

Eastern Green Link 3 and Eastern Green Link 4

Environmental Impact Assessment
Scoping Report

Volume 1 Main Text

Part 2 English Onshore Scheme

July 2024

nationalgrid

Part 2.3

10. Geology and Hydrogeology

10. Geology and Hydrogeology

10.1 Introduction

10.1.1 The geology and hydrogeology assessment will consider the potentially significant effects on geological and groundwater receptors which may arise from the construction and operation of the English Onshore Scheme.

10.1.2 This chapter of the Scoping Report sets out the relevant legislation, planning policy context and technical guidance used to inform the scope of the assessment and summarises any consultation and engagement in relation to Geology and Hydrogeology undertaken to date. It provides an overview of the baseline conditions relevant to geology and hydrogeology within and adjacent to the Scoping Boundary, the measures which will be incorporated into the English Onshore Scheme to mitigate Geology and Hydrogeology effects, the likely significant effects to be considered within the assessment, and how these likely significant effects will be assessed for the purpose of an EIA.

10.1.3 This chapter should be read in conjunction and considered alongside the following chapters found in Volume 1:

- **Part 2, Chapter 4: English Onshore Scheme**
- **Part 2, Chapter 5: EIA Methodology**
- **Part 2, Chapter 6: Biodiversity**
- **Part 2, Chapter 9: Water Environment**
- **Part 2, Chapter 11: Agriculture and Soils**
- **Part 3, Chapter 23: Marine Physical Processes**
- **Part 4, Chapter 35: Cumulative Effects**

10.1.4 This chapter is supported by the following figures:

- **Figure 10.1: Geology Baseline Features**
- **Figure 10.2: Bedrock Geology**
- **Figure 10.3: Superficial Geology**
- **Figure 10.4: Groundwater Source Protection Zones**
- **Figure 10.5: Groundwater Dependent Terrestrial Ecosystems/Sites of Special Scientific Interest**

10.2 Relevant Legislation, Planning Policy and Technical Guidance

10.2.1 This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the geology and hydrogeology.

Legislation

10.2.2 A summary of the key legislation considered, but not limited to, in the scope of geology and hydrogeology effects is outlined in **Table 10-1**.

Table 10-1: Legislation relevant to Geology and Hydrogeology

Legislation	Legislative Context	Section Considered
Environmental Protection Act (EPA) (1990) (Ref 10.1)	<p>The EPA:</p> <ul style="list-style-type: none"> Establishes provisions for preventing and controlling pollution to protect water sources, including groundwater. Regulates activities that may have an impact on groundwater quality, such as waste management and industrial processes. Provides powers to regulators for monitoring and enforcing compliance with groundwater protection standards. <p>Requires the identification and remediation of contaminated land to prevent pollution of groundwater.</p>	Section 10.5 Design and Control Measures
Environmental Protection Act (EPA) (1990) Part IIA (Ref 10.1)	<p>The overarching objectives of the regime are:</p> <p>(a) To identify and remove unacceptable risks to human health and the environment.</p> <p>(b) To seek to ensure that contaminated land is made suitable for its current use.</p> <p>(c) To ensure that the burdens faced by individuals, companies and society as a whole are proportionate, manageable and compatible with the principles of sustainable development.</p>	<p>Section 10.4 Baseline Conditions</p> <p>Section 10.5 Design and Control Measures</p> <p>Section 10.6 Scope of the Assessment</p> <p>Section 10.7 Assessment Methodology</p>
Environment Act (2021) (Ref 10.2)	<p>In summary, the Act:</p> <ul style="list-style-type: none"> Aims to protect and enhance the natural environment, including groundwater resources. Provides a framework for the sustainable management of water resources, considering the needs of the environment and society. Encourages the implementation of measures to prevent pollution and promote the restoration of damaged 	<p>Section 10.5 Design and Control Measures</p> <p>Section 10.6 Scope of the Assessment</p>

Legislation	Legislative Context	Section Considered
The Contaminated Land (England) Regulations (2006) (Ref 10.3)	<p>environments, including groundwater.</p> <ul style="list-style-type: none"> Facilitates the integration of environmental considerations into decision-making processes and policies. <p>The Regulations:</p> <ul style="list-style-type: none"> Implement Part IIA of the EPA. Focuses on the identification and remediation of contaminated land, including the protection of groundwater from contamination. Sets out procedures and standards for assessing and managing contaminated land to prevent or reduce risks to human health and the environment. Requires the investigation and remediation of significant pollution incidents that pose a threat to groundwater quality. Establishes responsibilities for identifying and remediating historical contamination that may impact groundwater. 	<p>Section 10.4 Baseline Conditions</p> <p>Section 10.5 Design and Control Measures</p> <p>Section 10.6 Scope of the Assessment</p> <p>Section 10.7 Assessment Methodology</p>
Groundwater (England and Wales) Regulations (2009) (Ref 10.4)	<p>The Groundwater (England and Wales) Regulations:</p> <ul style="list-style-type: none"> Implements the EU Groundwater Directive to protect and manage groundwater resources in England and Wales. Sets standards and measures for preventing and reducing pollution of groundwater, including the control of hazardous substances. Requires the monitoring and reporting of groundwater quality to assess compliance with quality standards. Facilitates the development and implementation of programs of measures to achieve good groundwater status and prevent deterioration. 	<p>Section 10.5 Design and Control Measures</p> <p>Section 10.6 Scope of the Assessment</p>

Legislation	Legislative Context	Section Considered
Environmental Damage Regulations (2009) (Ref 10.5)	<p>The Environmental Damage Regulations:</p> <ul style="list-style-type: none"> Places liability on operators to prevent and remedy environmental damage, including damage to groundwater. Requires operators engaged in activities with a significant risk of causing environmental damage to have financial mechanisms in place to cover potential liabilities. Implements the "polluter pays" principle, holding operators responsible for the costs of preventive and remedial measures in case of environmental damage to groundwater. Encourages the restoration of affected groundwater to its original state or as close as possible, ensuring the long-term protection and sustainable use of this resource. 	<p>Section 10.4 Baseline Conditions</p> <p>Section 10.5 Design and Control Measures</p> <p>Section 10.6 Scope of the Assessment</p> <p>Section 10.7 Assessment Methodology</p>
The Water Act (2014) (Ref 10.6)	<p>The Water Act:</p> <ul style="list-style-type: none"> Focuses on the sustainable management of water resources and the protection of water quality, including groundwater. Provides powers to regulators to manage water resources effectively, including the ability to issue licenses and permits for water abstraction and discharge activities. Sets out provisions for regulating and controlling activities that may impact groundwater, such as the construction and operation of wells and boreholes. Addresses issues related to water supply, drought management, flood risk management, and the protection of aquatic ecosystems. 	<p>Section 10.4 Baseline Conditions</p> <p>Section 10.6 Scope of the Assessment</p>
The Water Resources Act (1991) (Ref 10.7)	<p>The Water Resources Act:</p> <ul style="list-style-type: none"> Regulates the abstraction and impounding of water, including groundwater, to prevent overexploitation and ensure 	<p>Section 10.4 Baseline Conditions</p> <p>Section 10.5 Design and Control Measures</p>

Legislation	Legislative Context	Section Considered
	<p>sustainable water resource management.</p> <ul style="list-style-type: none"> Establishes licensing requirements and permits for water abstraction activities to protect groundwater quantity and quality. Sets out provisions for controlling pollution and contamination of groundwater to safeguard its ecological and human health significance. Promotes the implementation of water resource management plans to balance water supply needs while considering the protection of groundwater resources. 	Section 10.6 Scope of the Assessment
The Environmental Permitting (England and Wales) Regulations (2016) (Ref 10.8)	<p>The Environmental Permitting (England and Wales) Regulations:</p> <ul style="list-style-type: none"> Requires operators of certain activities, including those related to waste management and industrial processes, to obtain environmental permits that address the protection of groundwater. Specifies measures to prevent or control pollution of groundwater, including stringent storage and handling requirements for hazardous substances. Mandates monitoring and reporting obligations to ensure compliance with groundwater protection standards and facilitate early detection of potential contamination incidents. Enables regulatory authorities to take enforcement action, including imposing penalties, for non-compliance with the regulations' groundwater protection requirements. 	<p>Section 10.4 Baseline Conditions</p> <p>Section 10.5 Design and Control Measures</p> <p>Section 10.6 Scope of the Assessment</p>
The Water Environment (Water Framework Directive) Regulations (2017) (Ref 10.9)	<p>The Water Environment (Water Framework Directive) Regulations:</p> <ul style="list-style-type: none"> Provides a framework for managing the water environment in the UK, aiming to achieve good ecological 	Section 10.6 Scope of the Assessment

Legislation	Legislative Context	Section Considered
	<p>and chemical status of water bodies, including groundwater.</p> <ul style="list-style-type: none"> • Sets out provisions for the protection and improvement of groundwater quality and quantity, including measures to prevent pollution and ensure sustainable water resource management. • Requires the development and implementation of river basin management plans, which consider the protection and restoration of groundwater. • Promotes the involvement of stakeholders and public participation in water management decision-making processes. 	

Planning Policy

10.2.3 A summary of the planning policies at both a national and local level relevant to the scope of geology and hydrogeology effects is given in **Table 10-2** and **Table 10-3**.

Table 10-2: National Planning Policy relevant to Geology and Hydrogeology

Policy Reference	Policy Context	Section Considered
Overarching National Policy Statement for Energy (EN-1) (2024) (Ref 10.10)		
Paragraph 5.4.12-5.4.13	EN-1 notes the contribution that regional and local geological sites have in supporting local biodiversity and geological interest	Section 10.4 Baseline Conditions Section 10.5 Design and Control Measures
Paragraph 5.4.19	States that “ <i>the Applicant should show how the Project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests.</i> ”	Section 10.5 Design and Control Measures
Paragraph 5.11.3 – 5.11.5	Outlines the potential risk associated with the re-use of previously developed land for new development, noting that it may not be suitable for all forms of energy infrastructure. Paragraphs 5.11.4 and 5.11.5 identify potential effects on soil resources through land contamination as well as indirect impact on the local water regime, organic matter content and soil biodiversity. Risks would	Section 10.6 Scope of the Assessment

Policy Reference	Policy Context	Section Considered
	require consideration in accordance with the contaminated land statutory guidance as a minimum	
Paragraph 5.11.8	Outlines that for development on previously developed land, the Applicant’s assessment should “ <i>should ensure that they have considered the risk posed by land contamination and how it is proposed to address this</i> ”.	Section 10.4 Baseline Conditions Section 10.6 Scope of the Assessment
Paragraph 5.11.15 and 5.11.17	States that Applicants should consider the potential for adverse effects from land instability ensuring the site is suitable for its intended use taking into consideration ground conditions, land instability and contamination.	Section 10.6 Scope of the Assessment
Paragraph 5.11.18	States that for developments on previously developed land, the Applicant’s assessment “ <i>should ensure that they have considered the risk posed by land contamination, and where contamination is present, applicants should consider opportunities for remediation where possible</i> ”. It is noted that engagement with relevant bodies should be carried out.	Section 10.4 Baseline Conditions Section 10.6 Scope of the Assessment Section 10.7 Assessment Methodology
Paragraph 5.11.19	States that the Applicant “ <i>should safeguard any mineral resources on the proposed site as far as possible, taking into account the long-term potential of the land use after any future decommissioning has taken place</i> ”.	Section 10.4 Baseline Conditions
Paragraph 5.11.28	States that “ <i>Where a proposed development has an impact upon a Mineral Safeguarding Area (MSA), the Secretary of State should ensure that appropriate mitigation measures have been put in place to safeguard mineral resources.</i> ”	Section 10.4 Baseline Conditions Section 10.5 Design and Control Measures
Paragraph 5.16.6	States that Applicants are encouraged to “ <i>consider protective measures to control the risk of pollution to groundwater beyond those outlined in the River Basin Management Plans and Groundwater Protection Zones</i> ”.	Section 10.5 Design and Control Measures

Policy Reference	Policy Context	Section Considered
Paragraph 5.16.3 and 5.16.7	<p>Outlines the aspects that should be considered by the Applicant’s assessment and the features that should be described in the ES, including:</p> <ul style="list-style-type: none"> • The existing quality of waters affected by the proposed project and the impacts of the proposed project on water quality, noting any relevant existing discharges, proposed new discharges and proposed changes to discharges. • Existing water resources affected by the proposed project and the impacts of the proposed project on water resources, noting any relevant existing abstraction rates, proposed new abstraction rates and proposed changes to abstraction rates (including any impact on or use of mains supplies and reference to Abstraction Licensing Strategies) and also demonstrate how proposals minimise the use of water resources and water consumption in the first instance. • Existing physical characteristics of the water environment (including quantity and dynamics of flow) affected by the proposed project and any impact of physical modifications to these characteristics. • Any impacts of the proposed project on water bodies or protected areas (including shellfish protected areas) under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 and source protection zones (SPZs) around potable groundwater abstractions. 	<p>Section 10.6 Scope of the Assessment Section 10.7 Assessment Methodology</p>
National Policy Statement for Electricity Networks Infrastructure (EN-5) (2024) (Ref 10.11)		
Paragraph 2.9.25	<p>The policy acknowledges the “<i>potential disruptive effects of undergrounding on local communities, habitats,</i></p>	<p>Section 10.6 Scope of the Assessment</p>

Policy Reference	Policy Context	Section Considered
	<i>archaeological and heritage assets, marine environments, soil (including peat soils), hydrology, geology, and, for a substantial time after construction, landscape and visual amenity”.</i>	

Table 10-3: Local Policy relevant to Geology and Hydrogeology

Local Authority Plan/Strategy	Summary of Relevant Policies Relating to Geology and Hydrogeology
Lincolnshire Minerals Local Plan/East Lindsey Minerals Safeguarding Areas Policies Map (Ref 10.12)	<p><i>Policy M11 Safeguarding of Mineral Resources</i></p> <p>Policy M11 identifies potential economic mineral resources to be safeguarded from non-minerals development and avoid preventing future extraction. Applications for non-mineral development within a mineral safeguarding area should be accompanied by a minerals assessment.</p> <hr/> <p><i>Policy M12: Safeguarding of Existing Mineral Sites and Associated Minerals Infrastructure</i></p> <p>Policy M12 safeguards strategically allocated mineral sites and associated infrastructure against development that could sterilise or jeopardise their use.</p>
Norfolk Minerals and Waste Development Framework (Ref 10.13)	<p><i>Policy CS16: Safeguarding mineral and waste sites and mineral resources.</i></p> <p>Policy CS16 sets out the Mineral Planning Authority’s approach to safeguarding existing and planning mineral extraction sites and their associated infrastructure (such as railheads, wharves).</p> <p>Policy also identifies Silica sand as being a safeguarded resource within the Mineral Planning Authority’s jurisdiction, whilst areas of sands and gravels are noted as requiring caution against non-minerals development needlessly sterilising. The policy sets out that the Mineral Planning Authority should be consulted on development proposals within the mineral consultation areas.</p>
Cambridgeshire and Peterborough Minerals and Waste Local Plan (adopted July 2021) (Ref 10.14)	<p><i>Policy 5: Mineral Safeguarding Areas</i></p> <p>Sets out the Mineral Planning Authority’s approach to safeguarding potential economic minerals from non-minerals development.</p>

Local Authority Plan/Strategy	Summary of Relevant Policies Relating to Geology and Hydrogeology
	<p>Policy sets out criteria to trigger consultation with the Mineral Planning Authority</p> <hr/> <p><i>Policy 6: Mineral Development Areas</i> Sets out the Mineral Planning Authority’s approach to protecting sites (both with and without planning permission) which have been strategically allocated for future mineral extraction within the Local Plan.</p> <hr/> <p><i>Policy 15: Transport Infrastructure Areas</i> Identifies strategic transport areas such as wharves, railheads (both existing and planned) which support in the sustainable transport of minerals and waste.</p> <hr/> <p><i>Policy 16: Consultation Areas</i> Allocates a buffer around the strategically allocated areas covered by the Local Plan in which non-minerals development are required to consult with the Mineral Planning Authority.</p>
<p>East Lindsey Local Plan Core Strategy (Adopted July 2018) (Ref 10.15)</p>	<p><i>Strategic Policy 24 (SP24) Biodiversity and Geodiversity</i> Policy SP24, sets out how development should protect and enhance the biodiversity and geodiversity of land and buildings, noting a requirement to protect sites designated internationally, nationally and locally for the geodiversity importance. Policy 24 also notes the potential risks of pollution from nearby development.</p>
<p>South East Lincolnshire Local Plan (2011 – 2036) Adopted March 2019 (Ref 10.16)</p>	<p><i>Policy 28: The Natural Environment</i> Policy 28 sets the Council’s position on how proposed development can take a role in addressing gaps in the ecological network including through the conservation and enhancement of geodiversity features.</p> <hr/> <p><i>Policy 30: Pollution</i> Sets out that development proposals cannot lead to unacceptable adverse impacts on the health and safety of the public, amenities of the area, and the natural, historic and built environment. The policy further states that development on contaminated land, or where there is reason to suspect contamination, must include an</p>

Local Authority Plan/Strategy	Summary of Relevant Policies Relating to Geology and Hydrogeology
Fenland Local Plan, (adopted May 2014) (Ref 10.17)	<p>assessment of the extent of contamination and any possible risks.</p> <p>The policy also notes the requirement to protect surface and groundwater quality.</p> <hr/> <p><i>Policy LP16: Delivering and Protecting High Quality Environments Across the Districts</i></p> <p>Sets out that the Council will only permit development that identifies, manages and mitigates against any existing or proposed risks from sources of pollution and contamination. This also accounts for the protection of groundwater resources for future uses.</p> <hr/> <p><i>Policy LP19: The Natural Environment</i></p> <p>Sets the Council’s approach to conserving and enhancing biodiversity and geological interest of the natural environment throughout the Fenland.</p>
King’s Lynn and West Norfolk Borough Council Local Development Framework – Core Strategy, (adopted July 2011). (Ref 10.18)	<p><i>Policy CS08: Sustainable Development</i></p> <p>Policy CS08 highlights the Council’s preference for new development to optimise site potential and making best use of brownfield sites.</p> <hr/> <p><i>Policy CS12: Environmental Assets</i></p> <p>Sets the Council’s approach to protecting and enhancing geodiversity with the aim of creating a high quality environment for biodiversity and geodiversity to flourish. Development should seek to avoid, mitigate or compensate for any adverse impacts on biodiversity, geodiversity and heritage as well as seeking to enhance sites through the creation of features of new biodiversity, geodiversity and heritage interest.</p>

Technical Guidance

10.2.4 The following relevant technical guidance, specific to the scope of geology and hydrogeology effects, has informed this Scoping Report and will inform the assessment within the PEIR and ES is given in **Table 10-4**.

Table 10-4: Technical Guidance relevant to Geology and Hydrogeology

Technical Guidance Document	Context
Land Contamination: Risk Management (LC:RM), Environment Agency (2023) (Ref 10.19)	This guidance sets out the process for managing risks from land contamination.
Contaminated Land Risk Assessment (CIRIA) 552, A guide to good practice, CIRIA (2001) (Ref 10.20)	CIRIA sets out guidance for the approach to contaminated land risk assessment.
BS 10175:2011+A2:2017 Investigation of potentially contaminated sites. Code of Practice, British Standards Institution (2017) (Ref 10.21)	This code of practice provides recommendations and guidance for investigation on site which could potentially be affected by contamination.
BS 5930:2020 Code of practice for site investigations, British Standards Institution (2020) (Ref 10.22)	This document provides guidance on the legal, environmental and technical matters relating to site investigation.
Environment Agency's Guiding Principles for Managing and Reducing Land Contamination (GPLC2), Environment Agency (2010) (Ref 10.23)	This guidance clarifies the roles and responsibilities and compliance with regulations.
Design Manual for Roads and Bridges (DMRB) LA 109: Geology and soils, Highways Agency, (2019) (Ref 10.24)	LA109 provides a framework for assessing and managing the effects associated with geology and soils.
Protect groundwater and prevent groundwater pollution. Environment Agency (2017) (Ref 10.25)	This guidance sets out the control and permitting of activities that could affect the quality or quality of groundwater.
Environment Agency - The Environment Agency's approach to groundwater protection (Ref 10.26)	This guidance sets out the principles of groundwater protection.
Regulatory Position Statement 261: Temporary dewatering from excavations to surface water (Ref 10.27)	This guidance sets out the regulatory approach for consenting the discharge of clean rainwater from excavations
Regulatory Position Statement LIT 16814, (2019) (Ref 10.28)	This guidance sets out the position status of low risk passive dewatering
National Planning Policy Framework Guidance: Land Affected by Contamination (Ref 10.29)	This guidance provides guiding principles on how planning can deal with land affected by contamination.

10.3 Consultation and Engagement

10.3.1 To date no engagement in relation to the geology and hydrogeology has been undertaken. However, in advance of the PEIR and ES engagement would be undertaken with the following stakeholders relevant to geology and hydrogeology:

- Lincolnshire County Council;

- Cambridgeshire County Council;
- Norfolk County Council;
- East Lindsey District Council;
- South Holland District Council;
- Boston Borough Councils;
- Borough Council of King's Lynn and West Norfolk;
- Fenland District Council; and
- Groundwater abstraction owners identified within the study area.

10.3.2 Natural England and the Environment Agency will be specifically consulted on the scope of the Groundwater Dependent Terrestrial Ecosystems (GWDTEs) assessment.

10.4 Baseline Conditions

Study Area

10.4.1 There are two study areas for the assessment on geology and hydrogeology. For the geology aspect, the study area comprises land directly affected by the English Onshore Scheme, plus a 250 m buffer. This is presented on **Figure 10.1: Geology Baseline Features**. The study area for hydrogeology aspect comprises land directly affected by the English Onshore Scheme plus a 500 m buffer as presented on **Figure 10.4: Groundwater Source Protection Zones**.

10.4.2 Given the scale and nature of the English Onshore Scheme, this is considered an appropriate approach. The study area is also based on professional judgement, knowledge of similar projects and the DMRB LA109: Geology and Soil (Ref 10.24).

Data Gathering Methodology

- 10.4.3 The baseline assessment has been informed by the following information sources:
- British Geological Survey (BGS) 1:50,000 scale geological mapping, solid and drift edition (Ref 10.30);
 - BGS GeoIndex Viewer (Ref 10.31);
 - Coal Authority Interactive Map Viewer (Ref 10.32);
 - BGS Hydrogeological Maps (Ref 10.33);
 - Environment Agency's Catchment Data Explorer (Ref 10.34);
 - Natural England, Designated Sites View (Ref 10.35);
 - Multi-Agency Geographic Information for the Countryside (MAGIC) interactive map (Ref 10.36);
 - Environment Agency Groundwater Dependent Terrestrial Ecosystems (Ref 10.37);
 - East Lindsey Local Plan Adopted July 2018. Annex 4 Minerals Safeguarding Areas Policies Map (Ref 10.15);
 - The Lincolnshire Minerals Local Plan (Ref 10.12);

- Norfolk Minerals and Waste Development Framework (Ref 10.13);
- Cambridgeshire and Peterborough Minerals and Waste Local Plan (Ref 10.14);
- UK Health Security Agency (UKHSA) Interactive Radon Map – Ukradon – UK maps of radon (Ref 10.38);
- Zetica unexploded ordnance (UXO) online Unexploded Bomb Risk Maps. Zetica UXO (Ref 10.39);
- Environment Agency, Permitted Waste Sites and Authorised Landfill Site Boundaries – opensource GIS layer (Ref 10.40);
- Environment Agency, Historic Landfill Sites – opensource GIS layer (Ref 10.41);
- Registered Brownfield Land – Brownfield land Dataset, Planning Data (Ref 10.42); and
- Publicly available satellite imagery/aerial photography (Ref 10.43).

Current Baseline

10.4.4 The baseline provides a characterisation of the study area in terms of geological and hydrogeological setting. To provide geographical context, the study area has been split into the following sections:

- Landfall at Theddlethorpe;
- Landfall at Anderby Creek;
- Section 1: Landfall to Bilsby (including LCS Converter Station Area);
- Section 2: Bilsby to Welton Le Marsh;
- Section 3: Welton Le Marsh to Little Steeping;
- Section 4: Little Steeping to Sibsey Northlands;
- Section 5: Sibsey Northlands to Hubbert’s Bridge;
- Section 6: Hubbert’s Bridge to Moulton Seas End;
- Section 7: Moulton Seas End to Foul Anchor; and
- Section 8: Foul Anchor to Walpole.

Context

10.4.5 **Table 10-5** provides a high-level summary of baseline features (current uses, significant features shown on maps, unexploded bomb risk, historical landfills and radon risk) within the geology study area and has been developed using publicly available desk-based information as set out above. Key features described are also noted on **Figure 10.1: Geology Baseline Features**



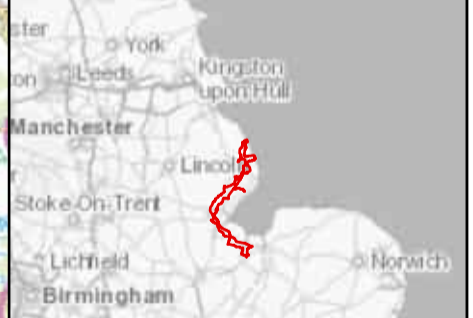
Figure 10-1 Geology Baseline Features (Overview)

Legend

- Scoping Boundary
- Scoping Boundary Section Break



Notes
 This drawing is scaled at paper size A3, therefore any prints taken at smaller sizes will affect accuracy of the measurement units and should not be scaled against.



