, especially near Risby, the warren has survived and retains its historic character. This may be due to the unstable nature of the sandy soil, which has been significantly eroded by wind action, and may have been unsuitable for early pastoral enclosure or eighteenth-century planned enclosure.

Elsewhere, much of the medieval pattern was removed by the enclosures of the eighteenth and nineteenth centuries, which created new rectilinear field patterns over the ancient unenclosed land. The new fields were bounded by hedges which were laid out in straight lines by professional surveyors. New isolated farm complexes were established away from the villages in the years following enclosure, creating a secondary dispersed settlement pattern in parallel to the original pattern of nucleation. The present-day rural landscape is primarily the result of modern farming practices which have caused the removal of numerous field boundaries.

After the establishment of the Scunthorpe iron industry in the late nineteenth century, the zone was subject to open-cast mining for ironstone. The mines were connected to the iron foundries by a new railway which cut across the rectilinear planned enclosure landscape.

Legibility

The zone is particularly notable for the survival of the pre-enclosure landscape at Risby Warren. This may either be as a result of the unsuitability of the soil for cultivation or because the land was purchased for its mineral resources which have remained unused. As the warren has been designated as a Site of Special Scientific Interest, it will continue to enjoy a high degree of protection in the future.

There is limited survival of ancient enclosures in the zone, most of which are found in the immediate vicinity of historic settlements. The sinuous shapes of these enclosures offer limited legibility of the medieval open fields that preceded them.

The eighteenth- and nineteenth-century enclosure landscape can be seen throughout the zone in isolated pockets of intact rectilinear fields. Although most of the rural landscape is the result of twentieth-century consolidation of fields, there are enough surviving boundaries to provide a high legibility of the former landscape.

There are several sites of former open cast ironstone mining which have not, as yet, been backfilled. These pits are in the process of being colonised by rough vegetation and have the potential to provide significant amenity value to the zone. They also bear witness to the decline of the industrial power of the zone.

Character Zone NOM1

The Humber Bank within The Northern Marshes Character Area

ARS sub-province: CLNSC

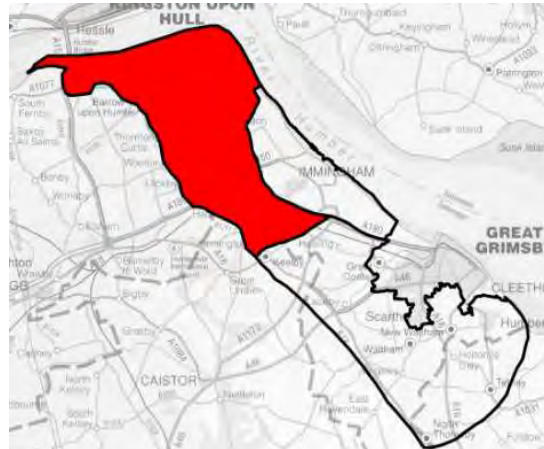
Countryside Agency Countryside Character Areas:

- 41 Humber Estuary
- 42 Lincolnshire Coast and Marshes
- 43 Lincolnshire Wolds

Total area: 112.4 km²

**Percentage of Regional Character
Area:** 39.9%

**Percentage of Overall Project
Area:** 1.61%



Description

The landscape of the Humber Bank Character Zone is primarily rural, although there are several small towns and villages to be found throughout. Much of the rural landscape comprises large open fields, with few hedges to interrupt the wide views across the zone, and across the river Humber to the north. Many of these fields have a strongly rectilinear character, indicative of the planned drainage and enclosure of the historic marshland which once covered the zone. The influence of the Humber Estuary can be seen in many parts of the zone, especially in the maritime character of the major settlement, Barton-upon-Humber.

The historic settlements in the zone occupy two distinct lines running parallel to the shore. The eastern line, from Habrough to East Halton, is notable for the survival of several moated sites and areas of deserted village earthworks. The western line, from Ulceby to Barton, follows the main road through the zone. The historic cores are readily identifiable in most settlements, despite the encroachment of modern development. This is mainly due to the use of locally-produced brick and pantile in the construction of historic buildings.

Away from the main settlements, isolated farmsteads are evenly distributed across the character zone, also typically constructed of brick. Many are associated with redundant out-buildings in varying states of decrepitude. In some cases these have been replaced by modern barns and sheds, but in most cases there is a mix of types, creating a jumbled, utilitarian character.

The major town within the character zone is Barton-upon-Humber, situated in the north of the character zone. At its heart, Barton remains largely unchanged from the nineteenth century. The haven, to the north of the town centre, retains much of the character of its maritime origins, including the Ropewalk, an active boatyard and the former customs house. The bank of the Humber to the east and west of the haven is heavily influenced by the former brick and tile industry, with former clay pits having been reused as nature reserves and for watersport facilities. Towards the edges of the town, modern residential and industrial developments have been constructed in recent years.

There are two former RAF airfields within the character zone, at North Killingholme and Goxhill. Both of these are in use as industrial estates, but retain such features as hangars and runways in identifiable forms.

Historic Landscape Evolution

Although the drainage of this zone dates from the eighteenth and nineteenth centuries, there were active settlements and farming systems in place by the time of the Domesday survey. From the surviving place-names, these appear to be an even mix of Anglo-Saxon and Danish foundations.

Although much of the coastal area would have comprised low-lying saltmarsh, the area between the two lines of settlement is generally higher, and appears from relict ridge and furrow earthworks to have been part of an open-field farming regime. The saltmarsh to the east would have provided common grazing land for sheep and cattle.

In the early part of the twelfth century, Thornton Abbey was established on a promontory of slightly higher ground, at approximately 8m above sea level, which at the time would have been isolated on the edge of the coastal marshes. It is also possible that some of the isolated farmsteads identified within the zone were founded at this time as granges attached to the relevant monastic estate. Some of these granges were probably enclosed, perhaps for the purposes of livestock rearing.

The zone was subject to planned enclosure and drainage in the eighteenth and nineteenth centuries, and much of this survives now, along with its associated isolated farmsteads. The post Second World War period saw the consolidation and enlargement of many of the fields within the character zone by the removal of some of the field boundaries.

Legibility

Legibility of the medieval landscape is evident in the survival of the settlement pattern with historic settlement cores still retain much of their historic character and local building materials. A number of earthwork sites which represent former monasteries and medieval high status residences are locally highly legible. Within the landscape, elements of the wider influence of these establishments are apparent, in the high legibility of early enclosures, which have been subsumed into later planned fieldscapes, and centred on certain isolated farmsteads.

Much of the planned character of the landscape survives to the present day. In some cases the eighteenth-century field pattern remains largely unchanged. Where field boundaries have been removed in modern times, the underlying rectilinear character is usually identifiable from field drains.

Character Zone NOM2

The Immingham Coastal Marsh within The Northern Marshes Character Area

ARS sub-province: CLNSC

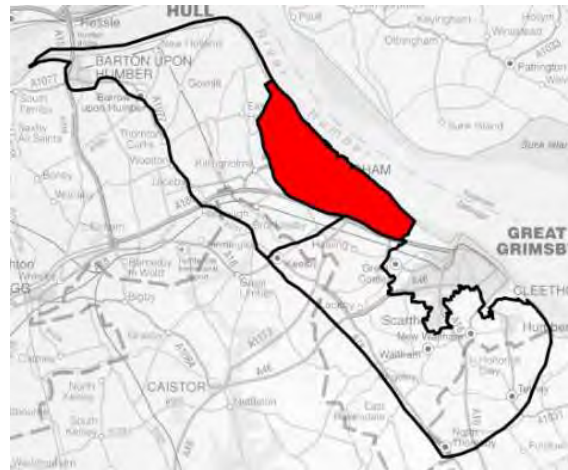
Countryside Agency Countryside Character Area:

41 Humber Estuary

Total area: 40.4 km²

Percentage of Regional Character Area: 14.4%

Percentage of Overall Project Area: 0.58%



Description

This character zone is dominated by industrial activity, in particular installations related to the petrochemical industry and docks. The 'Industrial' broad type accounts for 36% of the total land area within this character zone.

Immingham is the only settlement within this character zone. It has seen considerable expansion in the twentieth century to the extent that the historic core is now largely invisible. The main focus of the settlement has shifted to the civic centre, which was built in the mid-1960s. There are still a few, scattered isolated farmsteads within the character zone, which are all on the western periphery of the character zone. Several isolated farmsteads have been subsumed into industrial sites.

As a proportion of the total land area there are very few fields of any type within the character zone when compared to other character zones within this study, due in the main to the development of fields during the twentieth century for industrial and port use. Those areas of surviving fields are fairly evenly split between modern consolidated fields and surviving planned enclosure, with some examples of ancient enclosure in the vicinity of settlements.

Historic Landscape Evolution

Before the drainage and enclosure movements of the eighteenth century, the coastal landscape of this zone mainly comprised saltmarsh grazing for the settlements to the west. Certain areas of higher ground, especially in the immediate vicinity of Immingham, were used for arable farming in a traditional open field regime.

Much of the zone was subject to planned enclosure and drainage in the eighteenth and nineteenth centuries, when many of the isolated farmsteads within the zone would have been established. The post Second World War period saw the consolidation and enlargement of many of the fields within the character zone by the removal of some of the field boundaries.

The early twentieth century saw the development of Immingham Port, which opened in 1913. The presence of the Great Central Railway was probably the deciding factor in the location of the port, providing good transport links to the rest of the country.

The development of the port facility led to the establishment of other industrial facilities in the surrounding area, some to provide supporting infrastructure to the port, others to take advantage of imported materials or to export finished products. Perhaps the most significant of these is the Lindsey Oil Refinery, which occupies an area of the marsh comparable in size to the port itself.

Legibility

Although most of the zone is of modern origin, it is still possible to identify historic elements within the landscape. The historic core of Immingham is largely gone, but the church of St Andrew remains as an indicator of its location. There is a monument in the town itself commemorating the departure of the Pilgrim Fathers in 1608.

The eighteenth-century planned enclosure landscape survives largely intact in the coastal area to the east of the Lindsey Oil Refinery, largely because of the impracticality of removing boundaries that are formed by field drains.

Although the modern industries do not immediately appear to retain any vestiges of preceding landscapes, they are typically aligned according to the planned field systems over which they were built. The internal roads and tracks of the Lindsey Oil Refinery in particular follow the courses of former field drains that can be seen on historic map data.

Character Zone NOM3

The Grimsby Commuter Belt within The Northern Marshes Character Area

ARS sub-province: CLNSC

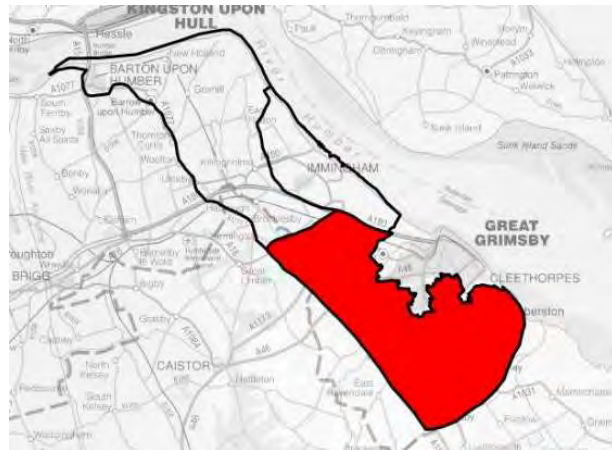
Countryside Agency Countryside Character Area:

42 Lincolnshire Coast and Marshes

Total area: 128.3 km²

**Percentage of Regional Character
Area:** 45.6%

**Percentage of Overall Project
Area:** 1.82%



Description

The main settlements in the character zone form an arc to the south and east of Grimsby, stretching from Humberston to Healing. The cores of these settlements are generally well-preserved and readily identifiable from medieval churches and eighteenth- and nineteenth-century red brick buildings.

As Grimsby has grown in size, the surrounding villages have also expanded. New housing developments have appeared at the edges of all the villages in the zone, with a dominant character of cul-de-sac estates made up of bungalows and other small dwellings. In some areas, particularly between Humberston, New Waltham and Grimsby, so-called 'ribbon developments' have all but connected what were once individual settlements into a single suburb. Similar developments along the roads connecting the settlements to Grimsby may eventually cause the whole zone to coalesce into a single large conurbation. An example of this can perhaps be seen in the merging of Grimsby and Cleethorpes.

The rural landscape is mostly made up of large modern fields that have been formed from the loss of field boundaries and the consolidation of adjacent fields. However, a significant proportion of the fields in the zone are the result of eighteenth-century planned enclosure, and display the straight boundaries and rectilinear pattern characteristic of this period. On a more limited scale, there are areas of irregular fields in the vicinity of some of the settlements, which are interpreted as ancient enclosure of medieval open fields.

The zone is also notable for the high proportion of golf courses, six in all. These may be an outgrowth of the tourist trade, but may equally exist to service the retirees in the commuter villages.

Much of the road network to the west of the character zone reflects those areas of higher ground and is fairly sinuous in nature, in contrast to those roads which extend out into areas of former marsh, which are generally straight and rectilinear in nature.

Historic Landscape Evolution

Although there is evidence for occupation of the zone in the Prehistoric and Roman eras in the form of crop marks and scattered finds, no extant visible remains are now apparent. It is likely that these features were situated on areas of higher ground that would have been

visible from the surrounding marsh land, and the existence of modern settlements on some of these areas of higher ground hints at continuity of use.

Estates sharing the names of most of the current settlements are mentioned within the Domesday Survey. The settlements as seen today do not display any features dating from this period, but it is likely that they occupy the same locations.

Remnant ridge and furrow earthworks around Humberston suggest that the area to the west of that village was suitable for traditional open field farming methods. To the east, however, it is likely that there was common marshland grazing which may have been shared with those parishes away from the coast, and arrangement seen around Immingham and Killingholme to the north. It is also possible that the coastal part of the zone was used for salt making, which was an important medieval industry along the shoreline of much of medieval Lincolnshire.

During the eighteenth and nineteenth centuries, the landscape of the zone was substantially reorganised by two forces. In common with much of the rest of the county, the open field farming regime was abolished in favour of rectilinear planned enclosure. This meant that land which was once farmed in common was parcelled out amongst individual owners. The new holdings were bounded by long, straight hedges or ditches in a rectilinear pattern. It became increasingly attractive for landowners to live among their new holdings, and many new isolated farm complexes were constructed as a result. The second process that took place at this time was the drainage and reclamation of the common grazing marshes, which were then reallocated in the same planned way as the open fields had been.

The twentieth-century expansion of Grimsby caused a number of changes to the surrounding villages. As motorised transport became available to the public, it became possible to live some distance away from ones place of work. This resulted in the growth of the villages surrounding Grimsby into a substantial commuter belt. The demand for housing was so great that an entirely new settlement was created at New Waltham.

Legibility

At the present time, the settlement pattern in this zone retains much of its historic character, with a mixture of nucleated medieval settlements and dispersed isolated farms. However, the character of the towns and villages in the zone may in the future be lost if 'ribbon development' and outward growth are not contained.

The rural landscape retains a high degree of legibility of planned enclosure landscapes, especially around Waltham and Humberston. Further field boundary loss may cause this type of landscape to be eroded, and much of the zone is occupied by large modern fields formed by this process of consolidation.

Character Zone WOL1

The Brocklesby Heath within The Wolds Character Area

ARS sub-province: CLNSC

Countryside Agency Countryside Character Areas:

42 Lincolnshire Coast and Marshes

43 Lincolnshire Wolds

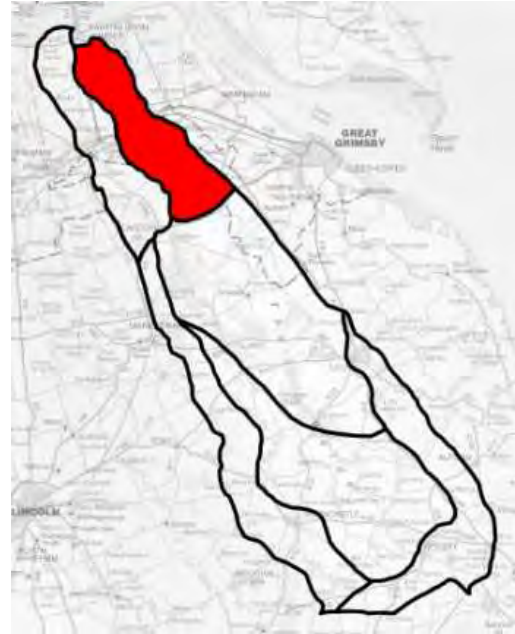
Total area: 116 km²

Percentage of The Wolds Character

Area: 10.3%

Percentage of Overall Project

Area: 1.66%



Description

The rural landscape of the zone is characterised by roughly equal areas of surviving planned enclosure and large twentieth-century arable fields formed from the consolidation of older fields by the removal of boundaries and hedges. As in other zones, ancient enclosures, possibly dating to the late medieval period, are found in close proximity to the historic settlements. Today, these small, irregular fields are mostly used for grazing.

The settlements in this zone are generally small and are irregularly scattered throughout the character zone. Many of the buildings within the character zone are brick-built with pantile roofs, materials which were easily available from the brick-kilns of the Humber Estuary. The village cores are typically well-preserved with little modern development either as infill or in the form of peripheral housing estates.

As well as the main estate villages of Brocklesby and Great Limber, there are examples of estate housing in villages throughout the zone, identifiable by their ornamented appearance and by the presence of family crests in prominent positions. These tend to be constructed in stone, although the more modern examples are largely indistinguishable from other twentieth-century housing except for the presence of heraldic shields.

There are many small to medium sized areas of woodland throughout the character zone, which appear from their names, and from their rectilinear form, to be predominantly eighteenth- and nineteenth-century plantations. Some of these were intended to form a designed hunting landscape, a use which can be inferred from the fact that many of them are called 'coverts'. In the area around Brocklesby there are also several large areas of sinuous woodland, which were planted in the nineteenth century to form the boundary of Brocklesby Park.

Brocklesby Park, a major feature of the zone, was created by the Pelham family who have owned an estate here since the sixteenth century. Charles Anderson Pelham was created Earl of Yarborough in 1837 and the park continues to be maintained and developed by the present Earl. The park was landscaped in the eighteenth century by Lancelot 'Capability' Brown. However it is not quite so extensive as it once was, with some of the former parkland having been ploughed up for arable cultivation.

Humberside Airport, in the western part of the character zone, is a former Second World War RAF airfield, which was subsequently developed as a civilian facility. Its runway has been lengthened in recent years, and a number of other facilities developed on the site in association with its use as a civilian airfield.

Historic Landscape Evolution

There is evidence in the character zone for activity in the landscape during the Prehistoric and Roman periods. It is possible that the line of the A1077, which in places forms the eastern edge of the character zone, dates from the Prehistoric period.

There is evidence for occupation of the zone during the early medieval period with estates sharing the names of many of the current settlements being mentioned in the Domesday survey. It is likely that during the medieval period certain elements of the present landscape were established. Most of the historic parish boundaries and village settlement cores were established during this period.

Much of the zone was subject to planned enclosure in the eighteenth and nineteenth century and much of this survives, along with its associated isolated farmsteads. Some of the isolated farmsteads are associated with deserted village earthworks, and it is possible that these are remnants of the earlier settlement cores as opposed to isolated farmsteads established as a result of the enclosure movement.

From the early part of the twentieth century there was a reduction in the numbers of large country house estates after they became subject to inheritance tax following the extension, in 1894, of the old probate duty to all the possessions of a deceased person. One result of this has been the conversion to agricultural use of many of the parkland landscapes that were associated with country houses.

The Second World War saw the establishment of at least one airfield in the character zone, which has subsequently been redeveloped as a civilian airport. The post war period saw the consolidation and enlargement of many of the fields within the character zone by the removal of some of the field boundaries. There is evidence of post Second World War field consolidation and some expansion of the rural settlements in the twentieth century. Much of this later nineteenth- and early twentieth-century development survives to the present.

Legibility

The medieval landscape is well represented in the form of extant ridge and furrow earthworks, which are typically associated with small irregular enclosures at the edge of settlements. Areas of surviving landscape parks also provide a setting for survival of ridge and furrow, as they have not been ploughed for several hundred years. The historic settlement cores are generally identifiable in smaller villages. Many of the deserted or shrunken village sites are visible as earthworks and are a particular characteristic of this character zone.

Humberside Airport retains some features associated with its use as a Second World War bomber airfield. Some of the dispersal pads and elements of the A-shaped runway arrangement are retained.

Much of Brocklesby Park retains its designed form, and the areas that have been converted to arable cultivation typically retain the woodland boundaries indicative of their origins. In some cases, isolated trees are found in the middle of cultivated areas, representing survivals from the preceding designed landscape.

Modern fields often retain significant legibility through their remaining boundaries. Where the preceding fields were planned enclosures, the modern fields often retain long, straight

boundaries. Those fields formed from the consolidation of ancient enclosures often retain sinuous boundaries, which are indicative of the early enclosure of former open field farmland.

Character Zone WOL2

The Caistor Spring-Line within The Wolds Character Area

ARS sub-province: CLNSC

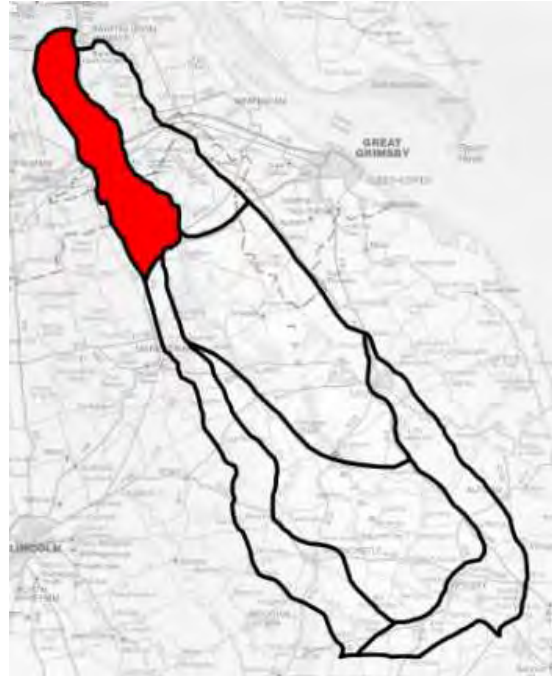
Countryside Agency Countryside Character Area:

41 Humber Estuary
43 Lincolnshire Wolds
44 Central Lincolnshire Vale

Total area: 112.4 km²

**Percentage of Regional Character
Area:** 10%

**Percentage of Overall Project
Area:** 1.61%



Description

The character zone includes a line of small nucleated settlements, starting with Nettleton in the south and terminating with South Ferriby in the north. To the north they are situated on the B1204 road, approximately following the 20m contour line. While the settlements are fairly small, they do have much more modern development within and around them than those settlements elsewhere in the Wolds Character Area, perhaps because of their proximity to Scunthorpe and Grimsby. Traditional buildings are typically brick-built with pantile roofs. Many buildings in the north are whitewashed. Settlement cores are generally well defined and well preserved with modern developments limited to the edges. Away from the villages there are many examples of isolated farmsteads. These are typically found on the plateau at the top of the slope and are set among large areas of rectilinear fields.

Much of the farmland in this zone is the result of modern boundary removal, resulting in large irregularly shaped fields. Many examples of modern consolidated fields occur on the top of the scarp, which gives this zone an open character. There are older enclosures throughout the character zone which are typically small with irregular shapes. These are often used as grazing land for livestock, or as paddocks for horses, and are typically found adjacent to the nucleated settlements in the zone.

There are small to medium sized areas of woodland throughout the character zone, which appear to be predominantly eighteenth- and nineteenth-century plantations. There are several areas of sinuous narrow woodland, which may have once formed part of the boundary of small landscape parks. There is at least one former park in the zone.

There are two former military airfields within this character zone both of which retain enough of their military character to confidently be assigned to the 'Military' broad type. The technical site at the former RAF Elsham Wolds is now an industrial estate and the airfield has reverted to agricultural land, but the lines of the runways and some taxiways are still visible. The perimeter track at the site of the former RAF Caistor is still visible, as are the three 'Thor' ballistic missile launch pads dating from the early 1960s.

Historic Landscape Evolution

There is evidence for occupation of the zone during the early medieval period. Estates with the names of many of the current settlements are mentioned within the Domesday survey. It is likely that any settlement associated with these estates was located in the vicinity of the present historic settlement cores within the zone.

Much of the zone was subject to planned enclosure of the open fields and commons in the eighteenth and nineteenth centuries. This new fieldscape was subsequently populated by isolated farmsteads occupied by the owners of the newly enclosed fields.