Coordinate System: British National Grid
 Sheet X Centroid Coordinate: 540239.88E Sheet Y Centroid Coordinate: 350760.07N



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Figure 10-1
 Geology Baseline Features



Figure Number
 FIGURE 10-1

Drawing Reference
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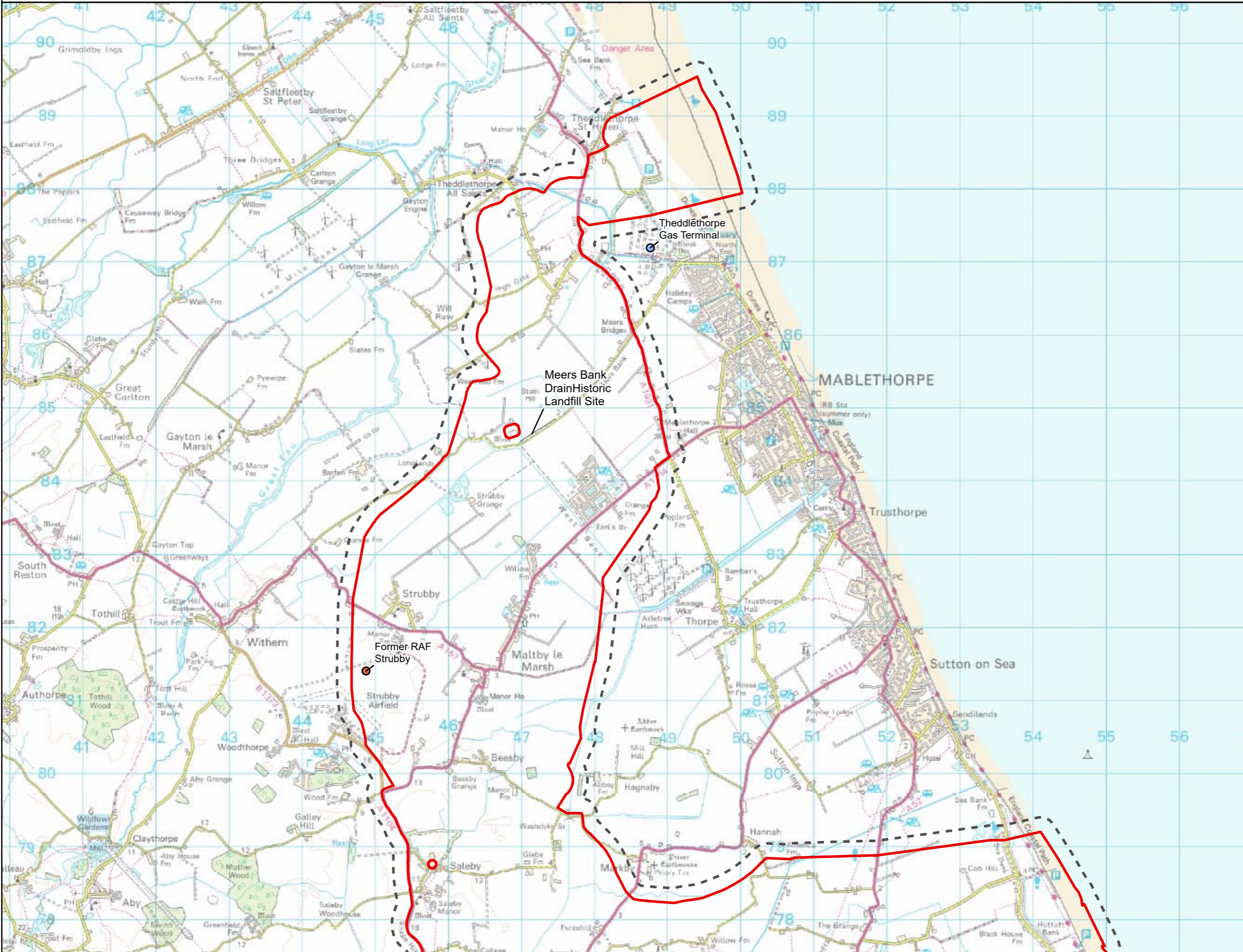
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Figure 10-1 Geology Baseline Features

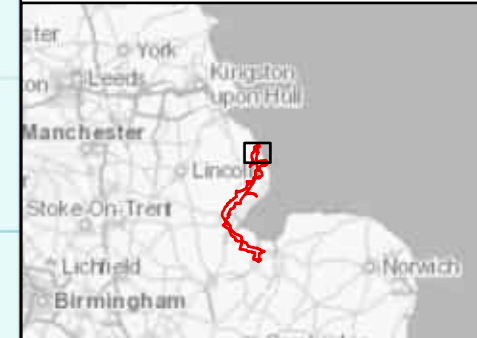
Legend

- Scoping Boundary
- 200m Study Area
- Peaty Soils
- Meers Bank Drain Historic Landfill Site
- Former RAF Strubby
- Theddlethorpe Gas Terminal

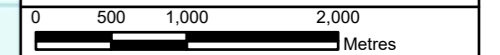


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Title

Figure 10-1
Geology Baseline Features

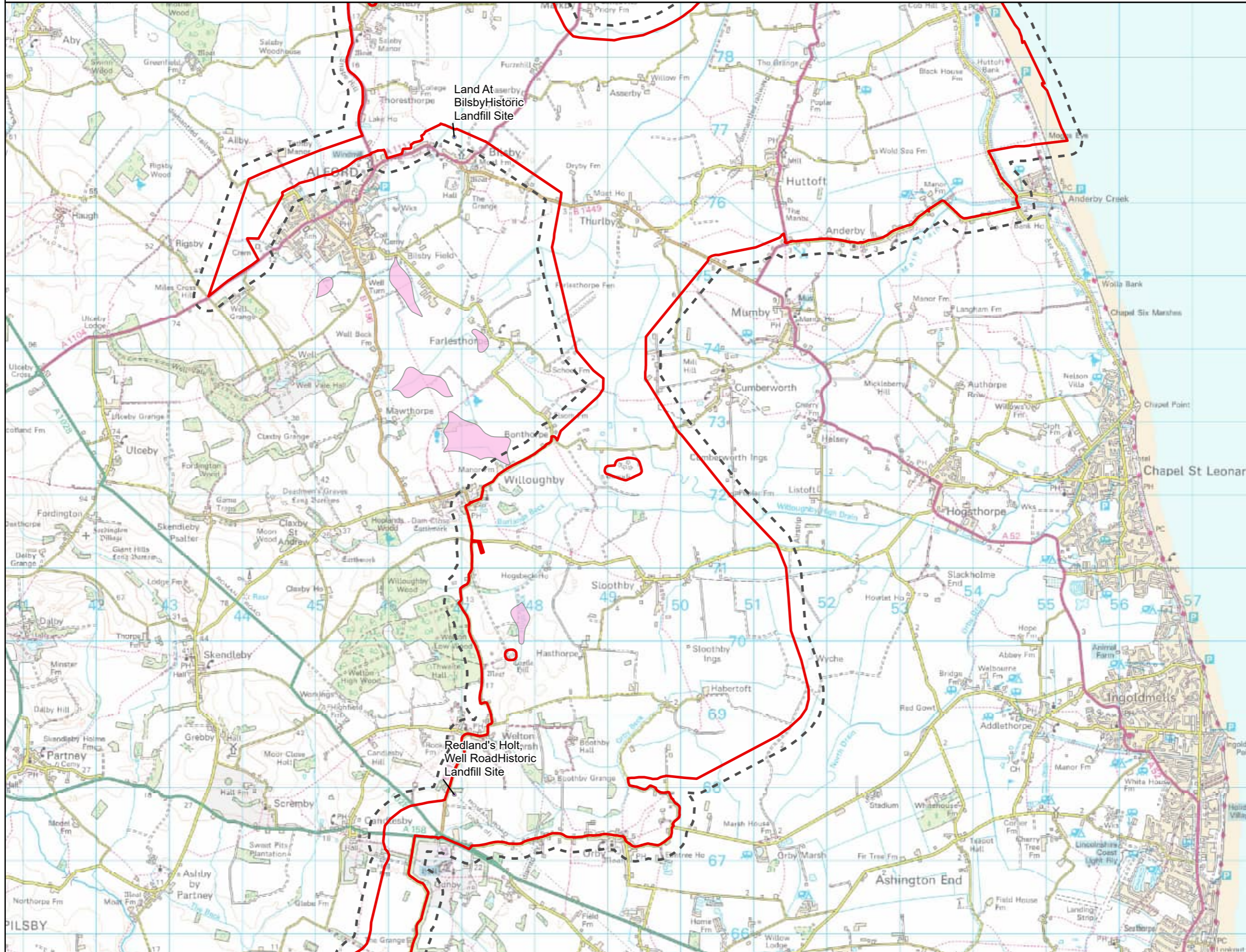
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Figure Number			
FIGURE 10-1			
Drawing Reference			
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Figure 10-1 Geology Baseline Features

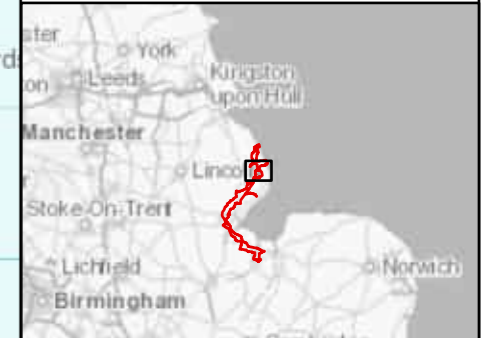
Legend

- Scoping Boundary
- 200m Study Area
- Peaty Soils
- Land At Bilby Historic Landfill Site
- Redland's Holt, Well Road Historic Landfill Site

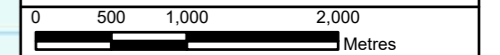


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Issue	Date	Remarks	Drawn	Checked	Approved

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Figure 10-1
Geology Baseline Features



Figure Number
FIGURE 10-1

Drawing Reference
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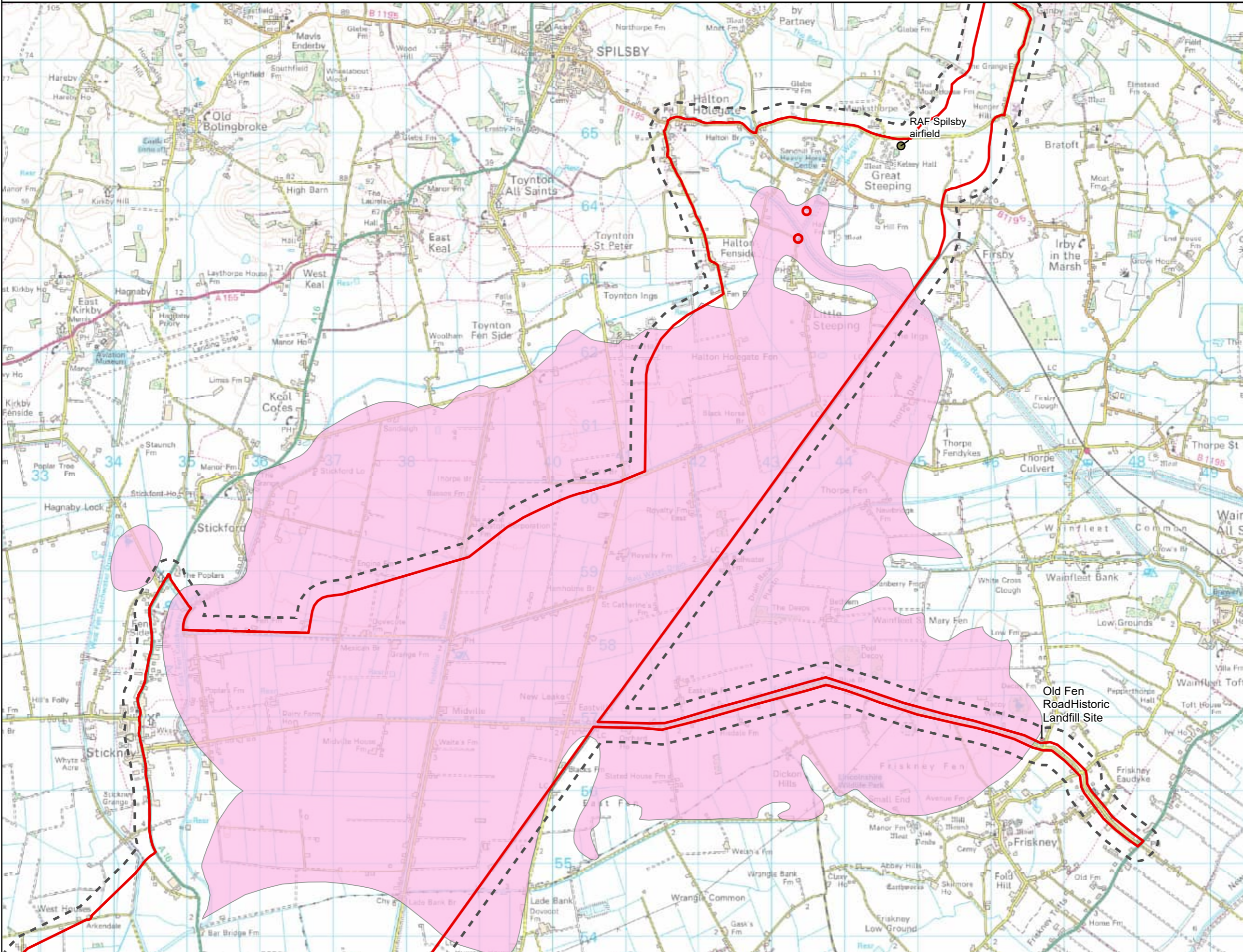
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1:50,000	A3	SHEET 2 OF 7	1



Figure 10-1 Geology Baseline Features

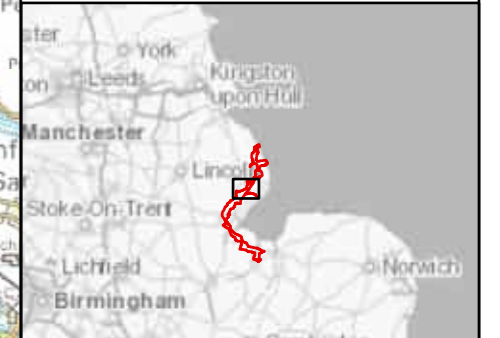
Legend

- Scoping Boundary
- 200m Study Area
- Peaty Soils
- Old Fen Road Historic Landfill Site
- RAF Spilsby airfield

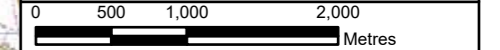


Notes

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Title

Figure 10-1
Geology Baseline Features



Figure Number: FIGURE 10-1

Drawing Reference: EGL-ARC-CONS-XX-DR-G-006

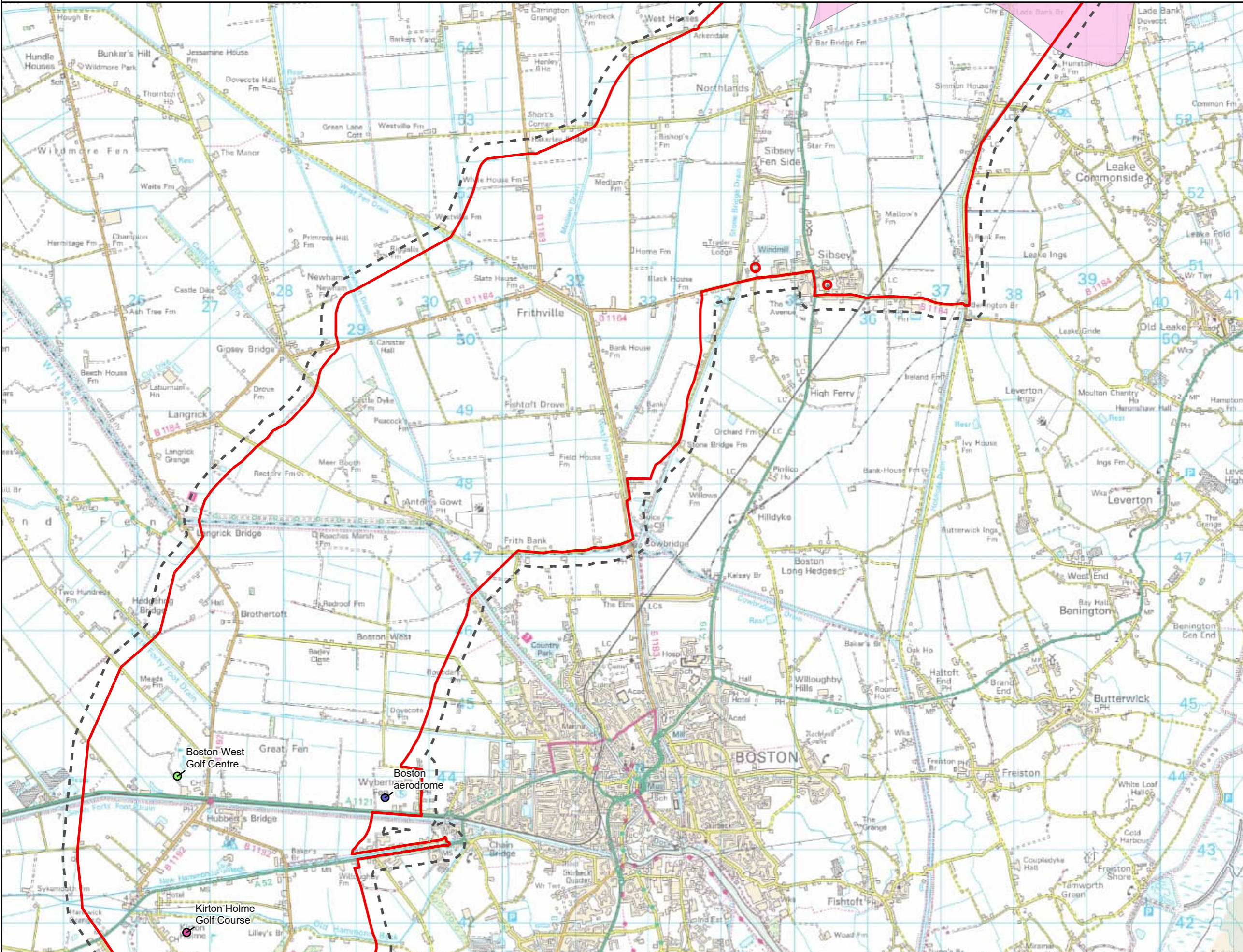
Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 3 OF 7	1



Figure 10-1 Geology Baseline Features

Legend

- Scoping Boundary
- 200m Study Area
- Peaty Soils
- Boston West Golf Centre
- Boston aerodrome
- Kirton Holme Golf Course

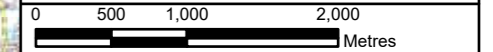


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Figure 10-1
Geology Baseline Features



Figure Number
FIGURE 10-1

Drawing Reference
EGL-ARC-CONS-XX-DR-G-006

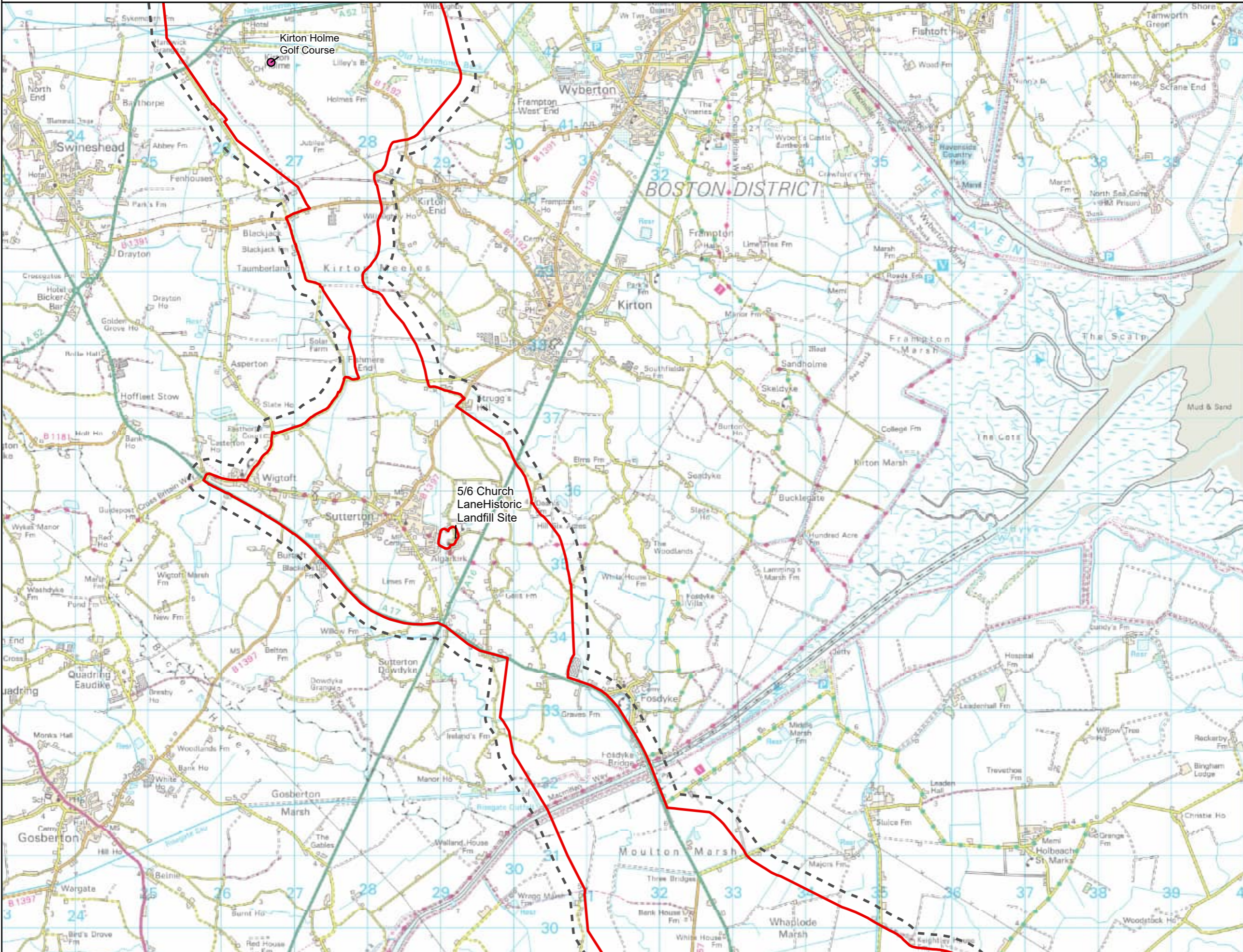
Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 4 OF 7	1



Figure 10-1 Geology Baseline Features

Legend

- Scoping Boundary
- 200m Study Area
- Peaty Soils
- 5/6 Church Lane Historic Landfill Site
- Kirton Holme Golf Course



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Title
 Figure 10-1
 Geology Baseline Features

nationalgrid			
Figure Number	FIGURE 10-1		
Drawing Reference	EGL-ARC-CONS-XX-DR-G-006		
Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 5 OF 7	1



Figure 10-1 Geology Baseline Features

Legend

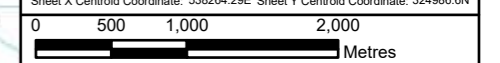
- Scoping Boundary
- 200m Study Area
- Peaty Soils
- Anglia Motel Historic Landfill Site
- Battle Field Historic Landfill Site
- Delph Bank Historic Landfill Site
- Millbank Road Historic Landfill Site
- Sewage Farm Historic Landfill Site
- Wisbech Road Historic Landfill Site
- Grange windfarm

Notes

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Figure 10-1
Geology Baseline Features



Figure Number

FIGURE 10-1

Drawing Reference

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Scale	Sheet Size	Sheet	Issue
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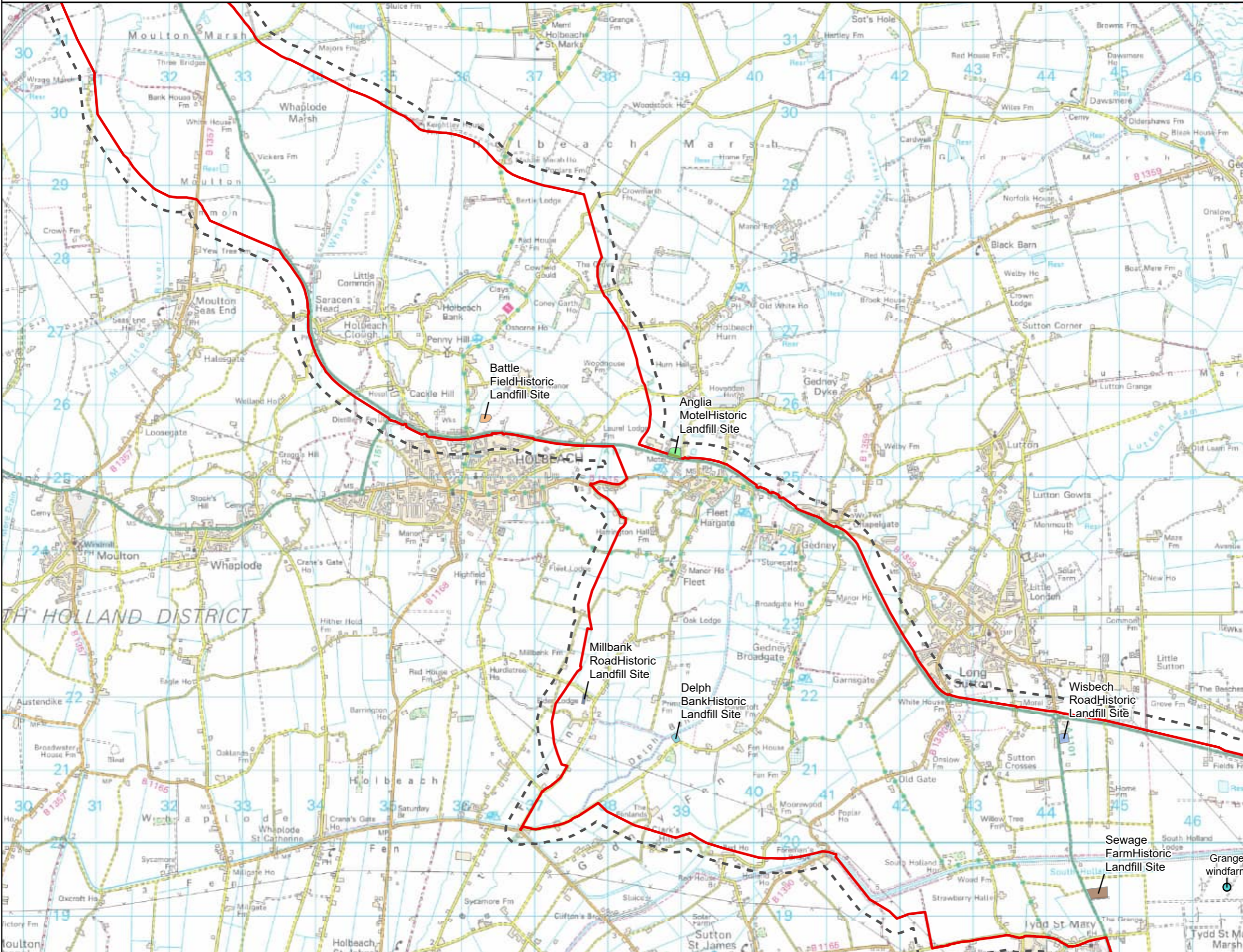
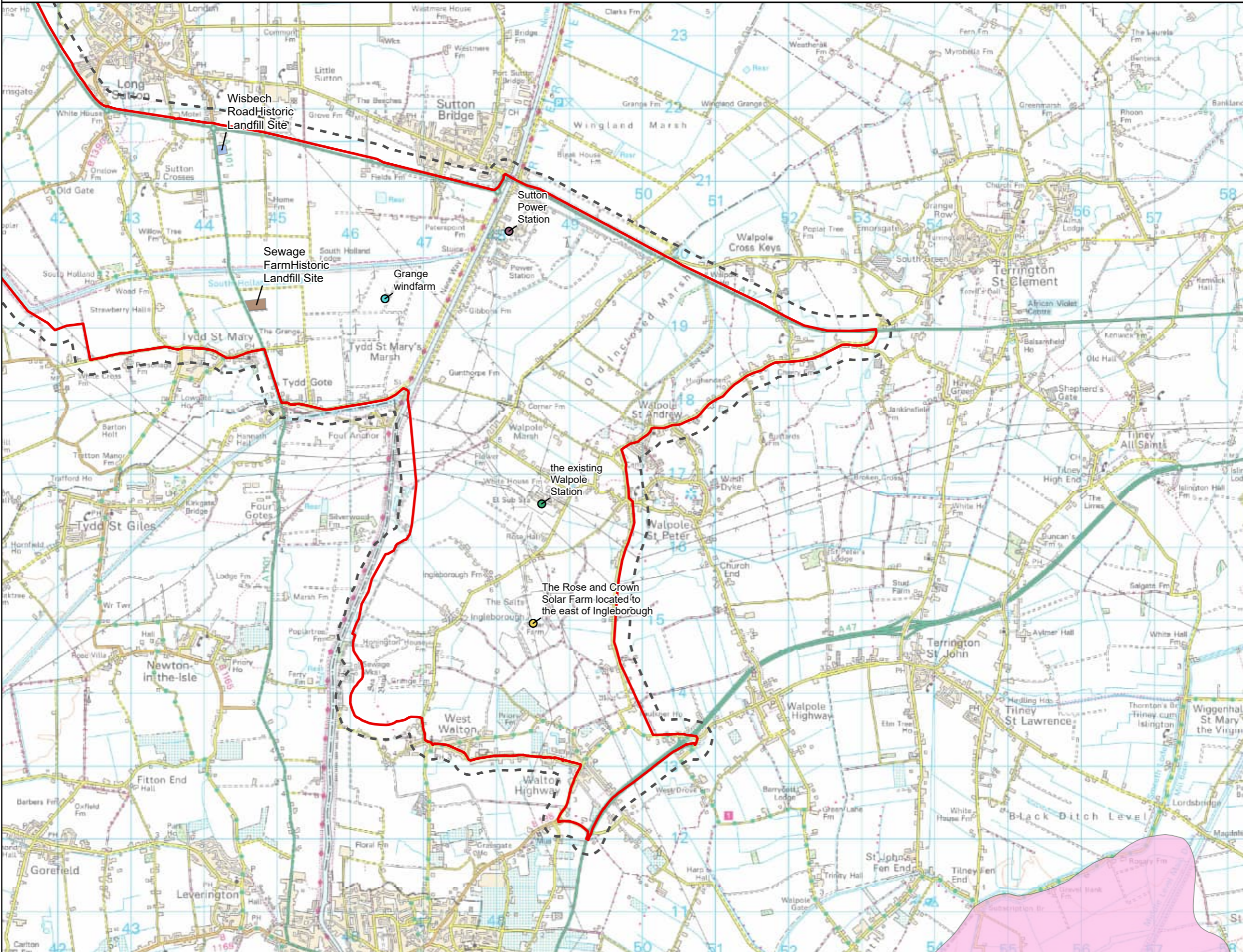




Figure 10-1 Geology Baseline Features

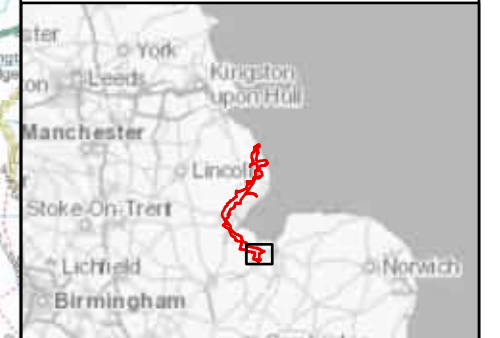
Legend

- Scoping Boundary
- 200m Study Area
- Peaty Soils
- Sewage Farm Historic Landfill Site
- Wisbech Road Historic Landfill Site
- Grange windfarm
- Sutton Power Station
- The Rose and Crown Solar Farm located to the east of Ingleborough
- the existing Walpole Station

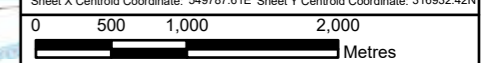


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Figure 10-1
Geology Baseline Features

nationalgrid			
Figure Number	FIGURE 10-1		
Drawing Reference	EGL-ARC-CONS-XX-DR-G-006		
Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 7 OF 7	1

Part 2 Chapter 9: Water Environment provides a description of the hydrological environment of the study area, whilst **Part 2 Chapter 6: Biodiversity** sets out the ecological baseline conditions.