Both of the airfields within the character zone were established during the Second World War. RAF Elsham Wolds was closed at the end of the war and partially returned to agricultural use before the site was developed as an industrial estate in the 1970s. RAF Caistor was used as a nuclear missile base between 1958 and 1963, before reverting to agricultural use. The post Second World War period also saw the consolidation and enlargement of many of the fields within the character zone by the removal of some of the field boundaries.

Legibility

Elements of the medieval landscape can still be seen in the survival of the settlement pattern and the long east to west orientated field and parish boundaries. The historic settlement cores still retain some of their historic character, but in some cases the scale of modern development reduces the legibility of the historic core.

The widespread survival of planned enclosure and isolated nineteenth-century farmsteads across the character zone are survivals from the late post medieval period. Modern fields, which have been primarily formed from the loss of boundaries of older field patterns, often retain significant legibility through their external boundaries.

The legibility of the former military airfields within the character zone is evident in the good survival of many of their Second World War elements, despite the airfields having gone out of use.

Character Zone WOL3

The Upper Wolds within The Wolds Character Area

ARS sub-province: CLNSC

Countryside Agency Countryside Character Area:

42 Lincolnshire Coast and Marshes

43 Lincolnshire Wolds

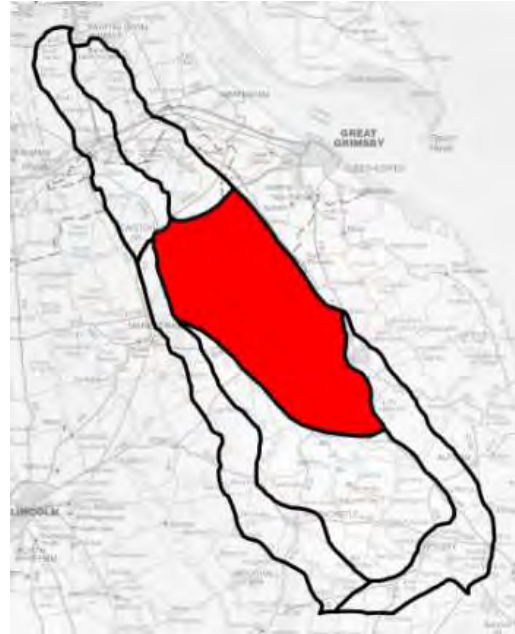
Total area: 313.7 km²

Percentage of Regional Character

Area: 27.9%

Percentage of Overall Project

Area: 4.5%



Description

There is a large number of small nucleated settlements, scattered fairly evenly across the character zone, which gives an impression of dispersal. Many of the settlements nestle in dry valleys, providing only limited intervisibility between settlements, giving a sense of isolation which is further emphasised by the rolling nature of the topography.

The settlements are generally small with very little modern development within, or around, them. In the west of the character zone many buildings are constructed of limestone under pantile roofs. As one travels east through the character zone these give way to brick and pantile as building materials. A few surviving examples of mud and stud cottages, under thatched roofs, survive across the character zone. Older churches tend to be built using either local limestone, or ochre-coloured ironstone, across much of the rest of the zone, with more recent examples being brick built.

The settlement pattern in the zone is nucleated throughout, but individual villages are arranged in a variety of forms. The most common plan in the north of the character zone is for a small cluster of buildings to be arranged around, or in the vicinity of, a small church. In the south the most common arrangement is a rectangular plan with lanes enclosing a central area of cottages, farmhouses and paddocks. There is a third village form, which consists of settlement strung out along roads and arranged in separate groups of three or four buildings. This gives a somewhat dispersed feel to these settlements.

There are few isolated farm complexes. Many of these are associated with historic earthwork sites, which suggests that they are the survivors of lost settlements rather than more recent additions associated with planned enclosure. Settlement cores are generally well defined and well preserved with modern developments limited to the periphery. Roads tend to follow physical features, such as valley bases, and as such are very sinuous.

Earthwork sites of deserted settlements and high status residences are a particular feature of the east of the character zone. There is a distinct cluster of these sites in the area surrounding Wold Newton, and particular mention should be made of the village and abbey remains at North Ormsby, which as well as being exceptionally well preserved, also dominate the valley in which they are situated.

There are a several modest country houses and small parklands distributed evenly throughout the character zone. Surviving parkland is typically under pasture with many examples of isolated veteran trees dotted throughout. There are several areas of woodland associated with these parks, which form distinctive belt patterns around their current and former boundaries.

There are three former military airfields within this character zone all of which retain enough of their military character to confidently be assigned to the 'Military' broad type. RAF Ludford Magna and RAF Kelstern both reverted to agriculture after their use as active bases ceased, but both still retain their perimeter tracks and, in the case of RAF Ludford Magna, the 'Thor' nuclear missile launch pads. At RAF Binbrook the hangars and technical buildings are now part of an industrial estate, and the former married quarters are now the village of Brookenby. Also within this character zone is RAF Stenigot, which, although not an airfield, is one of the few sites within the UK which retains a Second World War Chain Home radar transmitter tower. Also on this site are the remains of the Ace High communications relay equipment, installed in 1960 and in use until the early 1990s.

Historic Landscape Evolution

There is evidence for activity in the character zone in the Prehistoric and Roman periods. There are several Neolithic long barrows, predominantly in the south, with stone tools from this period being widely distributed across the character zone. Bronze Age round barrows are found across the character zone, and there is some evidence for farming in the zone during the Neolithic and Bronze Age periods.

The apparent dispersed pattern of some settlements in the character zone is probably due, in the main, to settlement desertion and shrinkage. There are various factors which might have led to depopulation in these settlements. Village populations increased from the eleventh to the thirteenth centuries, and the need for more land caused people to establish themselves on marginal land. However in the fourteenth century, a combination of economic decline, worsening climate and repeated outbreaks of pestilence led to a general fall in rural population numbers. Consequently, some settlements were totally abandoned and others saw substantial reductions in the size of their inhabited areas. In later centuries other factors also led to settlement desertion. The enclosure of plough land, pasture and common land, as a result of fluctuations in the prices of secondary animal products, is recorded as a reason for the desertion of some of settlements. There are, in addition, repeated references in the seventeenth century to landlords converting arable fields into pasture and sheepwalks. Finally, the association of village earthwork remains with country parks suggests that emparkment was an additional factor leading to the desertion of settlements in this part of the character zone.

Much of the zone was subject to planned enclosure in the eighteenth and nineteenth centuries and much of this survives. Some of the isolated farmsteads are associated with deserted village earthworks and may not have been established at enclosure, but rather be earlier survivals.

All of the airfields within the character zone date from the Second World War, with RAF Kelstern being closed at the end of the war and returned to agricultural use. RAF Ludford Magna was also closed, handed to the Ministry of Agriculture and returned to agricultural use in the areas between the runways and buildings. In 1958 part of the old airfield was returned to military use as a 'Thor' missile base until 1963, when it was again returned to agricultural use. RAF Binbrook continued in use as an RAF station until 1988, when the Lightning aircraft went out of service. Many of the airfield buildings were then converted to industrial use, while the married quarters were sold off into private ownership.

The post Second World War period saw the consolidation and enlargement of many of the fields within the character zone by the removal of some of the field boundaries. Also during this period many of the small parklands in character zone were converted to productive farmland.

Legibility

Elements of the medieval landscape survive in the form of extant ridge and furrow earthworks which are typically associated with small irregular enclosures at the edge of settlements. Areas of surviving landscape parks often have good survival of ridge and furrow as they have not been ploughed for several hundred years.

The historic settlement cores are generally identifiable in smaller villages. Many of the deserted and shrunken village sites are visible as earthworks and are a particular characteristic of this character zone.

RAF Binbrook and the village of Brookenby, which is the former married quarters of RAF Binbrook, retain strong legibility of their former RAF use.

Many of the former parklands within the character zone have retained their shelterbelt woodland boundaries, but are otherwise invisible.

Character Zone WOL4

The Dry Valleys within The Wolds Character Area

ARS sub-province: CLNSC

Countryside Agency Countryside Character Area:

43 Lincolnshire Wolds

44 Central Lincolnshire Vale

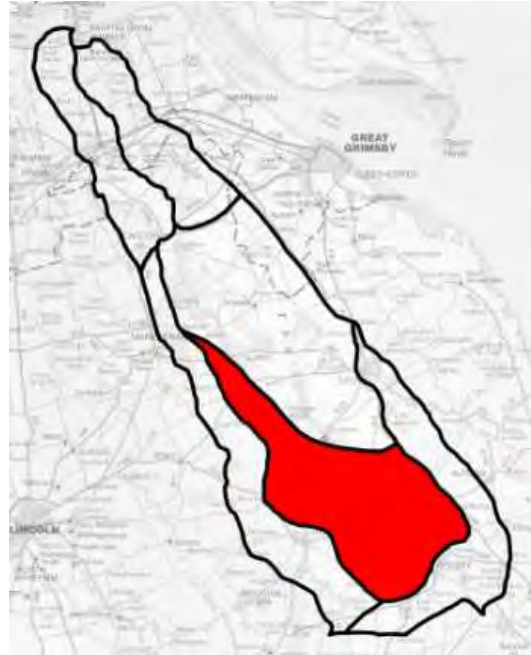
Total area: 255.9 km²

Percentage of Regional Character

Area: 22.7%

Percentage of Overall Project

Area: 3.67%



Description

Settlements in the zone are typically small, and are often situated along the base of dry river valleys. This results in an enclosed, intimate character to the villages. Most of the buildings in the settlements are eighteenth century, or later, and tend to be brick-built with pantile roofs. However, a few examples of mud and stud cottages, with thatched roofs, survive throughout the character zone. Churches and other major public buildings tend to be built using the local Spilsby sandstone. Settlement cores are generally well defined, and well preserved, with modern developments on the periphery of the villages.

There are few isolated farm complexes and those that are present are often associated with historic earthwork sites. Earthwork sites of deserted settlements and moated sites are a particular feature of the south-east of this character zone. There is a distinct cluster of these sites within Brinkhill and surrounding settlements.

Although there are many surviving examples of ancient enclosures and nineteenth-century rectilinear fields, the farmland of the zone is dominated by large modern fields, with an open character resulting from the removal of hedgerows and other boundaries.

A major feature of the south of the character zone is the high density of country houses with small parklands. These are distributed evenly with many parishes having at least one example. There are several areas of woodland associated with these parks, and these woodlands form distinctive belt patterns around the current and former boundaries of the parks.

Historic Landscape Evolution

There are examples of Prehistoric earthworks scattered throughout the zone but although they are significant monuments they have little major landscape impact.

Although the zone is now very sparsely populated, with relatively few surviving villages, it was once very populous and has a high proportion of village earthworks. The medieval economy of the zone was predominantly rural, and it seems likely that the open field farming methods practiced elsewhere in the county were also used here. However, the poorer quality of the upland soils may have caused a greater reliance on pastoral farming than in other

zones, and it is recorded that farmers in the Wolds used to rent grazing land in the fens and marshes for the purpose of fattening their livestock.

The causes of settlement desertion are much debated, but there is little doubt that there are several reasons why this zone was so heavily affected by the phenomenon. The increasing prices of wool during the medieval period, combined with local export opportunities in Boston and other coastal towns, may have encouraged landowners to depopulate parishes in order to rear sheep. The large numbers of small parks and houses in the zone may also indicate that villages were lost to emparking. Regardless of the causes, deserted settlements are an important component of the landscape of the zone.

During the eighteenth and nineteenth centuries, the zone was subject to widespread planned enclosure, especially on higher ground. This process created a new landscape of planned, rectilinear fields where there were once areas of heath and open field farming. The owners of these new fields often built new farmhouses and associated buildings in the midst of their holdings, and there are several isolated farmsteads in the zone.

The planned enclosure landscape survived largely unchanged into the twentieth century, but has been much diminished by modern processes of field consolidation and boundary removal. Many of the historic farm buildings, created to serve a nineteenth-century farming system, have fallen into disrepair. New farm buildings of corrugated iron and concrete have been erected throughout the zone, greatly expanding the physical area of the original farmsteads.

Legibility

The historic settlement cores are generally identifiable in smaller villages, and surviving earthworks of former medieval settlement are found in the zone.

Much of the planned enclosure landscape is still identifiable in the remnant boundaries of large modern fields. Likewise, the sinuous boundaries of ancient enclosures are indicative of the ridge and furrow farming techniques applied to the medieval open fields, some of which still survive as earthworks in areas of pasture.

Although settlement desertion and depopulation have strongly affected this zone, the earthworks left behind are still highly visible in the landscape, and are important heritage assets.

Character Zone WOL5

The Western Wolds Foothills within The Wolds Character Area

ARS sub-province: CLNSC

Countryside Agency Countryside Character Area:

43 Lincolnshire Wolds

44 Central Lincolnshire Vale

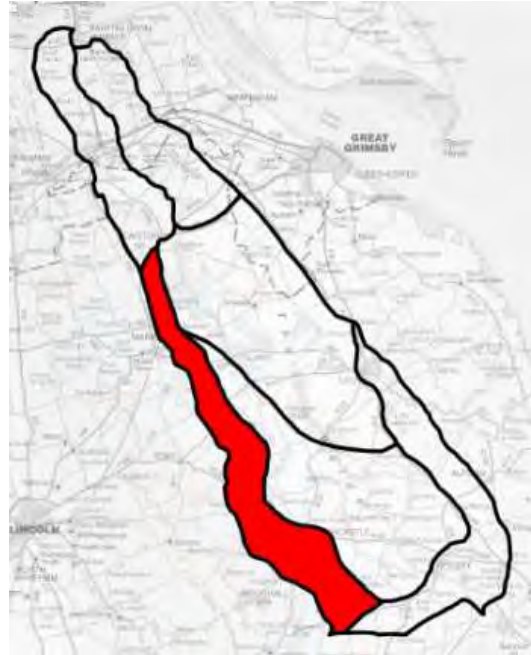
Total area: 167.2Km²

Percentage of Regional Character

Area: 14.8%

Percentage of Overall Project

Area: 2.4%



Description

The character zone includes a large number of small nucleated settlements, with one group found on the spring line along the western edge of the Wolds, and another around the town of Horncastle, which acts as a centre for surrounding settlements. With the exception of Horncastle, the settlements are generally very small, with very little modern development within or around them. The settlement pattern in the zone is nucleated but there are several isolated farm complexes scattered across the character zone. Some of these farmsteads are close to areas of ancient enclosure, suggesting that they are may be the remains of deserted settlements.

Most of the field pattern in this zone has been influenced by modern boundary removal resulting in large irregularly shaped fields. There is survival of planned enclosure in distinct blocks throughout the character zone. Ancient enclosures are found most frequently in the south of the character zone, in close proximity to settlements. These are typically small fields with irregular shapes, and are often used for grazing or as paddocks for horses.

An important feature of the south of the character zone is the high density of modest country houses with small parklands. Much of the parkland is under pasture, but retains some of its historic character. There are several areas of woodland associated with these parks which form distinctive belts of trees around their boundaries.

Historic Landscape Evolution

The earliest features with a significant landscape impact in the south of this zone date from the Roman occupation. The market town of Horncastle is built on the site of a Roman settlement, and some of the plan form of the Roman fortified enclosure is still visible in the street pattern of the modern town.

The character zone has features typical of open field farming development during the medieval and early post medieval periods – namely the nucleated settlement pattern and some ancient enclosure and extant ridge and furrow focussed around the settlement cores.

Some of the apparent dispersed settlement pattern in the character zone is probably due in part to settlement desertion and shrinkage. In the fourteenth century there was a combination of economic decline, worsening climate and repeated outbreaks of plague, all of

which led to a general decline in rural populations. Some settlements were abandoned while others experienced substantial reductions in size. Additional factors which may have led to abandonment and shrinkage of these settlements in later centuries included the enclosure of ploughlands, pastures and commons as a result of increases in the price of wool.

Alongside a typical medieval open-field system of agriculture and associated nucleated settlement pattern, there are a significant number of small post medieval country parks in the south of the character zone which have in some cases caused the relocation or shrinkage of settlements. The presence of the country parks suggests that the post medieval planned enclosure in these areas is likely to have been initiated privately by landowners rather than by Act of Parliament.

There is evidence of post Second World War field consolidation and some expansion of the rural settlements in the twentieth century. Horncastle has seen significant development on its fringes from the later nineteenth century onwards, including the construction of industrial estates in the late twentieth century.

Legibility

The historic settlement pattern is well preserved throughout the zone, especially along the spring line and in the satellite settlements of Horncastle. Each historic village remains a discrete entity, and there has been little modern development along connecting roads. Although the historic core of Horncastle is hemmed in on all sides by later development, it is still highly legible, including significant elements of the Roman fort layout from the third century.

There is little direct evidence of the medieval farming landscape, although the ancient enclosures found near to the historic settlements have their origins in medieval strip farming. The planned enclosure landscape is quite well preserved throughout the zone, and even where boundaries have been removed, the resulting modern fields retain a strongly rectilinear character.

Character Zone WOL6

The Spilsby Crescent within The Wolds Character Area

ARS sub-province: CLNSC

Countryside Agency Countryside Character Area:

42 Lincolnshire Coast and Marshes

43 Lincolnshire Wolds

44 Central Lincolnshire Vale

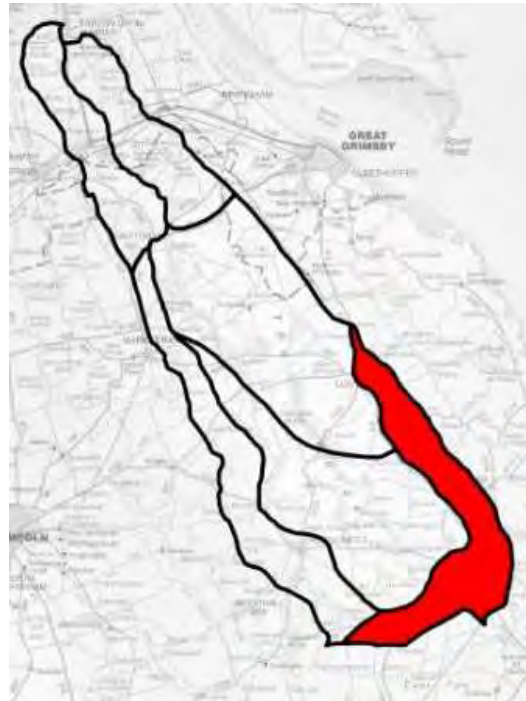
Total area: 160.6 km²

Percentage of Regional Character

Area: 14.3%

Percentage of Overall Project

Area: 2.3%



Description

The current land use in this zone is mostly agricultural, of which the greater part is arable cultivation. Grazing land is limited to small fields in close proximity to settlements and to areas within the boundaries of surviving landscape parks. Several old country house estates are currently used as farm complexes. There are limited areas of former, small scale mineral extraction in the character zone. There is some recreational use of the land, for example a golf course at Kenwick Park

The character zone includes a large number of small nucleated settlements. There is a line of these, which probably equates to a spring line, that runs down the centre of the character zone, roughly adhering to the 45m contour line.

The settlement pattern in the zone is strongly nucleated in the west and the north, with few isolated farm complexes, but is more dispersed in the east as the land drops towards the coastal marshes. Settlement cores are generally well defined and well preserved.

Historic cores are generally aligned along roadways, many of which link the high Wold settlements with the coastal grazing marshes and fens. Roadways themselves tend to be aligned to allow through passage from the higher ground to the lower, wetter ground.

Typically, surviving parkland is under pasture with many examples of isolated veteran trees dotted throughout. There are several areas of woodland associated with these parks, which form distinctive belts around the boundaries. The best preserved example of a landscape park in the character zone is at Gunby Hall, currently owned by the National Trust; it is an important visitor attraction.

Historic Landscape Evolution

Both the modern settlement pattern and fieldscapes of the zone are a natural outgrowth of the medieval open field farming system. Each settlement was once set among two or three open arable fields, which were farmed in rotation with various crops. Further away from the settlement there were areas of common grazing land, typically on less productive land such as the thin upland soils found in the western part of the character zone.

During the eighteenth and nineteenth centuries, these farming practices were superseded by newer methods. Perhaps the most significant change was the planned enclosure of the open fields and the commons, which resulted in new rectilinear field patterns throughout the zone. At the same time, farmers began to construct new farmhouses in their new fields and away from the historic villages where farm buildings had hitherto been located.

This landscape prevailed until the latter half of the twentieth century, when many field boundaries were removed to facilitate modern mechanised farming techniques. The historic farmsteads have also undergone significant changes, as new sheds and barns have been erected, while older brick-built outbuildings have fallen into dereliction and disuse.

Quite apart from the changing face of the agricultural landscape, the aristocracy living in the zone created new, designed landscapes throughout the seventeenth, eighteenth and nineteenth centuries. The formation of these parks and gardens may well have resulted in the relocation of some settlements.

The shared borders of this character zone, most notably with the coastal grazing marshes to the east and the fens to the south, are likely to have driven much of its historical development. Many of the settlements here stood on the droveways from the High Wolds to the grazing lands on the fens and coastal marshes.

Legibility

The medieval landscape is well represented in the form of extant ridge and furrow earthworks, which are typically associated with small irregular enclosures at the edge of settlements. Areas of surviving landscape parks also provide for good survival of ridge and furrow, as they have not been ploughed for several hundred years. The historic settlement cores are generally identifiable in smaller villages, but modern residential development obscures the historic settlement core of Legbourne.

The former parklands within the character zone have retained their shelterbelt woodland boundaries, but otherwise are invisible. The area of Burwell Park is now modern fields, and the area of Kenwick Park is now a golf course. However there is surviving parkland further south in the character zone including Well and Gunby Parks which are both registered parks.

Modern fields, which have been primarily formed from the loss of boundaries of older field patterns, often retain significant legibility through their external boundaries. Where the previous fields were planned enclosures, the modern fields often retain long, straight boundaries. Similarly, those fields formed from the consolidation of older enclosures often retain sinuous boundaries, which are indicative of former open field farming.

Character Zone CLV1

The Witham Abbeys within The Clay Vale Character Area

ARS sub-province:

CLNSC
EWASHW

Countryside Agency Countryside Character Areas:

44 – Central Lincolnshire Vale
46 – The Fens

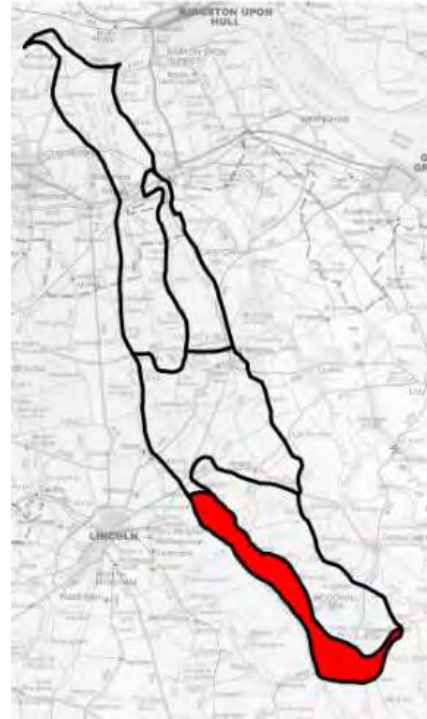
Total area: 77 km²

Percentage of Regional Character

Area: 12%

Percentage of Overall Project

Area: 1.1%



Description

There is some survival of planned enclosure landscapes across the character zone, particularly in the centre of the character zone. The modern fields, produced through a process of consolidation in the twentieth century retain much of the character of the underlying planned enclosures. The orientation of the modern fields and planned enclosures seems to be determined by the former fen edge revealed by LiDAR survey data. There is some survival of ancient enclosures with this character zone, all of which is centred around historic settlement cores.

The nucleated settlements in this zone are irregularly spaced across the zone, generally arranged on higher ground (6m to 7m above sea level) on the fen edge. In the northern half of the character zone few of the nucleated settlements have expanded much beyond their historic cores with modern development being very piecemeal in nature. Local building materials are commonly used, comprising brick and pantile. Isolated farmsteads are apparent throughout the zone. To the south of the character zone a number of ribbon settlements, consisting of scattered homesteads and farmsteads, extend along many of the roads. In particular, the settlements of Tattershall and Coningsby have seen considerable expansion since the Second World War with the two settlements now being linked by extensive areas of modern housing. Historic cores in this area have been somewhat obscured by later development, resulting in limited legibility of their original forms. This part of the character zone is heavily influenced by the presence of RAF Coningsby, which, although not the sole military airfield in the zone, is the only one still active. There are five areas of earthworks representing former monastic establishments within the character zone, which are spread fairly evenly across the zone. The zone as a whole displays a nucleated pattern of settlement.