Table 10-5: Summary of Setting of the Scoping Boundary and Surrounding Area

Section	Baseline Features within Study Area
Landfall at Theddlethorpe Section 1: Theddlethorpe to Bilsby (including LCS Converter Station Area)	<p>The landfall at Theddlethorpe extends through the shoreline into the Saltfleetby Theddlethorpe Dunes National Nature Reserve and Site of Special Scientific Interest (SSSI) with extensive shoreline, sand dunes, marshes, sand flats and mudflats. In land, the area is characterised by agricultural fields.</p> <p>The Zetica UXO online unexploded bomb (ordnance) risk map shows a low risk.</p> <p>Radon risk is characterised as <1%.</p> <p>Historical landfills are not mapped within the Theddlethorpe landfall area.</p>
Landfall at Anderby Creek	<p>The landfall at Anderby Creek extends through the shoreline into Anderby Creek Beech where there are sea defences and visitor amenities such as the Sandiland Golf Course (now a National Trust nature reserve), which is located to the north of the Landfall at Anderby Creek. Typically, land use inland from the shoreline is characterised by agricultural fields and clusters of residential properties.</p> <p>The Zetica UXO online unexploded bomb risk map shows a low risk.</p> <p>Radon risk is characterised as <1%.</p> <p>Historical landfills are not mapped within the landfall at Anderby Creek area.</p>
Section 1: Landfalls to Bilsby (including LCS Converter Station Area)	<p>This section of the Scoping Boundary is characterised as a rural setting of agricultural fields with land drainage, farms and in frequent villages such as Maltby Le Marsh, Beesby, Alford, Huttoft and Thurlby. The former Theddlethorpe Gas Terminal is located directly adjacent to the south of the Scoping Boundary at Theddlethorpe.</p> <p>The Zetica UXO online unexploded bomb risk map shows a low risk with two strategic targets mapped; a decoy site at Anderby Creek and Strubby Airfield. The radon risk is noted as <1%.</p> <p>The former RAF Strubby airfield is located approximately 500 m south of Strubby village. There are two historical landfills mapped within Section 1. These are named as Meers Bank Drain near Maplethorpe and Land at Bilsby historical landfill site located approximately 100 m south of the Scoping Boundary at Bilsby. Alford Crematorium is located to the west of Alford and directly south of the Scoping Boundary.</p>

Section	Baseline Features within Study Area
Section 2: Bilsby to Welton Le Marsh	<p>Section 2 of the Scoping Boundary is characterised as a rural setting of agricultural fields and farms. Section 2 incorporates a number of villages such as Sloothby, Hasthorpe and Habertoft. The Zetica UXO online unexploded bomb risk map shows a low risk.</p> <p>There are no active or historical landfill sites mapped within Section 2.</p> <p>Radon risk is noted as 1-3%.</p>
Section 3: Welton Le Marsh to Little Steeping	<p>The land use in Section 3 is generally characterised by agricultural fields, farms and villages such as Welton le Marsh and Orby in the north, and Great Steeping and Little Steeping to the south.</p> <p>Kelsey Wood Country Park is located approximately 600 m northeast of Great Steeping and the Lincolnshire Wolds extends into the north. The National Trust Gunby Estate bounds the east of the Scoping Boundary to the east of Candlesby.</p> <p>The Zetica UXO online unexploded bomb risk map shows a low risk for the area, however, one strategic target is mapped, RAF Spilsby Airfield.</p> <p>A small historical landfill is mapped at Redlands Holt, Well Road in the north of the Section. There are no active landfill sites mapped.</p> <p>The radon risk is noted as 3-5%.</p>
Section 4: Little Steeping to Sibsey Northlands	<p>Section 4 is predominantly comprised of agricultural fields with farms and villages such as Little Steeping, New Leeke and Stickney. Sibsey is located at the southern border of Section 4.</p> <p>The Zetica UXO online unexploded bomb risk map shows a low risk for the area with a decoy site mapped approximately 2.3 km northeast of Sibsey.</p> <p>There are two historical landfill sites mapped in Section 4. These include the Old Railway Site, located directly adjacent to Scoping Boundary to the west of the A16 (Main Road) at Stickney and the Old Fen Road site which is located directly north of the Scoping Boundary at the intersection between Fodder Dyke Bank and Burgh Road.</p> <p>Radon risk is mapped as <1% for the Section.</p>
Section 5: Sibsey Northlands to Hubbert's Bridge	<p>Section 5 is generally characterised by agricultural fields with farms, and villages such as Frithville, Anton's Gowt, Frith Bank and Brothertoft.</p> <p>The Boston Aerodrome is located directly north of the A1121 (Boardsides). The A1121 (Boardsides) is bounded to the south by a railway corridor and the South Forty Foot Drain. Both features have a west to east alignment. Other features of note within Section 5 include the Boston West Golf Centre located within the southwest corner of Section 5, whilst the West Fen Drain and River Witham both cross the Scoping Boundary in a west to east alignment at Frithville and Anton's Gowt respectively.</p>

Section	Baseline Features within Study Area
Section 6: Hubbert's Bridge to Moulton Seas End	<p>The Zetica UXO online unexploded bomb risk map shows a low risk for the area with one decoy site noted approximately 150 m west of Peacock's Road.</p> <p>There are no active or historical waste sites mapped within Section 5.</p> <p>Radon risk is noted as <1%.</p>
Section 7: Moulton Seas End to Foul Anchor	<p>Section 6 is characterised by agricultural fields with farms and villages such as Kirton Holme, Wigtoft and Sutterton. Kirton Holme Golf Course is located to the north of the Section and the River Welland runs on a west to east alignment through Fosdyke Bridge.</p> <p>The Zetica UXO online unexploded bomb risk map shows a low risk for the area. Radon risk is noted as <1%.</p> <p>There are no active landfill or waste sites noted within the Section, however, one historical landfill site named as 5/6 Church Lane is noted in Algarkirk, northeast of St Peter and St Paul's Church.</p> <p>Section 7 is characterised by agricultural fields, farms and villages such as Fleet Hargate, Gedney, Tydd St Mary and Tydd Gote. Holbeach is located directly south of the Scoping Boundary and is bounded to the north by the A17 (Washway Road). Key features of note include the Grange windfarm and substation located approximately 1.2 km east of Tydd Saint Mary. The River Nene runs through Sutton Bridge in a northeasterly direction, whilst the South Holland Drain flows in an easterly direction to the South Holland Sluice located 850 m south of the Cross Keys Swing Bridge.</p> <p>The Zetica UXO online unexploded bomb risk map shows a low risk for the area. Radon risk is noted as <1%.</p> <p>A total of seven historical landfill sites are mapped, including:</p> <ul style="list-style-type: none"> ● Battle Field, Penny Hill Road, Holbeach; ● Anglia Motel, located north of Washway Road (directly adjacent to the Scoping Boundary); ● Millbank Road site, Millbank Road; ● Delph Bank and Gedney Fen, located on Bullock's Short Gate; ● Wisbech Road, located east of the A1101 (Wisbech Road); and ● Sewage Farm, located on A1101 (Wisbech Road), Tydd Saint Mary.
Section 8: Foul Anchor to Walpole (including Walpole Station Area)	<p>Section 8 is generally characterised by agricultural fields with farms and villages. The River Nene flows through Sutton Bridge. Commercial and industrial land uses are noted within the Scoping Boundary to the south and east of Sutton Bridge. These include; Sutton Power Station, located directly east of Sutton Bridge and</p>

Section	Baseline Features within Study Area
	<p>the River Nene; the existing Walpole Substation, located off Walpole Bank; The Rose and Crown Solar Farm located to the east of Ingleborough and commercial/industrial business are present around Walton Highway.</p> <p>The Zetica UXO online unexploded bomb risk map identifies two strategic targets former RAF Sutton Bridge Airfield and a Luftwaffe target.</p> <p>A small historical landfill site is recorded at East Elloe Road.</p> <p>Radon risk is noted as <1%.</p>

Published Geology

- 10.4.7 The following sections provide an overview of the geological and ground condition information across the study area based on the available desk study data. The generalised geological succession for the Scoping Boundary is presented for each of the Sections running north to south.
- 10.4.8 The distribution of the superficial and bedrock deposits is shown in **Figure 10.2: Bedrock Geology** and **Figure 10.3: Superficial Geology**

Artificial Ground

10.4.9 **Table 10-6** summarises the areas of Artificial Ground mapped by the BGS within the study area.

Table 10-6: Summary of BGS mapped Artificial Ground

Sections	Artificial Ground in the Study Area
Landfall at Theddlethorpe, Landfall at Anderby Creek, Section 1: Landfalls to Bilsby, Section 2: Bilsby to Welton Le Marsh, Section 3: Welton Le Marsh to Little Steeping	Artificial Ground is not mapped by BGS.
Section 4: Little Steeping to Sibsey Northlands	The BGS mapping indicates Artificial Ground is found along the alignment of the A52 (Main Road/Boston Road) at Friskney Eaudyke.
Section 5: Sibsey Northlands to Hubber’s Bridge, Section 6 Hubber’s Bridge to Moulton Seas End	No Artificial Ground is mapped by BGS.
Section 7: Moulton Seas End to Foul Anchor	The BGS mapping indicated seven pockets of Artificial Ground to the west of the Scoping Boundary at Saracen’s Head and Holbeach Clough. An additional two areas of Artificial Ground are noted within the Scoping Boundary to the north of Roman Bank.
Section 8: Foul Anchor to Walpole (including Walpole Station Area)	No Artificial Ground is mapped by BGS.

10.4.10 Unmapped and localised Artificial Ground would be anticipated along the study area associated with historic developments, infrastructure, waste sites and residential, commercial and industrial land uses (including farming and local salt industries).

Superficial and Bedrock Deposits

10.4.11 Mapped Superficial and Bedrock deposits are set out in **Table 10-7** and presented on **Figure 10.2 and Figure 10.3**. **Table 10-7** also provides the aquifer classification. The definitions of the aquifer classifications are set out below.

Aquifer Designations

10.4.12 Aquifer classifications for the superficial and bedrock geology within the Scoping Boundary have been obtained from Department for Environment Food & Rural Affairs MAGIC mapping portal (Ref 10.36). The Environment Agency classify aquifers as follows:

- Principal Aquifer: Provide significant quantities of drinking water, and water for business needs. They may also support rivers, lakes and wetlands;
- Secondary A Aquifer: Comprise permeable layers that can support local water supplies, and may form an important source of base flow to rivers;
- Secondary B Aquifer: Comprise mainly lower permeability layers that may store and yield limited amounts of groundwater through characteristics like thin cracks (fissures) and openings or eroded layers;
- Secondary Undifferentiated: Aquifers where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the rock type. These have only a minor value; and
- Unproductive Strata: Largely unable to provide usable water supplies and are unlikely to have surface water and wetland ecosystems dependent on them.



10.4.13

The distribution of aquifers within each section of the Scoping Boundary is summarised in **Table 10-7**.



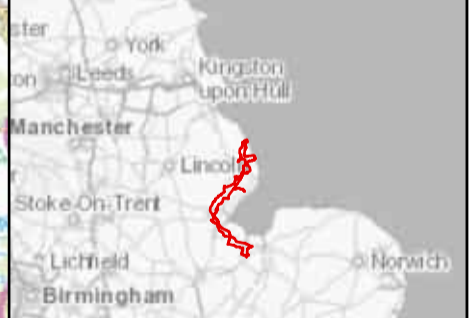
Figure 10-2 Bedrock Geology (Overview)

Legend

-  Scoping Boundary
-  Scoping Boundary Section Break



Notes
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Title

Figure 10-2
 Bedrock Geology



Figure Number
 FIGURE 10-2

Drawing Reference
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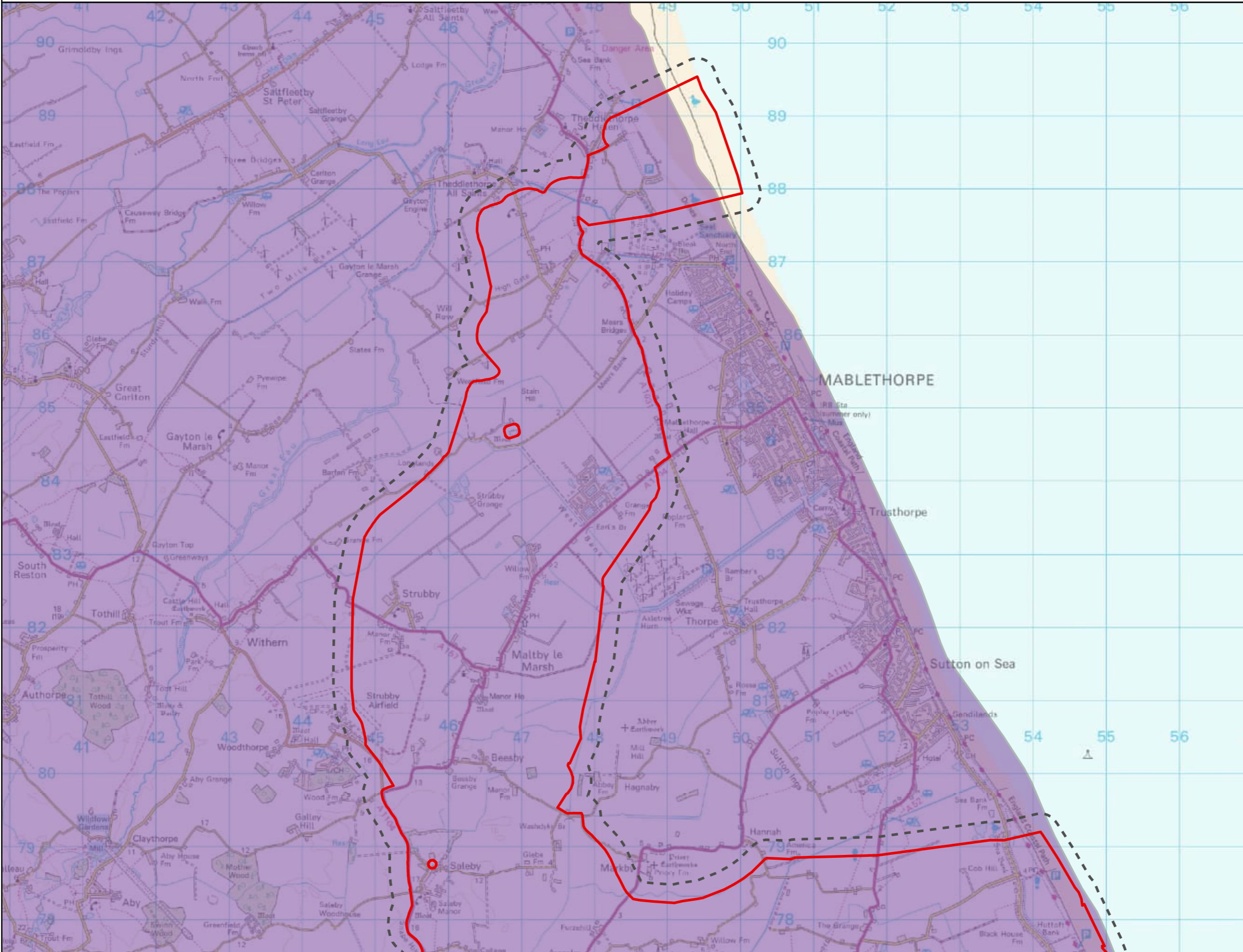
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Figure 10-2 Bedrock Geology

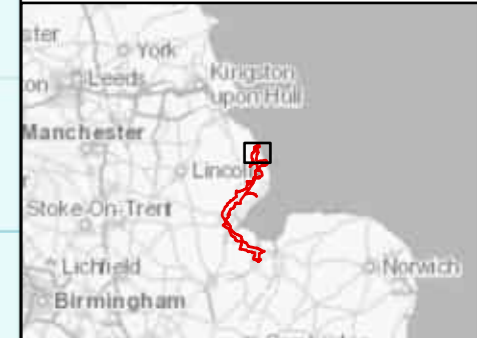
Legend

- Scoping Boundary
- 250m Study Area
- Bedrock**
- Chalk

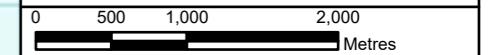


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Figure 10-2
Bedrock Geology

nationalgrid

Figure Number
FIGURE 10-2

Drawing Reference
EGL-ARC-CONS-XX-DR-G-007

Scale	Sheet Size	Sheet	Issue
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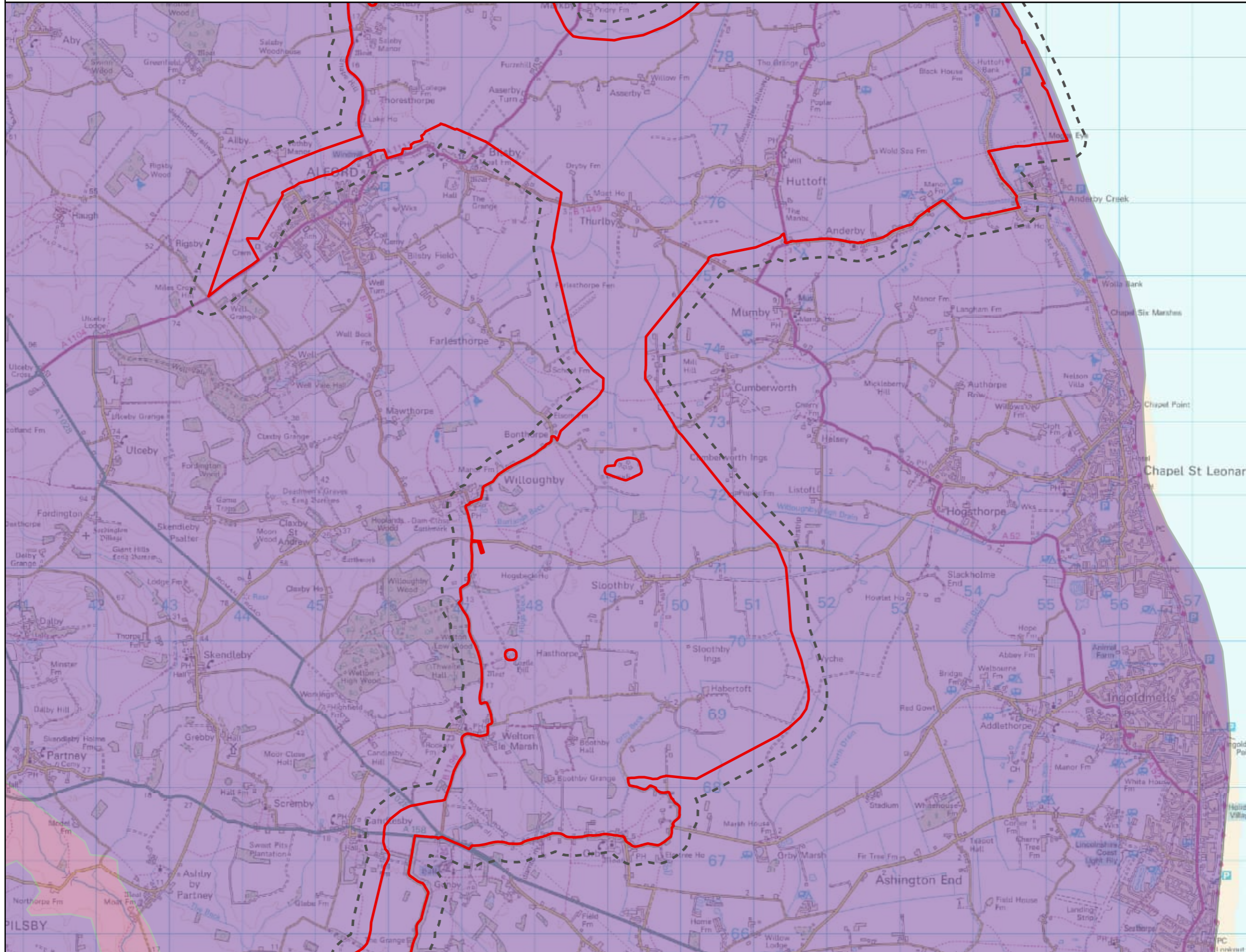
Figure 10-2 Bedrock Geology

Legend

- Scoping Boundary
- 250m Study Area

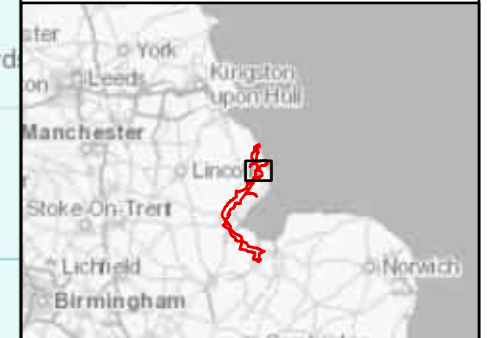
Bedrock

- Chalk
- Mudstone, Siltstone And Sandstone

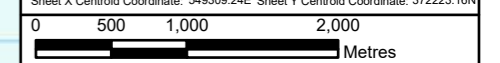


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Figure 10-2
Bedrock Geology



Figure Number
FIGURE 10-2

Drawing Reference
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Scale	Sheet Size	Sheet	Issue
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Figure 10-2 Bedrock Geology

Legend

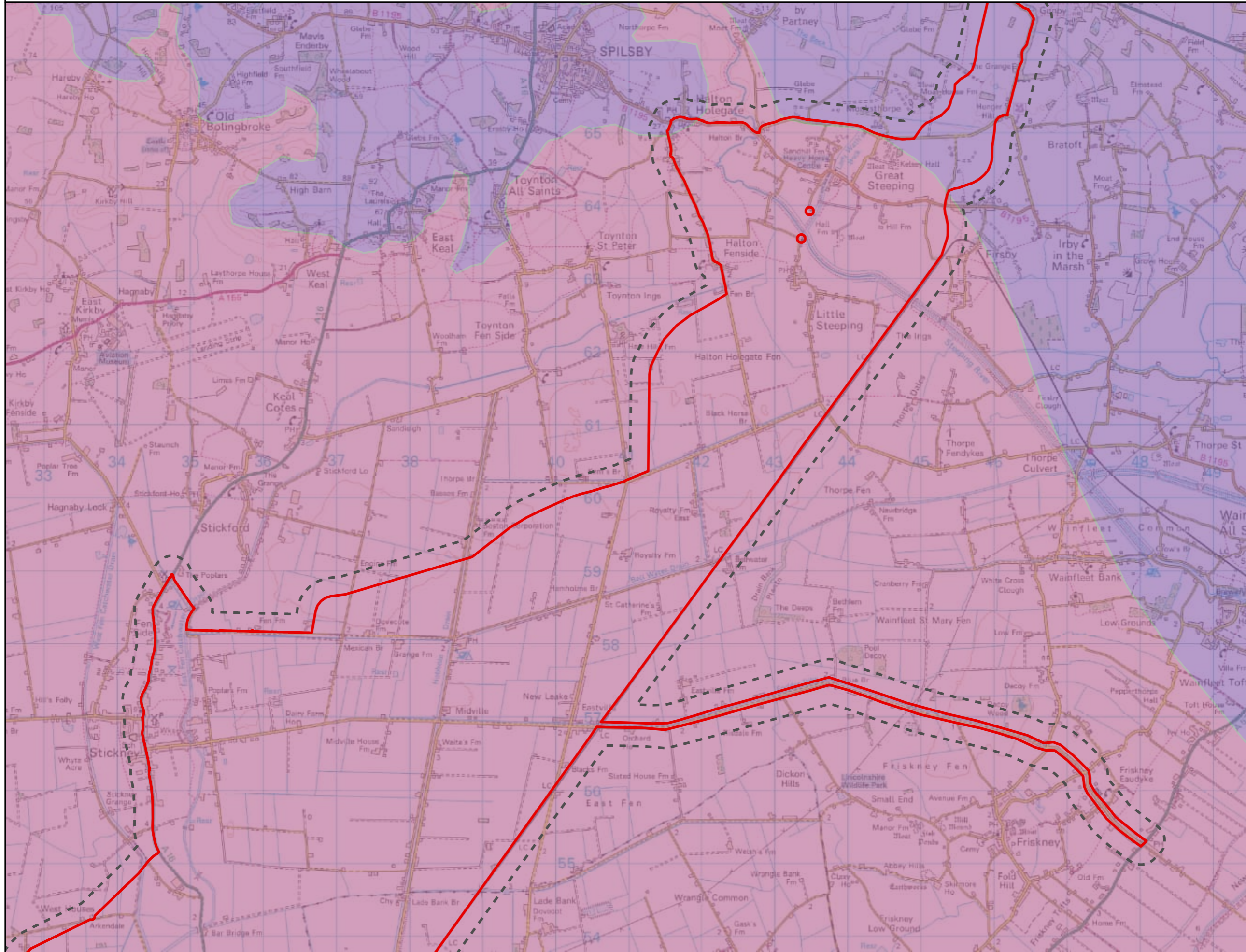
Scoping Boundary

250m Study Area

Bedrock

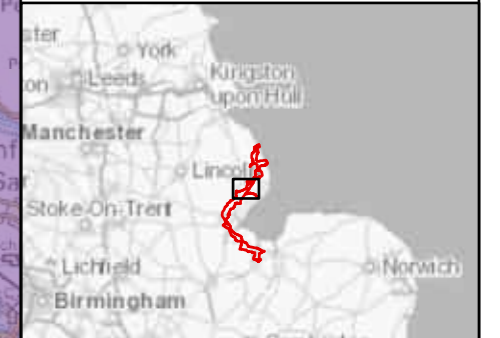
Chalk

Mudstone, Siltstone And Sandstone

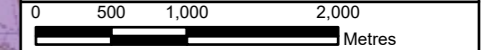


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Title

Figure 10-2
Bedrock Geology



Figure Number
FIGURE 10-2

Drawing Reference
EGL-ARC-CONS-XX-DR-G-007

Scale	Sheet Size	Sheet	Issue
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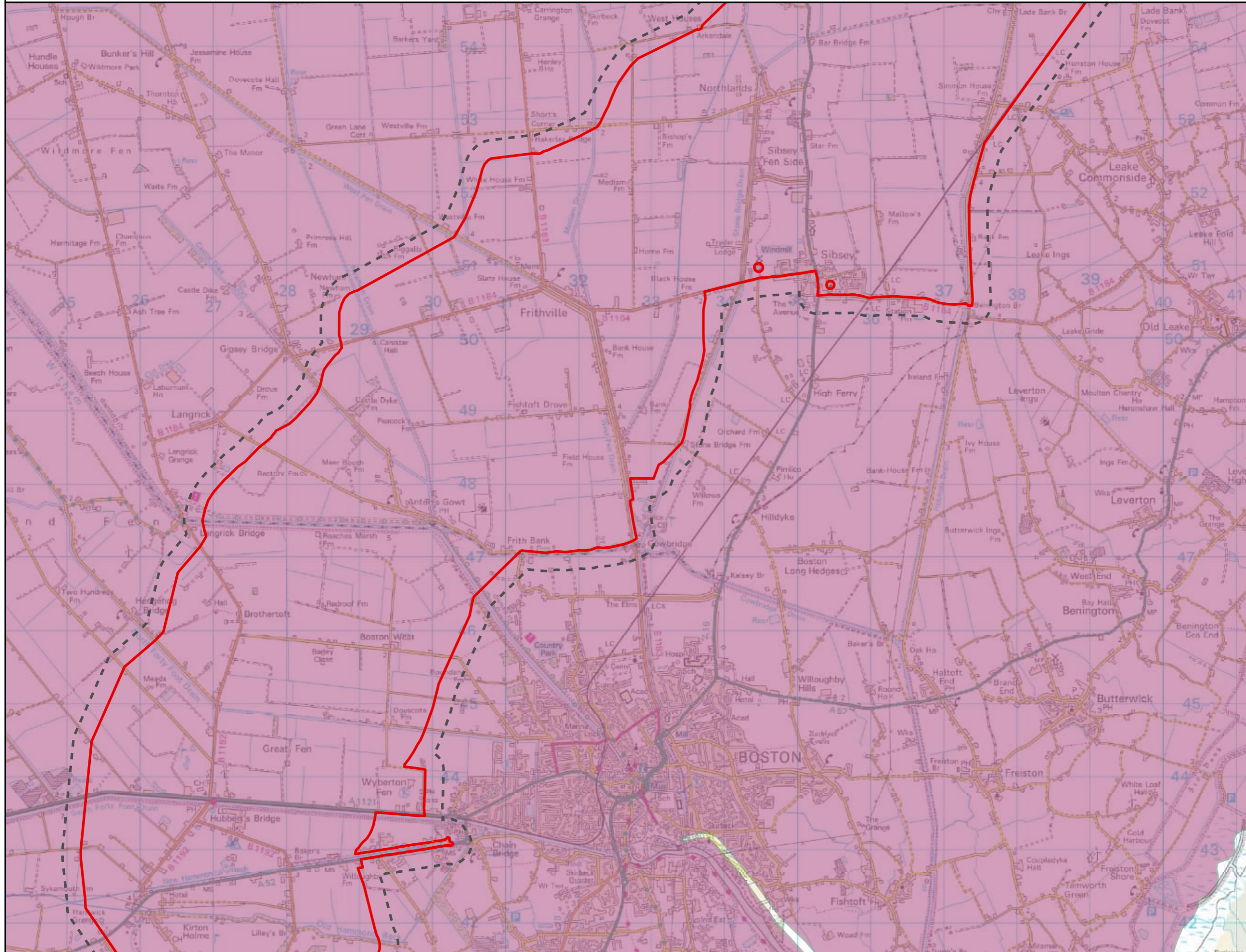
Figure 10-2 Bedrock Geology