In the north of the character zone, the road network appears to have been built on historically higher ground. Away from the fen, the road network is more rectilinear in nature. Some of the roads serve settlements on the banks of the River Witham and do not extend onto the opposite bank of the river.

Historic Landscape Evolution

Although there is evidence for occupation of the zone in the Prehistoric and Roman eras, in the form of crop marks and scattered finds, no extant visible remains are now apparent. It is possible that a number of causeways crossing the fen were established during the Prehistoric period, and these routes may have survived into the present.

There is evidence for occupation of the zone during the early medieval period, in the form of settlements, and in one case for a religious complex. Estates sharing the names all of the current settlements are mentioned within the Domesday survey.

In the early part of the twelfth century a number of religious complexes were established on the edge of the Witham Fens, located on promontories and within embayments, usually on the present 5m contour line. It has been shown that some of these complexes were associated with earlier religious sites and each may have been associated with causeways across the fenland and associated crossing points on the river itself.

It is likely that the parish boundaries and the historic settlement cores as seen now were established during the medieval period. It is also possible that some of the isolated farmsteads identified within the zone were founded at this time, as granges or farms of the religious foundations in the zone.

The zone was subject to planned enclosure in the eighteenth and nineteenth centuries, and much of this survives now, along with its associated isolated farmsteads. The post Second World War period saw the consolidation and enlargement of many of the fields within the character zone by the removal of some of the field boundaries.

Legibility

Legibility of the medieval landscape is evident in the survival of the settlement pattern. The five earthwork sites which represent former monasteries and other religious complexes are locally highly legible. These religious foundations have had a lasting impact on the landscape, and even today it is possible to identify their associated farms and ancient enclosures.

Character Zone CLV2

The Limewoods within The Clay Vale Character Area

ARS sub-provinces:

CLNSC
EWASHW

Countryside Agency Countryside Character Area:

44 – Central Lincolnshire Vale

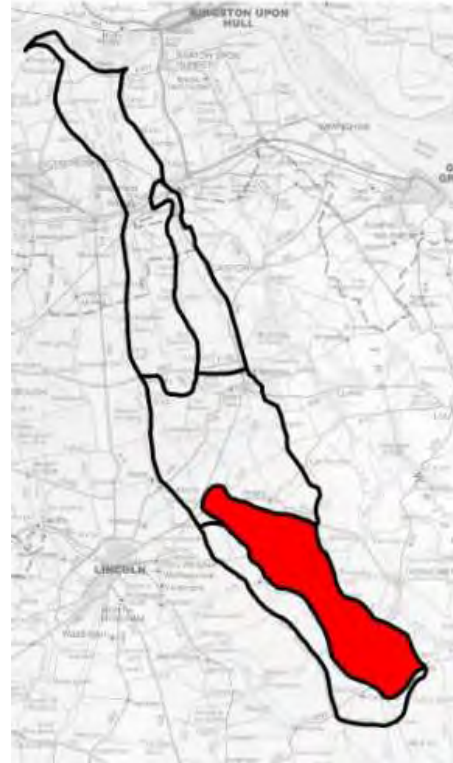
Total area: 136.8 km²

Percentage of Regional Character

Area: 21.3%

Percentage of Overall Project

Area: 1.96%



Description

The character of the zone is heavily influenced by the presence of numerous islands of woodland situated within a more typical rural landscape of fields and villages. The topography of the landscape is gently rolling rather than flat, like the fens to the west, or noticeably hilly, like the Wolds to the east. There are several becks and drains which run across the zone from the Wolds to the drainage system of the Witham valley. These watercourses often form boundaries between parishes.

The woodland in the zone comprises many different species in various combinations depending on soil types and conditions. There are several areas of ancient semi-natural woodland which provide valuable habitats for many species of plants and animals. The small-leaved lime, *Tilia cordata*, which gives the zone its name, is a significant component of woodlands across the zone. In addition to the surviving ancient semi-natural woodland, there are many areas of post medieval and modern plantations, which are populated by oaks and conifers. Although the plantations do not display the same levels of biodiversity as the ancient semi-natural woodlands they are an important local wildlife habitat. While much of the woodland in the zone is privately owned and managed, significant areas are open to the public. Chambers Farm Wood is an example of how multi-purpose forestry can achieve a balance between timber production, nature conservation and public recreation and amenity. The zone is recognised as containing Britain's greatest concentration of woodlands dominated by small-leaved lime with several of the woodlands designated as the Bardney Limewoods National Nature Reserve.

The agricultural landscape of the zone mostly comprises arable fields with straight boundaries. There are also several areas where field boundaries have been lost, producing very large irregularly-shaped 'prairie' fields, especially in the area around Bardney Dairies.

The modern settlement pattern is highly dispersed. There are several small nucleated settlements, such as Bucknall and Kirkby-on-Bain, but most of the settlement in the zone comprises small isolated farmsteads and occasional individual detached houses. These are scattered throughout the Limewoods zone at a very low density, giving the zone an

unpopulated character and a feeling of isolation. The largest settlement in the zone is the Victorian town of Woodhall Spa. The town has a nineteenth-century core made up of large villas and hotels along a straight main road, with surrounding twentieth-century housing developments extending off the main axis to the north and south. The town is set within a large area of plantation woodland, and many of the roads and streets within the town are heavily planted with broadleaved trees.

Historic Landscape Evolution

The ancient woodland that survives throughout the zone may be the earliest surviving landscape feature in the whole county, exhibiting a species composition believed to have been prevalent in lowland Britain some 5000 to 8000 years ago. The small-leaved lime, a characteristic species found in the ancient woods, was a dominant species in mixed deciduous woods which once probably covered much of the better soils in lowland Britain and Europe. Since the small-leaved lime is palatable to grazing livestock, tended to be associated with soils preferentially cleared for agriculture and, in recent centuries, has suffered from poor, or non-existent, seed generation, much of this woodland cover has now been lost. The presence of these Lincolnshire woodlands characterised by small-leaved lime, therefore, indicates areas which may have been continuously wooded since the species first arrived. Although it is difficult to prove this theory, it is certainly the case that extensive areas of woodland were recorded in this zone in the Domesday survey of 1086, and it seems likely that the ancient woodland in the zone dates to at least this time.

It is thought that the majority of the Limewoods zone was cleared of woodland in prehistory, leaving a landscape of wooded 'islands' albeit more extensive than those seen today. The woodland would have provided the backbone of the medieval economy in this zone. As the underlying soils would not have been very productive in medieval arable cultivation, it is likely that the woodlands themselves would have been used for fuel-gathering and as hunting grounds, with consistent management as coppice and high forest being a feature since the eleventh century. In addition to coppice management, livestock would have grazed in wooded areas once the coppiced trees had matured sufficiently. There would also have been, scattered within the woodland proper, areas of wood pasture which would have been areas of open grassland with sporadically occurring mature trees.

The woodland and much of the farmland in the zone would have formed part of the estates of the neighbouring abbeys to the west, and may have been partially administered from granges within the Limewoods zone. It is possible that at least some of the existing isolated farmsteads in the zone have their origins as grange farms.

The historic nucleated settlements in the zone would have been farmed according to a typical open field strip farming regime. There are few of these settlements in evidence today, but earthwork and cropmark evidence suggest that the surviving settlements, such as Apley, were once much more extensive, and also that there were additional settlements that have not survived to the present day, such as Burreth in the parish of Tupholme. It is possible that the prevailing phenomena of settlement shrinkage and desertion were due to the dominating presence of the abbeys to the west and perhaps also to the relatively poor clay soil.

After the monasteries were dissolved in the sixteenth century, ownership of their land was either gifted to members of the aristocracy or bought by wealthy farmers. Much of the land was then transferred from arable to pasture, and this is reflected in the modern landscape by the presence of large areas of private planned enclosure and by the presence of numerous isolated farmsteads.

During the second half of the twentieth century, the landscape was further altered by the removal of many field boundaries, resulting in the creation of large 'prairie' fields across much of the zone.

Legibility

The ancient woodlands of the Limewoods zone may represent some of the earliest surviving landscape features in the county. Although much diminished from their medieval size, they retain much of the 'island' character of the landscape that is thought to have existed in the medieval period. It may be possible to trace former woodland patterns in the modern landscape by the presence of sinuous banked field boundaries. Partners in the ongoing Lincolnshire Limewoods Project are not only acting to conserve and manage the ancient woodland but are also raising local awareness of it as a recreational asset. New woodlands have been planted to expand and link together the remaining ancient woodlands and this may continue in the future, perhaps impacting on neighbouring historic landscape features.

The zone is also notable for the widespread survival of historic earthworks, which represent the sites of former villages and religious establishments. These earthworks provide a tangible link to the medieval landscape but are highly vulnerable to ploughing.

Later landscapes are also well preserved, and the planned enclosures dating from the eighteenth and nineteenth centuries can be seen across the zone. The associated farmsteads are also a significant element of the rural landscape, although some have fallen into disuse as farm holdings have been amalgamated. Where historic farms are still in use, it is often the case that their outbuildings will have become obsolete, and are now in danger of dereliction.

Character Zone CLV3

The Central Clay Vale within The Clay Vale Character Area

ARS sub-province: CLNSC

Countryside Agency Countryside Character Area:

44 – Central Lincolnshire Vale

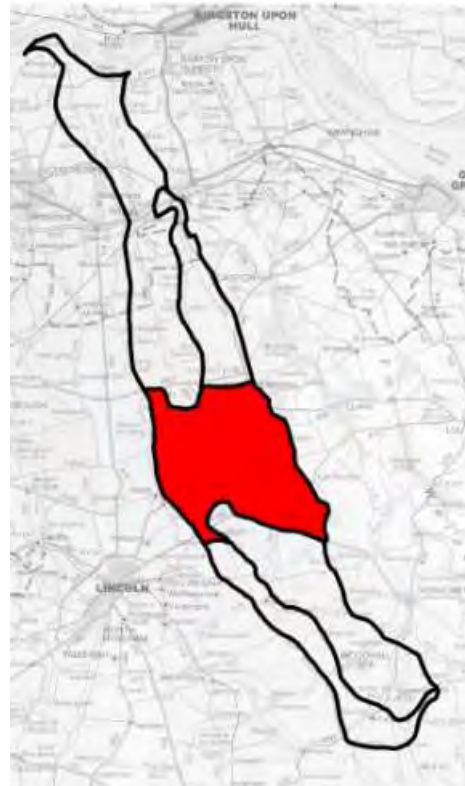
Total area: 176 km²

Percentage of Regional Character

Area: 27.4%

Percentage of Overall Project

Area: 2.52%



Description

This zone occupies a flat, low-lying area of land to the north-east of Lincoln. It is drained by two main watercourses, the Rase and the Barlings Ea. These rivers are fed by a network of drainage channels and carry water, that has drained from the Wolds, to the Rivers Ancholme and Witham, and thence to the sea. The topography of the landscape exhibits a gentle fall from higher ground on the eastern and western edges to the centre of the zone. Throughout the zone there are distant views to the Wolds in the east and the limestone cliff to the west.

The rural landscape of the zone is dominated by large open arable fields, whose boundaries are made up of degraded hedges. Some areas of the zone are characterised by smaller rectilinear fields with intact hedge boundaries, and the landscape around Newton-by-Toft is a good example of this planned fieldscape.

The zone is traversed by several main roads, including the A46, which links Market Rasen to Lincoln. There are also numerous minor roads and tracks which are typically long and straight with wide, grassed verges, for example, Linwood Road to the south of Market Rasen.

Although not a dominant landscape feature, there is still a significant amount of woodland in the zone, including areas of ancient semi-natural woods at Wickenby and Linwood and several small plantations throughout the zone.

Isolated farmsteads are a significant and widespread element of the landscape. They are typically constructed of red brick, and are often associated with outbuildings such as barns or stables. In several cases the outbuildings have become obsolete, and have been replaced or supplemented by the construction of modern agricultural buildings. In some instances the farmhouse itself has fallen into disuse.

The zone is populated by a network of small historic villages, some of which comprise only one or two houses along with a church. Many of these settlements are found in association

with historic earthworks indicating historic desertion of large parts of the zone. The remaining buildings are typically red brick with orange pantile roofs. In most cases these small villages have seen no modern development apart from the occasional individual house.

The exception to this pattern of small settlements is the town of Market Rasen, which is characterised by a well preserved historic core surrounded by succeeding areas of nineteenth- and twentieth-century housing and infrastructure.

RAF Faldingworth in the north-west of the zone is a significant component of the modern landscape. Although no longer in use as a Royal Air Force facility it remains a heavily guarded and secure installation, with all the associated security measures. Activities at the site sometimes involve setting off explosions, which occasionally disturb the otherwise tranquil rural landscape of the zone.

Historic Landscape Evolution

Most of the surviving settlements within the zone were founded in the early medieval period. The survival of ridge and furrow earthworks throughout the zone suggests that some of the surrounding land was farmed in a typical open strip field system. These earthworks are not extensive however, and, as the underlying clay soils are heavy and difficult to plough, it may be that livestock rearing played a more important and extensive role in the economy than in neighbouring areas.

There are several deserted or shrunken settlements in the zone, some of which are marked by surviving earthwork remains such as those at Cold Hanworth and Linwood. These remains suggest a larger medieval population than is indicated by the surviving settlement pattern. There are many reasons why medieval settlements such as these shrank or were deserted, including early enclosure of arable land for sheep pasture. There are several areas where such enclosures survive in the modern landscape, including West Barkwith, which is itself a shrunken settlement.

During the eighteenth and nineteenth centuries those parts of the zone that remained as open fields or common land were enclosed either by private agreement or by Act of Parliament. The resulting landscape was divided in a planned fashion, replacing the open landscape with many new fields bounded by hedges. Although much of the planned character of the zone has been lost due to the removal of field boundaries, there are several surviving islands of planned enclosure, including sizeable areas around Snarford and Bleasby Moor.

In Market Rasen the construction of the station on the railway line between Lincoln and Grimsby caused significant changes. Prior to this point Market Rasen had been no different to neighbouring villages, and may in fact have been smaller than either East or Middle Rasen. With easier transport to nearby cities, the town became attractive to commuters and has gradually expanded since then.

In the later twentieth century, much of the rural landscape was subject to alteration by the removal of field boundaries. This occurred, in part, to facilitate the use of modern large-scale farming techniques, such as crop-spraying and combine-harvesting.

The conflicts of the twentieth century have also left their mark on the landscape. RAF Wickenby was once a bomber base, and is now a civil airfield. RAF Faldingworth was, likewise, a Second World War bomber base, but later became a depot for the nuclear weapons carried by V-Bombers from nearby RAF Scampton. The reinforced storage sheds are now used as secure storage by the current occupiers of the site.

Legibility

As well as the surviving historic settlements, there are several sites where earthworks indicate the presence of deserted or shrunken villages. The two together provide strong legibility of the medieval settlement pattern. There are also several areas where ancient enclosures survive in the modern landscape, including West Barkwith, which is itself a shrunken settlement.

Although much of the planned character of the zone has been lost due to the removal of field boundaries, there are several surviving islands of planned enclosure, including sizeable areas around Snarford and Bleasby Moor. The associated pattern of isolated farmsteads is also well preserved, although several of these buildings are in danger of dereliction.

The weapon storage facilities at RAF Faldingworth appear from recent aerial photography to retain much of their Cold War form, perhaps as they have been put to a similar use by the new owners. However, these features are not easily visible within the wider landscape due to the extensive security measures, such as razor-wire fences, that have been erected around the edge of the facility.

Character Zone CLV4

The Ancholme Carrs within The Clay Vale Character Area

ARS sub-province: CLNSC

Countryside Agency Countryside Character Area:

41 Humber Estuary
44 Central Lincolnshire Vale
45 Northern Lincolnshire Edge with Coversands

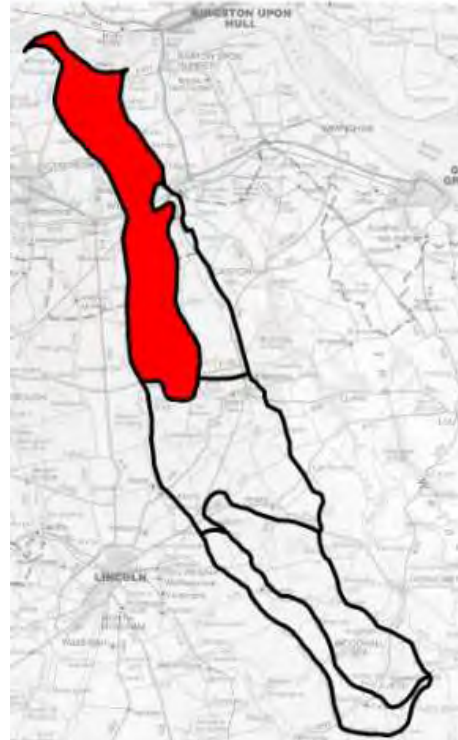
Total area: 186.1 km²

Percentage of Regional Character

Area: 29%

Percentage of Overall Project

Area: 2.67%



Description

The Ancholme Valley is characterised by flat arable countryside situated on either side of the long and straight New River Ancholme, which runs through the zone from Bishopbridge near Market Rasen in the south to the Humber Estuary in the north, a distance of over 30 kilometres. The course of this man-made river is almost completely straight, with a slight curve at its northern end. The old River Ancholme is still present in the landscape as a series of watercourses which meander to either side of the man-made channel, creating a pattern of long thin islands.

There is some survival of planned enclosure which is distributed fairly evenly across the character zone. The modern fields, produced through a process of consolidation in the twentieth century seem to retain much of the rectilinear character of the underlying planned enclosures. Most of the modern fields and planned enclosures have a strong orientation to the cut of the New River Ancholme. Close to the historic settlements there is a preponderance of surviving ancient enclosures characterised by small field sizes.

There are only a few nucleated settlements within this character zone. These are generally larger than those elsewhere in the Clay Vale Character Area, and are scattered irregularly across the northern half of the character zone. The southern half of the character zone is notable by the absence of any significant nucleated settlements, with the main settlement type being isolated farmsteads. The nucleated settlements are arranged primarily on the slightly higher ground which flanks the Ancholme flood plain. All of the nucleated settlements have expanded beyond their historic cores, with much development comprising planned housing. However, in most cases the historic core is still highly visible, comprising brick built structures under pantile roofs.

Much of the road network reflects the drained river valley nature of the character zone, with most major roadways orientated north to south and hugging the higher ground. The majority of the east to west aligned roads terminate at the cut of the New River Ancholme or prior to this if their primary purpose is to serve isolated farmsteads. Only a handful of the roads cross the river channel, the most major of these being in the vicinity of Brigg. The east to west aligned roads on the carrs are generally characterised by their straight, planned nature,

with those on the higher ground being more sinuous in nature. The exception to this is the line of the north to south aligned Ermine Street, which follows the line of the modern B1207 just to the north of Appleby, where it becomes a minor road.

There are two main areas of industry in this character zone, the first being on the west side of Brigg, the second being the South Ferriby Cement Works, located on the far northern edge of the character zone, on the banks of the River Humber.

Historic Landscape Evolution

Prior to the drainage of the zone in the post medieval period the landscape was characterised by seasonally waterlogged carr woodland, resulting from the uncontrolled flooding of the River Ancholme. Although largely useless for growing crops, the Carrs may have provided opportunities for hunting wildfowl, fishing and gathering useful building materials such as reeds and timber, which would have been exploited by settlements in neighbouring areas.

Settlement within the zone itself appears to have been as sparse in the past as it is now. Brigg, the major settlement in the zone, does not appear in the Domesday survey. Other settlements which do appear in the survey, such as Cadney, Winterton and Appleby, are typically situated on the edge of the zone on areas of slightly higher ground.

The course of the River Ancholme has been subject to alteration and management since the medieval period, when the earliest attempts were made to drain the surrounding land. The process accelerated in the sixteenth century, and was largely complete by the eighteenth century. As the land was drained, it was also enclosed, creating the field pattern that can be seen in the zone to this day.

Following the enclosure of the carrs, many isolated farmsteads were established on the former floodplain. These are much more prevalent in the area to the south of Brigg than in the north. This may be because the lower Ancholme Valley was more prone to flooding. The characteristic disjointed pattern of minor roads was created to provide access to these farmsteads and even today many such roads only lead to one or two farm complexes before reaching a dead end.

Although there is no remaining carr woodland in the zone today, there are several areas of more recent plantation to be found across the Ancholme Valley. These are typically rectilinear in form, indicating that they were planted either at the point of enclosure or subsequently to it. Some of these blocks of woodland may have been created as part of a wider fox-hunting landscape, as indicated by plantations such as New Covert in the parish of Glentham.

The agricultural landscape of the zone was altered in several ways during the twentieth century. The most wide-ranging change is the removal of field boundaries across the zone, which has in places transformed the preceding enclosed landscape of small rectilinear fields to an open landscape of large irregular 'prairies'. The transfer of pasture to arable is another ongoing trend in the landscape.

Legibility

The old river Ancholme remains visible for much of its former length, and still forms an important part of the drainage system of the zone. Although the carr woodland has long since been removed the wetland character of the islands between the courses of the old and new rivers can still be seen, as these areas are frequently flooded and retain standing pools of water for much of the winter. This makes it difficult to grow crops, as can be seen on aerial photographs where large brown dead patches appear in these areas.

Although much of the zone has been subject to boundary loss in recent years, it is still possible to identify several large areas where the planned enclosure landscape remains largely unchanged particularly in the area of Worlaby Carrs just north of Brigg. The associated pattern of isolated farmsteads is also well preserved, although the farm complexes have often been expanded by the addition of modern barns and other outbuildings.

Although much added to in recent years, the town of Brigg retains a well preserved historic centre with many Georgian buildings to be seen along the main street. Other settlements in the zone are equally well-preserved with only limited areas of modern development to be seen.

Character Zone CLV5

The Kelsey Moors within The Clay Vale Character Area

ARS sub-province: CLNSC

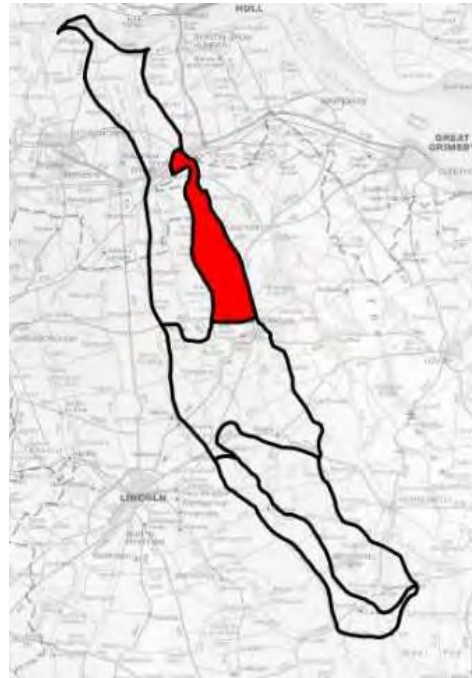
Countryside Agency Countryside Character Area:

44 – Central Lincolnshire Vale

Total area: 66.9 km²

**Percentage of Regional Character
Area:** 10.4%

**Percentage of Overall Project
Area:** 0.96%



Description

This zone is a transitional landscape between the carrs of the Ancholme Valley and the foothills of the Wolds in the east. The topography is largely flat with occasional undulations of around two or three metres. The zone is dominated by arable fields, although some pasture can still be found especially in areas adjacent to settlements. The fields are typically separated from each other by ditches rather than hedges, creating an open character with wide views in most directions.

Settlements are arranged in two irregularly spaced north to south aligned lines on the eastern and western edges of the zone. Buildings in the villages are typically constructed of red brick with pantile roofs, materials that are easily available from nearby sources, such as Barton-upon-Humber. The villages themselves have not expanded much beyond their historic cores, with modern housing development generally limited to infill development of vacant plots within village cores.

There is a secondary pattern of isolated farms throughout the zone. These are also generally of brick construction and often include numerous outbuildings of the same materials. In some cases these farms have been expanded by the addition of modern agricultural buildings such as barns and animal sheds.

There are four areas of historic village earthworks representing deserted or shrunken settlements within the character zone, which are located towards the middle of the western side of the character zone. Some of these areas of historic earthworks seem to be associated with isolated farmsteads.

There is no overriding orientation to the layout of the fieldscapes within the character zone. Close to the historic settlements on the western edge of the character zone there is a preponderance of surviving ancient enclosures, characterised by small field sizes.

Historic Landscape Evolution

Although there is evidence for occupation of the zone in the Prehistoric and Roman eras in the form of cropmarks and scattered finds, no extant visible remains are now apparent. This character zone is located on a ridge of higher ground between the Ancholme Carrs and the

narrow valley leading up to the Wolds, that would have been a prominent feature in the landscape in the Prehistoric period.