Legend

- Scoping Boundary
- 250m Study Area

Bedrock

- Mudstone, Siltstone And Sandstone

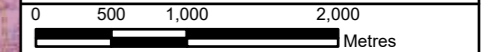


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Title

Figure 10-2
Bedrock Geology



Figure Number
FIGURE 10-2

Drawing Reference
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Figure 10-2 Bedrock Geology

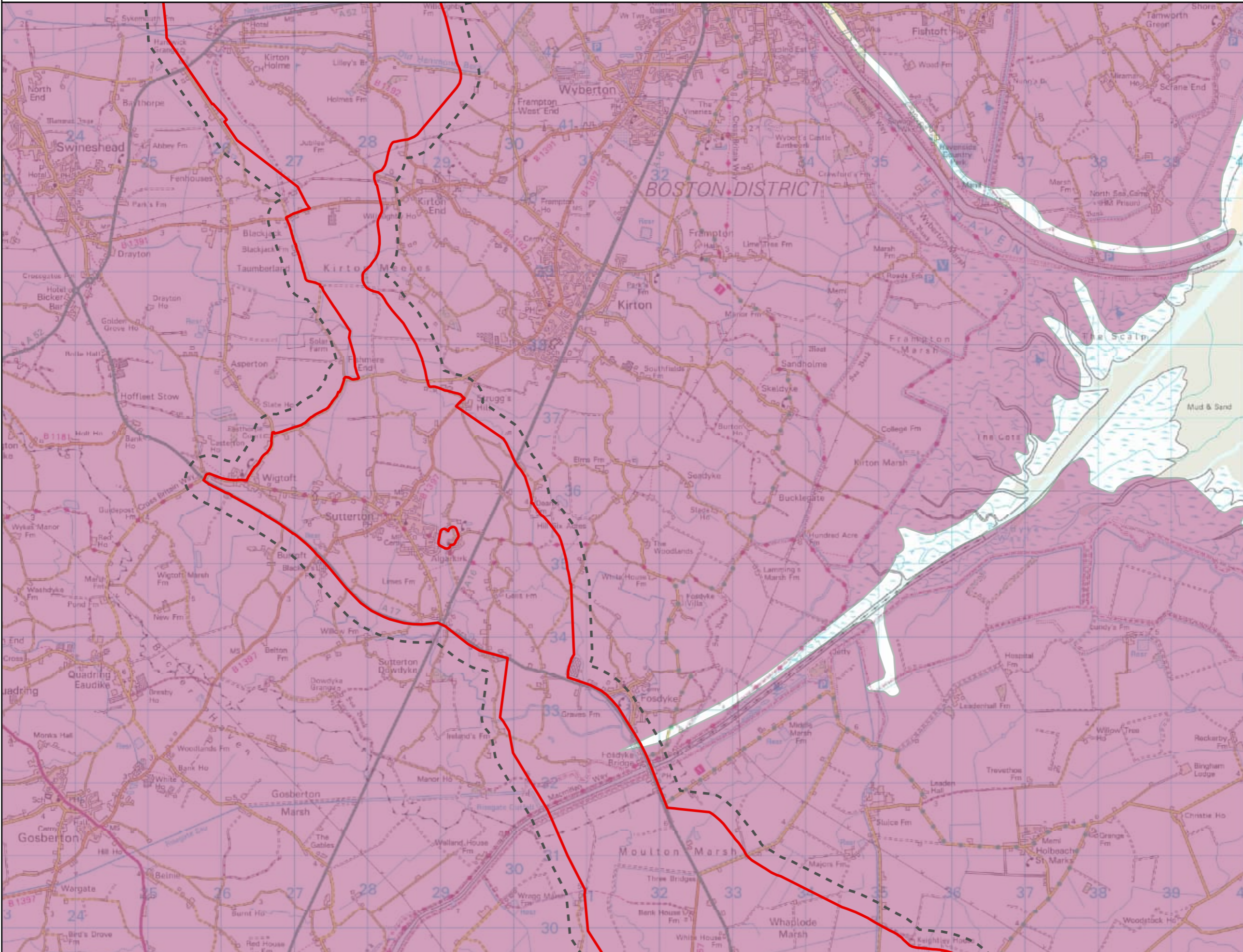
Legend

Scoping Boundary

250m Study Area

Bedrock

Mudstone, Siltstone And Sandstone



Notes

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Figure 10-2
Bedrock Geology



Figure Number
FIGURE 10-2

Drawing Reference
EGL-ARC-CONS-XX-DR-G-007

Scale	Sheet Size	Sheet	Issue
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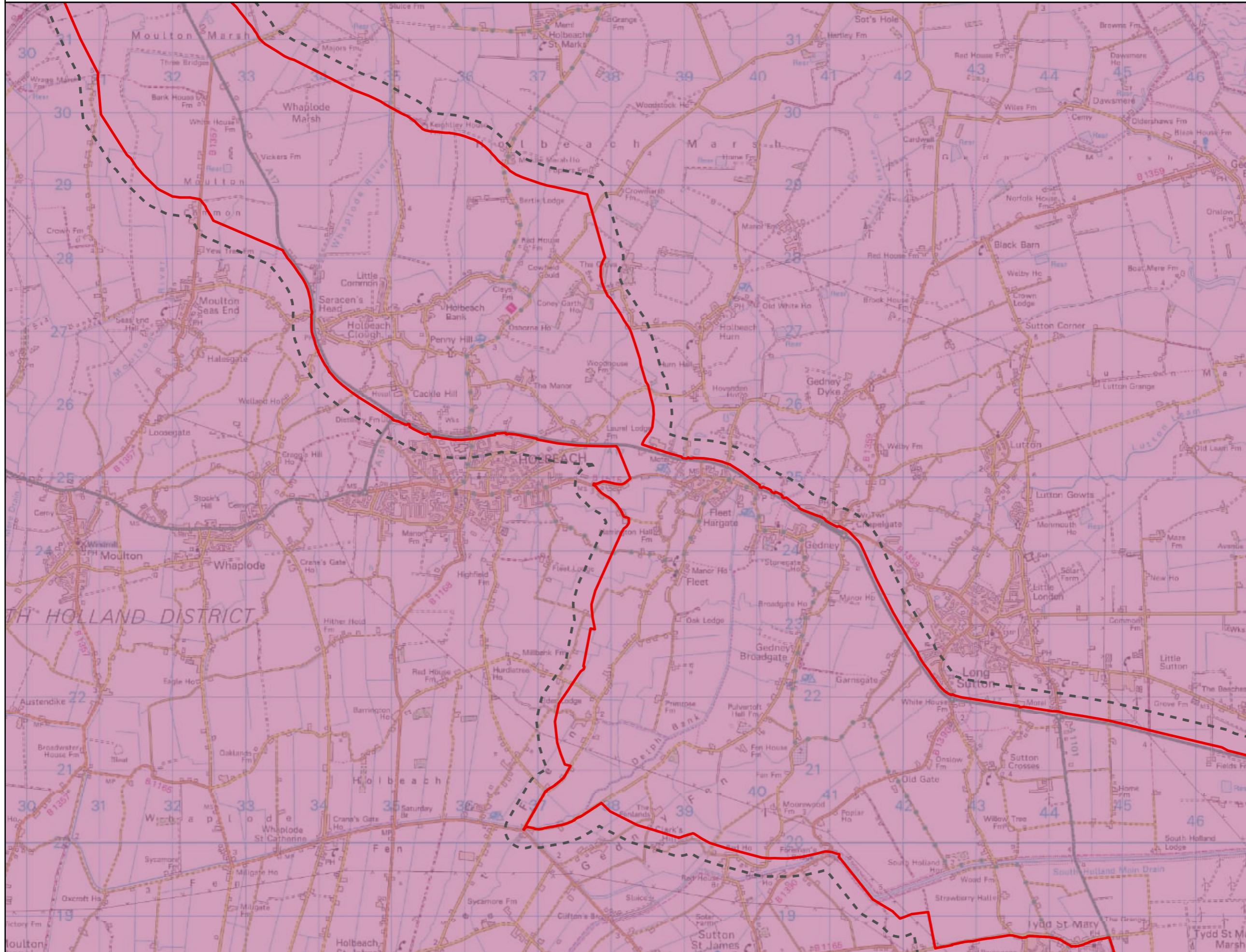
Figure 10-2 Bedrock Geology

Legend

- Scoping Boundary
- 250m Study Area

Bedrock

- Mudstone, Siltstone And Sandstone

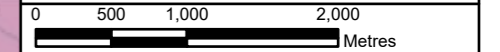


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Title

Figure 10-2
Bedrock Geology



Figure Number
FIGURE 10-2

Drawing Reference
EGL-ARC-CONS-XX-DR-G-007

Scale	Sheet Size	Sheet	Issue
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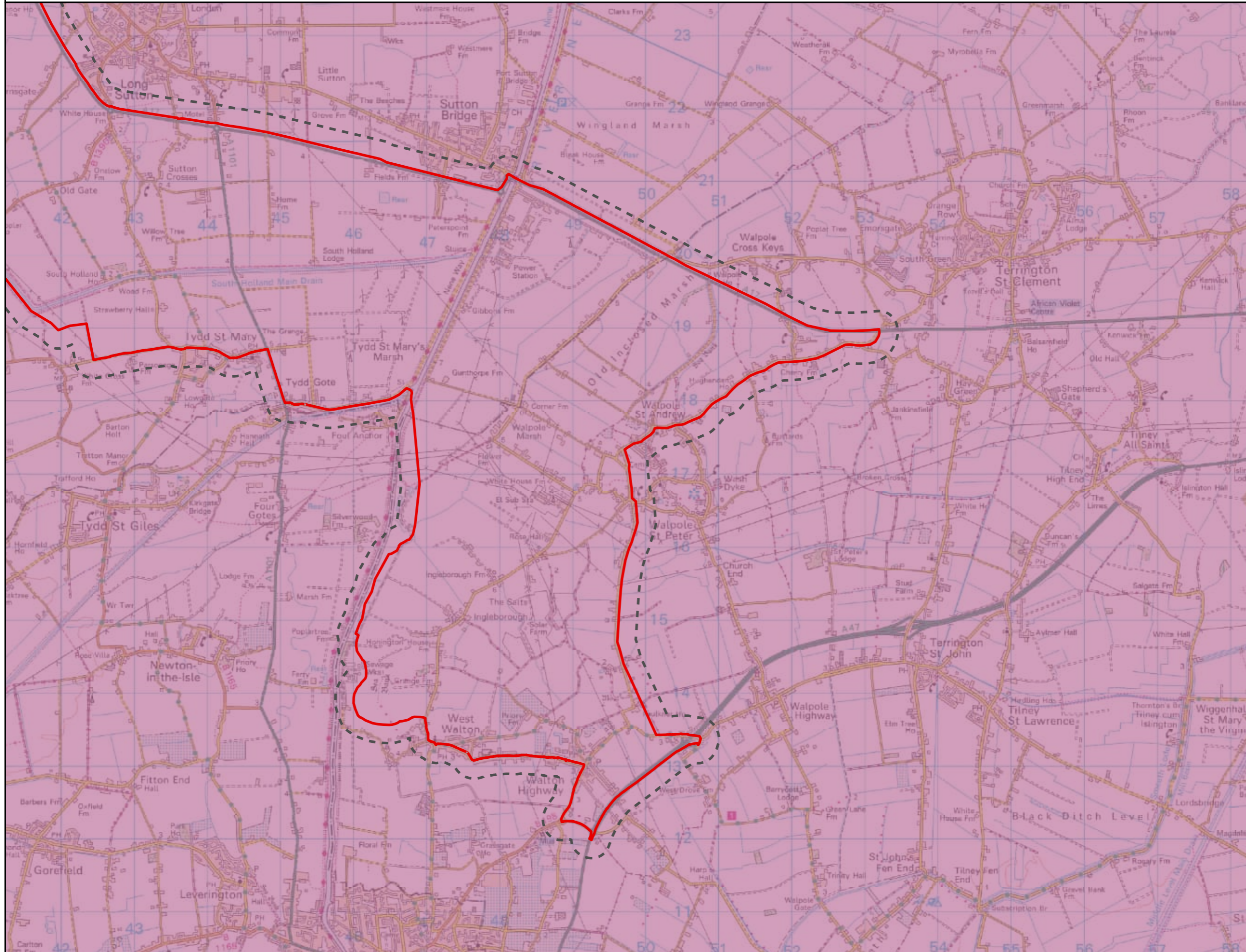
Figure 10-2 Bedrock Geology

Legend

- Scoping Boundary
- 250m Study Area

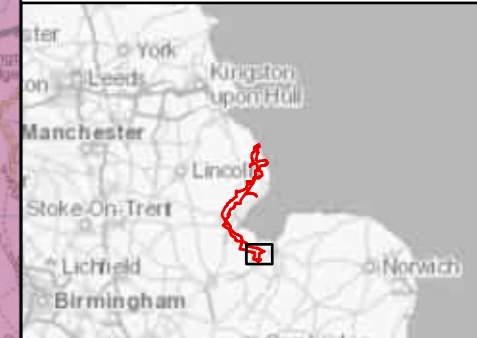
Bedrock

- Mudstone, Siltstone And Sandstone



Notes

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Sheet X Centroid Coordinate: 549787.61E Sheet Y Centroid Coordinate: 316932.42N



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Figure 10-2
Bedrock Geology



Figure Number

FIGURE 10-2

Drawing Reference

EGL-ARC-CONS-XX-DR-G-007

Scale	Sheet Size	Sheet	Issue
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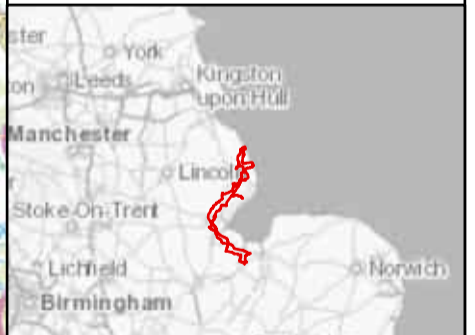
Figure 10-3 Superficial Geology (Overview)

Legend

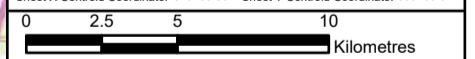
- Scoping Boundary
- Scoping Boundary Section Break



Notes
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Title

Figure 10-3
 Superficial Geology



Figure Number

FIGURE 10-3

Drawing Reference

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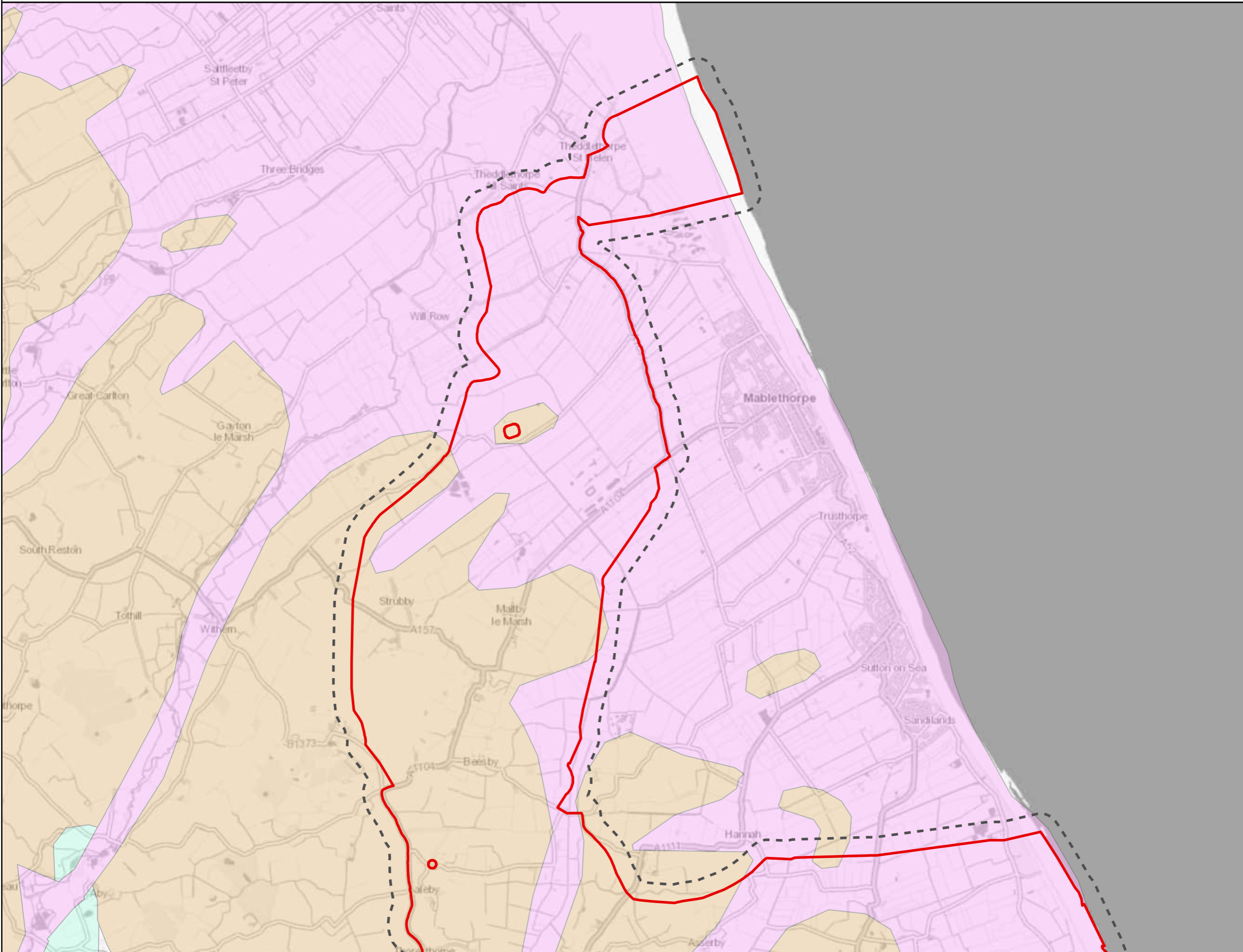
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Figure 10-3 Superficial Geology

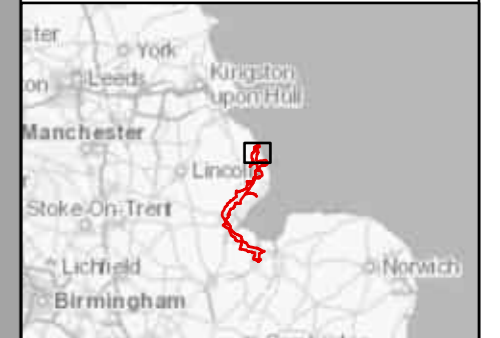
Legend

- Scoping Boundary
- 250m Study Area
- Superficial Geology Data**
- Alluvial Deposits - Clay, Silt And Sand
- Glacigenic Deposits - Diamicton (Clay, Sand And Gravel)
- Glaciofluvial Deposits - Sand And Gravel

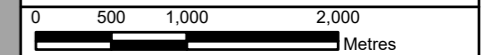


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Title

Figure 10-3
Superficial Geology



Figure Number
FIGURE 10-3

Drawing Reference
EGL-ARC-CONS-XX-DR-G-008

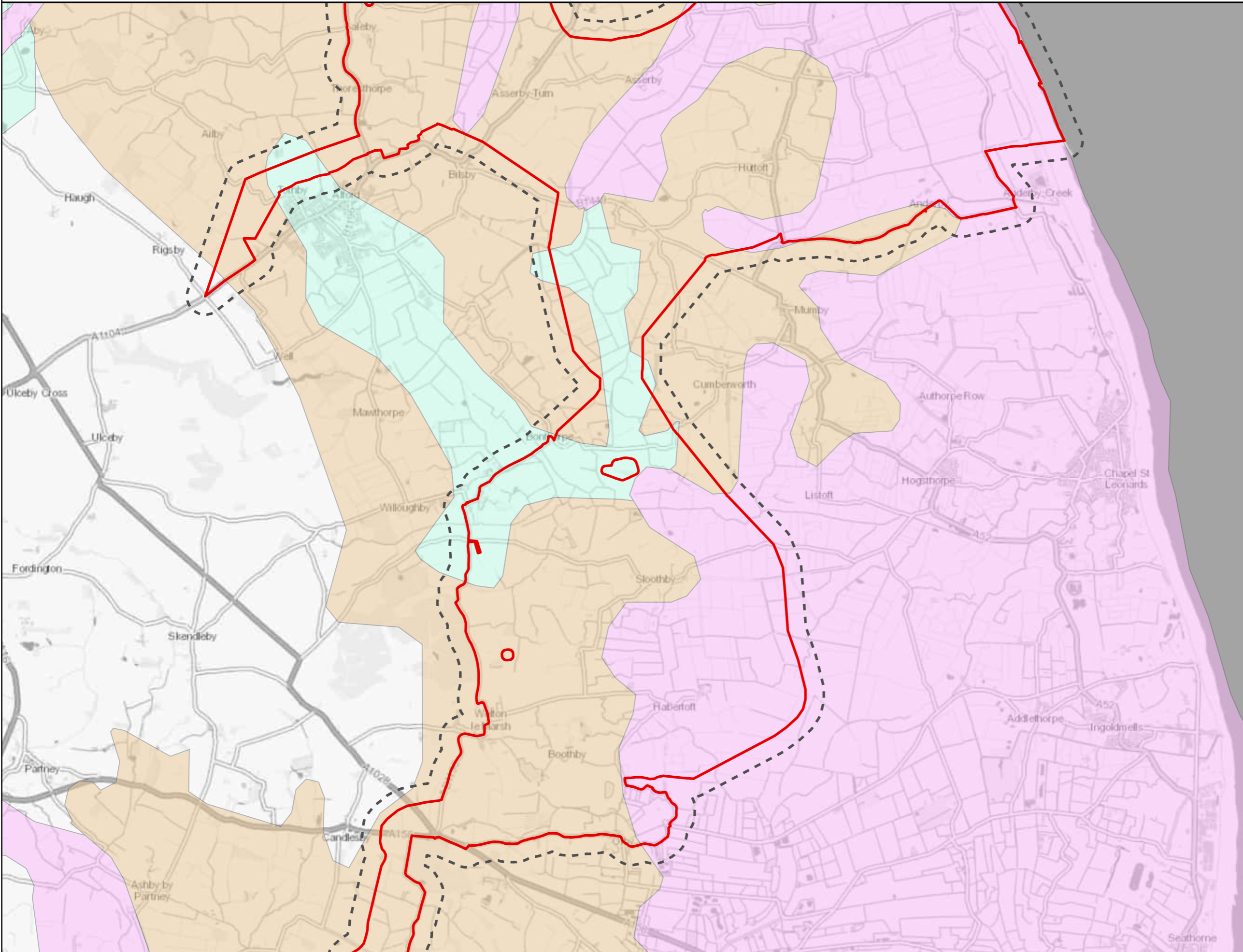
Scale	Sheet Size	Sheet	Issue
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Figure 10-3 Superficial Geology

Legend

- Scoping Boundary
- 250m Study Area
- Superficial Geology Data
 - Alluvial Deposits - Clay, Silt And Sand
 - Glacigenic Deposits - Diamicton (Clay, Sand And Gravel)
 - Glaciofluvial Deposits - Sand And Gravel