The settlements in this zone probably practiced a typical mixed farming regime, with areas of open arable fields near to the settlements and areas of common grazing land in the centre of the zone. However, the presence of so many place names including the word 'moor' may indicate that a high proportion of the medieval landscape was used for grazing. The settlements in this zone may, therefore, have relied more heavily on animal products such as meat and wool than those in neighbouring areas.

Estates sharing the names all of the current settlements and deserted settlements visible as earthworks are mentioned within the Domesday survey. Whilst it is not clear from the evidence available, it is likely that any settlement associated with these estates was located in the vicinity of the present historic settlement cores within the zone. It also seems likely that the road layout linking these settlements was established, at least in part, at this time.

It is likely that the parish boundaries and the historic settlement cores as seen now were established during the early medieval period. There is extensive cropmark and earthwork evidence for ridge and furrow ploughing throughout the character zone and this, along with some of the longer, more sinuous field boundaries probably date from the medieval period.

There are several areas of historic earthworks in the zone. These are found on the line of settlements running from North Owersby to North Kelsey. Some of these are the remains of high status sites, such as the former manor house at South Kelsey Park. Others are indicative of the desertion or shrinkage of historic settlements, perhaps as a result of early post medieval enclosure of the land for animal grazing. Some of the isolated farmsteads seem to be associated with deserted village earthworks, such as those at Thornton-le-Moor and North Owersby, and it is possible that these are remnants of the earlier settlement cores.

The zone was subject to planned enclosure in the eighteenth and nineteenth centuries, a process whereby the open arable fields and unenclosed commons were divided and enclosed. The pattern of small isolated farms in the zone is thought to be associated with the process of enclosure, as landowners moved away from village centres in order to work their holdings more efficiently.

Legibility

The historic settlement cores still retain much of their historic character with most modern development being small scale and limited to the edges of villages. As well as the surviving settlements, there are also several examples of well-preserved earthworks indicating the locations of villages that have been abandoned. It is therefore possible to see the medieval settlement pattern in the landscape with a high degree of legibility.

There are several areas of ancient enclosure throughout the zone. Some are in the immediate vicinity of settlements. Others, such as those to the east of North Kelsey, are found at greater distances and are indicative of the widespread conversion of arable land to pasture, a process that may have led to the abandonment of some of the medieval settlements in the zone. Those areas of early enclosure that have been subsequently been absorbed into areas of modern fields generally have a high legibility through the survival of characteristically irregular field boundaries.

The post medieval landscape is evident in the survival of planned enclosure and isolated farmsteads across the character zone. Particularly extensive areas have been preserved around North Kelsey, but smaller blocks of both private and parliamentary planned enclosure can be seen throughout the zone. Although much of the landscape of planned enclosure has

been superseded by modern fields through the processes of consolidation and boundary loss, the remaining field boundaries often retain their characteristic straightness and overall rectilinear plan.

Character Zone TVL1

The Northern Cliff Foothills within The Trent Valley Character Area

ARS sub-province: CTRNT

Countryside Agency Countryside Character Areas:

48 Trent and Belvoir Vales

45 Northern Lincolnshire Edge with Coversands

39 Humberhead Levels

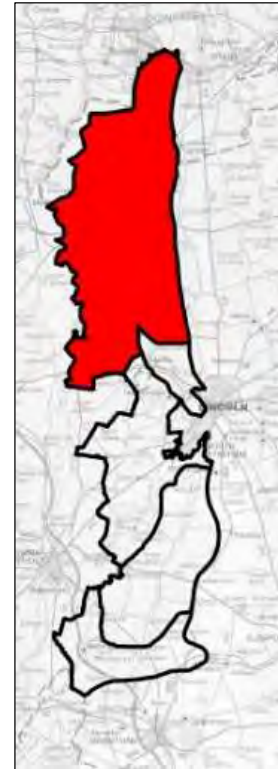
Total area: 317.9 km²

Percentage of Regional Character

Area: 46.6%

Percentage of Overall Project

Area: 4.6%



Description

The landscape of this zone is largely flat, with a gentle upward slope from the River Trent in the west to the foot of the Northern Cliff in the east. The level topography allows wide views of large features the landscape, especially the large power stations on the west bank of the Trent whose exhaust plumes can be seen across the zone.

A line of settlements, aligned approximately north to south, runs through the middle of the zone from Messingham in the north to Sturton-by-Stow in the south. The settlements retain much of their historic character, with organic infill development on vacant plots and occasional large-scale modern development at their edges. There are also, scattered across the zone, several isolated farmsteads the majority of which have expanded significantly from their original size to include modern barns and animal pens.

The largest settlement in the zone is Gainsborough, an historic town situated on the east bank of the River Trent. The town displays a mixture of residential types, but the two most dominant are the strict grid-pattern, nineteenth-century terraces in the centre and the sinuous branching mid to late twentieth-century housing estates on the edge. The boundary between the two is marked by the railway line. The town is also home to a number of industrial facilities, both active and historic. The Britannia Iron Works was once the largest of these and its former premises at Marshall's Yard have now been converted into office space and retail outlets, while retaining much of its former industrial character. The port facilities along the Trent are now largely disused and there are several areas of overgrown derelict land.

The fields in the zone comprise a balanced mix of types. Close to the historic settlements at the western edge of the zone there is a preponderance of surviving ancient enclosures, characterised by small field sizes. Away from the settlements there are a number of ancient enclosures of larger size which seem to be associated with specific isolated farmsteads. There is also strong survival of planned enclosure landscapes across the character zone, and the modern fields, produced through a process of consolidation in the twentieth century, seem to retain much of the rectilinear character of the underlying planned enclosures. Most

of the modern fields and planned enclosures have a strong east to west orientation, evident from the long boundaries that have survived the process of consolidation.

Much of the road network reflects the strong east to west alignment of the fieldscapes, apart from the road linking the central settlement line, which is aligned north to south and roughly follows the 20m contour line. The east to west aligned roads are all characterised by their wide, sinuous nature.

Historic Landscape Evolution

The earliest identifiable landscape features in this zone date from the Roman period. The modern A1500, also known as Till Bridge Lane, follows the course of a Roman road from Ermine Street on the top of the cliff to the former river crossing on the Trent to the west of Marton. To the south of this road the Foss Dyke, that may be a Roman canal, meets the River Trent at Torksey. The Anglo-Saxon town of Torksey was sizable and important, being considerably larger than Nottingham in 1066. It declined later and is now a relatively small village on the banks of the Trent.

The main line of settlement, running through the centre of the zone, appears to have been in existence by the time of the Domesday survey, with most settlements recorded. The villages are situated at some distance from the river, presumably to minimise the risk of flooding. The settlements on this line appear to have had typical, medieval, open field farming systems, with two or three strip fields in close proximity to each settlement and common grazing land on the marshes adjacent to the river.

Three large deer parks were established in the north of character zone in the twelfth the fourteenth centuries, at Gainsborough, Stow and Kettlethorpe. All three of these parks have since been enclosed, but there are still identifiable elements, such as continuous field boundaries, that reflect the former park outline in the landscape today.

As well as the enclosure of former deer parks, there are several examples of early enclosure of former open field strips to be found in close proximity to most of the villages in the zone. There are also several examples of ancient enclosures associated with isolated farmsteads.

The zone as a whole was largely enclosed, in a planned fashion, between the seventeenth and nineteenth centuries. This is evident from the strongly rectilinear field boundaries that survive to this day. These planned enclosures resulted from private agreements and Parliamentary Acts in approximately equal measure, judging by the survival of these types in the modern landscape. The process of planned enclosure also created a new settlement pattern of many isolated farmsteads in the landscape.

The nineteenth century saw a massive expansion in the population of Gainsborough, as people forced from the land by enclosure found employment in the factories and docks. The town itself took on a new character with the construction of large factories such as Marshall's Ironworks, and the large numbers of small terraced houses constructed to accommodate the workforce.

Legibility

Legibility of the medieval landscape is evident in the survival of the linear settlement pattern and long east to west orientated field and parish boundaries. Some surviving ridge and furrow, visible as extant earthworks and as cropmarks on aerial photographs, is also present within the ancient enclosures near to settlements.

Legibility of the post medieval landscape is evident in the good survival of planned enclosure and isolated farmsteads across the character zone, which gives the zone its dispersed character.

The modern landscape shows field consolidation from contemporary agricultural practices. Sturgate Airfield retains some of its character from its construction during the Second World War and is still in use as a civilian airfield. Most modern housing is centred on ancient settlements, but these settlements retain their historic character.

Character Zone TVL2

The Fosse Way within The Trent Valley Character Area

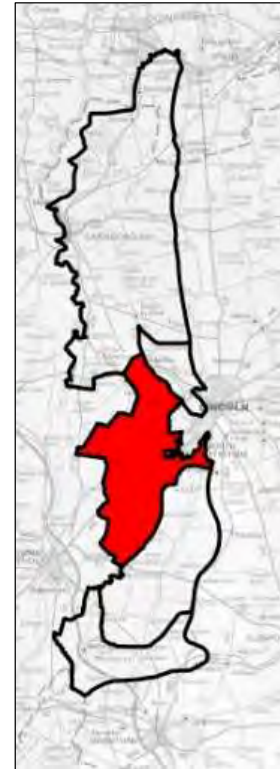
ARS sub-province: CTRNT

Countryside Agency Countryside Character Area:
48 Trent and Belvoir Vales

Total area: 46.4 km²

**Percentage of Regional Character
Area:** 7.7%

**Percentage of Overall Project
Area:** 0.7%



Description

The landscape of this zone is slightly elevated above the surrounding floodplains of the Trent and the Witham. It is a mixed landscape of woodland, open water and modern arable farmland. It is bisected by the A46, a modern dual-carriageway road which follows the course of the Roman Fosse Way. Despite this the character of each half remains similar to that of the other.

Villages in this zone are characterised by red-brick buildings with pantile roofs. In many cases there are active farms set within the village boundaries, giving the settlements an active rural character. Modern development is generally limited to individual buildings constructed on vacant plots or gardens. There are few instances of large homogenous blocks of modern housing in the vicinity of most historic settlements. The exception to this is Skellingthorpe in the north of the character zone, whose character is predominantly modern, with several cul-de-sac estates arranged around a highly denuded historic core. The village is separated from the City of Lincoln by a thin block of woodland, a strip of fields and the western bypass road.

Further modern development can also be seen at Witham St Hughs, which is entirely of twentieth-century origin. The earliest housing development was constructed as living quarters for RAF personnel from RAF Swinderby. This has been added to in recent years with modern sinuous estates, creating a large new village adjacent to the A46.

As well as the primary nucleated settlement pattern, there is also a secondary pattern of isolated farmsteads dispersed throughout the zone. Many of these are still in active use as farms, and have associated agricultural buildings such as barns and sheds. In some cases these ancillary buildings have become obsolete and are at risk of dereliction or demolition in favour of modern buildings.

The rural landscape is mostly made up of arable fields, which are arranged in a generally rectilinear pattern with straight field boundaries at right-angles to each other. This pattern is somewhat diminished across the zone by the loss of field boundaries, which has in places

created a more irregular pattern of larger fields. Field boundaries are more often formed by hedges rather than drainage ditches, perhaps as a result of the sandy soil which underlies the zone. There is a considerable area of small irregular pasture fields around the villages of Thurlby, Haddington and Aubourn. These fields often contain well-preserved ridge-and-furrow earthworks, especially adjacent to the village cores.

The zone is notable for its extensive woodland cover of various types. There are two areas of ancient woodland, one at Ash Lound close to Doddington and another at Norton Big Wood near Norton Disney. The greater part of the woodland is made up of rectilinear plantations and game coverts. As well as the blocks of woodland, there are often small strips of woodland immediately adjacent to minor roads across the zone. This intensifies the woodland aspect of the zone, and contributes to its enclosed, intimate character.

The underlying sand and gravel terraces of the zone have long been valued as a source of raw material. This has led to large scale extraction of these materials across the zone. Some quarries are still in use, while others have either been reinstated or allowed to flood producing new areas of open water and wetland vegetation. Some of the flooded pits have been designated as nature reserves, providing recreational and tourist opportunities.

Historic Landscape Evolution

The existing pattern of nucleated settlements has its roots in the early medieval period, during which Anglo-Saxon and Danish settlers established farms and hamlets on the sand and gravel terraces. It is possible that this early settlement continued a tradition of earlier Romano-British settlements. Examples of these have been found on similar gravel terraces throughout the Trent Valley.

Surviving ridge and furrow earthworks around the villages suggests that the medieval farming landscape in the zone was a typical open field system, with arable land on the high ground adjacent to the settlements and grazing land on the marshy areas below. The survival of ancient enclosures near Aubourn indicates early enclosure of the open fields for the purpose of raising livestock.

During the eighteenth and nineteenth centuries much of the rural landscape of the zone was subject to enclosure, either by Act of Parliament or through private agreement between landowners. Although the resulting landscape is the same, there is a clear distinction between the area north of the Fosse Way, which was subject to parliamentary enclosure, and the area to the south, where enclosure was brought about by private agreement. Many of the isolated farms found in the modern landscape were established at this time, with no real division between the Parliamentary and private enclosure landscapes.

The Second World War influenced the development of the landscape by the establishment of the military base at Swinderby and by the construction of RAF service personnel's quarters at Skellingthorpe.

The rural landscape underwent significant change after the Second World War as field boundaries were removed, both as a result of the consolidation of farm holdings and in order to facilitate the use of new farm machinery. The loss of boundaries has resulted in a diminution of the planned character of the landscape, especially on areas of former moorland away from the historic settlements.

The twentieth-century expansion of settlements, both within the zone and throughout the county, has created a demand for building materials, which has been partially served by the large sand and gravel quarries in the centre of the zone. The resulting impact has been twofold. Where extraction is active, the character of the landscape has become industrial, with large conveyor belts, processing plants and heavy machinery. Where extraction has

ceased the former quarry sites have developed a more recreational character, as nature reserves and as venues for watersport activities.

Legibility

The historic Fosse Way remains an important feature of the modern landscape. It follows the course of a major Roman road, but has recently been upgraded to a dual-carriageway. As well as providing a tangible link to the past, it now also acts as a barrier between the two halves of this zone. Although both halves currently display very similar characteristics, it is likely that their respective characters will begin to diverge.

The ongoing tension between the historic landscape and the pressures of development is well illustrated by the ongoing changes to the site of RAF Swinderby, where the formerly well-preserved wartime character is in the process of being changed by the erection of new modern housing around the base, and by the extension of nearby gravel extraction to the area within the perimeter track.

There are partially legible remnants of the medieval farming landscape to be found throughout the zone, primarily focussed on the nucleated settlements. These include ancient enclosures with irregular boundaries, and extant ridge and furrow earthworks. The post medieval landscape is visible in the extensive survival of planned enclosure throughout the zone. Although many of the fields on the former moorland have been consolidated, they currently still retain their planned enclosure character.

Character Zone TVL3

The Valley Fens within The Trent Valley Character Area

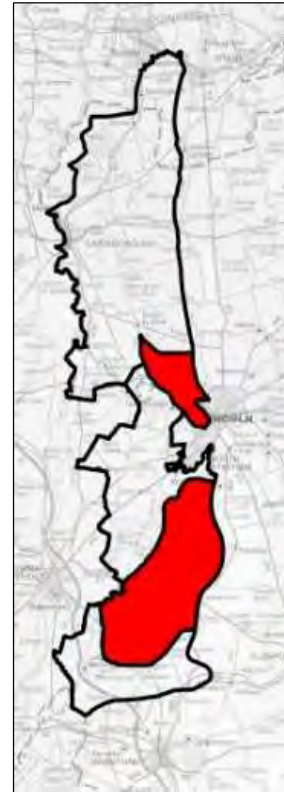
ARS sub-province: CTRNT

Countryside Agency Countryside Character Area:
48 Trent and Belvoir Vales

Total area: 160.8 km²

**Percentage of Regional Character
Area:** 26.8%

**Percentage of Overall Project
Area:** 2.3%



Description

This zone is divided into two unequal parts. The small area to the north of the City of Lincoln is centred on the River Till, while the larger area to the south of the city is centred on the River Brant. These two watercourses are tributaries of the River Witham, and the landscapes that have formed around them have very similar characteristics.

The northern part of the zone is bounded by the foot of the Northern Cliff to the east and by the edge of a gravel terrace to the west. The River Till runs through the centre of the area, through a rural landscape of fields and isolated farms.

The landscape around the River Till is almost entirely rural. There are no historic nucleated settlements, only a few isolated farmsteads. In recent years, a new settlement at Burton Waters has been created which is unique in Lincolnshire as a combined housing and marina development. The fields comprise a mixture of small to medium sized rectilinear fields bounded by hedges and ditches, and large irregularly-shaped fields where internal boundaries have been removed. There is little woodland, and vertical features, such as flood banks and pylons, tend to be disproportionately visible as elements of the landscape in the absence of other features.

The southern part of the zone displays a very similar rural landscape to that of the northern part. The River Brant rises near Gelston, just outside the zone, and flows northwards through the zone, past a floodplain landscape of flat fields. To the east of the river, these fields are referred to as fens on the modern Ordnance Survey maps, and they display many of the same characteristics as the fields in the Witham Fens on the other side of the Cliff. They typically have long, straight boundaries formed by drainage ditches, and there is little woodland cover to provide a vertical element to the flat, open landscape. To the west of the river the landscape begins to rise towards the base of the cliff, producing a slightly less fen-like character. Fields in this area are typically known as 'low fields'.

There is little settlement in this part of the zone, with only a few small nucleated villages in the south-west and a scattering of isolated farmsteads set within the rural landscape. The nucleated settlements generally comprise eighteenth- and nineteenth-century red-brick buildings, with some modern houses built on vacant plots.

Historic Landscape Evolution

There is relatively little evidence available for the pre-medieval use of this landscape, especially of the area surrounding the River Brant. However, the settlement of Brant Broughton is recorded in the Domesday survey of 1086, indicating that the landscape was in productive use by that time. There are numerous areas of relict ridge and furrow earthworks on the west bank of the Brant, indicating that the open fields of the settlements just outside the zone were quite extensive. Conversely, there is little or no evidence of open field farming on the land to the east of the Brant, between the river and the foot of the cliff, perhaps indicating that this land was used for grazing livestock. In the north-west of the zone is an area of former fenland which may have been used for seasonal grazing or hunting.

Although there are few surviving settlements in the zone today, there are two sites where earthwork remains and cropmarks indicate former medieval settlement. The first is the deserted village of Skinnand, which declined slowly until the middle of the nineteenth century, and has now been largely ploughed away. The second is Somerton Castle in the parish of Boothby Graffoe, which was built over the remains of a settlement which was deserted in the fourteenth century, perhaps after the Black Death.

There is a clear difference between the types of planned enclosure practised on either side of the Brant. To the west of the river, the land was generally privately enclosed, either by agreement between several landowners or by a single landowner who was able to act by himself. To the east, the landscape was enclosed primarily by Act of Parliament. Although the resulting landscape appears very similar, the underlying pattern of medieval landownership may well have been very different in these two areas. The former fenland around Bassingham was probably drained at this time, much like the fenland of the Witham valley on the other side of the Cliff.

During the twentieth century the main changes to the landscape came from the consolidation of historic fields into larger blocks by the removal of boundaries. This process was particularly prevalent in the upper Brant Valley, especially in the landscape around Brandon in Hough-on-the-Hill parish.

Legibility

Remnants of the medieval landscape can be found throughout the zone. As well as the surviving settlement of Brant Broughton, there are several sites where former medieval settlements can be seen in earthwork form. The surviving areas of ancient enclosure are often found in isolated blocks away from historic settlements.

The planned enclosure landscape survives in various degrees throughout the zone. It is particularly well preserved in the fenland landscape east of Bassingham. The isolated farmsteads scattered throughout the rural landscape are also indicative of nineteenth century farming practices.

Character Zone TVL4

The West Grantham Farmlands within The Trent Valley Character Area

ARS sub-province: CLNSC

Countryside Agency Countryside Character Area:
48 Trent and Belvoir Vales

Total area: 76.8 km²

**Percentage of Regional Character
Area:** 12.8%

**Percentage of Overall Project
Area:** 1.1%



Description

The landscape of this zone is divided between the flat, low lying areas of farmland and several small hills, on which the historic nucleated settlements are found. There are several watercourses that pass through the zone, including the River Witham and the Foston Beck. The Witham in particular is bounded by flood banks for much of its length, restricting views of the river itself but ensuring that it remains highly visible in the landscape.

The settlements in the zone are found in a rough crescent from Caythorpe in the east to Claypole in the west, and are all nucleated in character. Most of these settlements have not been altered or added to since the nineteenth century, and display extensive use of red-brick and pantile in their built form. The exceptions to this are Long Bennington and Caythorpe, which are situated on the A1 and the A607 respectively. These two villages have been extended by the addition of modern housing developments, perhaps because they provide better access to main roads, as described above. The nucleated settlement pattern is well preserved throughout the zone, except at Caythorpe where the expansion of that village has linked it to the neighbouring village of Frieston. There are several important heritage assets to be found within the settlements, including the castle and the Anglo-Saxon church at Hough-on-the-Hill and a moated medieval site at Hougham.

The rural landscape surrounding the main settlements displays a strongly planned character which is especially clear in the fields surrounding Dry Doddington. Elsewhere, for example around Caythorpe and Hough-on-the-Hill, the fields are larger and more irregular, although the character of straight, hedged boundaries is still prevalent. A less dominant pattern of small irregularly-shaped fields with sinuous boundaries can be seen on the higher ground in the immediate vicinity of some settlements, such as Gelston. These are typically pasture fields, and many of them contain well-preserved ridge and furrow earthworks.

There is little woodland in the zone as a whole, and what there is concentrated in a small area to the west of Carlton Scroop. Where woodland exists it typically conforms to the overarching rectilinear pattern of the rural landscape.

Historic Landscape Evolution

There is evidence from aerial photography for the settlement of this zone in pre-medieval periods. However, the limited amount of archaeological fieldwork undertaken to date means that it is not possible to assign a more accurate date to many of these remains. In particular, there is an extensive pattern of cropmarks in the area between the River Witham and the Foston Beck which may date from the late Iron Age, as indicated by field survey of one site.

The modern settlement pattern appears to have its origins in the early medieval period, as all of the surviving villages are mentioned in the Domesday survey of 1086. Most of the place-names indicate that the villages were founded by Anglo-Saxon settlers, although Caythorpe may be a later Danish settlement.

There is extensive survival of ridge and furrow earthworks on the higher ground throughout the zone, but little evidence for its existence on the lower-lying floodplains. This may indicate that the medieval strip fields were situated on the high ground surrounding the medieval villages, and possibly on the slopes of hills throughout the zone. The land between may have been less suitable for crops, being less well drained and more prone to flooding. However, these same qualities also provide suitable land for raising livestock, and it is likely that the common grazing land would have been situated in these floodplain areas.

During the later medieval period, and immediately afterwards, parts of the former open fields were gradually enclosed in a piecemeal fashion. This may have been undertaken in order to expand the amount of land available for grazing sheep. Examples of ancient enclosures can be found immediately adjacent to many of the historic settlements in the zone, but are particularly well preserved around Hougham, Long Bennington and Gelston.

The process of enclosure was largely haphazard and piecemeal until the eighteenth century, when the remaining unenclosed commons and open fields were divided and enclosed either by private landowners or by Act of Parliament. These later enclosures were undertaken by professional surveyors using relatively modern techniques, resulting in a landscape of strictly regimented rectilinear fields with straight boundaries. This sort of landscape is particularly well preserved in the area between Dry Doddington, Westborough and Long Bennington, which was enclosed in 1770. As well as creating a new agricultural landscape, the process of enclosure also created a secondary settlement pattern of dispersed isolated farmsteads, from which the landowners were able to work their consolidated holdings more efficiently.

The planned enclosure landscape has also been heavily modified in some areas as a result of twentieth-century agricultural processes. The trend towards mechanisation of farming techniques has resulted in the removal of field boundaries in order to create larger fields that can be worked more efficiently. Another factor has been the consolidation of farm holdings by sale or inheritance, which has also resulted in the removal of some boundaries. The resulting landscape of large prairie-style fields can be seen clearly in the area to the east of Hougham and Marston.

The nucleated settlements were also modified during the twentieth century as population increase necessitated the construction of many new houses. Most of the additions to the villages have been limited to small developments of five or six houses on plots at the edge of the village core, with occasional infill development of vacant plots. There are two exceptions to this, Long Bennington and Caythorpe. These villages are situated on the A1 and the A607 respectively, and have seen much greater growth as a result of their greater desirability to commuters. New housing in these villages has been on a greater scale, with estates of small detached homes being constructed on agricultural land surrounding the village. This has had a disproportionate effect on the survival of ancient enclosures around Caythorpe.

Legibility

It is possible to identify several levels of time-depth in the landscape of this zone. The medieval agricultural landscape was largely removed by the nineteenth-century enclosures, but the modern settlement pattern of nucleated villages is much the same today as it was at the time of the Domesday survey. However, this pattern is potentially threatened by the expansion of adjacent villages towards each other, which has already resulted in the unification of the villages of Caythorpe and Frieston.

Ancient enclosures dating from the late medieval period survive in many places, especially on the edges of historic settlement cores. In some places modern housing has encroached on these enclosures.

Large areas of eighteenth- and nineteenth-century planned enclosure survive across the zone, despite the consolidation of field boundaries in the post-war period.

Character Zone SCL1

The Southern Cliff Heath within The Southern Cliff Character Area

ARS sub-provinces:

CLNSC
EWASHW
CEMID
CTRNT

Countryside Agency Countryside Character Areas:

47 – Southern Lincolnshire Edge
48 – Trent and Belvoir Vales
74 – Leicestershire and Nottinghamshire Wolds
75 – Kesteven Uplands

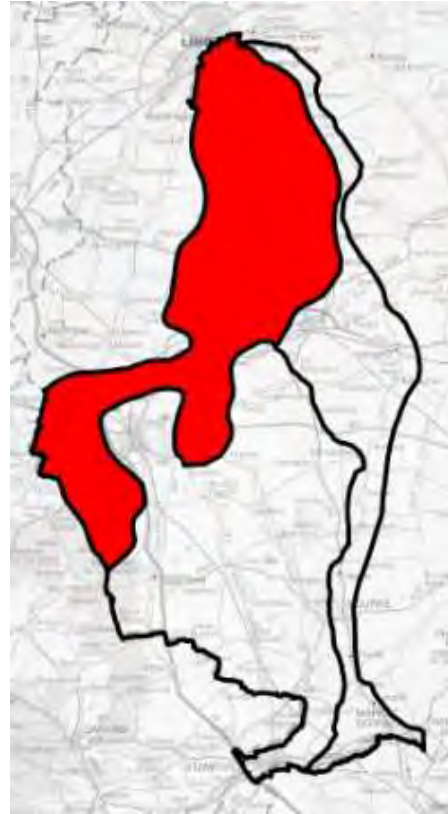
Total area: 441.9 km²

Percentage of Regional Character

Area: 37.8%

Percentage of Overall Project

Area: 6.33%



Description

The topography of this character zone is a continuation of the limestone scarp which runs north to south down the length of the county. The western edge of the zone is formed by this feature. The landscape then gradually drops away towards the Witham Fens in the east. Between these two strong boundaries, the landscape is one of broad open views. The grain of the landscape is predominantly governed by the main north to south roads, the A607 and the A15, and by the minor roads running between them from east to west.

There are two main lines of settlement in the character zone. To the west, a line of nucleated villages runs from Bracebridge Heath in the north, down the top of the cliff through Navenby, and around the north and west of Grantham through Ancaster and Barkston before terminating at Harlaxton. This string of settlements generally follows the line of the cliff edge, perhaps taking advantage of a historic spring-line. To the east, a second line of settlements runs from Branston, through Metherringham, to Ruskington. This line forms the eastern edge of the zone, beyond which lies the fen edge.

The individual settlements on both lines typically display a well preserved historic core, in which most of the buildings are constructed of local limestone with red pantile roofs. In most cases, the cores have been surrounded by later development. This mostly takes the form of late twentieth-century housing estates, which are generally brick built. The builders of some later estates have used limestone cladding in an attempt to blend in with the prevailing local character, but this effect is generally undermined by the uniform design of the houses.

Between the two lines of settlement, there is an even distribution of small isolated farmsteads. These are typically brick-built, with associated out-buildings. They tend to date from the eighteenth and nineteenth century, and many have fallen into disrepair as newer farming practices have rendered them obsolete. Others have kept pace with these changes by constructing large ancillary buildings such as barns and animal pens. These tend to be made of concrete and corrugated iron, rather than traditional building materials.

The rural landscape is strongly rectilinear in character. The east to west aligned field boundaries tend to be long and straight, often running parallel to minor roads or tracks. The north to south boundaries are typically shorter, but are equally straight. The result is a regimented field system in which right-angles and straight lines provide the defining character. The boundaries themselves are typically formed by hedges rather than ditches. This landscape prevails throughout the character zone, although there has been some consolidation of these rectilinear fields into much larger, more irregular fields in the years since the Second World War.

Like the Northern Cliff Character Area, the Southern Cliff is home to a number of RAF bases. Three of these bases are currently active. RAF Waddington is home to a number of large aircraft, including the E3 Sentry, which are frequently seen circling above the character zone. RAF Cranwell has an important role as the RAF officer training college, and as such marries the character of a typical airfield with that of a large educational establishment. RAF Barkston Heath, in the south of the zone, is used for flight training, but is also a very well preserved Second World War airfield. As it has never been used for large modern aircraft, the runways have never been extended and so the wartime layout remains largely intact.

Historic Landscape Evolution

The earliest surviving landscape features in the zone date from the Roman occupation. Ermine Street, which once ran from London to York, is still identifiable for much of its length through this zone. It runs south from RAF Waddington as the High Dyke, passing through the centre of the heath until it meets Ancaster, which was itself once a Roman town.

It is clear that the Roman road continued to be an important landscape feature, as it forms the boundary for parishes to either side of it. This may be because it provides a convenient mid-point between the two main lines of settlement, dividing the heath equitably between them.

The medieval landscape was one of nucleated settlements set amidst a typical open field farming system. The open fields were situated immediately adjacent to the settlements, as can be seen from the ancient enclosures and ridge and furrow earthworks seen today. Beyond the open fields lay the common grazing lands, with dry, heath grazing at the centre of the zone and wet fenland grazing outside the zone in the Trent Valley to the west and the Witham Fens to the east. The Domesday survey of 1086 records, as estates, the names of the present day nucleated settlements in the zone, indicating a degree of settlement continuity since at least the eleventh century.

Surprisingly there are very few deserted settlements in the zone, perhaps suggesting that the medieval economy of this zone was more resilient to the factors that caused desertion elsewhere. For example, the medieval farming regime may have been more heavily weighted towards pastoral farming, and so post medieval pressure to enclose the land for sheep farming was perhaps less strong here than in other areas, such as the Wolds.

During the eighteenth and nineteenth centuries the zone was subject to planned enclosure of many of the open fields surrounding the villages and of the large areas of open heath. The new fields were laid out by professional surveyors, resulting in a new landscape of straight lines and right-angles. New roads were also laid out at this time, and these also were long and straight, with wide verges. Where the land had previously been farmed in common, with one man's holdings intermingled with those of his fellows, it was at this time re-distributed to the landowners in large contiguous blocks. This meant that it was possible, and more convenient, for landowners to live in the midst of their holdings, and the following decades saw the foundation of many isolated farmsteads on the heath.

During the twentieth century, the landscape was again subjected to wide ranging changes. The establishment of airfields during the First and Second World Wars not only created new physical objects in the landscape, such as hangars, runways and perimeter tracks, but also brought an influx of people to work on the bases, to supply and maintain them, and to provide the families of personnel based at them with goods and services. After the Second World War some of the bases were closed down or re-purposed. RAF Coleby Grange, for example, still retains the concrete launch pads built in the 1950s to accommodate American Thor intermediate range ballistic missiles.

The settlements in the zone have all expanded to some extent in the last century. This expansion has been caused by a number of factors, including natural population growth, the addition of new housing by the RAF and by the proximity of the villages to Lincoln, Grantham and transport links to London.

Legibility

Although the medieval landscape has been largely over-written by the planned enclosures of subsequent years, elements of it can still be identified. There are areas of irregular ancient enclosures to be found in the vicinity of most settlements, the boundaries of which typically reflect the sinuous forms of the open fields from which they were derived. The tower of the Templar preceptory at Temple Bruer still exists as a standing monument, although denuded of its landscape context by later development.

The planned enclosure landscape of the eighteenth and nineteenth centuries is extremely well preserved throughout the zone. Where modern fields have been created they retain the essential rectilinear character of the underlying planned landscape. The isolated farms, which are an essential part of this landscape, are also well preserved, although they and their outbuildings are increasingly subject to dereliction and abandonment.

The airfields in the zone are a visible reminder of more recent historic processes. As well as the obvious links to the Second World War, exemplified by the layout of RAF Barkston Heath, there are physical manifestations of the Cold War to be found at RAF Waddington with its extended runway for the operation of Vulcan nuclear bombers, and at RAF Coleby Grange with its Thor IRBM launch pads.

Character Zone SCL2

The Fen Edge Settlements within The Southern Cliff Character Area

ARS sub-provinces:

CLNSC
CEMID
EWASHW

Countryside Agency Countryside Character Areas:

46 – The Fens
47 – Southern Lincolnshire Edge
75 – Kesteven Uplands

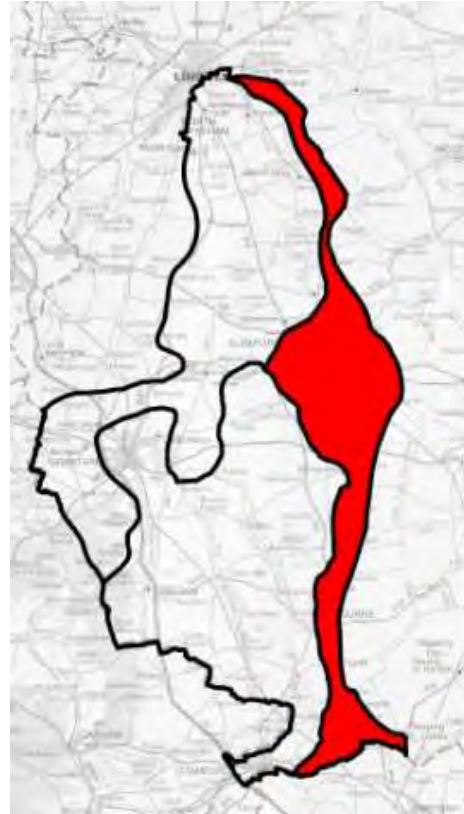
Total area: 241.3 km²

Percentage of Regional Character

Area: 20.7%

Percentage of Overall Project

Area: 3.46%



Description

This long, thin character zone runs from the very north of the Southern Cliff Character Area to its southern extremity. The western edge marks the top of the downward slope from the plateau at the top of the Cliff. The eastern edge is defined by the beginning of the fens, and for much of its length roughly follows the line of the ancient Car Dyke.

The zone is most heavily settled in its southern half, where a line of nucleated settlements runs from Market Deeping to Heckington along the A15, the B1177 and the B1394. The older buildings within these settlements are generally constructed from local limestone, presumably quarried from the top of the Cliff. More modern buildings, from the nineteenth century onwards, tend to be brick-built, reflecting the greater availability and affordability of these materials following the arrival of the railways. Many of the smaller settlements remain largely unchanged since the nineteenth century. Larger villages, such as Heckington and Bourne, have expanded due to the construction of housing estates in the twentieth century. In some places there has been a tendency for new housing to follow existing main roads, resulting in 'ribbon' development. This is particularly in evidence at Heckington, where twentieth-century development has caused it to be linked to Great Hale to the south, resulting in a loss of the discrete nucleated character of these fen-edge villages.

Sleaford is the largest settlement in the character zone, and acts as a local hub for shopping and services. Much of the present town centre dates from the nineteenth century, but older buildings can be found in the vicinity of the Church of St Denys. Away from the town centre, much of the built-up area comprises mid to late twentieth-century housing. This initially developed gradually along the main roads out of Sleaford in the 1930s. Later estates were then constructed behind these houses, creating blocks of large modern estates, which are the dominant housing type in Sleaford today.

There is some survival of ancient enclosure, most usually located on the periphery of historic settlement cores which have not been subject to significant expansion in the post Second

World War period. There is a strong survival of planned enclosure landscapes across the character zone, and the modern fields, produced through a process of consolidation in the twentieth century seem to retain much of the rectilinear character of the underlying planned enclosures. Most of the modern fields and planned enclosures have a strong east to west orientation, evident from the long boundaries that have survived the process of consolidation. Isolated farmsteads are scattered fairly evenly throughout the character zone.

There are several gravel extraction sites in the south of the character zone, in the vicinity of Market Deeping. Some of these workings have now been flooded and converted to leisure use.

Historic Landscape Evolution

There is archaeological evidence for the occupation of the fen edge from the Iron Age onwards. The Car Dyke, which runs along the eastern edge of the zone, is a Roman feature, and several sections of it survive to this day and are protected as scheduled ancient monuments. The Car Dyke is thought to have been created in order to allow drainage of the adjacent fenland and, as such, represents one of the first recognisable attempts in Lincolnshire to control the water system for agricultural purposes.

The settlements along the fen edge were almost certainly in existence, in some form, by the time of the Domesday survey of 1086. The actual shape of the villages as seen today is probably the result of later growth or planning. Prior to the enclosures that occurred in the post medieval period, the villages were set within a pattern of open arable fields, farmed in strips by the tenants and rotated annually on a three-field system. The arable land was complemented by areas of grazing land at the edge of each parish, used in common. In the Fen Edge character zone, this comprised areas of dry heathland grazing to the west and seasonal wetland grazing on the fens to the east. It is conceivable that cattle and sheep were grazed on the fens in summer, when the land was drier, and over-wintered either on the heath, or in small closes adjacent to the villages.

The main axis of many of the towns and villages in the south of the character zone seems to be east to west – namely aligned with the routes from settlements in Southern Cliff Character Area 3 (the Kesteven Parklands character zone) towards the fens. This could indicate that these settlements developed to serve the movement of livestock from the west to grazing on the fens. The axis of the larger settlements, situated on the route of the A15, seems to have rotated by 90° in the recent past, to reflect the growing prominence of this route way.

The open field farming system remained in place until the eighteenth and nineteenth centuries. It was removed by two processes. The first was the enclosure movement, which took away the strip allocations and common grazing rights from the landholders and returned them in the form of consolidated blocks of land which were owned outright. These blocks were set out according to a strict rectilinear pattern devised by professional surveyors, resulting in the straight field boundaries set at right-angles to each other that can be seen in the landscape today. The second process was the drainage of the fens by means of new watercourses and channels. This resulted in a very similar landscape to the planned enclosures described above. Both of these processes were undertaken either by private agreement between major landowners, or, where this could not be arranged, through an Act of Parliament. In practice there was little difference in the resulting landscape.

Legibility

The zone retains and displays significant legibility from several periods. The Car Dyke, which survives in several areas, illustrates both the antiquity of settlement in this zone and the long history of drainage and reclamation which has influenced that settlement. The long line of villages running north to south through the zone is medieval in origin, and the original pattern

of nucleated settlements remains largely intact, despite some 'ribbon' development. In some areas, mostly adjacent to historic villages, it is possible to discern the irregular curved field boundaries of ancient enclosures, which represent the earliest transfer of land holdings from the communal to the individual. The irregular shape of these fields often results from the sinuous nature of the ploughed strips in the former open fields. They are therefore a tangible reminder in the modern landscape of farming practices that disappeared up to two hundred years ago.

Character Zone SCL3

The Kesteven Parklands within The Southern Cliff Character Area

ARS sub-province: CEMID

Countryside Agency Countryside Character Areas:

47 – Southern Lincolnshire Edge

48 – Trent and Belvoir Vales

75 – Kesteven Uplands

92 – Rockingham Forest

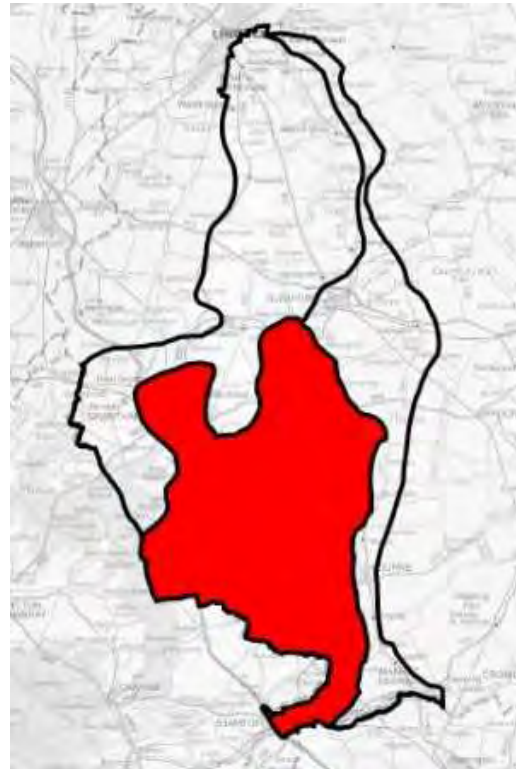
Total area: 484.7 km²

Percentage of Regional Character

Area: 41.5%

Percentage of Overall Project

Area: 6.95%



Description

The physical landscape of this character zone is characterised by rolling countryside similar to that found in the Lincolnshire Wolds. Unlike the heath to the north, there are many small hills and sheltered valleys, providing an intimate landscape of enclosure and shade. This is enhanced by the extensive woodland found throughout the zone, much of it arranged in plantations.

The zone is particularly notable for the large number of country parks and associated country houses that are located within its boundaries. These range in size from large examples such as Grimsthorpe Park, which occupies an area of approximately 1200ha, to smaller parks such as Irnham or Bulby. These parks are characterised by large areas of grassland with large areas of woodland around their edges. In some cases, the grassland has been ploughed up for arable cultivation, often leaving veteran parkland trees isolated within fields of crops.

The largest settlement in the zone is Grantham, a historic market town, which is situated in a small depression to the east of the cliff edge. The town has many important historic elements, such as St Wulfram's Church, the well-preserved 'moustachioed' Georgian terraces and the nineteenth-century industrial townscape of factories and terraced housing. More recently, there has been extensive construction of modern housing on the periphery of the town, taking advantage of Grantham's transport infrastructure. Grantham is on the main east coast rail route from London to the north.

The next largest settlement is Stamford, also an historic market town, which is notable for the exceptional preservation of its historic core. Much of the old town is built from locally-quarried limestone with slate roofs. The town is situated adjacent to the A1 and is close to the main east coast rail route to London. These transport links make the town popular with commuters, and several large estates of modern housing have been constructed on its edges to accommodate them. These estates generally comprise typical small brick-built detached houses in cul-de-sac developments. However, some more recent examples have been built with stone façades in an attempt to reflect the historic character of the town.

The villages in this zone are generally small, with a nucleated character. These villages typically possess a well-preserved historic core, with few buildings having been constructed in the twentieth century. Apart from the two market towns, the exceptions to this are those towns, such as Colsterworth and Corby Glen, which are within easy reach of the A1. In these cases there has been considerable modern expansion to provide homes for commuters. Many of the settlements have been strongly influenced by the presence of nearby country parks, either by the addition of estate cottages and buildings or by historic adjustment of the layout of a village by an important landowner.

There is significant survival of planned enclosure landscapes across the character zone, particularly in the south and west of the character zone. The modern fields, produced through a process of consolidation in the twentieth century seem to retain much of the rectilinear character of the underlying planned enclosures. Close to many of the historic settlements there is a preponderance of surviving ancient enclosures, characterised by small field sizes and irregular boundaries. There are also a number of estate fields within this character zone, situated in the vicinity of the many landscape parks.

Historic Landscape Evolution

Estates sharing the names of many of the current settlements and deserted settlements visible as earthworks are mentioned within the Domesday Survey. Whilst it is not clear from the evidence available, it is likely that any settlement associated with these estates was located in the vicinity of the present historic settlement cores within the zone.

Given the nucleated settlement pattern and the survival of ridge and furrow earthworks throughout the zone it is likely that the land was cultivated according to a typical open field system from the medieval period until the eighteenth century. This entailed the rotation of crops on an annual basis between two or three large open fields. In addition to the arable fields, the zone supported many flocks of sheep, and wool production was a vital part of the medieval economy. Indeed, the profits from the wool trade provided much of the wealth that allowed the local aristocracy to begin constructing large houses and creating large areas of parkland.

Much of the zone was subject to planned enclosure in the eighteenth and nineteenth centuries, and much of this survives now, along with its associated isolated farmsteads. Some of the isolated farmsteads seem to be associated with deserted village and moated site earthworks, and it is possible that these are remnants of the earlier settlement cores as opposed to isolated farmsteads established as a result of the enclosure movement.

Many of the designed landscape parks were also established during this period. In some cases, the enclosure of fields and the establishment of the parklands and associated buildings may have occurred at the same time. From the early part of the twentieth century there was a reduction in the number of country houses and the conversion of many of their associated parkland landscapes to agricultural use, through the liability of the estates to inheritance tax.

The nearby villages were often altered in order to accommodate the needs of the estate. Some villages, such as Manthorpe near Belton Park and Edenham near Grimsthorpe, were completely remodelled by the local aristocrats, who demolished the former village buildings in favour of new uniform cottages for their estate workers. These cottages are found in many other villages throughout the character zone, and usually carry the crest of their patron family in a prominent place. Thus the influence of the landed gentry is felt throughout the zone, and not merely within the formal parks and gardens.

Legibility

The landscape of the zone is rich in historical elements. As well as the extensive preservation of the nineteenth-century planned enclosure landscape, there are many examples of pre-enclosure fields with irregular boundaries. The historic wealth of the zone, brought about by the wool trade, can be seen on many levels. The many landscape parks and country houses are a highly visible example of this, but so too are the well preserved stone buildings found in almost every village in the zone. Those settlements which were associated and built by estates generally retain much of their 'corporate' character, with villages from one estate generally being distinguishable from others associated with a different estate through their differing architectural details.

Many of those parks in the character zone retain much of their character as designed landscapes, despite the fact that large areas of former parkland have been converted to arable cultivation. In most cases, the estate woodlands planted at the edge of parks remain in their original form and the isolated trees commonly found within parkland are often preserved in the midst of modern arable farmland.

Character Zone GRM1

The Middle Marsh within The Grazing Marshes Character Area

ARS sub-provinces:

EWASH

CLNSC

Countryside Agency Countryside Character Areas:

42 - Lincolnshire Coast and Marshes

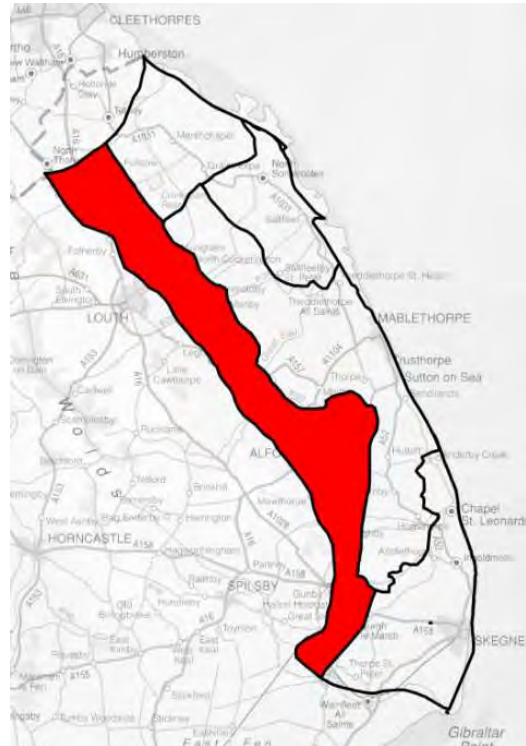
Total area: 160.4 km²

Percentage of Regional Character

Area: 29.4%

Percentage of Overall Project

Area: 2.3%



Description

The eastern edge of the north of the zone is marked by a line of settlements, aligned approximately north to south, which follow the 10m contour line. At the western edge of the zone is a similar line of settlements, generally adhering to the 20m contour line, which straddles the border between this character zone and the Wolds Character Area. The settlements retain much of their historic character, with little additional development. There are also several isolated farmsteads, scattered across the zone, the majority of which have expanded significantly from their original size to include modern barns and animal pens. The character zone as a whole displays a nucleated pattern of settlement.

The fields in the zone comprise a balanced mix of types. Close to the historic settlements at the edge of the zone, there is some survival of ancient enclosures of the former open field systems. A distinct area of ancient enclosure survives around Keddington Grange.

There is also a strong survival of planned enclosure landscapes across the character zone, and the modern fields, produced through a process of consolidation in the twentieth century, seem to retain much of the rectilinear character of the underlying planned enclosures. Most of the modern fields and planned enclosures have a strong east to west orientation, evident from the long boundaries that have survived the process of consolidation.