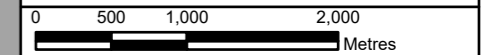


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Title

Figure 10-3
Superficial Geology

nationalgrid

Figure Number
FIGURE 10-3

Drawing Reference
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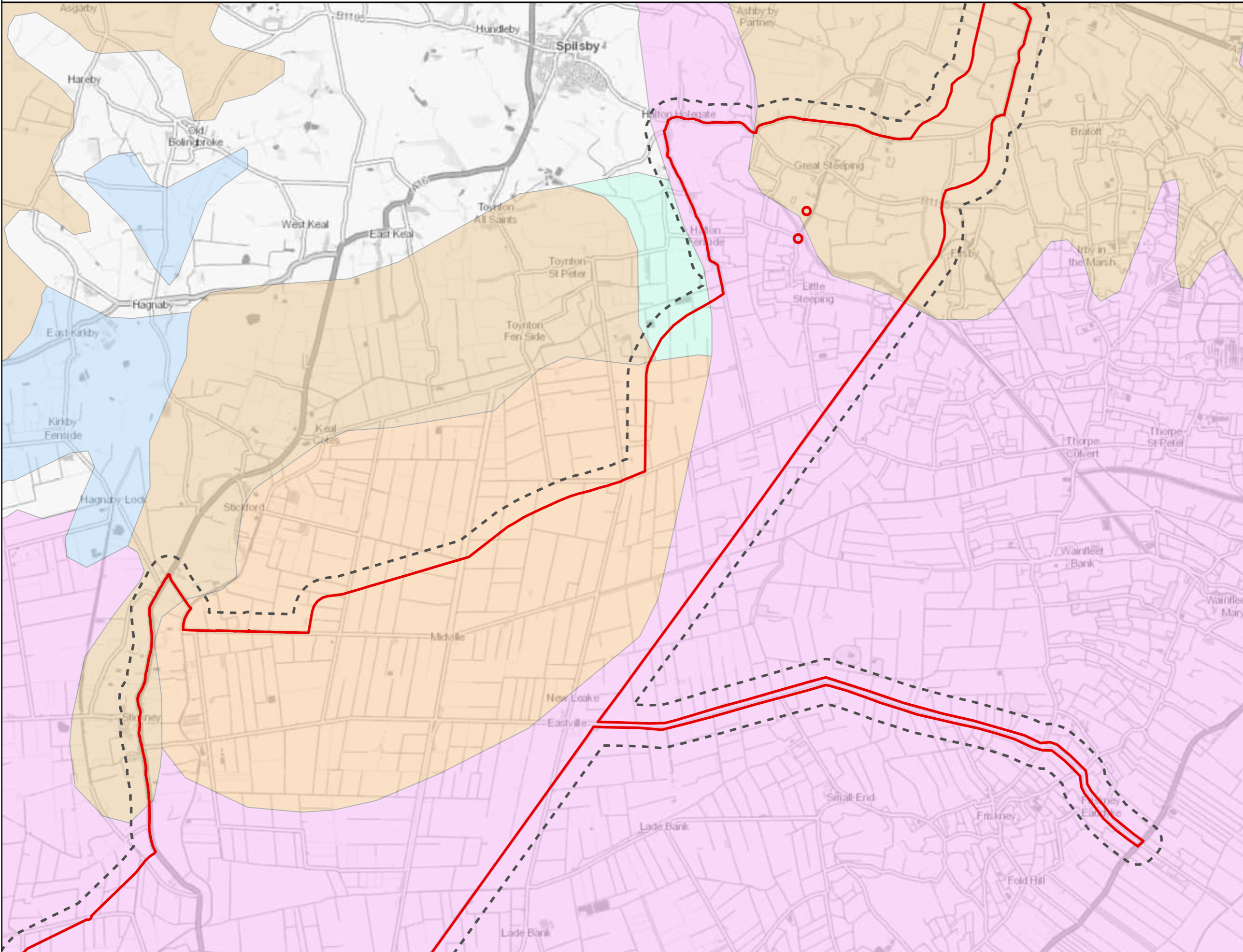
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Figure 10-3 Superficial Geology

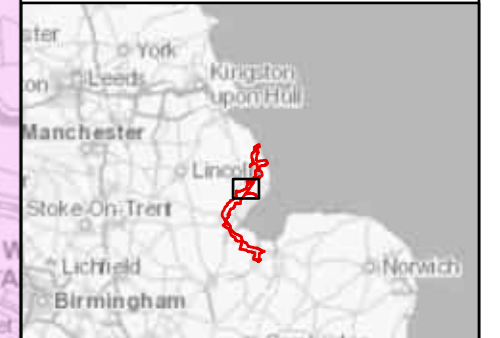
Legend

- Scoping Boundary
- 250m Study Area
- Superficial Geology Data**
- Alluvial Deposits - Clay, Silt And Sand
- Glacigenic Deposits - Diamicton (Clay, Sand And Gravel)
- Glaciofluvial Deposits - Sand And Gravel
- Organic Deposits - Peat
- River-Terrace Deposits - Sand And Gravel

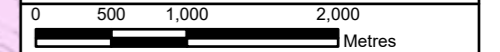


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Figure 10-3
Superficial Geology



Figure Number

FIGURE 10-3

Drawing Reference

EGL-ARC-CONS-XX-DR-G-008

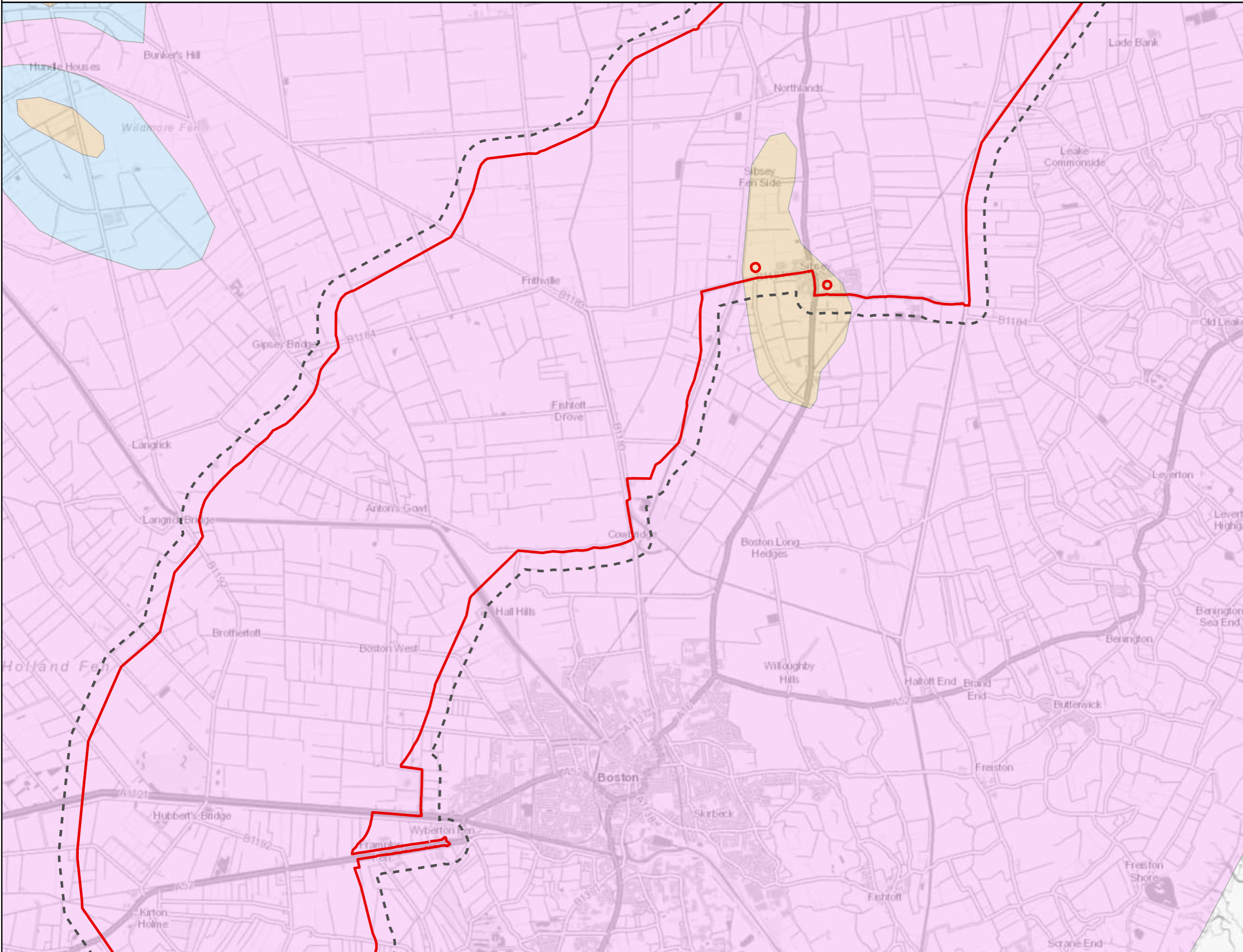
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Figure 10-3 Superficial Geology

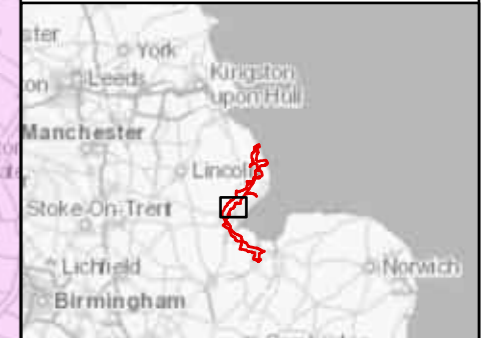
Legend

- Scoping Boundary
- 250m Study Area
- Superficial Geology Data
 - Alluvial Deposits - Clay, Silt And Sand
 - Glacigenic Deposits - Diamicton (Clay, Sand And Gravel)
 - River-Terrace Deposits - Sand And Gravel

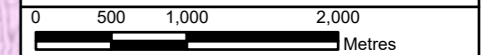


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Figure 10-3
Superficial Geology

nationalgrid

Figure Number
FIGURE 10-3

Drawing Reference
EGL-ARC-CONS-XX-DR-G-008

Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 4 OF 7	1



Figure 10-3 Superficial Geology

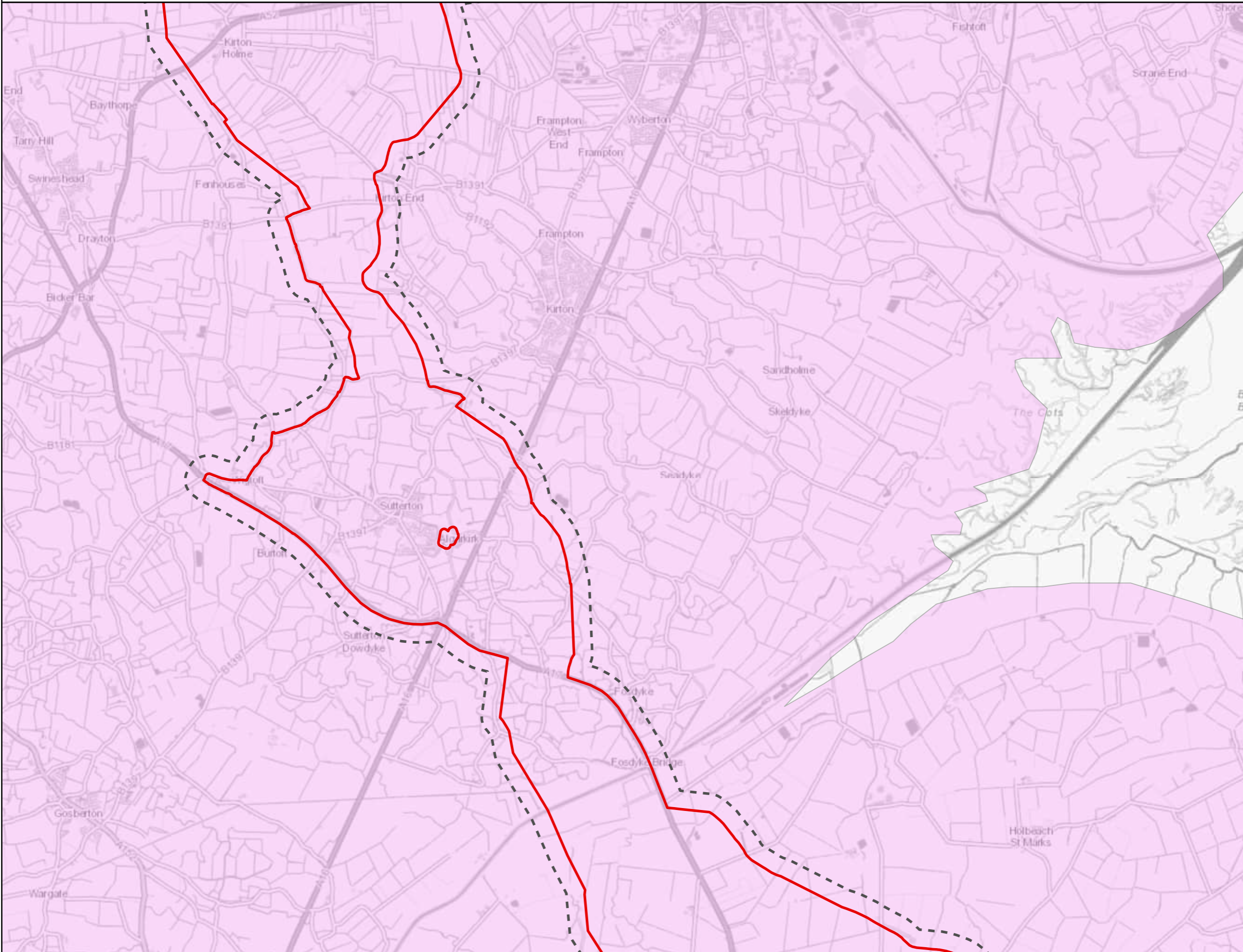
Legend

Scoping Boundary

250m Study Area

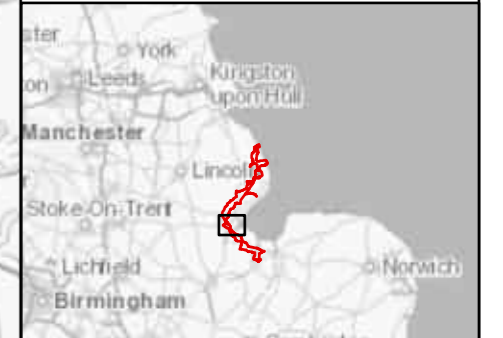
Superficial Geology Data

Alluvial Deposits - Clay, Silt And Sand

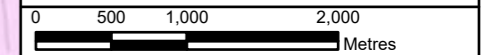


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Title

Figure 10-3
Superficial Geology

nationalgrid

Figure Number
FIGURE 10-3

Drawing Reference
EGL-ARC-CONS-XX-DR-G-008

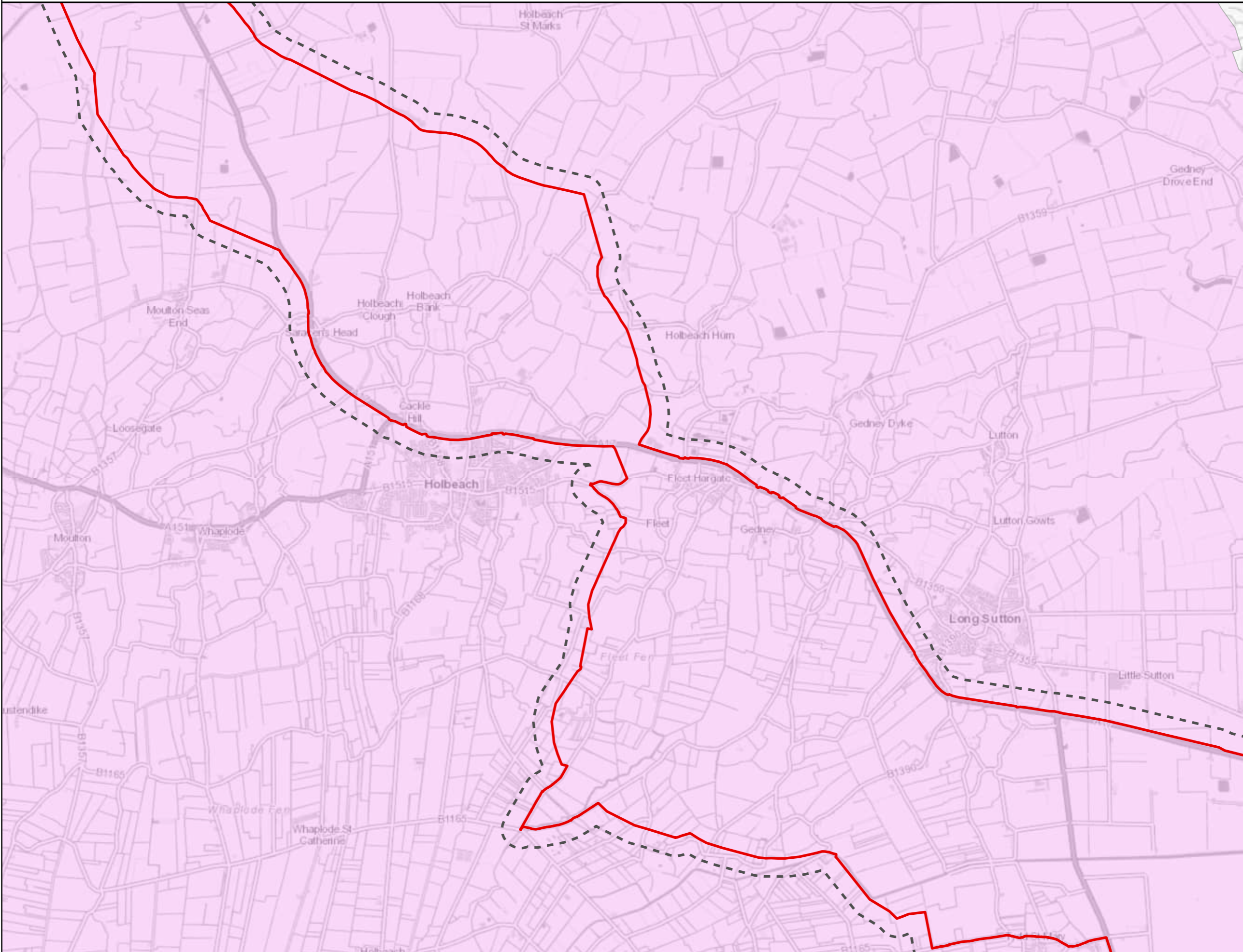
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Figure 10-3 Superficial Geology

Legend

- Scoping Boundary
- 250m Study Area
- Superficial Geology Data
- Alluvial Deposits - Clay, Silt And Sand

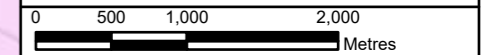


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Figure 10-3
Superficial Geology

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Figure Number

FIGURE 10-3

Drawing Reference

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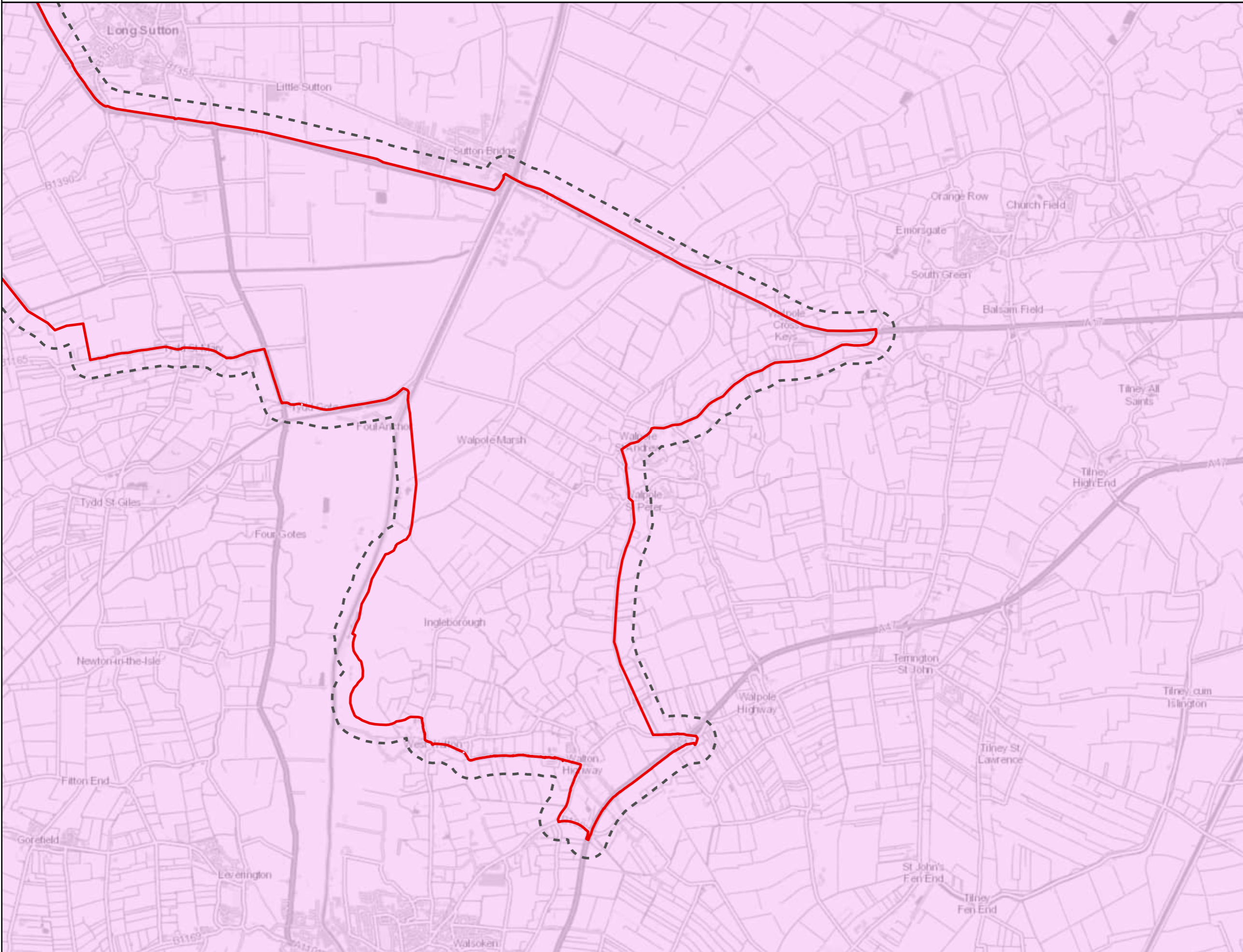
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Figure 10-3 Superficial Geology

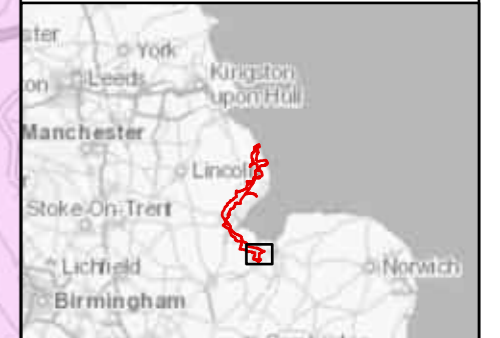
Legend

- Scoping Boundary
- 250m Study Area
- Superficial Geology Data
- Alluvial Deposits - Clay, Silt And Sand

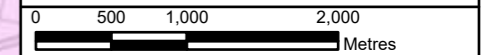


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Title

Figure 10-3
Superficial Geology



Figure Number
FIGURE 10-3

Drawing Reference
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Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 7 OF 7	1

Table 10-7: BGS Mapped Geological Units and Aquifer Classification within the Study Area

Section	Superficial / Bedrock	Geological Units	Aquifer Classification
Landfall at Theddlethorpe	Superficial	Beach and Tidal Flat Deposits. Blown Sand. Storm Beach Deposits	Secondary (undifferentiated). Secondary A. Secondary A
	Bedrock	Burnham Chalk Formation	Principal
Landfall at Anderby Creek	Superficial	Till, Devensian – Diamiction. Beach and Tidal Flat Deposits. Blown Sand. Tidal Flat Deposits - clay	Secondary (undifferentiated). Secondary (undifferentiated). Secondary A. Unproductive
	Bedrock	Burnham Chalk Formation	Principal
Section 1: Landfall to Bilsby	Superficial	Tidal Flats. Till, Devensian -Diamiction. Glacial Fluvial Deposits (sand and gravel)	Unproductive. Secondary (undifferentiated). Secondary A
	Bedrock	Burnham Chalk Formation and Welton Chalk Formation	Principal

Section 2: Bilsby to Welton Le Marsh	Superficial	Till, Devensian – Diamiction. Glacial Fluvial Deposits (sand and gravel)	Secondary (undifferentiated). Secondary A
	Bedrock	Welton Chalk Formation, Ferriby Chalk Formation, Carstone Formation. Roach Formation. Claxby Ironstone Formation, Tealby Formation and Roach Formation (undifferentiated). Spilsby Sandstone Formation	Principal. Secondary A. Secondary B. Principal
Section 3: Welton Le Marsh to Little Steeping	Superficial	Till, Devensian – Diamiction. Glacial Fluvial Deposits (sand and gravel)	Secondary (undifferentiated). Secondary A
	Bedrock	Ferriby Chalk Formation, Carstone Formation. Roach Formation. Claxby Ironstone Formation, Tealby Formation and Roach Formation (undifferentiated). Spilsby Sandstone Formation. Kimmeridge Clay Formation	Principal. Secondary A. Secondary B. Principal. Unproductive Strata

Section 4: Little Steeping to Sibsey Northlands	Superficial	Till, Devensian – Diamiction. Glacial Fluvial Deposits (sand and gravel). Peat. Tidal Flats	Secondary (undifferentiated). Secondary A. Unproductive Strata. Unproductive Strata
	Bedrock	Spilsby Sandstone Formation. Kimmeridge Clay Formation	Principal. Unproductive Strata
Section 5: Sibsey Northlands to Hubbert’s Bridge	Superficial	Till, Devensian – Diamiction. Tidal Flats	Secondary (undifferentiated). Unproductive Strata
	Bedrock	Kimmeridge Clay Formation. Amphill Clay Formation	Unproductive Strata. Unproductive Strata
Section 6: Hubbert’s Bridge to Moulton Seas End	Superficial	Tidal Flats	Unproductive Strata
	Bedrock	Amphill Clay Formation. West Walton Formation. Oxford Clay Formation	Unproductive Strata. Unproductive Strata. Unproductive Strata
Section 7: Moulton Seas End to Foul Anchor	Superficial	Tidal Flats	Unproductive Strata
	Bedrock	Oxford Clay Formation. Amphill Clay Formation	Unproductive Strata. Unproductive Strata

Section 8: Foul Anchor to Walpole (including Walpole Station Area)	Superficial	Tidal Flats	Unproductive Strata
	Bedrock	Amphill Clay Formation.	Unproductive Strata.
		Kimmeridge Clay Formation	Unproductive Strata

Coal Authority

- 10.4.14 A review of the Coal Authority Interactive Map viewer (Ref 10.32) confirmed that there are no features of interest located within the study area.

Minerals

- 10.4.15 Mineral safeguarding is the process of ensuring that non-minerals development does not needlessly prevent the future extraction of mineral resources of local and national importance. Mineral Planning Authorities designate strategic sites as preferred and/or reserve mineral sites for extraction within their spatial development plans, identifying sites where the principle of extraction has been accepted and the need for the release of minerals is proven. Mineral Safeguarding Areas (MSAs) identify where resources are located to make relevant parties aware of the presence of the resources and ensure that their presence is considered when determining the acceptability of planning applications, so that these resources are not needlessly sterilised.
- 10.4.16 The Lincolnshire Minerals Local Plan (Ref 10.12), East Lindsey Minerals Safeguarding Areas Policies Map (Ref 10.15) and Cambridgeshire and Peterborough Minerals and Waste Local Plan (Ref 10.14) were reviewed. No Mineral Safeguarding Areas or strategically designated sites and facilities were identified within the study area.

Land Based Designations and Geological Sites

- 10.4.17 A total of three SSSI were identified within the geology study area:
- Saltfleetby SSSI – Theddlethorpe Dunes is located at the proposed Theddlethorpe landfall site;
 - Sea Bank Clay Pits SSSI is located within 50 m of the Scoping Boundary at the proposed Anderby Creek landfall site; and
 - Willoughby Meadow SSSI is located within Section 2: Bilsby to Welton Le Marsh. It is located directly adjacent to the Scoping Boundary approximately 500 m south of the village of Willoughby.
- 10.4.18 None of the identified SSSI are designated for their geological interest.
- 10.4.19 No regional or local sites of geological importance were identified within the publicly available desk study data. Consultation with local geological and geoconservation interest groups will be carried out to identify sites of regional and local importance to inform the developing cable route and supporting impact assessment presented in the ES.

Hydrogeology

- 10.4.20 The hydrogeological context of the English Onshore Scheme is summarised in the following sections, drawing on the geological context presented in **Table 10-7, Figure 10.2: Bedrock Geology** and **Figure 10.3: Superficial Geology**

10.4.21 and a variety of published data sources. Site specific data has not yet been collected for the English Onshore Scheme.

Source Protection Zones

10.4.22 Source Protection Zones are non-statutory planning tools, used by the Environment Agency for informing a risk-based approach to planning and environmental permitting. It is a material consideration that the English Onshore Scheme includes works both above and below ground and may, as a consequence, reduce the effectiveness of protection to groundwater afforded by any overlying or unsaturated zone strata.

10.4.23 The Environment Agency has published Source Protection Zones around strategic potable water abstractions, typically those used for Public Water Supply or large scale commercial use such as hospitals or food manufacturing. These are available on MAGIC mapping service (Ref 10.36). In addition to delineated (published) Source Protection Zones, any source of groundwater that is used for potable water abstraction purposes will benefit from a minimum level of protection defined by unpublished Source Protection Zones with default radius of 50 m (Source Protection Zone 1, described in this document as SPZ1) and 250 m (Source Protection Zone 2, described in this document as SPZ2) (Ref 10.44).

10.4.24 The presence of published Source Protection Zones within each section is identified in **Table 10-8** and presented on **Figure 10.4: Groundwater Source Protection Zones**. Data has been derived from Environment Agency published data (Ref 10.45).

10.4.25 When discussing Source Protection Zones within the Environmental Statement (ES) any reference to the specific location of public abstraction sources will incorporate degraded NGET references for reasons of national security.

10.4.26 It should be noted that the design of the English Onshore Scheme does not incorporate liquid coolants within the buried cable elements hence this does not need to be considered as part of our risk assessment.

10.4.27 The locations of other water sources benefitting from the unpublished default Source Protection Zones will be identified during the detailed assessment process.

Table 10-8: Published Source Protection Zones

Section	No. of Published Zones	Classification
Landfall at Theddlethorpe	None published	N/A
Landfall at Anderby Creek	One	SPZ3 over the entirety of this area.
Section 1: Theddlethorpe to Bilsby (including LCS Converter Station Area)	Multiple zones present	SPZ1, SPZ2 and SPZ2 (confined) present at the southern end of this section, and SPZ3 present over approximately 90% of the remaining section (not present

Section	No. of Published Zones	Classification
		in the northern end of this section).
Section 2: Bilsby to Welton Le Marsh	Multiple zones present	SPZ1, SPZ2 and SPZ2 (confined) at the southern end of this section, and SPZ3 present over the remainder of this section.
Section 3: Welton Le Marsh to Little Steeping	Multiple zones present	SPZ1, SPZ2 and SPZ2 (confined) at the northern end of this section, and SPZ3 present over the remainder of this section.
Section 4: Little Steeping to Sibsey Northlands	None published	N/A
Section 5: Sibsey Northlands to Hubbert's Bridge	None published	N/A
Section 6: Hubbert's Bridge to Moulton Seas End	None published	N/A
Section 7: Moulton Seas End to Foul Anchor	None published	N/A
Section 8: Foul Anchor to Walpole (including Walpole Substation)	None published	N/A



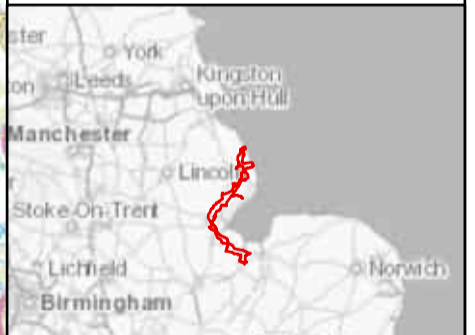
Figure 10-4 Groundwater Source Protection Zones (Overview)

Legend

- Scoping Boundary
- Scoping Boundary Section Break



Notes
 This drawing is scaled at paper size A3, therefore any prints taken at smaller sizes will affect accuracy of the measurement units and should not be scaled against.



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 Sheet X Centroid Coordinate: 540239.88E Sheet Y Centroid Coordinate: 350760.07N

0 2.5 5 10
 Kilometres

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Issue Date Remarks Drawn Checked Approved

Title
 Figure 10-4 Groundwater Source Protection Zones

nationalgrid

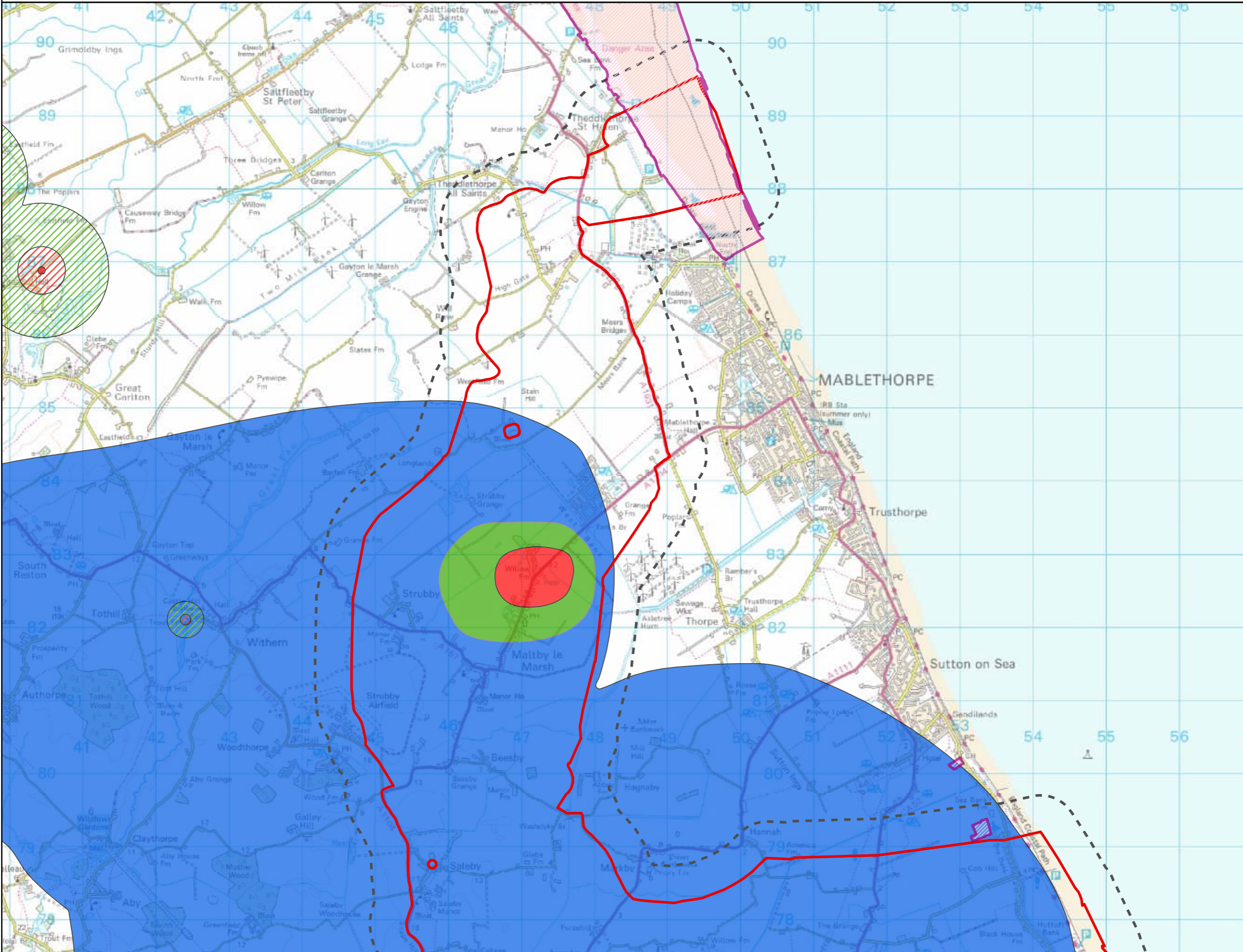
Figure Number
 FIGURE 10-4

Drawing Reference
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Figure 10-4 Groundwater Source Protection Zones



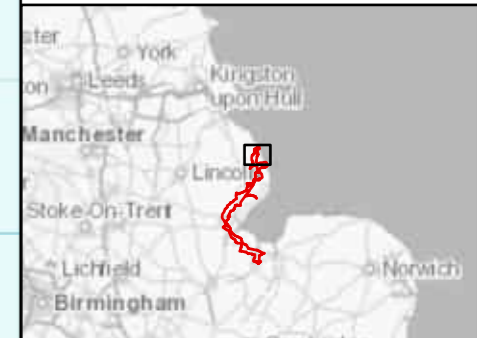
Legend

- Scoping Boundary
- 500m Study Area
- Sites of Special Scientific Interest

Groundwater Source Protection Zones

- Source Protection Zone 1
- Source Protection Zone 1c
- Source Protection Zone 2
- Source Protection Zone 2c
- Source Protection Zone 3

Notes
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Figure 10-4
Groundwater Source
Protection Zones

Figure Number		FIGURE 10-4	
Drawing Reference			
EGL-ARC-CONS-XX-DR-G-010			
Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 1 OF 7	1



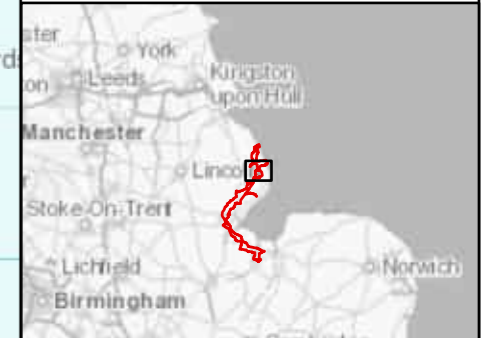
Figure 10-4 Groundwater Source Protection Zones

Legend

-  Scoping Boundary
-  500m Study Area
-  Sites of Special Scientific Interest
- Groundwater Source Protection Zones**
-  Source Protection Zone 1
-  Source Protection Zone 1c
-  Source Protection Zone 2
-  Source Protection Zone 2c
-  Source Protection Zone 3

Notes

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Title

Figure 10-4
Groundwater Source
Protection Zones

nationalgrid

Figure Number
FIGURE 10-4

Drawing Reference
EGL-ARC-CONS-XX-DR-G-010

Scale	Sheet Size	Sheet	Issue
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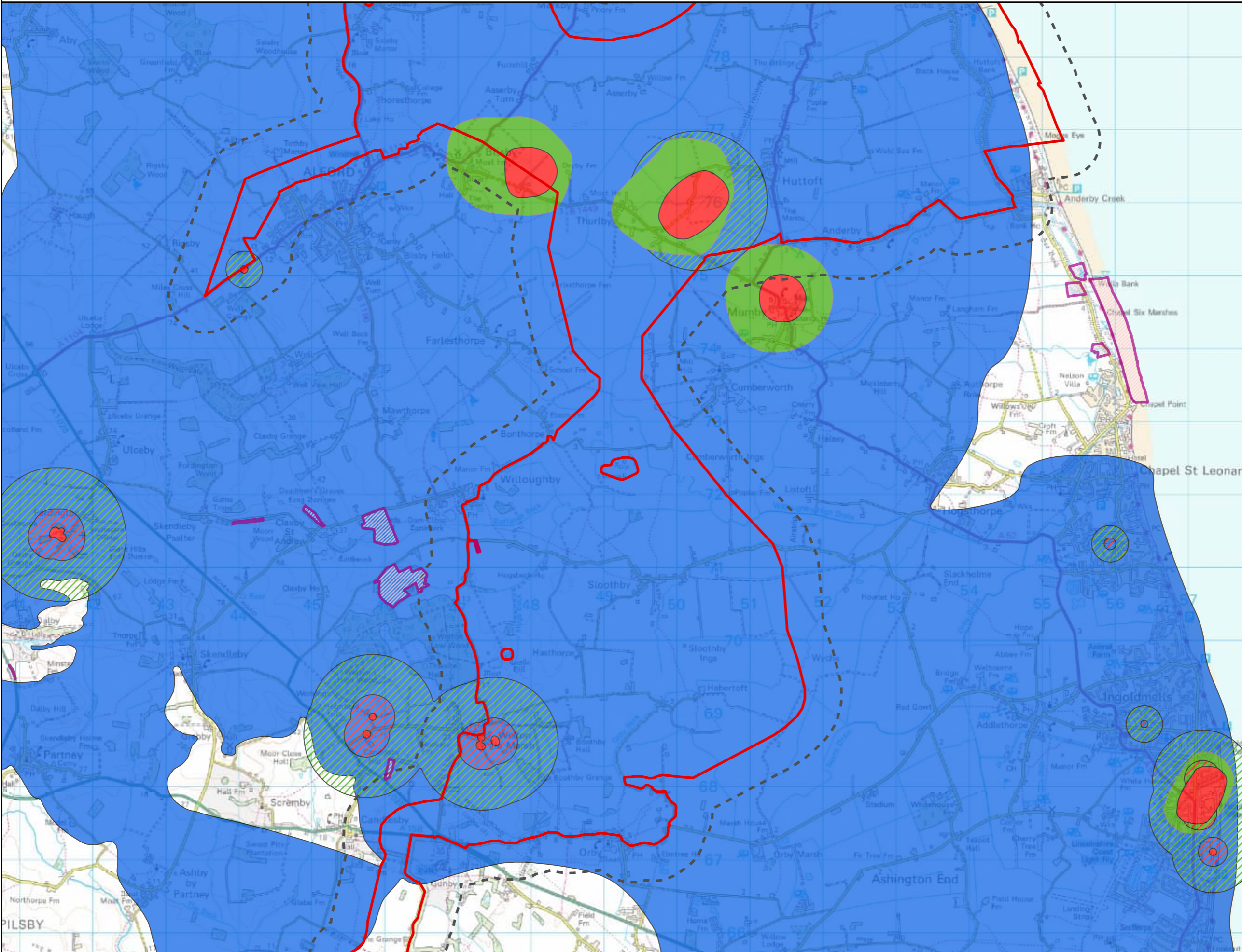
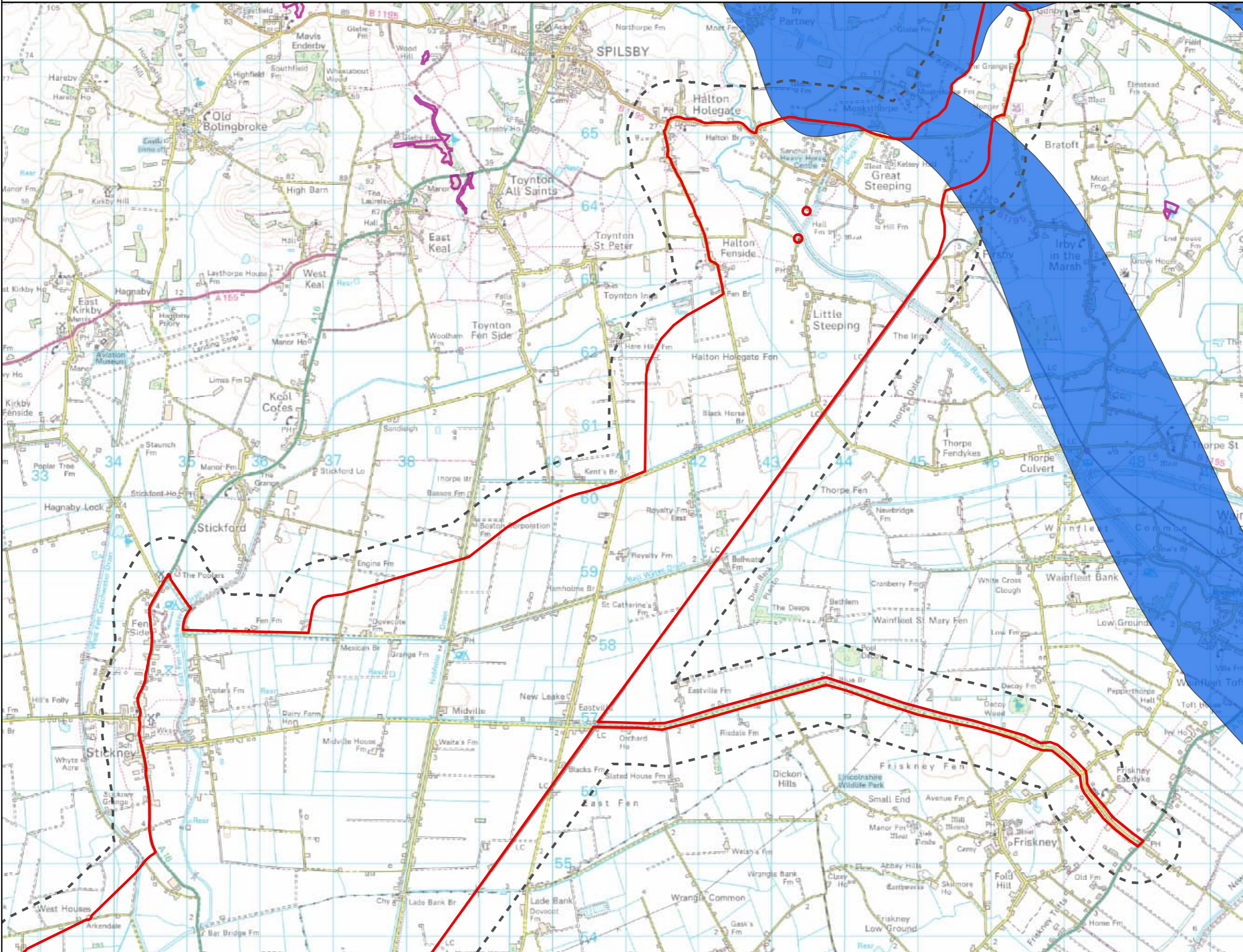


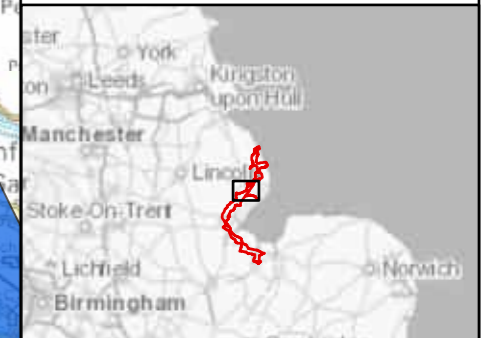


Figure 10-4 Groundwater Source Protection Zones

- Legend**
- Scoping Boundary
 - 500m Study Area
 - Sites of Special Scientific Interest
- Groundwater Source Protection Zones**
- Source Protection Zone 1
 - Source Protection Zone 1c
 - Source Protection Zone 2
 - Source Protection Zone 2c
 - Source Protection Zone 3



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Figure 10-4
Groundwater Source
Protection Zones

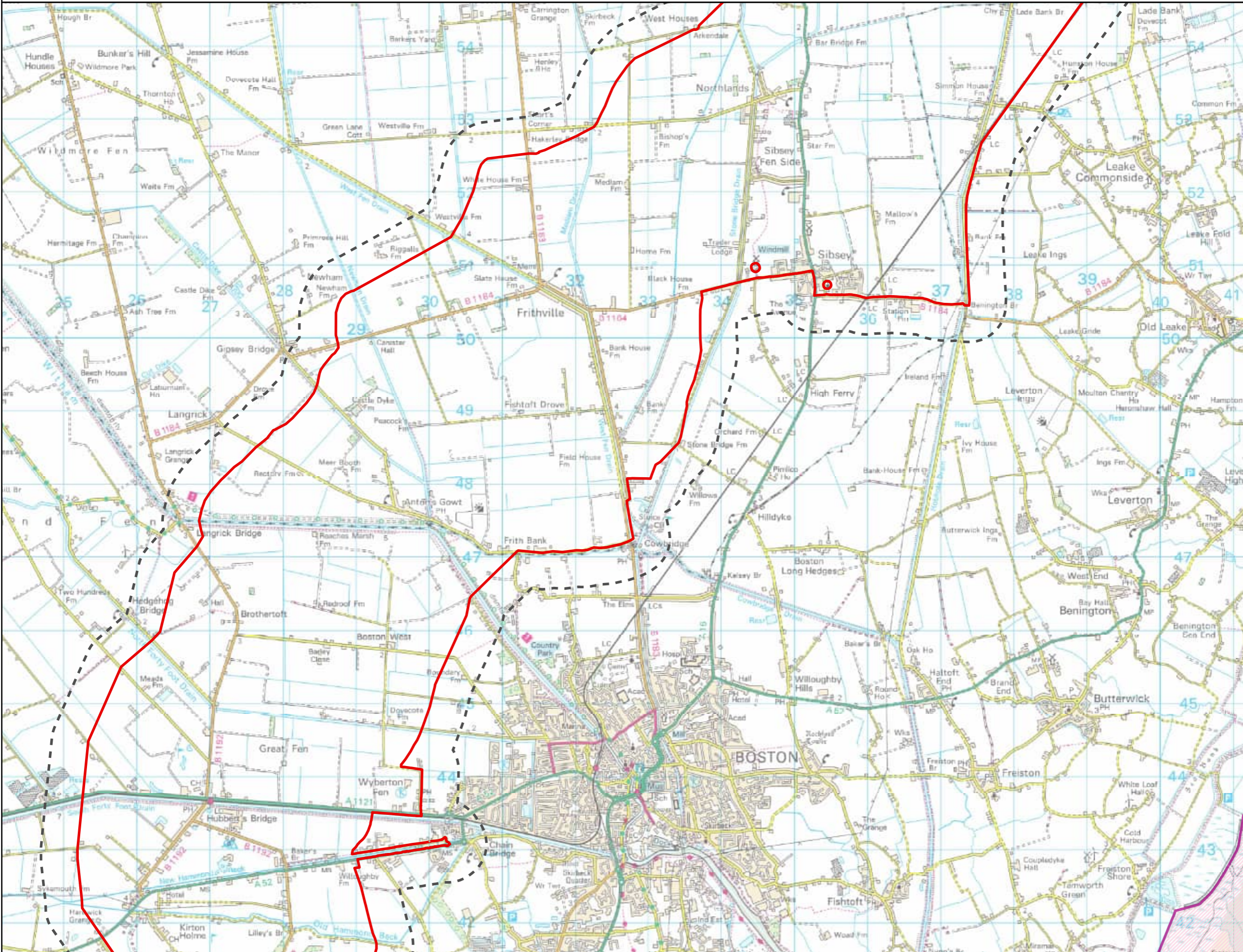
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Drawing Reference	EGL-ARC-CONS-XX-DR-G-010		
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1:50,000	A3	SHEET 3 OF 7	1



Figure 10-4 Groundwater Source Protection Zones

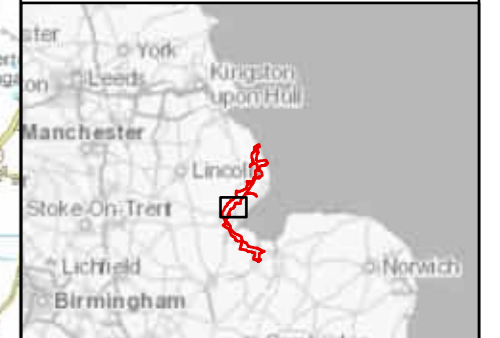
Legend

-  Scoping Boundary
-  500m Study Area
-  Sites of Special Scientific Interest
-  Source Protection Zone 1
-  Source Protection Zone 1c
-  Source Protection Zone 2
-  Source Protection Zone 2c
-  Source Protection Zone 3

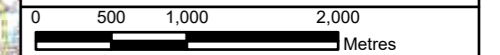


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Figure 10-4
Groundwater Source
Protection Zones



Figure Number
FIGURE 10-4

Drawing Reference
EGL-ARC-CONS-XX-DR-G-010

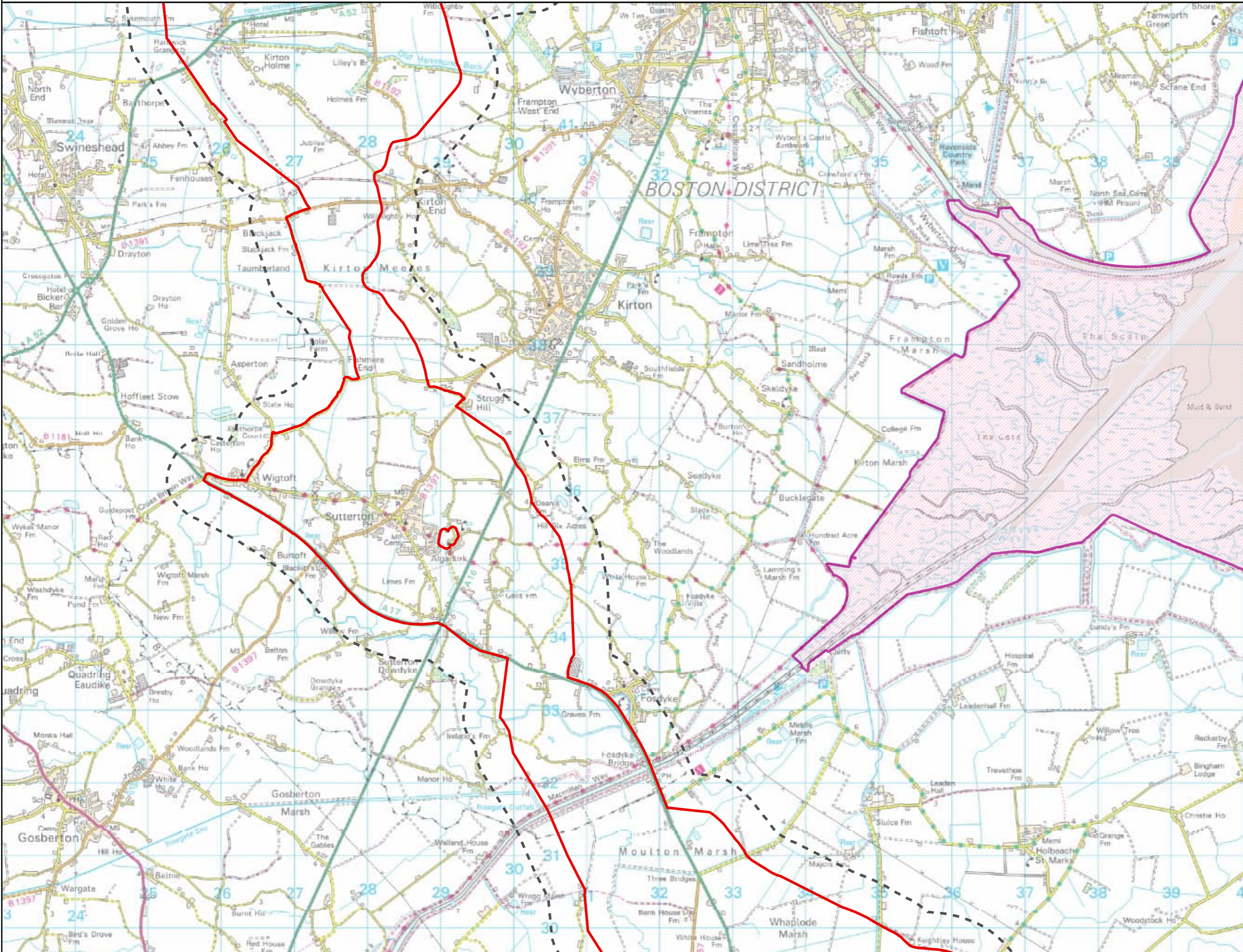
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Figure 10-4 Groundwater Source Protection Zones

Legend

- Scoping Boundary
- 500m Study Area
- Sites of Special Scientific Interest
- Source Protection Zone 1
- Source Protection Zone 1c
- Source Protection Zone 2
- Source Protection Zone 2c
- Source Protection Zone 3



Notes
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Title
 Figure 10-4
 Groundwater Source
 Protection Zones

nationalgrid			
Figure Number	FIGURE 10-4		
Drawing Reference	EGL-ARC-CONS-XX-DR-G-010		
Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 5 OF 7	1