The south of the zone displays two distinct settlement types. Larger settlements, such as Alford, Willoughby or Orby, are situated on higher ground and are highly nucleated. On the lower lying, drained marshland settlement is restricted to isolated farm complexes, which are scattered evenly throughout the zone, and linear settlement strings, such as Irby-in-the-Marsh, which are situated on a series of small mounds rising two or three metres above the surrounding land.

Generally speaking, modern development is situated on lower lying ground, while older settlements, that predate the drainage of the landscape, are found on higher ground.

The agricultural land in this part of the zone retains a high proportion of old enclosures, mostly resulting from early marshland drainage and reclamation. There are some areas of planned enclosure, probably dating from the eighteenth and nineteenth centuries. More than 50% of the agricultural land in this zone is the result of modern consolidation of fields. Throughout the character zone, there are well preserved and maintained hedgerows, especially along roads. This gives a feeling of enclosure, and has the effect of restricting viewing distances on low lying ground. This is a marked contrast to the more modern reclamation seen in neighbouring character zones.

There is a concentration of woodland on the high ground to the west of the zone, which can be divided into two types. The greater part of the woodland is made up of small rectilinear plantations, but there is also a block of ancient woodland near Greenfield Priory.

Historic Landscape Evolution

The earliest line of settlement lies on the east in the north of the character zone; it is situated on the marsh edge. This line extends from Covenham St Bartholomew in the north to Great Carlton in the south and comprises a series of nucleated settlements, which generally do not seem to have shrunk significantly in size. To the west of these settlements there was a typical open field arable and common grazing regime. There is some survival of early enclosures in this area centred on the late medieval grange at Keddington. Much of the zone was subject to planned enclosure in the eighteenth and nineteenth centuries, but little of this survives now, as the dominant field type is post Second World War consolidated modern fields. In general, this zone follows the typical evolution of an open field farming system, from strip fields to planned enclosure to modern field consolidation.

In contrast, to the south of the character zone, the general settlement pattern results from the depopulation of medieval villages. There are various factors which might have led to the depopulation, partial abandonment and subsequent shrinkage of these settlements. Village populations grew rapidly in the eleventh to thirteenth centuries, causing the utilisation and occupation of marginal land. However, in the fourteenth century there was a combination of economic decline, worsening climate and repeated outbreaks of pestilence which led to a general decline in rural population numbers, with some settlements being partially or totally abandoned. Additional factors which led to the abandonment of settlements in later centuries included the enclosure of open fields, pastures and commons as a result of the fluctuations in the prices of wool and meat, and by the removal of villages to facilitate emparking, the creation of landscape parks within large country estates.

The area around Greenfield Priory demonstrates an alternative landscape evolution and development. Here, ancient woodland seems to have been cleared and enclosed by private irregular enclosure. Although the date of this enclosure is unknown, it is probably associated either with the establishment of the Cistercian priory in the twelfth century, or with the post dissolution use of the landscape, when a small hamlet was established on the site of the former Priory.

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The agricultural land in this part of the zone retains a high proportion of old enclosures, mostly resulting from early marshland drainage and reclamation. There are some areas of planned enclosure, probably dating from the eighteenth and nineteenth centuries.

Throughout the character zone, there are well preserved and maintained hedgerows, especially along roads. This gives a feeling of enclosure, and has the effect of restricting

viewing distances on low lying ground. This is a marked contrast to the more modern reclamation seen in neighbouring character zones.

Legibility

Legibility of the medieval landscape is evident in the survival of the linear settlement pattern and long east to west orientated field and parish boundaries. Some surviving ridge and furrow, visible as extant earthworks and as cropmarks on aerial photographs, is also present within the ancient enclosures near to settlements. The area around Keddington Grange displays a high legibility from this period.

Legibility of the post medieval landscape is evident in the good survival of planned enclosure and isolated farmsteads across the character zone, which gives the zone its dispersed settlement character.

The modern landscape shows field consolidation, the result of contemporary agricultural practices. Industrial activity is centred on Manby Airfield, which retains its character from its construction during the airfield expansion period of the 1930s. Most modern housing is centred on ancient settlements, but these settlements generally retain their historic character.

Character Zone GRM2

The Salterns within The Grazing Marshes Character Area

ARS sub-province: EWASHW

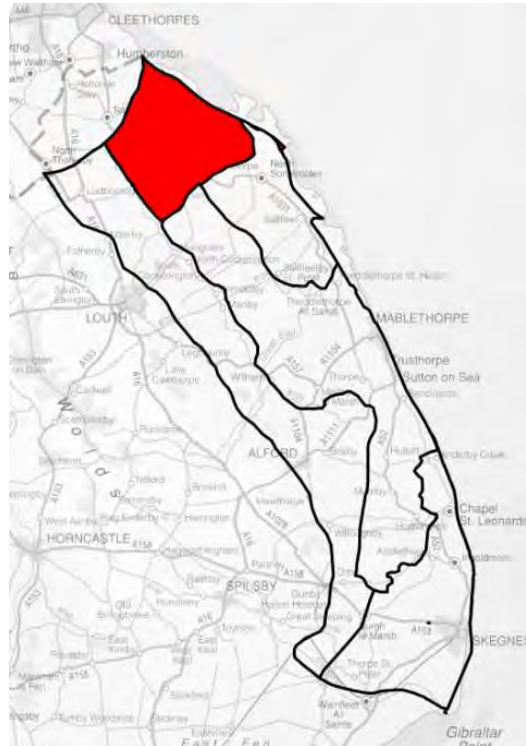
Countryside Agency Countryside Character Areas:

42 - Lincolnshire Coast and Marshes

Total area: 64.1 km²

**Percentage of Regional Character
Area:** 11.8%

**Percentage of Overall Project
Area:** 0.9%



Description

The predominant land use in this character zone is arable farming in large, consolidated modern fields, with small pastoral fields near main areas of settlement. A large reservoir with high banks provides recreational/tourist opportunities.

The settlements in this zone form a line, stretching from North Cotes to Grainthorpe along the A1031, parallel to the coast. The settlement character is mixed, including dispersed linear villages, such as Wragholme, and more traditional nucleated settlements, such as Grainthorpe.

The rural character of the zone is dominated by large modern fields, resulting from post Second World War consolidation processes. These fields show a markedly different character on either side of the settlement line. Those to the west of the line have largely straight boundaries, indicative of planned enclosure of a typical open field farming regime. The fields to the east have sinuous boundaries, usually formed by drainage ditches rather than hedges, which provides a more open landscape with wider views.

It is still possible to see much of the built form of the former RAF North Cotes, which is now used for a variety of light industrial purposes. The base is also home to a local flying club.

Covenham Reservoir, as well as providing water for Grimsby, is used for a variety of recreational purposes. It is built above the level of the surrounding land, and is widely visible throughout the eastern half of the character zone.

Historic Landscape Evolution

Most of the settlements in this zone were founded as satellites of villages of earlier foundation to the west. They evolved from seasonal salt production and marsh grazing – Wragholme is an example of this process. However, Grainthorpe may perhaps have earlier origins. It is the only one of these settlements mentioned in the Domesday Survey, and it had direct access to a haven at that time and so may well have been an important local centre for the transport of salt by land and by sea from this area.

The medieval salt industry is responsible both for the initial reclamation of the eastern half of the zone, and for the sinuous field boundaries visible in the landscape around Marshchapel and Tetney Lock. The salt-making process resulted in large quantities of unwanted spoil which were piled up in mounds. Eventually, enough spoil was collected to create higher and dryer land where it was possible to plant crops. The water draining off the high ground to the west into the sea naturally followed courses that ran around the new areas of high ground, creating the sinuous boundaries seen in the landscape today.

The historic landscape of the western half of the character zone is largely the result of post medieval processes, particularly the planned enclosure of formerly open fields and common grazing during the eighteenth and nineteenth centuries. This resulted in a landscape of rectilinear field boundaries, running in straight lines across the landscape. Land that was once worked communally fell into the ownership of specific individuals, who, in some cases, built farmsteads set among their new holdings.

Legibility

The modern consolidated fields to the west of the main axis of settlement retain their historic character of old enclosure close to the settlement. Some earthwork ridge and furrow is evident in the immediate vicinity of the main settlements.

The fields to the east of the main settlement axis are of a modern, consolidated character, with most internal boundaries having been lost. However, sinuous streams clearly indicate the salt marsh origins of this area. Almost all of the saltern earthworks have been ploughed out, but are clearly visible as cropmarks and soilmarks on aerial photographs.

Although some elements of the former RAF North Coates are still visible, the runways, Bloodhound missile launching pads, and perimeter track have been destroyed by ploughing since 2000.

Character Zone GRM3

The Mablethorpe Outmarsh within The Grazing Marshes Character Area

ARS sub-province: EWASH

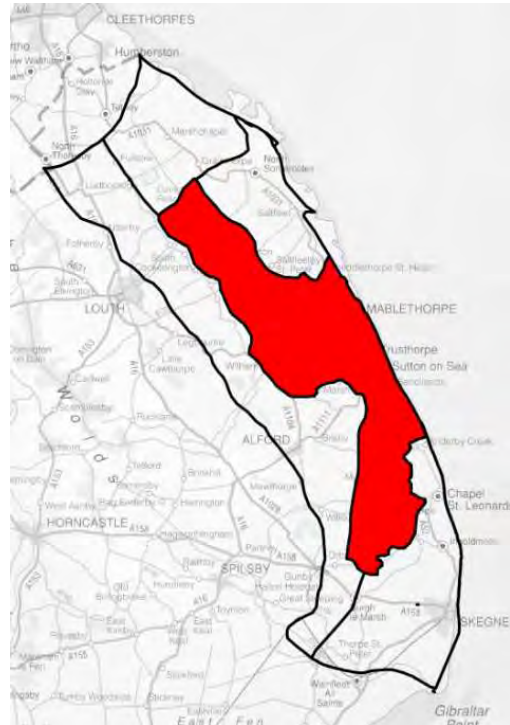
Countryside Agency Countryside Character Area:

42 - Lincolnshire Coast and Marshes

Total area: 163.6 km²

**Percentage of Regional Character
Area:** 30%

**Percentage of Overall Project
Area:** 2.3%



Description

The settlements in this zone are predominantly aligned along an east to west axis. They are also highly dispersed, with a linear character, and are generally spread along roads. There are numerous isolated farmsteads which is in keeping with the dominant planned enclosure landscape of the character zone. In general, low lying areas are served by straight roads, while those roads on higher ground are more sinuous.

The largest area of settlement in the zone is found along the coast from Sandilands in the south to Mablethorpe in the north. The formerly distinct settlements along the coast have been connected into a single conurbation by the establishment of caravan parks along the connecting roads.

The seaside villages are heavily influenced by the tourist economy, with many shops existing to provide goods to holidaymakers. There are also many amusement arcades and fast-food shops to be found in these villages, especially close to the seafront. During the winter months, these features are generally closed and shuttered, providing a very different character from the bustle and activity of the summer months.

Most of the agricultural land in this zone displays a strongly rectilinear pattern, with long, straight boundaries laid out at right-angles to roads and drains. In some parts of the character zone these rectilinear fields have been consolidated through boundary removal creating large open areas with irregular shapes.

There are several small onshore wind farms in the character zone which are a widely visible vertical component of the landscape. The gas terminal at Theddlethorpe is also a significant and visible industrial feature of the zone.

Historic Landscape Evolution

Early settlement in this zone was located on 'islands' of high ground within the undrained marsh. Associated with these settlements were strip fields which were located adjacent to the settlements, but the predominant landscape type was undrained marsh land, which would have been used for salt production and grazing. The marshland was drained in the

eighteenth and nineteenth centuries, with isolated farmsteads being built among the new agricultural land.

Mablethorpe expanded in the nineteenth and twentieth centuries, from a small fishing village to a sea side resort, to become the largest settlement in this character zone. The underlying landscape of planned enclosure and drainage upon which the nineteenth-century town was built can be readily identified in the rigid grid pattern of its streets.

Since the Second World War, the rural landscape has been somewhat altered by the widespread removal of field boundaries, resulting in the creation of some large modern fields in the zone. However, this effect has not been as widespread in this zone as elsewhere in the Character Area.

Although the zone was too remote to be much affected by nineteenth-century industrialisation, there have been a number of late twentieth-century additions that have added an industrial component to the landscape. The Theddlethorpe gas terminal was constructed in 1972 after the discovery and exploitation of gas deposits in the North Sea. This large installation occupies an area to the north of Mablethorpe, and continues to be used today. More recently, a small wind farm was constructed to the south-west of Mablethorpe. This type of development may become more common in the future as renewable energy forms a greater part of the nation's energy supply.

Legibility

There are partially legible remnants of the medieval landscape to be found on higher ground, primarily focussed on the few nucleated settlements. These include old enclosures with irregular boundaries and extant ridge and furrow earthworks. The post medieval landscape is visible in the extensive survival of planned enclosure throughout the zone.

Character Zone GRM4

The Saltfleet Storm Beach within The Grazing Marshes Character Area

ARS sub-province: EWASHW

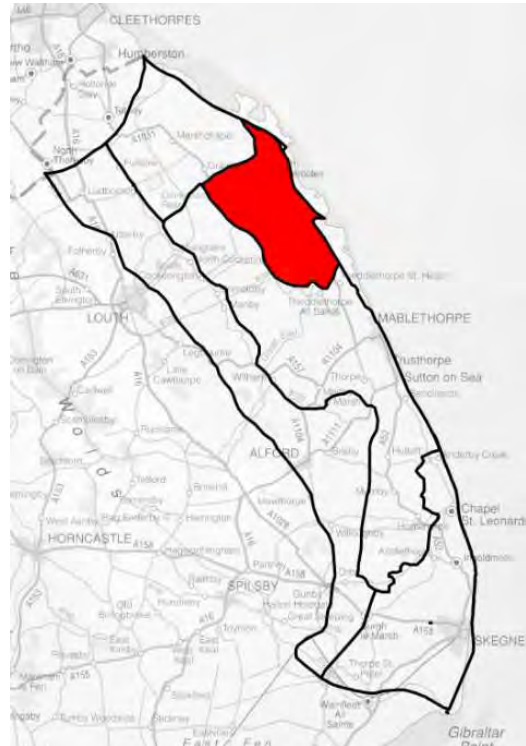
Countryside Agency Countryside Character Area:

42 - Lincolnshire Coast and Marshes

Total area: 52.3 km²

**Percentage of Regional Character
Area:** 9.6%

**Percentage of Overall Project
Area:** 0.8%



Description

The settlement character of this zone is highly dispersed. There are numerous isolated farmsteads, and villages are generally strung out along east to west aligned roads.

The villages of Saltfleet and North Somercotes form an arc to the north-east of the character zone. These two settlements also have a dispersed linear character, albeit more dense than the villages inland due to modern infill development.

The rural landscape of the zone is very open, with few hedges or hedge remnants along major roads. However, there has been very little consolidation of fields, and most original boundaries remain as dykes or ditches. These boundaries are generally irregular and are indicative of early enclosure of medieval strip fields.

There is good survival of ridge and furrow earthworks, which generally respect the alignment of the old enclosures. To the north-east of the zone there is a patch of surviving planned enclosure, indicating planned marshland reclamation in the eighteenth and nineteenth centuries.

Historic Landscape Evolution

The earliest use of the zone is likely to have been as seasonal grazing and salt making. As both Somercotes and Saltfleet are mentioned in Domesday it is highly likely that both of these settlements were established as seasonal settlements in the pre-Conquest period.

The development of a storm beach in the eleventh and twelfth centuries led to the permanent settlement of North Somercotes and Saltfleet on this feature, the drainage of the marsh and establishment of the strip farming patterns inland. The earlier salterns fell out of use. The strip farming was aligned perpendicular to drove and access roads, which may date from the pre-storm beach landscape.

The eighteenth and nineteenth centuries saw the drainage and planned enclosure of the salt marshes, to the seaward side of the storm beach, resulting in the strongly rectilinear field pattern visible to this day. Although many of the fields have been consolidated in the post

Second World War period, the underlying planned enclosure system remains the dominant feature in this part of the landscape.

Legibility

The Saltfleet-North Somercotes settlement arc reflects the formation in the eleventh and twelfth centuries of a storm beach upon which the settlements were established, which in turn is likely to have covered elements of the earlier landscape evolution. Modern settlement has reoriented the alignment of Saltfleet by 90° to now respect the line of the A1031 road, although the earlier orientation of the settlement remains along the line of Pump Lane and the associated public right-of-way which extends the lane to the west. It is likely that this orientation reflects the position of early medieval settlement on this site. The linear character of inshore settlement persists and may reflect the alignment of early medieval droveways.

There is strong legibility of the medieval farming patterns and drainage in this zone, visible in the irregular pattern of drains and field boundaries. The field pattern to the west of the storm beach arc is aligned perpendicular to the road system. This suggests that the fields were laid out to respect an earlier road system and it is likely, therefore, that the roads in this character zone date from the pre-storm beach era and originated as drove roads and access routes to the early seasonal settlements.

Character Zone GRM5

The Skegness Holiday Coast within The Grazing Marshes Character Area

ARS sub-provinces:

EWASHW

CLNSC

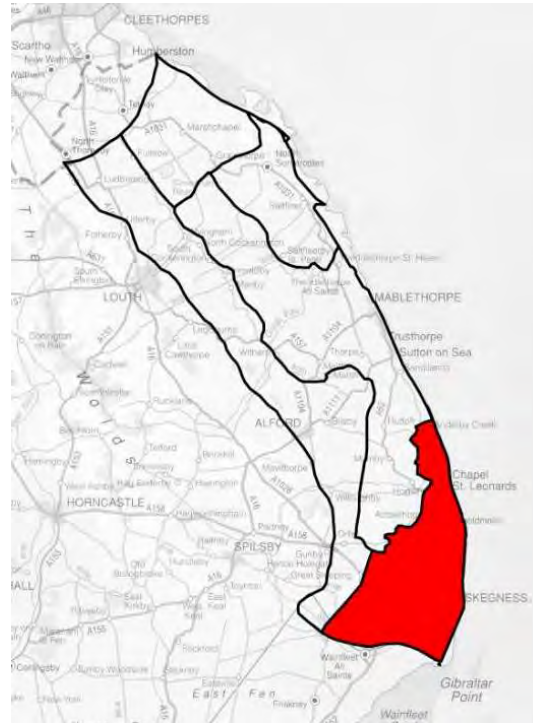
Countryside Agency Countryside Character Areas:

42 - Lincolnshire Coast and Marshes

Total area: 93 km²

**Percentage of Regional Character
Area:** 17.1%

**Percentage of Overall Project
Area:** 1.3%



Description

This zone is dominated by large modern fields largely formed by consolidation of older field patterns. The area of Burgh Marsh north of the Skegness Road (A158) is strongly rectilinear, suggesting a previous pattern of planned marshland drainage and enclosure. This is also true for the area between Anderby Creek and Chapel St Leonards. The part of Burgh Marsh to the south of Skegness Road is, by contrast, very irregular, with long sinuous streams forming the majority of field boundaries. These may be the courses of creeks in the former marshland. Settlements in the area are sparse and much dispersed, and mostly comprise isolated farm complexes.

Throughout the character zone, the landscape is very open with few hedges to obscure the wide views, but there are significant areas with surviving hedgerows, which give a feeling of enclosure and having the effect of restricting viewing distances on low-lying ground. The agricultural land in this zone retains some old enclosures, mostly resulting from early marshland drainage and reclamation.

This zone displays two distinct settlement types. Larger settlements, such as Burgh-le-Marsh, are situated on higher ground and are highly nucleated. Smaller settlements such as Thorpe St Peter are on low mounds two or three metres above the surrounding land. On the lower lying drained marshland, settlement is mostly restricted to isolated farm complexes, which are scattered evenly throughout the zone.

The largest settlements in the character zone are found on the coast and owe their growth to the holiday industry. The original settlement cores of these towns are still identifiable, but have been overshadowed by late nineteenth- and twentieth-century developments. The residential areas of these settlements were, for the most part, built in the latter half of the twentieth century. However, the planned nineteenth-century resort at Skegness, centred on St Matthew's Church, remains largely unaltered. There is also a sizeable seasonal population that is catered for by large static caravan parks which are found throughout the zone.

In addition to the many caravan parks, there is also the large Butlins holiday camp at Ingoldmells. Although much of the camp is of recent construction, the general layout still reflects the origins of the complex in 1936, with lines of chalets and cottages, and a grid pattern layout.

Generally speaking, modern development seems to be situated on lower lying ground, while older settlements, that predate the drainage of the landscape, are found on higher ground. This can be seen at Burgh-le-Marsh, which retains a very distinct historic core on higher land, with modern estates built on the periphery of the village on former marshland.

Historic Landscape Evolution

Much of the land initially would have been salt marsh utilised for seasonal grazing. The draining of the salt marsh to create arable farmland seems to have occurred in various different phases, demonstrated by the variation in field patterns and orientation of the field systems across the character zone.

There is evidence of some traditional open field agricultural development on higher ground at the southern edge of the character zone, which is at the far end of the Townlands character zone (WSH6), and was later subject to planned enclosure. Early drainage close to the settlements allowed arable farming and use of the wetlands for grazing. Prior to the large scale drainage of the marsh in the eighteenth and nineteenth centuries the marshlands were used for grazing.

The earliest nucleated settlements in the character zone were situated on higher ground, which afforded good visibility across the marsh and protection from flooding. The coastal resorts developed in the late nineteenth and early twentieth centuries. The planned resort expansion of Skegness began in 1877 and may have been spurred on by the establishment of several miners' convalescent homes for workers from the Nottinghamshire and Derbyshire coalfields. Butlins opened the first holiday camp at Ingoldmells in 1936, although this has seen substantial redevelopment since. In the post Second World War period a number of fun fairs and several large caravan parks were established throughout the coastal part of the zone.

Legibility

The marshland character of the zone is clearly visible in numerous wide drains, with associated wetland plants, such as reeds. The medieval landscape can be seen in the survival of well preserved irregular enclosures and, close to settlements, well preserved ridge and furrow earthworks.

Modern fields in the zone often retain significant boundaries, which are indicative of the former field types that have been consolidated. Areas of former planned enclosure are indicated by long, straight boundaries, while former early enclosures are identifiable by sinuous or curvilinear field boundaries. Rectilinear modern fields indicate previous planned drainage and enclosure, while irregular boundaries may be indicative of old enclosures on higher ground. On lower ground near to the coast, irregular drains and streams may be surviving salt marsh watercourses.

In Skegness, the historic settlement core is still identifiable in the sinuous course of Main Street. The planned elements of the nineteenth-century resort at Skegness are also largely unchanged, especially the residential area around St Matthew's Church and on the Victorian promenade.

Character Zone FEN1

The Witham Fens within The Fens Character Area

ARS sub-province: EWASHW

Countryside Agency Countryside Character Areas:

44 – Central Lincolnshire Vale

46 – The Fens

47 – Southern Lincolnshire Edge

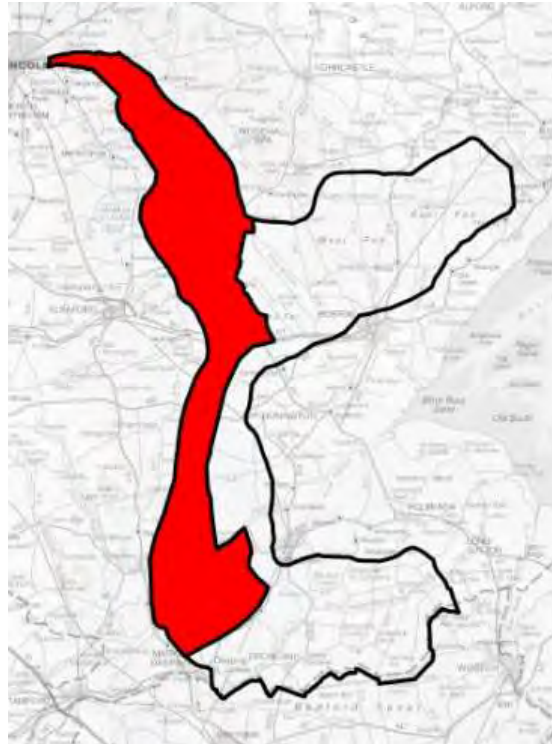
Total area: 390.5 km²

Percentage of Regional Character

Area: 37.1%

Percentage of Overall Project

Area: 5.6%



Description

There are very few nucleated settlements in the character zone, the only examples being a line of six villages on a low ridge of land, from South Kyme in the south to Martin in the north. Other settlements in the character zone comprise a combination of isolated farmsteads and irregular linear settlements along some of the routeways. There is little intervisibility between many of the isolated farmsteads in this character zone, due to the distance between them, which gives each farmstead a feeling of isolation. The character zone as a whole displays a dispersed pattern of settlement.

There is extensive survival of planned enclosure in the north and south of the character zone, perhaps because most of the field boundaries are ditches rather than hedges, forming part of the drainage system, and therefore not easily removed. Another effect of the lack of hedges is the open character of the zone, which is particularly prevalent in the north of the character zone. There are few areas of surviving ancient enclosure, and those which remain are focussed around the nucleated settlements on the low ridge of land from South Kyme to Martin.

The landscape is generally flat with any rises being very slight, only around half a metre above the surrounding land. Most areas of settlement are situated on these slight rises. The zone is also crossed by extensive drainage ditches, varying in width from a metre or so, to the South Forty Foot Drain (more than 20m wide), part of which forms the boundary of this character zone.

Historic Landscape Evolution

There is evidence for the use of substantial parts of the character zone during the Roman period. It seems likely that some fenland reclamation took place during this period. The Car Dyke was dug during this period, in order to provide drainage and control over flood waters and to provide a measure of drainage of reclaimed fen. Some sections of this feature survive in the modern landscape. The Lincolnshire HER contains numerous records of salterns dating from this period many of which are located on the fen side of the Car Dyke. Although very few of these survive as features in the modern landscape, the location of them gives an indication of the land use at this time. It is likely that the fens were used for grazing and for

salt production during this time. There is some evidence for settlement within the fen during this period, although no visible evidence of this survives now. The only visible clue to possible locations is likely to be slightly sinuous roadways extending beyond the Car Dyke. This road layout could also be associated with providing access to saltern sites or grazing.

In the post Roman period, the low level of the natural water table caused the peat fen to shrink, leading to drainage problems: essentially, the ancient drainage channels would have been too high to drain the fen, resulting in flooding. The former river channels, marked by heavier silty clay soils, were left standing above the now shrunken peat soils. They can be seen to this day and are known as 'roddons'.

There was probably very little or no settlement within the character zone during the early medieval period, with any settlement comprising isolated buildings associated with seasonal use of the fen for grazing and salterns. It is likely that Prehistoric causeways in the north of the character zone, or at least their successors, continued to be used during this period. Several of the monastic institutions in neighbouring zones were founded during the medieval period at the ends of these causeways.

In the later medieval period it is likely that some fen reclamation took place, although this was probably fairly limited in extent and located mainly around the fen edge. The zone was subject to planned enclosure and drainage in the eighteenth and nineteenth centuries and much of this survives now, along with its associated isolated farmsteads.

The post Second World War period saw the consolidation and enlargement of some of the fields within the character zone by the removal of hedged field boundaries, although this was fairly limited in extent because most field boundaries were also drainage ditches.

Legibility

The legibility of the early landscape, although not that conspicuous, is evident in the modern roadways which cross the character zone, particularly in the north. It seems to be the case that those modern roadways which cross the Witham Valley follow the line of medieval or perhaps even earlier causeways. The legibility of the Roman landscape is limited to the line of the Car Dyke and possibly to some of the roadways which cross the Car Dyke, which were established primarily to provide access for grazing and to saltern sites. Some of these roadways may have also provided access to settlements on the fen, although there is now no visible evidence of these in the modern landscape. The slight rises on which many of the modern isolated farmsteads in the former fen are situated on areas of higher ground or roddons corresponding to former river courses.

Legibility of the medieval landscape is evident in the survival of the nucleated settlement pattern in the Billingham area. Elements of the ridge and furrow open field system of agriculture are visible in the survival of some field boundaries in this area. The historic settlement cores still retain much of their historic character with most modern development being small scale. Across the rest of the character zone there is very little or no legibility of the medieval landscape, due to the drainage of the fens in the eighteenth and nineteenth centuries.

Legibility of the post medieval landscape is evident in the survival of planned enclosure and isolated farmsteads across the character zone.

Character Zone FEN2

The Eastern Fens within The Fens Character Area

ARS sub-province: EWASHW

Countryside Agency Countryside Character Areas:

44 – Central Lincolnshire Vale

46 – The Fens

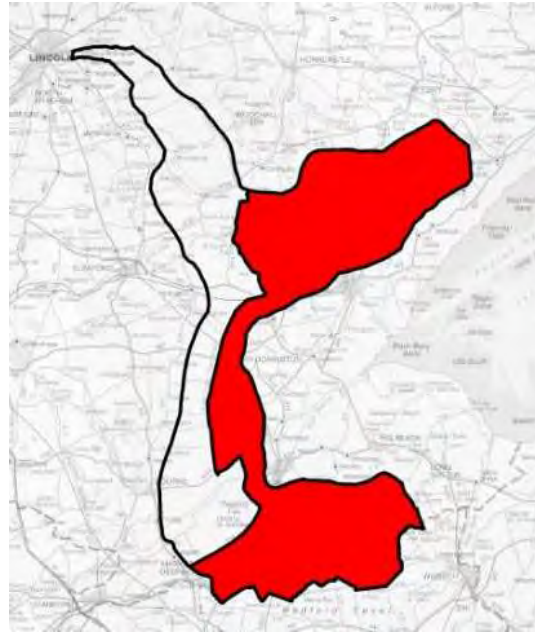
Total area: 661.8 km²

Percentage of Regional Character

Area: 62.9%

Percentage of Overall Project

Area: 9.5%



Description

There are some nucleated settlements scattered throughout the character zone, located on ridges of slightly higher ground. There are also some linear settlements, which are formed by the infilling of several dispersed settlement types within the character zone. All other settlements in the character zone comprise a combination of isolated farmsteads and ragged linear settlements along the main roads. It is generally possible to see several farmsteads or other houses in every direction from any position within the character zone. Although the overall settlement pattern is dispersed, the density of settlement is quite high by comparison to other areas of fen or marsh in the county as a whole.

Much of the planned enclosure landscape survives to this day, although this survival is probably due to the necessity of retaining field boundary drains to ensure the continued viability of the agricultural land. Certainly throughout the character zone there is a strong feeling of openness, with few hedges demarcating fields. Those areas of modern consolidated fields generally have more surviving elements of hedgerows within their field boundaries than those areas of surviving planned enclosure. There are some areas of surviving ancient enclosure which are focussed around the nucleated settlements in the north and south of the character zone and around the linear settlements in the centre of the character zone.

Historic Landscape Evolution

There is little evidence for occupation in this character zone during the Prehistoric, but extensive evidence that the land within it was utilised at this time. There have been many artefact finds made throughout the zone from the Prehistoric period. There is evidence of settlement on the ridge of higher ground around Stickney and Sibsey, and in the Pinchbeck area.

Generally, there was probably very little or no settlement within the character zone during the early medieval period, with possible exceptions of settlement in the Stickney/Sibsey area and around Crowland. Outside of the areas of possible settlement, any settlement was probably isolated and associated with seasonal use of the fen for grazing or salt production. It is not clear whether any of the Roman settlements continued into the early medieval period, although given the gradual inundation of the fens towards the end of the Roman period this seems unlikely. Crowland Abbey was established in the eighth century. In the

later medieval period some fen reclamation took place, although this was probably fairly limited in extent and mainly around the fen edge.

Reclamation of the fenland landscape began in earnest during the eighteenth and nineteenth centuries. During this time many new drainage channels were cut and pumping stations constructed to overcome the challenge of draining land that was below sea-level. These engines were initially wind-powered, but steam engines became common throughout the zone. Indeed, it is likely that the clean air and skies for which the zone is so valued today are largely a modern phenomenon. The reclaimed land was divided into a pattern of rectilinear fields, separated from one another by drains rather than hedges.

This pattern is still much in evidence today, as the consolidation of fields that occurred elsewhere in the county could not be undertaken here due to the necessity of retaining the boundary ditches for drainage purposes.

Legibility

The legibility of the Prehistoric and Roman landscape is relatively minimal, due in part to the inundations which have covered the landscape from this period.

Legibility of the medieval landscape is evident in the survival of the nucleated settlement pattern in the Stickney and Crowland areas. Elements of the ridge and furrow open field system of agriculture are visible in the survival of some field boundaries. The historic settlement cores still retain much of their historic character with most modern development being small scale. Across the rest of the character zone there is very little or no legibility of the medieval landscape, due in the main to the drainage of the fens in the eighteenth and nineteenth centuries.

The planned enclosure landscapes of the eighteenth and nineteenth centuries are the most readily identifiable historic landscapes in the character zone, due to their extensive survival.

Character Zone WSH1

Reclaimed Coastal Fringe within The Wash Character Area

ARS sub-province: EWASHW

**Countryside Agency Countryside
Character Areas:**
46 The Fens

Total area: 88.22 km²

**Percentage of Regional Character
Area:** 13.36%

**Percentage of Overall Project
Area:** 1.26%



Description

Land in the zone is predominantly agricultural, with fields intensively cultivated and the sea-banks and outlying saltmarsh grazed. Tourism is generally nucleated and is mainly nature based. Traditional bait digging, wildfowling and samphire picking continue throughout the coastal fringe of the zone. Two bombing ranges at RAF Wainfleet and RAF Holbeach occupy large swaths of the saltmarsh.

The zone is characterised by a network of active and relict earthen sea-banks aligned parallel and perpendicular to the coastline. The landscape is agricultural in appearance, being composed of rectilinear fields bounded by narrow and shallow wet dykes, reflecting an organised and recent pattern of land division associated with modern coastal land drainage.

Settlement density is very low, with buildings almost entirely limited to a handful of individual nineteenth- and twentieth-century farmsteads and isolated barns predominantly located within more inland parts of the character zone. Much of the land immediately adjacent to the coast is entirely unpopulated.

Infrastructure in the area is confined to small, straight minor roads and trackways which follow the field/drainage morphology.

The zone is dissected by a number of navigable canalised river outlets: the Nene, Witham, and Welland. Water features are few and comprise a small number of agricultural reservoirs and drains.

Woodland and natural vegetation is extremely sparse and where evident are limited to small scale rectilinear twentieth-century plantations and isolated patches of scrub. Wet dykes and small areas of wetland are often the foci of wetland species.

Historic Landscape Evolution

The entire zone was reclaimed from predominantly semi-natural saltmarsh which had accreted on the coastal side of sea banks constructed between the thirteenth and the

seventeenth centuries. Prior to reclamation the expansive coastal marshes would have been used as common grazing lands and for wildfowling.

Reclamation occurred in stages, with successive tracts of saltmarsh embanked and drained as marine silts accreted outside the most recent sea-banks. The size of intake varied according to the available land and the available finance. The largest single reclamation in the zone (4.695 acres) was achieved by the construction of the South Holland Embankment (1793-1811), although successive reclamations in Wainfleet and Friskney in 1809, 1948, and 1976 reclaimed considerable tracts of saltmarsh. Land reclamation from the mid nineteenth century became comparatively more piecemeal in fashion, enclosing smaller parcels of land as individual areas of saltmarsh became available.

When embanked, land was drained and enclosed using the existing creek system and series of rectilinear field drains, however the intakes were usually not suitable to be ploughed until up to a decade later.

Once firm enough to be ploughed the land was fully enclosed in an organised fashion, often infilling natural drainage channels in favour of a rectilinear pattern of land division and drainage. Some relict natural drainage channels remain.

Subsequent re-organisation of field boundaries has occurred in this zone, including boundary loss and sub-division of fields. Enclosures are frequently large in scale, deriving from the amalgamation of fields mainly from the 1950s onwards.

In places field patterns appear to correspond across one or more sea-banks providing tangible confirmation that, in certain parishes, coastal land ownership was extended directly into the saltmarsh and any reclaimed area of it.

A moratorium on further coastal drainage was enacted in 1985.

Legibility

Despite its comparatively recent and straightforward evolution, a fundamental element of the zone's character is its clarity of time-depth. This is most starkly illustrated at Freiston Shore managed re-alignment site where the sea-bank has been purposely breached to allow once agricultural land to revert to saltmarsh. The Second World War infrastructure inland of the breached defences clarifies the evolution of the landscape, albeit succinct.

Character Zone WSH2

The Tofts within The Wash Character Area

ARS sub-province: EWASHW

**Countryside Agency Countryside
Character Areas:**
46 The Fens

Total area: 19.37 km²

**Percentage of Regional Character
area:** 2.93%

**Percentage of Overall Project
Area:** 0.28%



Description

The landscape of the zone is intensively cultivated for arable and horticultural produce, with few areas reserved for grazing purposes. Light industry associated with the agricultural sector has emerged in recent years, mainly expanding on existing farm sites. The A52 is a heavily used road, specifically for summer traffic between Boston and Skegness and for the transport of agricultural produce.

The landscape of the zone is dominated by agriculture. Field systems within the zone comprise a parallel arrangement of thin rectilinear fields running perpendicular to the relict sea-bank (dating to about 1300) and a later seventeenth-century sea-bank which forms the south-easterly limit of the zone. Fields are defined by narrow and shallow wet dykes.

Central to the character of the area is a band of undulating relief with patchy areas of higher ground running parallel to, and either side of, the A52 and known as 'The Tofts'. The change in relief, produced as a result of salt manufacture, provides a stark contrast to the surrounding landscape.

Settlement density is dispersed and linear, predominantly adhering to the main road (A52) and the Eau Dyke Road in Friskney. Buildings are mainly medium to large farm complexes, interspersed with detached and often isolated domestic properties.

Infrastructure in the area comprises several small straight minor roads and trackways running perpendicular to the sea-banks. The minor road infrastructure is linked via two routes, the A52 and Low Road although there is also a trackway which runs along the later seventeenth-century sea-bank. There is a notable dearth of other south-west to north-east aligned roads in the zone and hence many of the straight minor roads and trackways running towards the coast are not interconnected.

Woodland and vegetation cover is extremely sparse comprising small areas of rough grassland and non-coniferous trees. The overwhelming majority of this vegetation cover is located along the A52 and may derive from small scale domestic and roadside planting.

Historic Landscape Evolution

This is very much a landscape that owes its existence to human activity. The zone was reclaimed from natural and semi-natural saltmarsh during the thirteenth and seventeenth centuries. The coastal extent of the initial intake of land is marked by the continuous earthen sea bank constructed about 1300 along the former coastline of East Lindsey, Boston, and South Holland. The later stage of reclamation occurred in about 1641, engineered by Sir Cornelius Vermuyden, embanking land from the River Steeping up to and including the former Wrangle Haven which had warped up by the early sixteenth century. Prior to its disconnection with the estuary, Wrangle Haven had its own fishing fleet and was an important exporter of salt.

From at least late Anglo-Saxon times, the 'tofts' (meaning areas of higher ground) were important centres of salt production, the vestiges of which can be seen as saltern mounds. The production of salt required direct access to tidal creeks, and resulted in the deposition of large mounds of silt and debitage. As tidal creeks silted up salt working sites would move towards the coast to access the brine. As a result, the toft lands represent a succession of medieval salt working sites. The higher land produced as a consequence formed integral components of early coastal sea defences.

The parallel rectilinear pattern of fields in the zone appear to derive from a system of medieval strip fields originating on the earlier reclaimed land and marginally higher silt ridge to the north-west. The field morphology is replicated in a more organised fashion across the later reclaimed land suggesting that coastal land owners had proportionate claim to the outlying saltmarsh beyond their plots.

Fields in the zone appear to have undergone sub-division, probably during the eighteenth and nineteenth centuries. Later twentieth-century boundary loss is widespread and has led to the amalgamation of fields and larger-sized enclosures, with the result that there has been a loss of continuity of field patterns across sea-banks in places.

Legibility

The two stages of coastal reclamation and the associated sea-banks provide tangible evidence for the landscape's genesis. The grain of the landscape with field boundaries and tracks running from the north-west to the south-east, at right angles to the old sea-banks, is still highly visible today and has been a consistent part of this landscape since its formation.

Character Zone WSH3

Cross Keys Wash within The Wash Character Area

ARS sub-province: EWASHW

**Countryside Agency Countryside
Character Area:**
46 The Fens

Total area: 18.67 km²

**Percentage of Regional Character
Area:** 2.83%

**Percentage of Overall Project
Area:** 0.27%



Description

The overwhelming majority of land is intensively cultivated, with a sparse distribution of farmsteads, and a growing number of private dwellings. Land use in the centre of the zone is industrial, with smaller individual industrial sites in the south of the zone, including a sewage works, an electricity transformer station and large farm-based storage and distribution complexes.

The zone's landscape is primarily agricultural in character. A late enclosure landscape of large rectilinear fields interspersed with frequently truncated curvilinear and sinuous field boundaries prevails throughout the zone. Field boundaries are defined by thin and shallow wet dykes.

The zone is intersected by active and relict earthen flood defence banks, associated with the piecemeal intake of coastal land in the nineteenth and twentieth centuries, and the canalised River Nene which forms the western boundary of the zone.

Settlement density in the zone is low, comprising dispersed linear post medieval and modern hamlets and villages concentrated along a network of straight minor roads and tracks which run alongside field boundaries.

The centre of the zone is more industrial in character being dominated by the Sutton Bridge gas-fired power station, the A17 and other industrial works.

Woodland is extremely sparse and, where evident, is limited to small scale twentieth-century rectilinear plantations, notably in the north-east of the zone.

Historic Landscape Evolution

Prior to its reclamation, the zone was the estuarine outfall of the River Nene, and was an expanse of saltmarsh and braided river channels. The estuary was passable at low tide, and was frequently negotiated by travellers and drove herds passing between Norfolk and Lincolnshire. Passage was often under escort, as the area was renowned for its changeable

character. Accessible saltmarsh and higher pasture in the area would have been grazed in common up until its reclamation in the mid eighteenth and nineteenth centuries.

Initial reclamation up to Gunthorpe Sluice successfully embanked land north of Wisbech and west of the 'Roman Bank' (dated about 1300) in Norfolk up to the Lincolnshire boundary. This boundary forms most of the eastern boundary of the zone. This stage of reclamation necessitated the canalisation of the Nene from Wisbech to a new outfall at Gunthorpe Sluice in 1770-72. Through a succession of increasingly smaller intakes of land, the remainder of the zone was reclaimed between 1830 and 1910. The reclamations entailed a further canalisation of the River Nene from Gunthorpe Sluice to its current outfall at Skate's Corner in 1828-31. The new canalised river channel took the Nene through land previously reclaimed in 1720 by Guy's Hospital.

Reclaimed land appears to have been drained using natural saltmarsh creeks with subsequent enclosure with rectilinear field drains. The existence of curvilinear field boundaries, many of which are truncated, suggests that the method of enclosure incorporated part of the natural drainage infrastructure which is retained in the modern landscape.

Road infrastructure in the zone appears to be contemporary with the drainage and organised enclosure of the land. Minor roads and trackways are straight in form and run parallel or perpendicular to the sea banks associated with each stage of reclamation. Bridging of the new Nene Outfall Cut in 1830 provoked the development of Sutton Bridge and the construction of the Cross Keys Bank in 1831 upon which the main road to King's Lynn was sited.

The dispersed and linear pattern of settlement indicates a small expansion of a late parliamentary enclosure style landscape. Initial settlement in the form of isolated farmsteads, would have occurred shortly after enclosure. Subsequent dispersed infill with semi-detached and detached dwellings alongside the established road network occurred mainly during the post-war period.

Little sub-division of land appears to have been undertaken since reclamation. The amalgamation of fields throughout the zone, mainly from 1950, has resulted in a landscape of medium to large enclosures frequently containing truncated field boundaries.

Legibility

Traces of the landscape's recent evolution are visible throughout the zone, but are most apparent around Sutton Bridge where communication, trade, military and flood defence infrastructure, each representative of different stages of landscape evolution, all occur within a local area.

The administrative landscape also demonstrates an element of time/depth, as the canalised Nene (c.1828-31) cuts through land reclaimed by Guy's Hospital in 1720. The eastern extent of the reclamation, and not the canalised Nene, marks the modern-day Lincolnshire County boundary and the former bank of the Nene estuary.

Character Zone WSH4

Reclaimed Wash Farmlands within The Wash Character Area

ARS sub-province: EWASHW

**Countryside Agency Countryside
Character Area:**
46 The Fens

Total area: 138 km²

**Percentage of Regional Character
Area:** 20.9%

**Percentage of Overall Project
Area:** 1.98%



Description

Land use throughout the entire zone is primarily agricultural, and there are a number of large scale farmsteads of industrial size in the zone. A small number of orchards exist in the south-west of the zone.

Industrial sites are few, comprising light industry along the A17 corridor as well as storage, processing and distribution sites associated with expanded farmsteads.

The agricultural landscape of the zone comprises a semi-regular pattern of field enclosures, with occasional areas of coherent rectilinear field divisions in the east of the zone and around Moulton Common. Field boundaries predominantly comprise narrow and shallow wet dykes, although embanked natural watercourses form continuous linear boundaries across the zone. A small number of fields around Holbeach St Matthew and Dawesmere are bounded by hedgerows.

Relict sea-banks around the periphery of the zone are associated with successive stages of coastal land reclamation. Sea-banks run roughly parallel to the coastline, with few perpendicular banks dividing inland areas.

The west edge of the zone is formed by the canalised river channel of the Welland, while the east edge of the zone is the large straight drainage channel of the North Level Main Drain and the canalised River Nene.

Settlement in the area is mainly dispersed and, where grouped, is linear. It mostly adheres to the road infrastructure, with the exception of some large, often industrial sized and isolated, farm complexes which are located along dedicated trackways. The southern limits of the zone have a higher population density, with settlement following the course of the 'Roman Bank' (a sea-bank dating to about 1300) and forming more nucleated settlements, such as Holbeach Hurn or Moulton Seas End, that are satellite villages to inland market towns. The northern limits of the zone similarly feature a string of smaller post medieval satellite hamlets such as Gedney Drove End and Holbeach St Marks. The far east of the zone is dominated by the port of Sutton Bridge.

Western parts of the zones are characterised by a network of curvilinear minor roads and tracks running perpendicular to the coast, connecting satellite settlements with their larger parent market towns in the Townlands Zone (WSH6) to the south. Towards the coast, the road system is aligned more east to west and connects the outlying settlements. Road infrastructure in the east of the zone is more organised in nature, with a rectilinear layout of minor roads and trackways.

Woodland in the zone is sparsely distributed throughout, and mainly consists of thin rectilinear plantations and holts located along field boundaries or adjacent to buildings. The south-west of the zone has a limited number of orchards. Numerous small agricultural reservoirs are scattered within the zone.

Historic Landscape Evolution

The entire zone was reclaimed from semi-natural and natural saltmarsh between 1660 and 1811. Prior to embankment and drainage, the saltmarsh was an extensive common grazing area serving livestock from the market towns inland.

Interest from the Crown under James I led to the reclamation of coastal land from the mid seventeenth century. Inhabitants of local villages had the opportunity to purchase their common marsh providing they embanked and drained the land. Tenancies on the remaining land was offered to private individuals who had to embank and drain the shares of Common, Crown and private land as part of their tenure agreement.

Land reclamation occurred from the mid seventeenth century with 17,374 acres of saltmarsh embanked between Moulton and Gedney. The size of the intake suggests that the extent of saltmarsh during this period was substantial. Semi-regular field patterns in the zone, and retained small scale natural watercourses indicate that drainage and enclosure utilised the existing natural drainage infrastructure (Lutton Leam, Fleet, Moulton and Whaplode River systems and the saltmarsh creeks). Areas of more organised enclosure patterns around Moulton and Long Sutton correlate with common land purchased by the villages prior to reclamation, and represents possibly later parliamentary style enclosure of common lands during the eighteenth and nineteenth centuries.

Reclamation and drainage of land provoked the development of post medieval satellite villages and hamlets on the seaward side of the 'Roman Bank', and inland of the new sea-bank. A new network of roads, accessing and interlinking the satellite villages, formed subsequent to the reclamations. Isolated farmsteads, associated with Crown and private estates, will have been constructed soon after enclosure. Further coastal reclamation between 1793 and 1811 was carried out under the South Holland Embankment Act, increasing the total area reclaimed by 4,695 acres.

Large drainage infrastructure in the south-east of the zone includes the canalised River Nene (1770-72 Wisbech to Gunthorpe Sluice and 1827-30 Gunthorpe Sluice to current outfall), the North Level Main Drain (about 1828), and the South Holland Main Drain (about 1793). The channels cut across former seventeenth- and eighteenth-century coastal reclamation landscapes in the zone, and derive from the drainage of vast tracts of former freshwater fenland in southern Lincolnshire, Cambridgeshire and Bedfordshire.

Canalisation of the River Nene and subsequent land reclamation in the Cross Keys Wash Zone (WSH4) led to the development of the port of Sutton Bridge in the late nineteenth century. Although the original Victorian port was short lived, the modern day port was opened in 1987 and continues to operate today.