Figure 10-4 Groundwater Source Protection Zones

Legend

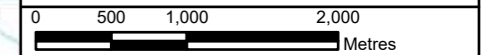
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- 500m Study Area
- Sites of Special Scientific Interest
- Groundwater Source Protection Zones**
- Source Protection Zone 1
- Source Protection Zone 1c
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- Source Protection Zone 3

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Figure 10-4
Groundwater Source Protection Zones



Figure Number
FIGURE 10-4

Drawing Reference
EGL-ARC-CONS-XX-DR-G-010

Scale	Sheet Size	Sheet	Issue
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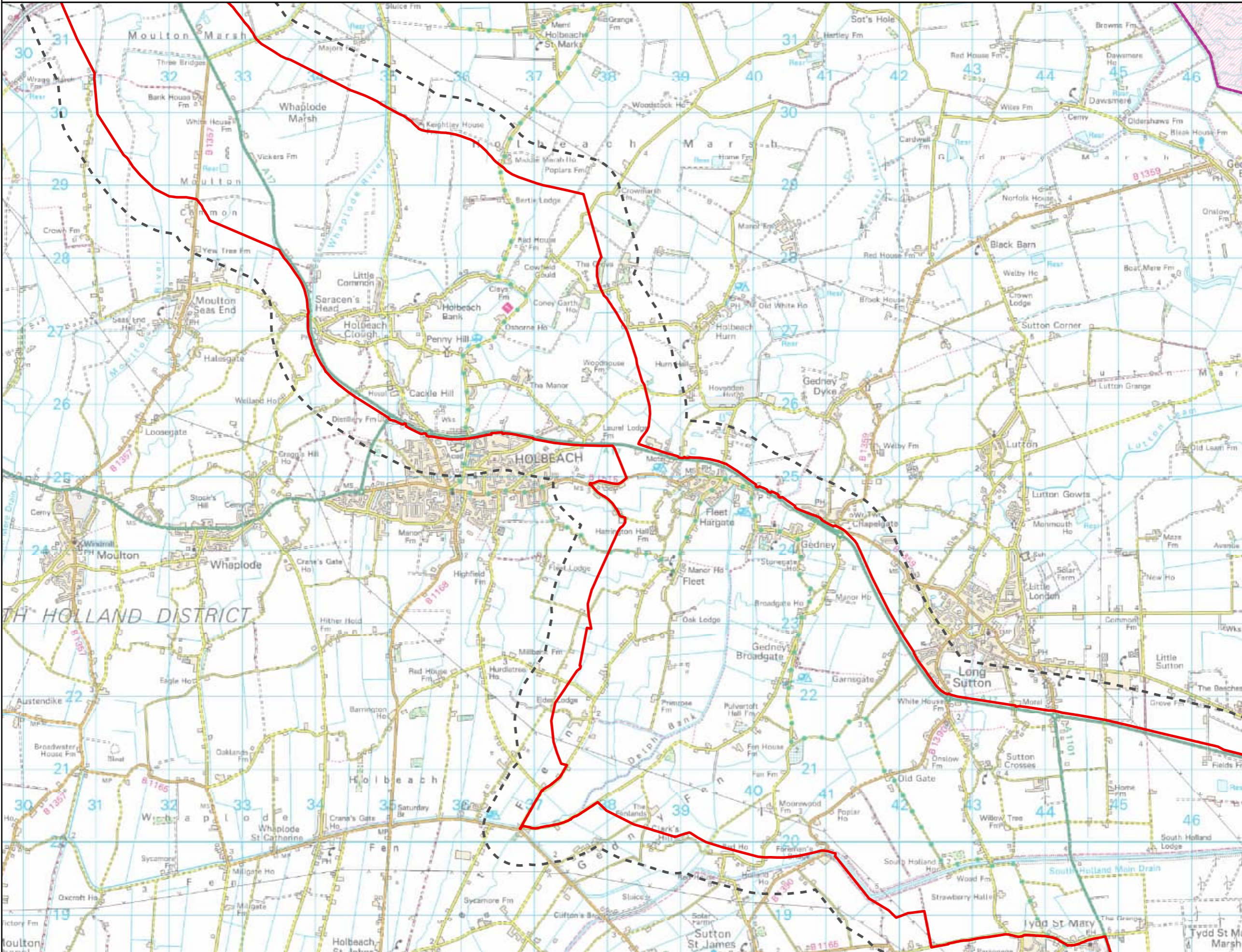










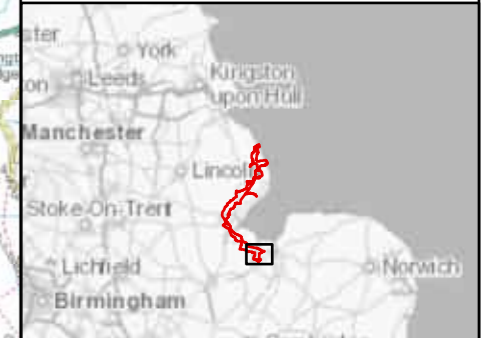
Figure 10-4 Groundwater Source Protection Zones

Legend

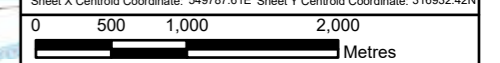
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-  500m Study Area
-  Sites of Special Scientific Interest
-  Source Protection Zone 1
-  Source Protection Zone 1c
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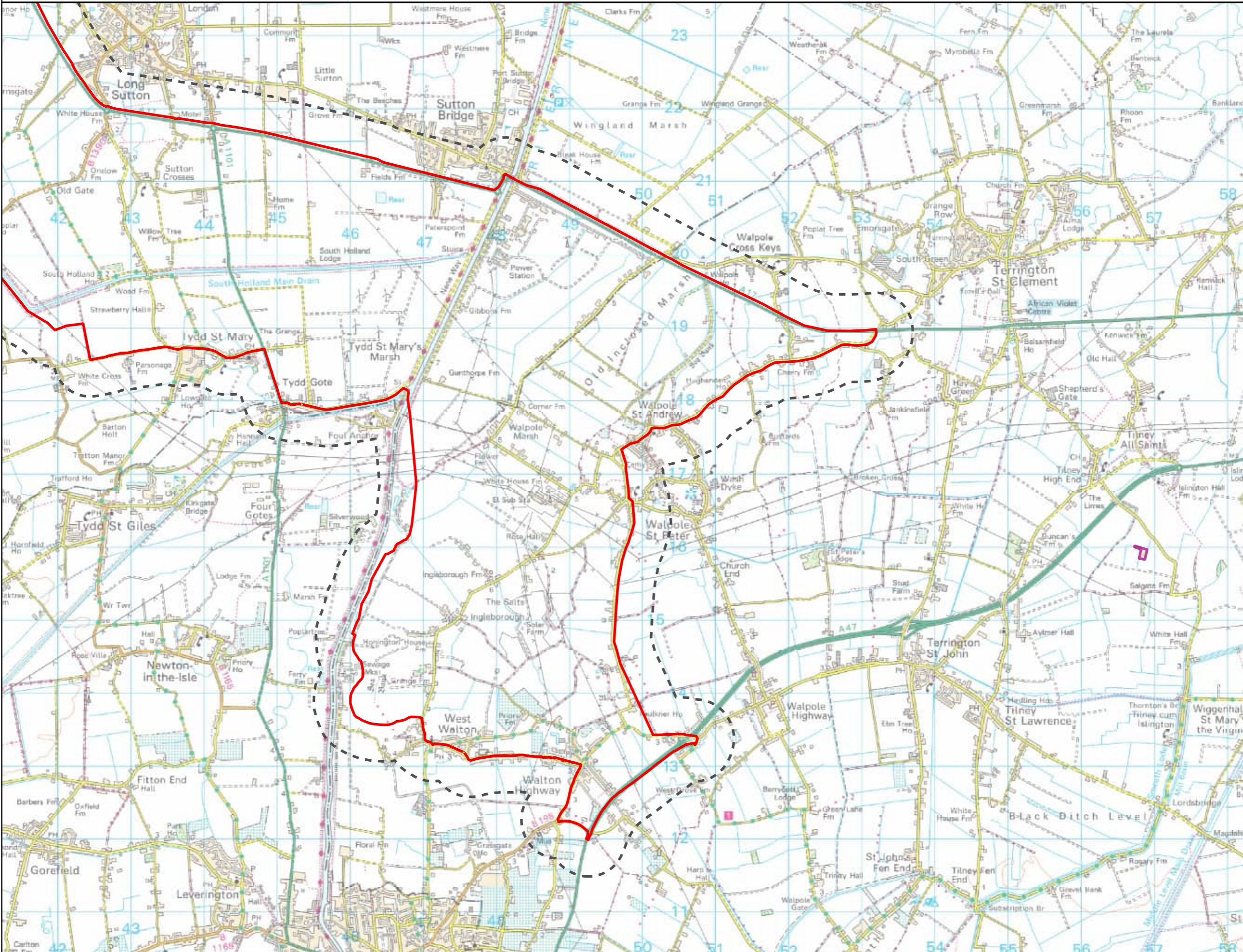
Figure 10-4
Groundwater Source
Protection Zones



Figure Number
FIGURE 10-4

Drawing Reference
EGL-ARC-CONS-XX-DR-G-010

Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 7 OF 7	1



Water Framework Directive Groundwater Bodies

- 10.4.28 Within England, objectives under the European Union Water Framework Directive have been translated into the Water Environment (Water Framework Directive) (England and Wales) Regulations (2017) (“WFD Regulations”) (WFD) (Ref 10.9).
- 10.4.29 Groundwater Bodies designated in WFD Regulations Cycle 3 are present within Section 1A, 1B, 2, and 3 inclusive of the English Onshore Scheme (Ref 10.46). These are detailed in **Table 10-9** and all are situated within Management Catchments of the Anglian River Basin District.
- 10.4.30 Classification information has been obtained from the Environment Agency’s Catchment Data Explorer (Ref 10.47).

Table 10-9: Water Framework Directive Groundwater Bodies

Section	Groundwater Body	Classification
Landfall at Theddlethorpe	South Lincolnshire Chalk Unit (GB40501G104600)	Overall Status: Poor. Driven by ‘poor’ rating for ‘General Chemical Test’ attributed to diffuse source pollution associated with agriculture and rural land management.
Landfall at Anderby Creek	South Lincolnshire Chalk Unit (GB40501G104600)	Overall Status: Poor. Driven by ‘poor’ rating for ‘General Chemical Test’ attributed to diffuse source pollution associated with agriculture and rural land management.
Section 1: Theddlethorpe to Bilsby (including LCS Converter Station Area)	South Lincolnshire Chalk Unit (GB40501G104600)	Overall Status: Poor. Driven by ‘poor’ rating for ‘General Chemical Test’ attributed to diffuse source pollution associated with agriculture and rural land management.
Section 2: Bilsby to Welton Le Marsh	South Lincolnshire Chalk Unit (GB40501G104600)	Overall Status: Poor. Driven by ‘poor’ rating for ‘General Chemical Test’ attributed to diffuse source pollution associated with agriculture and rural land management.
Section 3: Welton Le Marsh to Little Steeping	South Lincolnshire Chalk Unit (GB40501G104600)	Overall Status: Poor. Driven by ‘poor’ rating for ‘General Chemical Test’ attributed to diffuse source pollution associated with agriculture and rural land management.
Section 4: Little Steeping to Sibsey Northlands		Overall Status: Poor. Driven by ‘poor’ rating for ‘General Chemical Test’ attributed to diffuse source pollution associated with agriculture and rural land management.

Section	Groundwater Body	Classification
	Spilsby Sandstone Unit (GB40501G401700)	Overall Status: Poor. Driven by 'poor' rating for Quantitative Water Balance.
Section 5: Sibsey Northlands to Hubbert's Bridge	None present	N/A
Section 6: Hubbert's Bridge to Moulton Seas End	None present	N/A
Section 7: Moulton Seas End to Foul Anchor	None present	N/A
Section 8: Foul Anchor to Walpole (including Walpole Station Area).	None present	N/A

Groundwater Dependent Terrestrial Ecosystems

- 10.4.31 The "WFD Regulations" require Groundwater Dependent Terrestrial (as opposed to subterranean) Ecosystems to be identified and the pressures on them assessed. Where significant damage is occurring (or could occur) to a Groundwater Dependent Terrestrial Ecosystem (GWDTE) the associated groundwater body is considered at risk of not attaining good status under the "WFD Regulations".
- 10.4.32 Assessment of risk to identified GWDTEs will therefore be included within the ES. Risks may be water quality or water quantity driven.
- 10.4.33 The presence of GWDTEs, within each section of the Scoping Boundary is described in **Table 10-10 and presented on Figure 10.5: Groundwater Dependent Terrestrial Ecosystems/Sites of Special Scientific Interest** using data obtained from the Environment Agency (Ref 10.42).

Table 10-10: Groundwater Dependent Terrestrial Ecosystems

Section	GWDTE	Other Classifications
Landfall at Theddlethorpe	Saltfleetby – Theddlethorpe Dunes SSSI	SAC, Ramsar, SPA, NNR
Landfall at Anderby Creek	Sea Bank Clay Pits SSSI	N/A
Section 1: Landfall to Bilsby (including LCS Converter Station Area)	None identified	N/A
Section 2: Bilsby to Welton Le Marsh	Willoughby Meadow SSSI	N/A
Section 3: Welton Le Marsh to Little Steeping	None identified	N/A

Section	GWDTE	Other Classifications
Section 4: Little Steeping to Sibsey Northlands	None identified	N/A
Section 5: Sibsey Northlands to Hubbert's Bridge	None identified	N/A
Section 6: Hubbert's Bridge to Moulton Seas End	None identified	N/A
Section 7: Moulton Seas End to Foul Anchor	None identified	N/A
Section 8: Foul Anchor to Walpole (including Walpole Station Area).	None identified	N/A



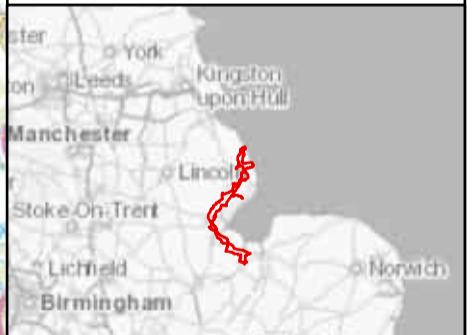
Figure 10-5 Groundwater Dependent terrestrial Ecosystems / SSSI (Overview)

Legend

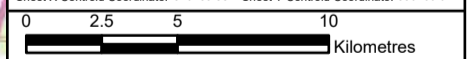
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Figure 10-5
 Groundwater Dependent terrestrial Ecosystems / SSSI



Figure Number
 FIGURE 10-5

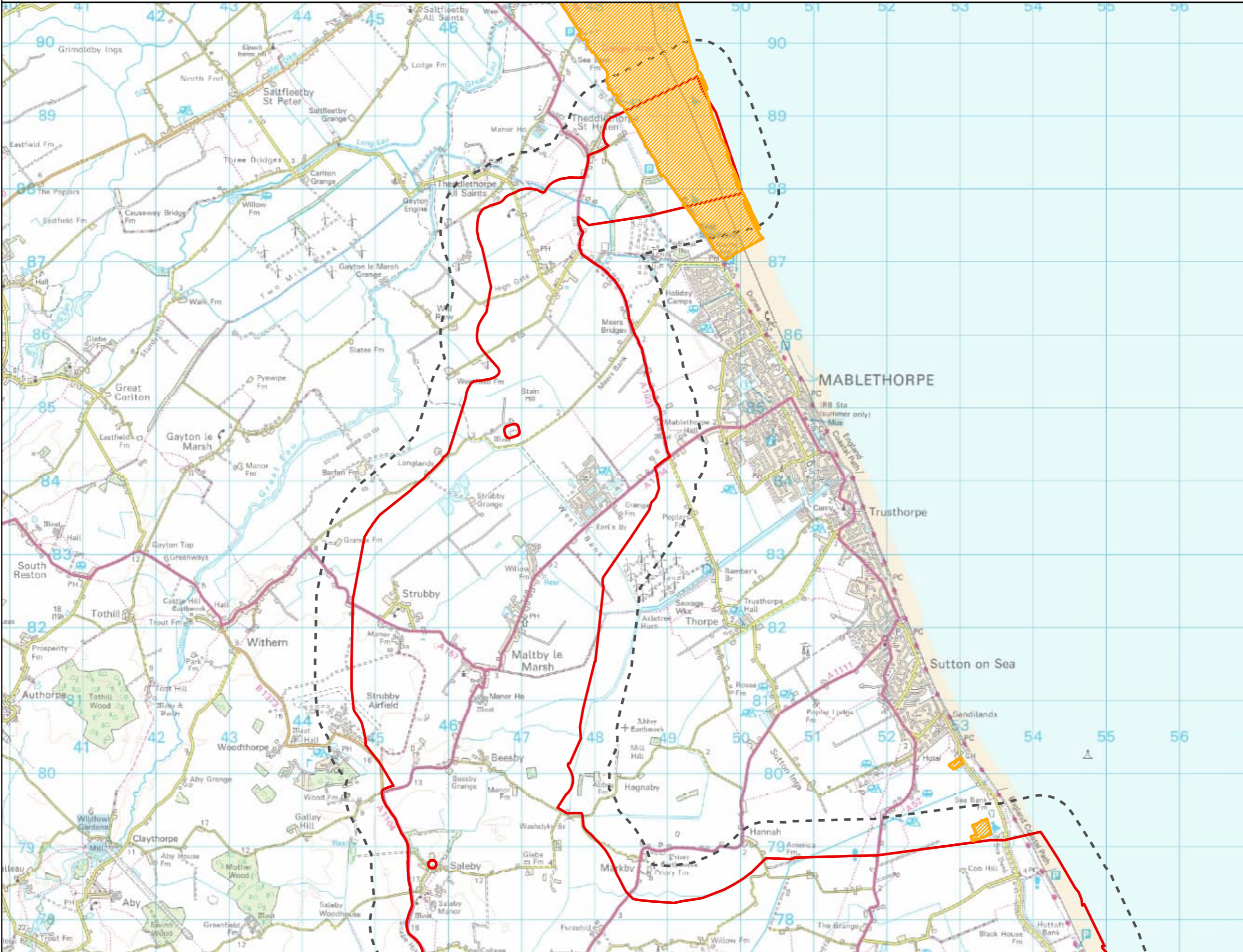
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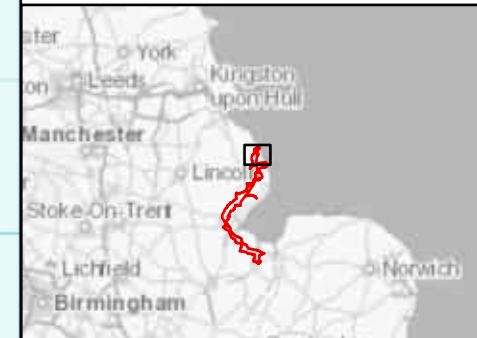


Figure 10-5 Groundwater Dependent terrestrial Ecosystems / SSSI

- Legend**
- Scoping Boundary
 - 500m Buffer
 - Sites of Special Scientific Interest
 - Groundwater Dependent terrestrial Ecosystems



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Title

Figure 10-5
 Groundwater Dependent
 terrestrial Ecosystems / SSSI

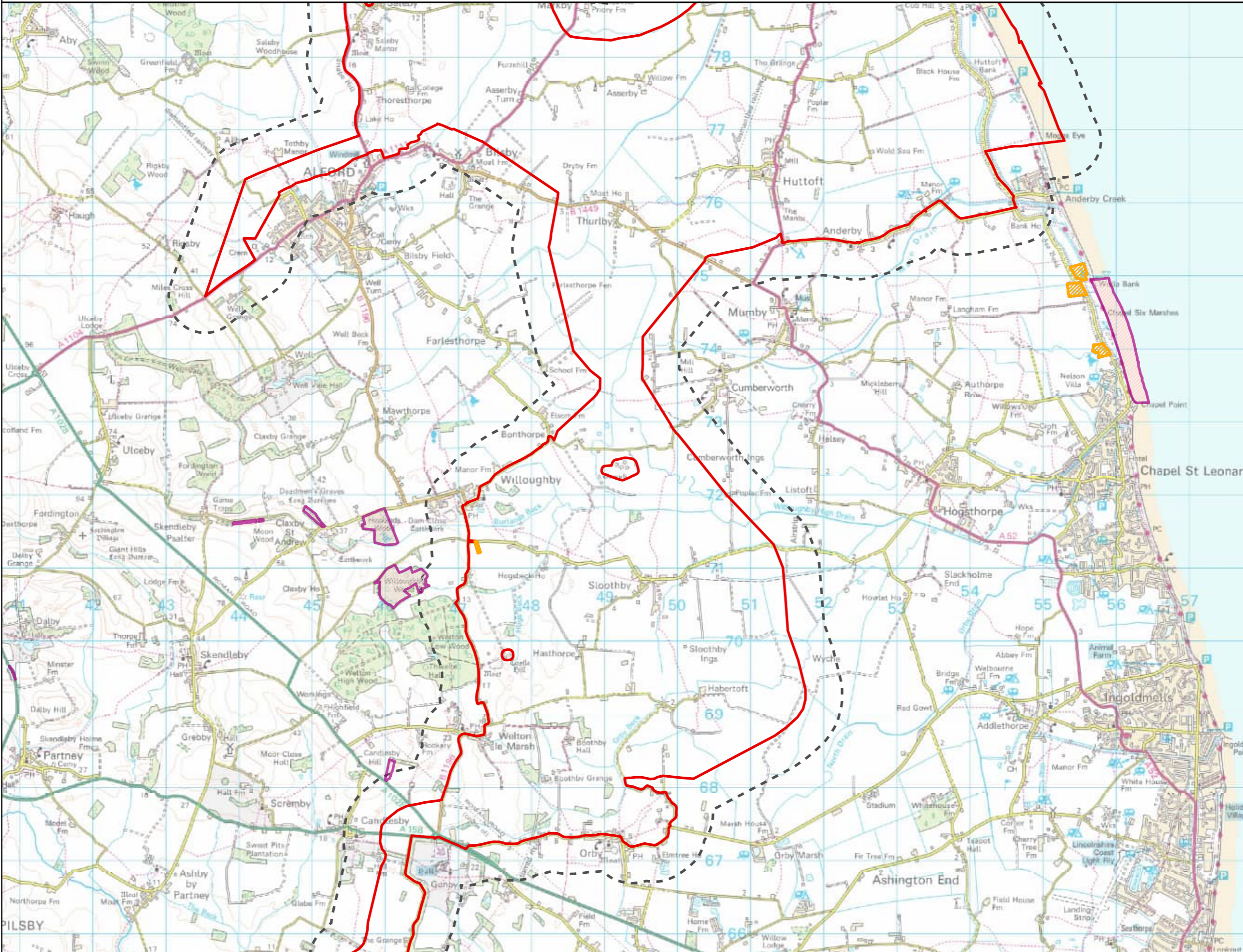
nationalgrid			
Figure Number			
FIGURE 10-5			
Drawing Reference			
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Scale	Sheet Size	Sheet	Issue
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Figure 10-5 Groundwater Dependent terrestrial Ecosystems / SSSI

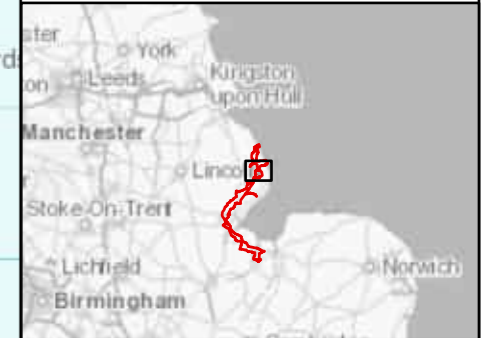
Legend

- Scoping Boundary
- 500m Buffer
- Sites of Special Scientific Interest
- Groundwater Dependent terrestrial Ecosystems

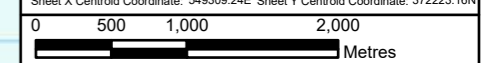


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Figure 10-5
Groundwater Dependent
terrestrial Ecosystems / SSSI

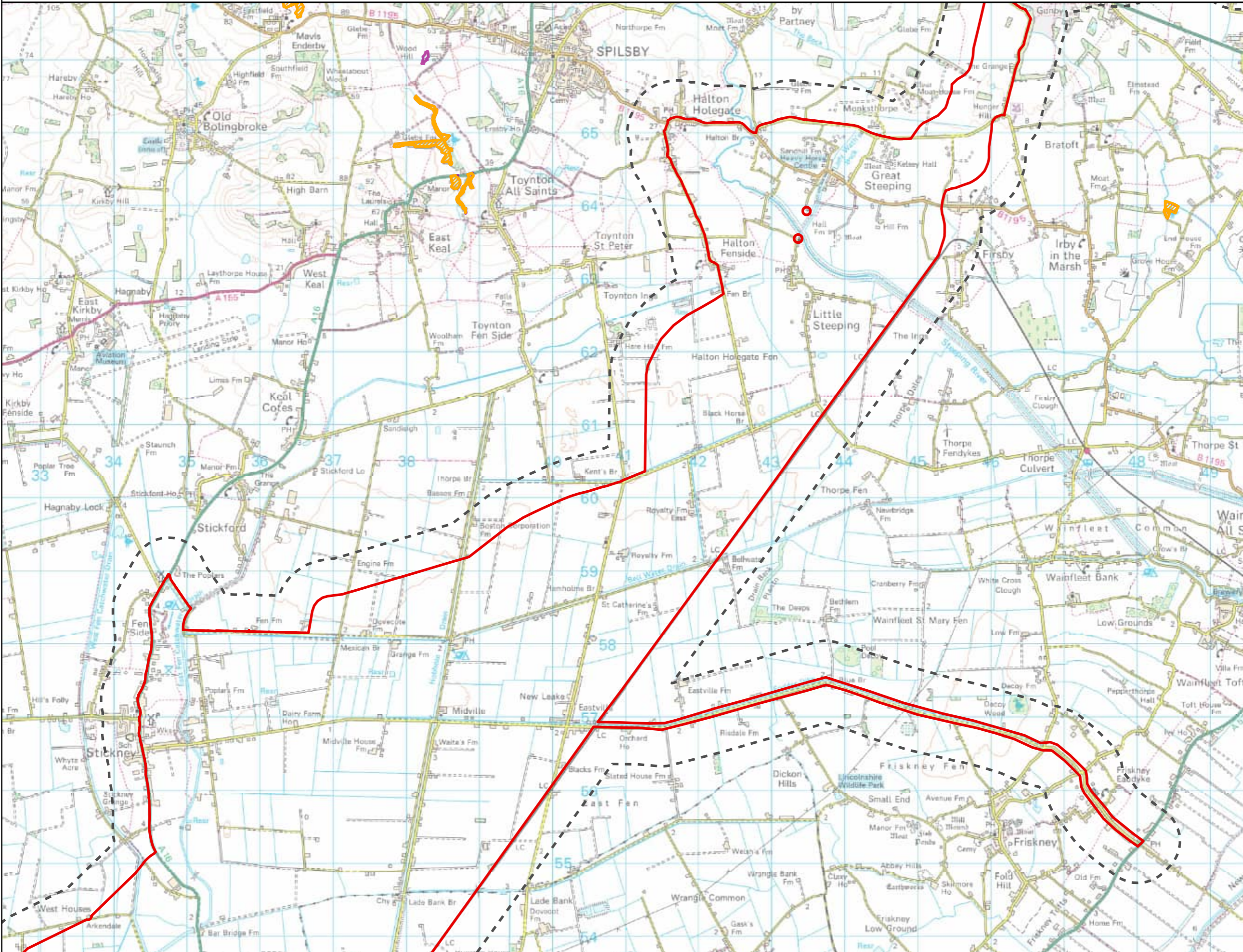
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Drawing Reference			
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Figure 10-5 Groundwater Dependent terrestrial Ecosystems / SSSI