Elsewhere in the zone, the pattern of settlement indicates twentieth-century expansion of the more southerly satellite villages, with infill and suburban development along linear features such as sea-banks and minor roads. The northerly satellite villages underwent comparatively less expansion, and in some cases their populations have diminished as industrialised farming techniques reduced the demand for labour.

The modern landscape is a result of widespread amalgamation of enclosures into larger field units mainly from the 1950s, and the growth of eighteenth- and nineteenth-century farmsteads into agricultural complexes of industrial size.

Legibility

The zone clearly demonstrates the successive reclamation of coastal marsh from the thirteenth century onwards, and shows in particular the different approaches to land drainage and enclosure. Subsequent colonisation of the area is visible in the pattern of settlement and infrastructure, and in the place-name evidence of satellite hamlets and villages.

Eighteenth- and nineteenth-century freshwater drainage channels in the zone provide clear evidence for the episodic evolution of the landscape in this zone and the drained fen landscapes lying inland.

Character Zone WSH5

**Bicker Haven
within The Wash Character Area**

ARS sub-province: EWASHW

**Countryside Agency Countryside
Character Area:**
46 The Fens

Total area: 13.97 km²

**Percentage of Regional Character
Area:** 2.12%

**Percentage of Overall Project
Area:** 0.2%



Description

By far the greater part of the agricultural land in this area is under arable cultivation. While there are some small areas of pastoral land, these are invariably found in close proximity to isolated farmsteads. Settlement in the area is predominantly made up of working farm complexes, with only a few examples of individual private houses. The character of settlement in this area is entirely dispersed, with no nucleation. There are no civic buildings or amenities in the character zone.

The landscape of the southern part of the zone is a juxtaposition of irregular geometric field boundaries and small sinuous relict natural drainage channels aligned in a north-west to south-east direction. The pattern reflects the retention of the larger natural waterways when the land was drained and enclosed in the late seventeenth century. Field boundaries are discontinuous and in the form of shallow wet dykes which connect to form a drainage network discharging into canalised embanked watercourses. The south of this area is characterised by a landscape of later parliamentary enclosure with strict rectilinear field morphology.

The upper reaches of the former haven is characterised by more irregular fields and localised areas of gently undulating relief. The change in topography is a result of waste produced during extended periods of medieval salt manufacture.

The borders of the zone are delineated by the course of the 'Roman Bank' (a sea-bank dating to about 1300) which remains extant in part. The south-east limit of the zone is defined by the canalised and embanked River Welland.

The zone is sparsely settled, comprising a small number of twentieth-century dwellings along minor roads, with earlier eighteenth- and nineteenth-century isolated brick farm buildings and large houses located mainly along the fringes of the zone. A large proportion of farmsteads have glasshouses. Road infrastructure in the zone is likely to be contemporary with the zone's enclosure, and is almost entirely composed of straight minor roads and trackways aligned south-west to north-east across the former haven. A small number of often 'dead

end' trackways associated with individual farmsteads are oriented along the main axis of the zone.

Woodland in the zone is extremely sparse, and consists of small scale twentieth-century plantations around domestic or farm buildings. A number of small water features including ponds and reservoirs are found in the north-west of the zone.

Historic Landscape Evolution

During the medieval period, the haven was a tidal estuary providing navigable access to the village of Bicker. Its access to the main Wash estuary prompted the development of satellite hamlets of Donington Eaudike and Quadring Eaudike. During the late thirteenth century the perimeter of the haven was defined by the 'Roman Bank' protecting inland areas from rising floodwaters.

Access to saltwater at the head of the haven encouraged the manufacturing of salt during the medieval period, resulting in the creation of large debris mounds known as salterns. Higher ground associated with the waste deposits provided a natural barrier to rising flood waters and caused areas of the upper Haven to dry out.

Falling sea levels in the sixteenth and seventeenth centuries caused the haven to warp up, leaving navigable creek ports inaccessible from the sea. During the mid seventeenth century the land was drained and enclosed. The field pattern suggests that land was enclosed in an organised and rectilinear fashion, similar to parliamentary enclosure, however, parts of the existing natural drainage was retained and interlinked with the new network of straight field drains. As part of the enclosure a new cut was made to carry the Risegate Eau from Lampson's Clough to its modern outlet on the River Welland.

The lower southern part of the Zone was reclaimed in about 1838 alongside works to create a new cut for the River Welland under an Act of Parliament. The later enclosure of this area is manifested in the more organised and parliamentary style field morphology typical of eighteenth- and nineteenth-century landscapes.

Drained land would have become sparsely populated soon after enclosure, with dedicated trackways and minor roads serving the farms scattered through the zone.

The removal of field boundaries in the zone was most intense during the mid to late twentieth century, with the majority of modern enclosures deriving from three or more amalgamated fields.

Legibility

The rectilinear field systems dating to the eighteenth and nineteenth centuries in the southern part of this zone are still recognisable despite twentieth-century boundary loss.

Similarly the curvilinear field boundaries and trackways in the northern parts of the zone originally respected the higher mounds and hills of the Bicker salterns. These surviving sinuous boundaries fossilize parts of a much earlier landscape that possibly dates back to the early medieval period.

The original line of Bicker Creek survives as a parish and district administrative boundary down the length of the character zone. This has helped it to survive as a physical boundary, in the form of wet dykes and water courses as part of the drainage system, in places along its length.

Character Zone WSH6

Townlands within The Wash Character Area

ARS sub-provinces:

EWASHW

CLNSC

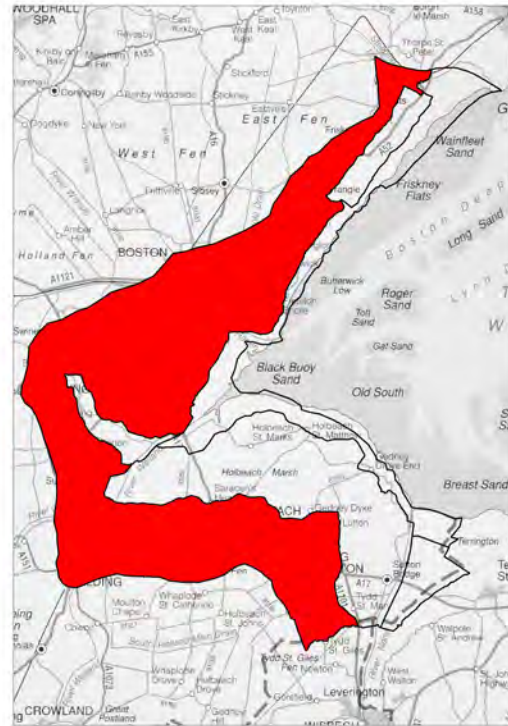
Countryside Agency Countryside Character Areas:

46 The Fens

Total area: 379.7 km²

**Percentage of Regional Character
Area:** 57.5%

**Percentage of Overall Project
Area:** 5.44%



Description

The greater part of this area is made up of arable fields, which are used to cultivate a variety of food and cash crops. There are some areas of pasture most of which is found in close proximity to historic settlements. Grazing animals are often allowed onto fields that have been harvested, where they devour the stubble and stalks.

Although predominantly agricultural, this character zone encompasses most of the nucleated settlements in the wider Wash region. The two largest settlements, Boston and Spalding, have markedly different roles within the local area. Boston, a medieval port, retains a strong maritime character, with working docks and associated infrastructure. Spalding, although possessing a roughly equivalent proportion of industrial types, is very much the hub of the food production industry in the region, with an assortment of processing plants, canneries and distribution centres. The smaller settlements in the area are primarily residential, although there are several examples of smaller industrial areas on the outskirts of these towns.

The zone is largely agricultural in character. Field morphology consists of a combination of irregular enclosures of early medieval origin, subdivided by straight field boundaries along the seaward edge of the zone. Most of the zone's seaward edges are defined by the 'Roman Bank', a medieval sea defence constructed in about 1300.

Field patterns in more inland parts of the zone comprise series of thin parallel strips within large irregular fields. Many of which have been amalgamated through extensive boundary removal in the mid to late twentieth century.

The pattern of settlement in the zone is distinct, with a string of nucleated medieval market towns and villages running roughly parallel to the coastline. Several small hamlets bridge, or lie adjacent, to the 'Roman Bank', some of which are satellite communities of the larger market towns. Settlements are of late Anglo-Saxon origin, with later medieval and subsequently twentieth-century expansion.

The main market towns and villages retain minor roads through their centres, however, peripheral road infrastructure has been upgraded to single carriageway 'A' roads which bypass the settlements. Remaining road infrastructure consists of an organic network of minor roads and trackways. Roads towards the inland parts of the zone are arranged more perpendicular to the coastline, and tend to form less of a network than those nearer the medieval sea-bank.

The zone is divided by large straight embanked river channels, mainly canalised during the nineteenth and twentieth centuries. Minor rivers and sewers are more sinuous in character, but nonetheless have been straightened and embanked from the at least the sixteenth century.

Large scale drainage infrastructure includes the early nineteenth-century Cowbridge and Hobhole Drains, north and east of Boston, and the modern relief channel of the river Welland. Standing water features in the zone are infrequent, and where apparent they are small ponds and embanked agricultural reservoirs. The latter are often associated with large glass houses. A number of small fishing lakes in the north-east of the zone have developed during the late twentieth century. Some small water features are associated with former brickwork sites, or moated houses.

Tree cover in the zone is sparse, comprising deciduous and non-deciduous, small scale, nineteenth- and twentieth-century plantations located in field edges and corners, around settlements and as shelter belts around farmsteads.

Historic Landscape Evolution

During the Prehistoric and Roman periods the zone was coastal in character, consisting of an areas of intertidal saltmarsh with localised areas of marginally higher ground. Early occupation would have been based around the manufacture of salt and hunting of wildfowl.

Falling sea levels from the mid Anglo-Saxon period allowed settlement on drier areas in the form of isolated ranches and salt manufacturing sites. By the late Anglo-Saxon period a landscape of small villages within an irregular field pattern was established on a long curve of higher silt land running from King's Lynn to Wainfleet. The linear pattern widened at Kirton, where a broader band of marginally higher silt land enabled the settlement pattern to be more dispersed. By 1086, the modern day settlement pattern of market towns had been established.

During the early medieval period, fields comprised a mixture of arable and meadow land. Common meadows, known as 'ings,' and open fields for grazing and arable were in use during the medieval period. Fields were irregular in nature, with many subdivided into selions, or strips, divided by thin dykes, allotted to individual land owners or tenants. The pattern of fields created by this method of allotment appears fossilised in the modern landscape and is more prevalent in, although not entirely restricted to, the inland areas of the zone bordering the freshwater fen.

Population expansion during the twelfth and thirteenth centuries occurred at the same time as reclamation of saltmarsh and freshwater fen on both sides of the established settlement zone. Land was protected from inundation by raising flood banks both in the fen and on the saltmarsh. Banks such as the Hurdletree Bank and 'Roman Bank' (that dates to about 1300). Drove ways and trackways, which would later influence the modern day pattern of infrastructure, would have developed alongside this reclamation.

In the Middle Ages villages became more urbanised, developing into towns, many of which had both a market and fair licensed by the Crown. Burgage tenements were also laid out in port centres such as Boston and Wainfleet. Satellite villages developed along the flood

banks, allowing increased access to marsh and fen grazing lands and meadows. Flocks and herds from as far away as Ireland and Scotland came to graze on fen pastures, before moving onto London to be sold. Several of the settlements were small port towns, with access to The Wash via navigable creeks. During the late medieval period, many of the creeks serving the small ports warped up resulting in their abandonment or relocation further downstream.

Drainage was a continual preoccupation of all communities within this zone, as the onus on digging, embanking, and maintaining drains and watercourses rested on local inhabitants and landowners. During the Middle Ages the enclosure of marginal meadow and grazing land, which allowed marsh and silt fen to be ploughed, resulted in the laying out of thousands of miles of field drainage. Medieval works also included the embankment and canalisation of small watercourses, the creation of navigable drains and the diversion of river and sewer outfalls into major river estuaries such as the Welland and the Nene. Later post medieval and modern works consisted more massive engineering works, tackling the difficult tidal outfalls of major rivers and cutting large man-made drains from the peat fens through to the canalised river outfalls.

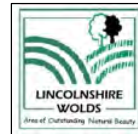
Throughout the post medieval period fields were amalgamated and re-enclosed through piecemeal agreements between individual landowners and tenants. The resulting subdivision and re-organisation of the land divided the organic pattern of fields and curvilinear arrangement of parallel strips with straight and geometric boundaries.

During the second half of the twentieth century, the zone has experienced considerable field boundary loss, resulting in an increased enclosure size that has dissipated the earlier field morphologies. Market towns within the zone have undergone large scale peri-urban residential and commercial expansion, coupled with the creation of new road infrastructures.

Legibility

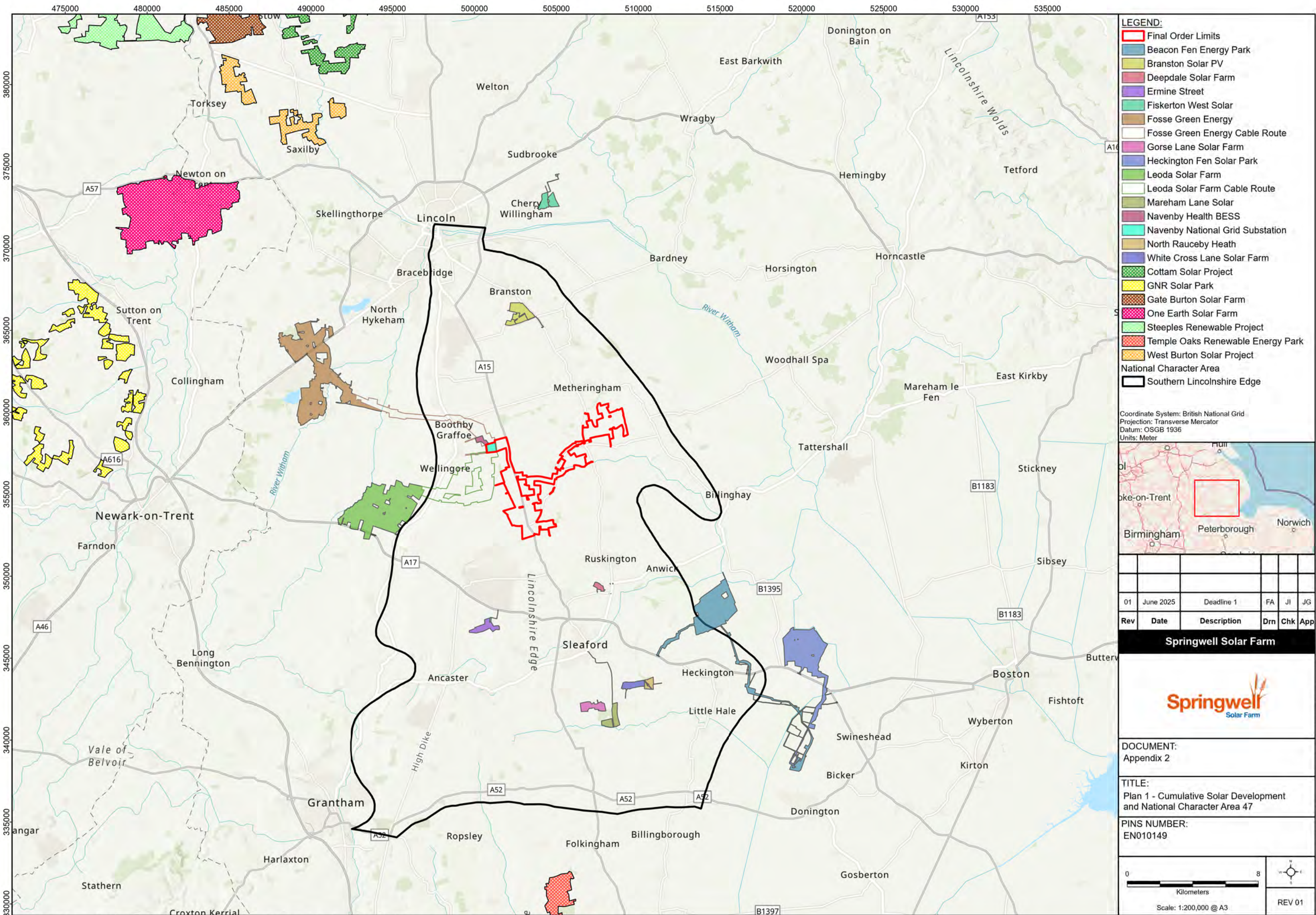
The area is the oldest character zone within the reclaimed marsh and fen landscapes and, as such, displays the greatest range of time depth. Economic trends, climatic changes and ever more ambitious drainage engineering works since the late Anglo-Saxon period are visible within the fabric of the historic landscape.

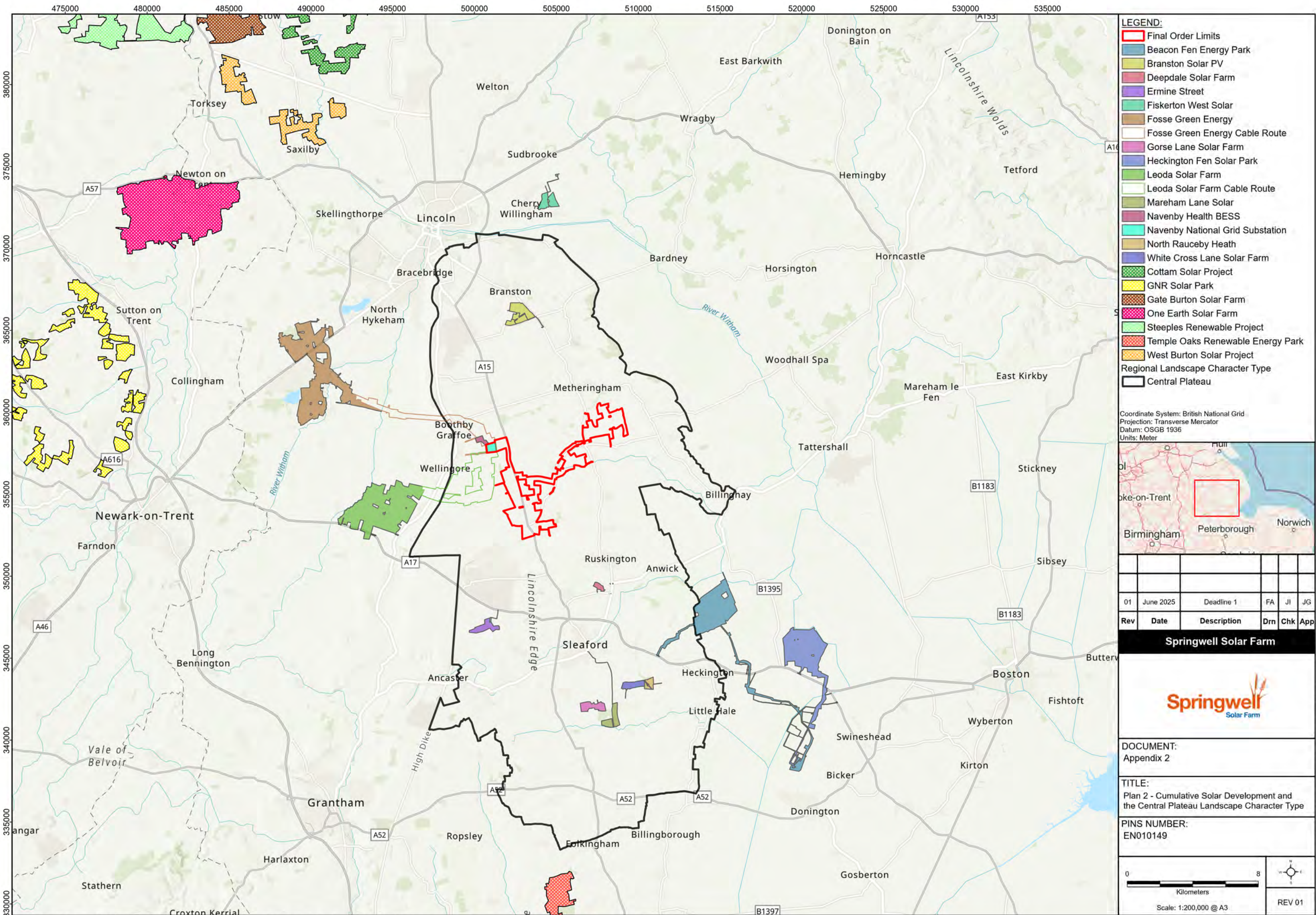
The zone is distinct from other zones around The Wash due to the higher density of settlement, and more irregular field boundary morphology. The 'island-like' colonisation of the zone and its subsequent prosperity through the exploitation of surrounding marsh and fen is clearly manifested in the landscape, giving the area a national distinct historic character.

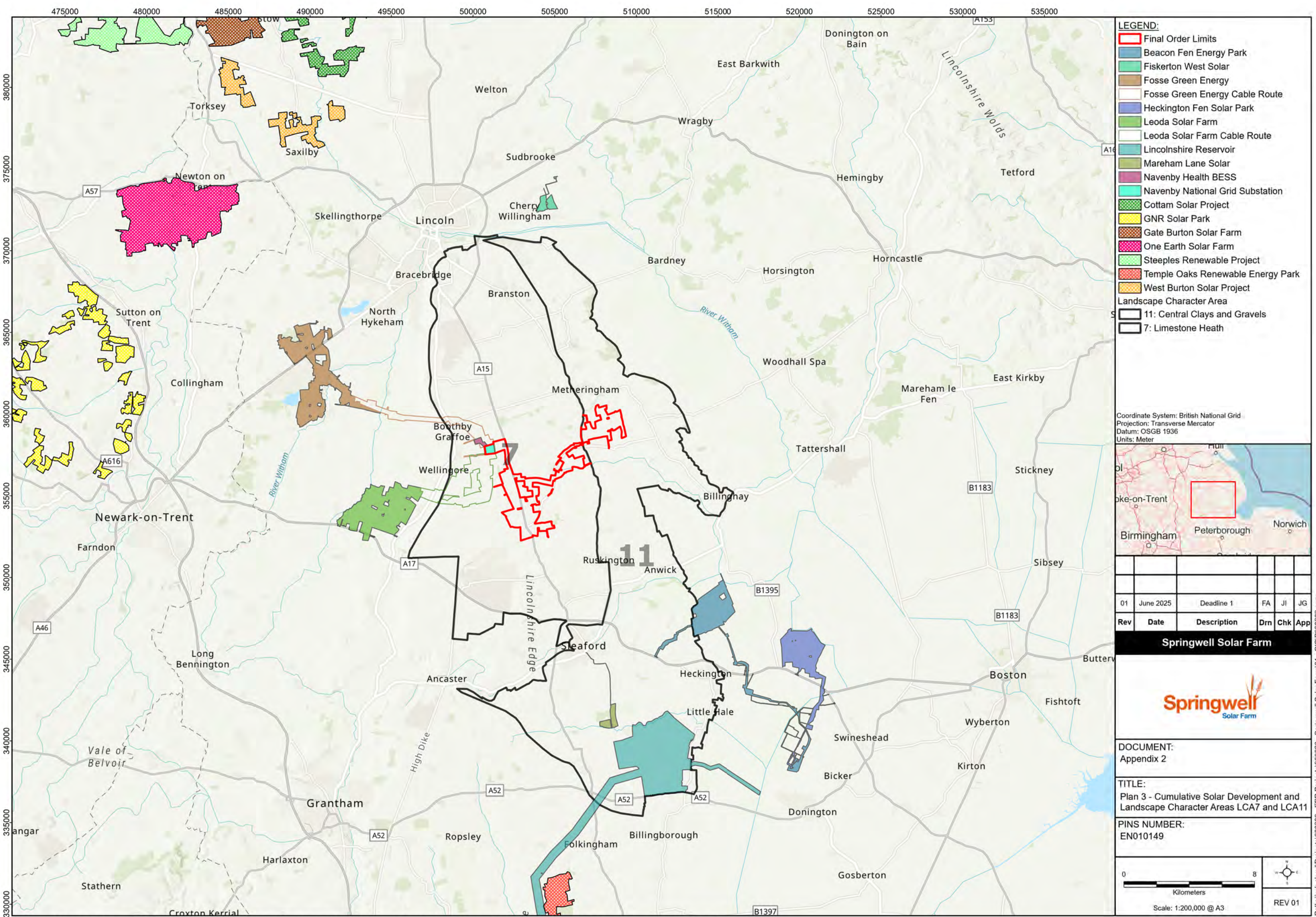


Appendix 3 - Supporting figures for Q1.10.3











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