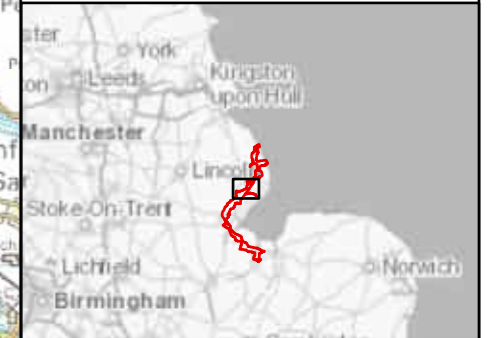
Legend

- Scoping Boundary
- 500m Buffer
- Sites of Special Scientific Interest
- Groundwater Dependent terrestrial Ecosystems



Notes

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Figure 10-5 Groundwater Dependent terrestrial Ecosystems / SSSI



Figure Number: FIGURE 10-5





Drawing Reference: EGL-ARC-CONS-XX-DR-G-011

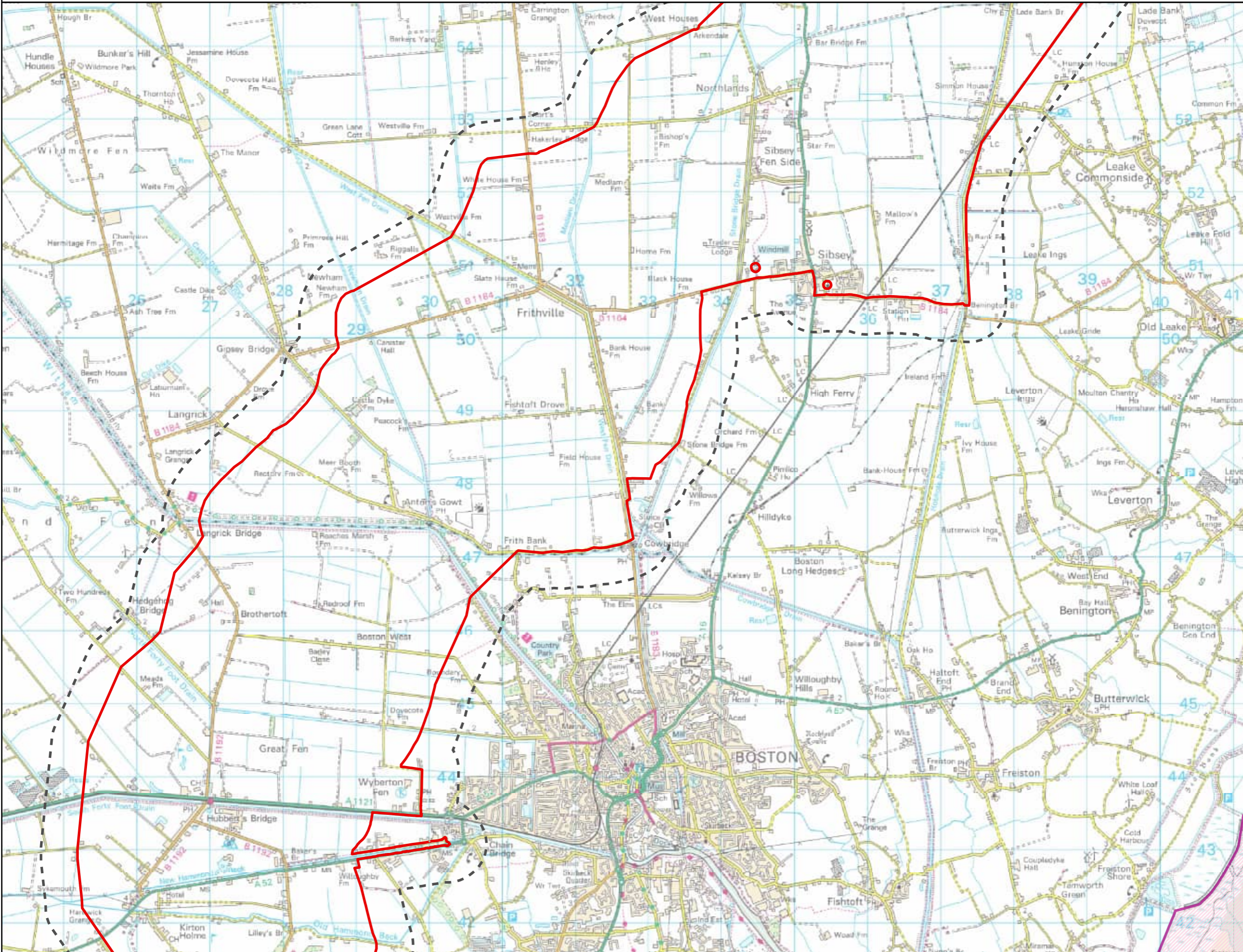
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Figure 10-5 Groundwater Dependent terrestrial Ecosystems / SSSI

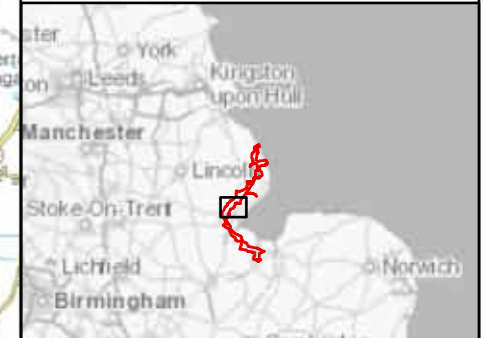
Legend

-  Scoping Boundary
-  500m Buffer
-  Sites of Special Scientific Interest
-  Groundwater Dependent terrestrial Ecosystems



Notes

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Figure 10-5
Groundwater Dependent
terrestrial Ecosystems / SSSI



Figure Number
FIGURE 10-5





Drawing Reference
EGL-ARC-CONS-XX-DR-G-011

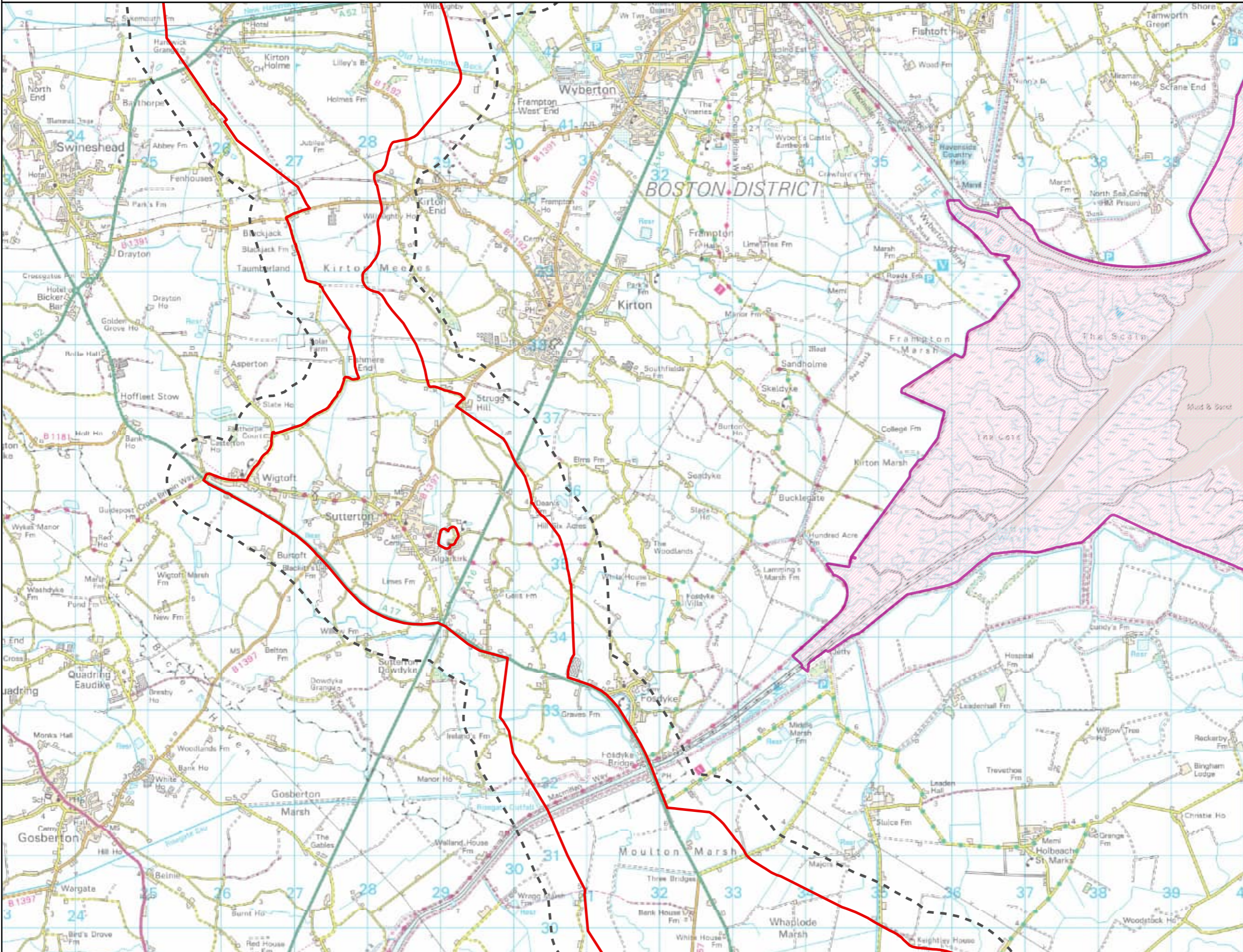
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Figure 10-5 Groundwater Dependent terrestrial Ecosystems / SSSI

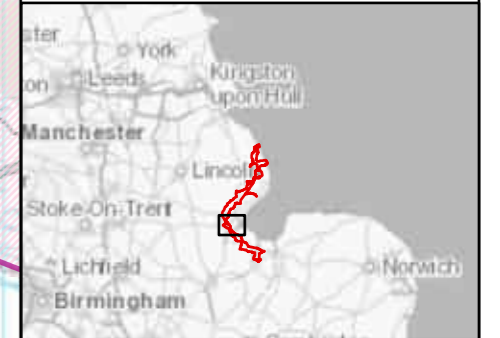
Legend

-  Scoping Boundary
-  500m Buffer
-  Sites of Special Scientific Interest
-  Groundwater Dependent terrestrial Ecosystems



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Figure 10-5
Groundwater Dependent
terrestrial Ecosystems / SSSI



Figure Number
FIGURE 10-5

Drawing Reference
EGL-ARC-CONS-XX-DR-G-011

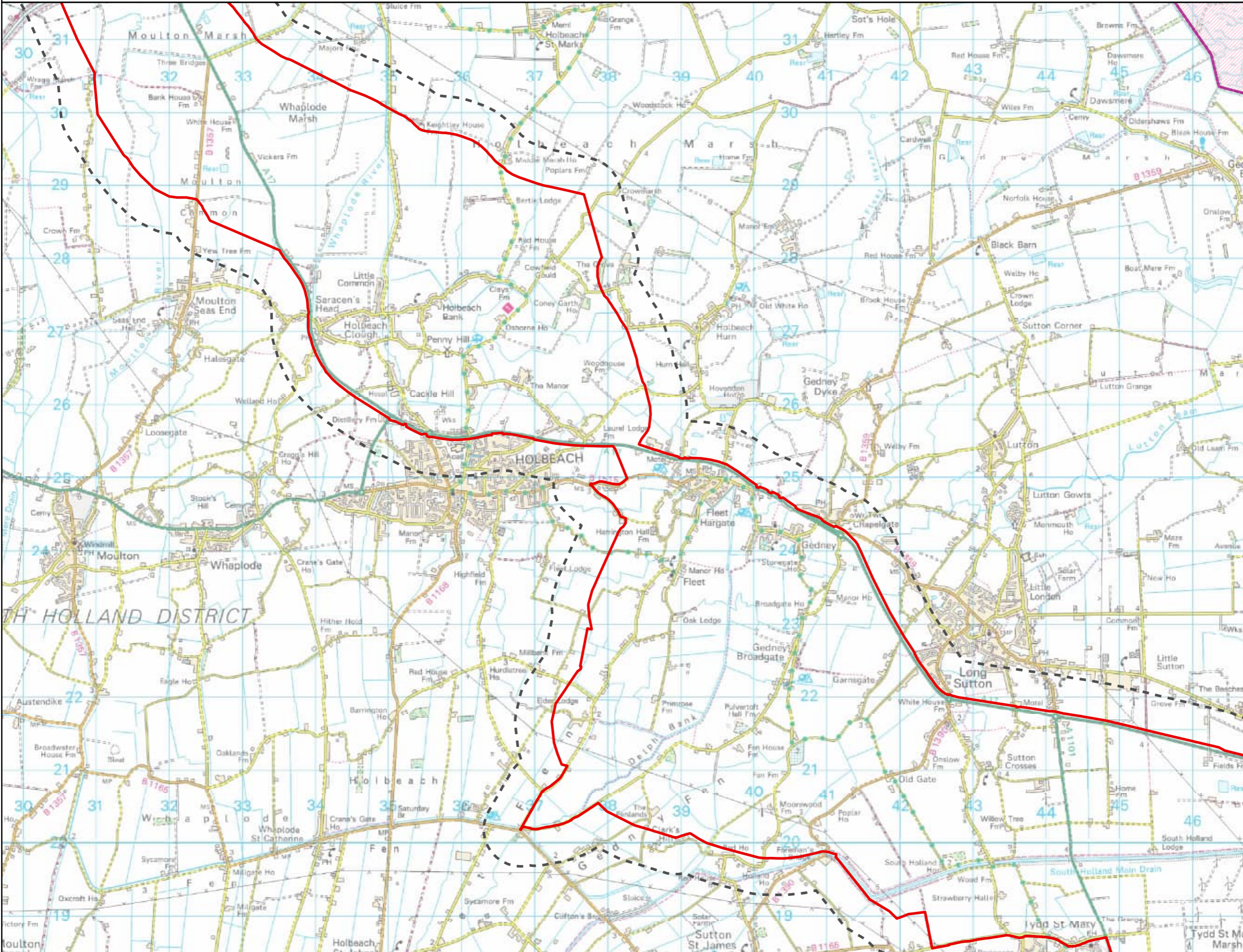
Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 5 OF 7	1



Figure 10-5 Groundwater Dependent terrestrial Ecosystems / SSSI

Legend

- Scoping Boundary
- 500m Buffer
- Sites of Special Scientific Interest
- Groundwater Dependent terrestrial Ecosystems

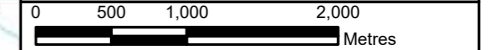


Notes

This drawing is scaled at paper size A3, therefore any prints taken at smaller sizes will affect accuracy of the measurement units and should not be scaled against.



Coordinate System: British National Grid
 Sheet X Centroid Coordinate: 538264.29E Sheet Y Centroid Coordinate: 324986.6N



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Title

Figure 10-5 Groundwater Dependent terrestrial Ecosystems / SSSI



Figure Number: FIGURE 10-5





Drawing Reference: EGL-ARC-CONS-XX-DR-G-011

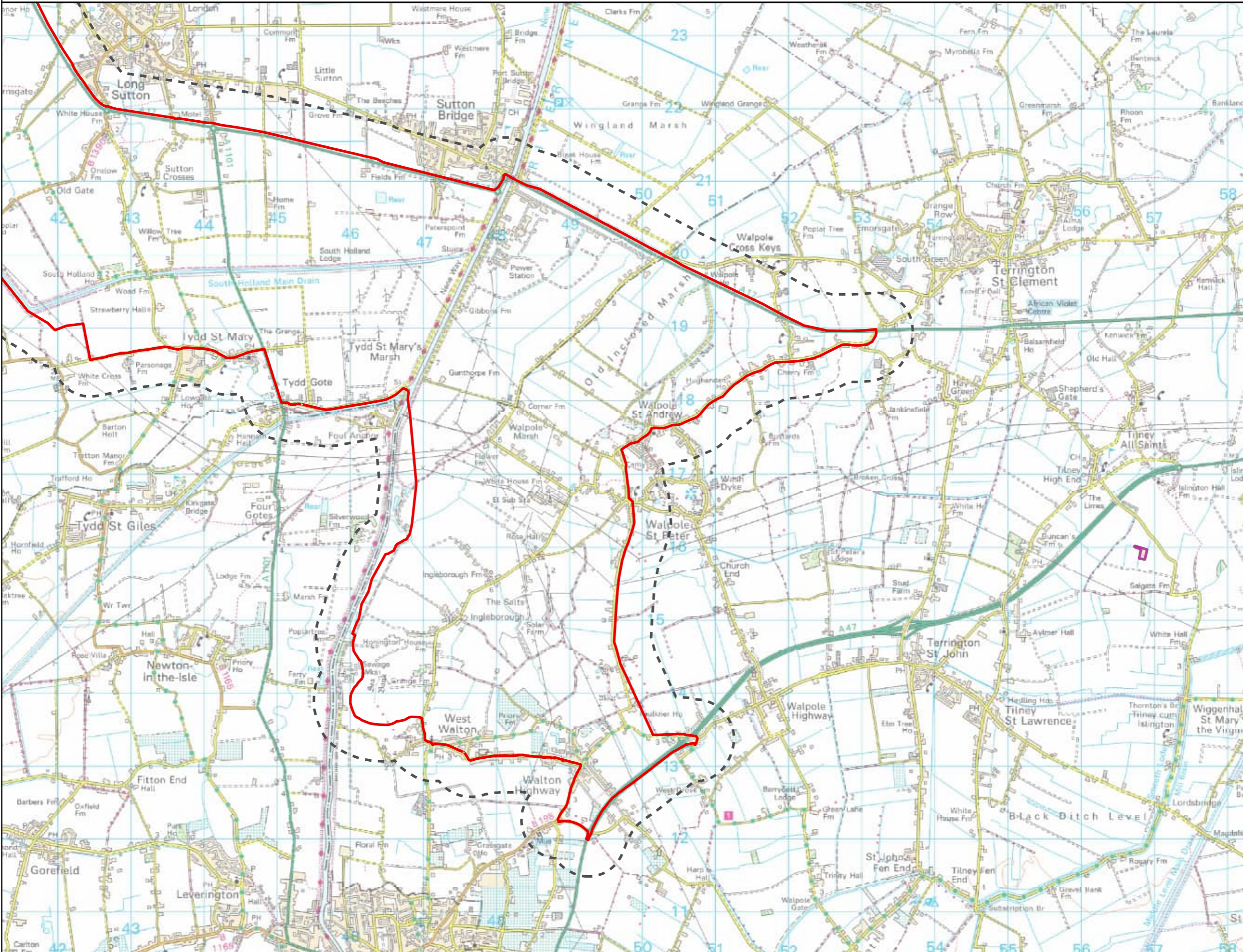
Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 6 OF 7	1



Figure 10-5 Groundwater Dependent terrestrial Ecosystems / SSSI

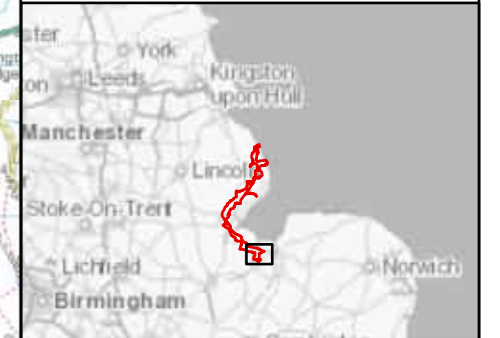
Legend

-  Scoping Boundary
-  500m Buffer
-  Sites of Special Scientific Interest
-  Groundwater Dependent terrestrial Ecosystems



Notes

This drawing is scaled at paper size A3, therefore any prints taken at smaller sizes will affect accuracy of the measurement units and should not be scaled against.



Coordinate System: British National Grid

Sheet X Centroid Coordinate: 549787.61E Sheet Y Centroid Coordinate: 316932.42N



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Title

Figure 10-5
Groundwater Dependent
terrestrial Ecosystems / SSSI



Figure Number
FIGURE 10-5

Drawing Reference
EGL-ARC-CONS-XX-DR-G-011

Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 7 OF 7	1

Other Hydrogeological Classifications and Features

Groundwater Vulnerability

- 10.4.34 Mapping showing the potential vulnerability of groundwater to the effects of activities taking place at the ground surface is published by the Environment Agency (Ref 10.29). Whilst detailed mapping is not currently available for the English Onshore Scheme, a high level review of publicly available mapping has been carried out. Aquifers underlying the Section 1: Landfalls - Bilsby, Section 2: Bilsby – Welton le Marsh and Section 3: Welton le Marsh – Little Steeping are variably designated as High to Low risk by virtue of the variable thickness and lithologies of the overlying superficial deposits.
- 10.4.35 It should be noted that the English Onshore Scheme would comprise below ground construction and may necessitate substantive ground reprofiling in the areas of the above ground infrastructure, such as converter stations, substation and DCSS. As a result the vulnerability of groundwater is likely to be greater than that designated by the published mapping.

Drinking Water Safeguard Zones

- 10.4.36 Drinking Water Safeguard Zones (DWSZ) are designated by the Environment Agency to drive improvements to long term trends in water quality and avoid deterioration. Typically, a suite of measures are adopted to influence, encourage and incentivise beneficial land management practices and reduce pollution. Safeguard Zones are defined for both surface and groundwater. There are no Groundwater DWSZ within the Scoping Boundary (Ref 10.29).

Nitrate Vulnerable Zones

- 10.4.37 Designated Nitrate Vulnerable Zone (NVZ) (2017) are areas designated as being at risk from agricultural nitrate pollution. A NVZ is present full across Theddlethorpe landfall, Anderby Creek landfall, Section 1: Landfalls - Bilsby, Section 2: Bilsby – Welton le Marsh, Section 3: Welton le Marsh – Little Steeping, Section 4: Little Steeping – Sibsey Northlands, Section 5: Sibsey Northlands – Hubbert’s Bridge, Section 6: Hubbert’s Bridge – Moulton Seas End. A NVZ is present across the northern half of Section 7: Moulton Seas End – Foul Anchor (North of the A17), and no NVZ is present across the southern half of Section 7 or Section 8: Foul Anchor - Walpole (Ref 10.29).

Summary of Hydrogeological Setting

- 10.4.38 The English Onshore Scheme can broadly be considered as lying within two distinct hydrogeological settings. Landfall at Theddlethorpe, Landfall at Anderby Creek, Section 1: Landfalls - Bilsby, Section 2: Bilsby – Welton le Marsh and Section 3: Welton le Marsh – Little Steeping are underlain by Principal Aquifers, which are overlain by variable superficial deposits. These aquifers comprise Chalk and Greensand units which form a regionally important groundwater resource, harnessed for public supply. Where exposed at surface, the Chalk forms the characteristic landscape of the Lincolnshire Wolds.
- 10.4.39 The Chalk has a primary porosity within its matrix, and a secondary porosity characterised by solution-enhanced fissures and fractures. These features make it susceptible to contamination. In Lincolnshire the Chalk is often found in hydraulic continuity with Lower Cretaceous Formations and overlying Quaternary deposits. These

granular formations can provide significant additional storage for the Chalk aquifer system (Ref 10.48). Contamination of shallow groundwater within superficial deposits may therefore be a risk to the wider Chalk aquifer system.

10.4.40 To the south in Section 4: Little Steeping – Sibsey Northlands, Section 5: Sibsey Northlands – Hubbert’s Bridge, Section 6: Hubbert’s Bridge – Moulton Seas End Section 7: Moulton Seas End – Foul Anchor and Section 8: Foul Anchor - Walpole, the English Onshore Scheme are generally underlain by thick mudstone and clay dominated formations which are designated as unproductive strata. These are also overlain by superficial deposits. Where these comprise coarser granular material, limited quantities of groundwater may be obtained. These units are designated as Secondary Aquifers.

Future Baseline

10.4.41 It is recognised that there are a number of other proposed and committed developments within the surrounding area that could alter the future baseline in the absence of the English Onshore Scheme. It is assumed that new developments would be appropriately managed, developed and operated to prevent the creation of potentially adverse ground conditions and/or including remediation, where required.

10.4.42 The potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined within **Part 4, Chapter 35: Cumulative Effects**.

10.4.43 Significant changes to the geological setting are not envisaged within the geological study area as it is assumed that new developments would be designed, managed, permitted and operated appropriately to safeguard geological conservation (in line with national and regional planning policy) and avoid resultant adverse ground conditions.

10.4.44 Hydrogeological conditions that may be prone to change include, but are not limited to:

- Published SPZs may change in size and spatial position depending on the decisions of individual water companies to increase or reduce abstraction dependant on usage in the region and other impacts such as water quality of supplies. Information is not available at the time of writing this Scoping Report of any potential changes;
- Future provision of housing development – an increase in housing in the region has the potential to affect recharge to the aquifers and the demand for drinking water, which could affect future water resources and groundwater levels in aquifers; and
- Climate change – changes in rainfall are likely to affect the amount and distribution of aquifer recharge, groundwater levels and flow gradients.

10.4.45 Given the nature of the English Onshore Scheme, any change in baseline resulting from these factors would be unlikely to have a meaningful influence on the assessment of effects. However, this will be reviewed as part of the ES.

10.5 Design and Control Measures

Design Phase

10.5.1 A range of standard measures design for the English Onshore Scheme are likely to be adopted in order to mitigate impacts to geology and groundwater throughout the duration of the operational phase, these measures will be inherent in the evolving design of the English Onshore Scheme:

- Multiple watercourse crossings would be necessary for the construction of temporary and permanent accesses and the cable installation. The design of these crossings would vary based on the size and sensitivity of the watercourses. Clear span bridges and trenchless techniques may be selected for the crossing of watercourses such as main rivers;
- The risks arising from the proposed use of drilling fluids will be assessed with particular reference to proximity to existing groundwater abstractions;
- It is anticipated that the proposed landfill, at either Theddlethorpe or Anderby Creek, would be constructed using trenchless methods. This is considered the most appropriate approach in minimising potential adverse effects on coastal habitats, including those identified as GWDTE;
- In areas of the landfills/Made Ground/Artificial Ground, assessments would be carried out to determine the requirements for remediation and or mitigation measures. This would be carried out in accordance with an agreed risk assessment and or remediation strategy;
- Consultation with local authority Building Control to inform design requirements for ground gas and or radon protection measures within buildings/structures;
- Implementation of appropriate gas protection measures or upgrading to radon (basic or full) protection measures and/or vapour resistance membrane as informed by the risk assessment; and
- Intrusive ground investigations and assessment would be undertaken prior to construction which would inform appropriate geotechnical design in relation to the site/structure specific ground conditions including ground instability/adverse ground conditions.

Construction Phase

10.5.2 A range of standard measures for the English Onshore Scheme are likely to be adopted throughout the duration of the construction phase. Design and control measures relevant to geology and hydrogeology would be set out in the Outline Code of Construction Practice (Outline CoCP), prepared to accompany the ES; these will include but are not limited to:

- Multiple watercourse crossings would be necessary for the construction of temporary and permanent accesses and the cable installation. Should the use of drilling fluids be required, appropriate mitigation for example the implementation of best practice control and handling of fluids would be included within the Outline CoCP;
- Construction methods such as appropriate piling techniques (if required) to minimise the risk of mobilising contaminants into the underlying aquifer bodies through the creation of new pathways would be utilised. This includes the provision of a Foundation Works Risk Assessment (FWRA), once the proposed foundation solutions are known, in accordance with Environment Agency guidance Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination (Ref 10.49);
- Use of appropriate occupational health and safety measures e.g. Personal Protective Equipment (PPE), and statutory health and safety compliance (e.g. compliance with the Confined Spaces Regulations, 1997 (Ref 10.50) in relation to

ground gas from working in confined spaces/trenches) to minimise the risks associated with anticipated/unexpected contamination;

- All use and storage of chemicals to be undertaken in accordance with Environment Agency and Government Pollution prevention for business (Ref 10.51) and controlled and monitored and general construction site good environmental and waste management procedures;
- An Outline Site Waste Management Plan (Outline SWMP) and an Outline Materials Management Plan (Outline MMP) would be prepared following the protocols within the CL:AIRE Definition of Waste: Development Industry Code of Practice (Ref 10.52) to ensure that excavated materials are re-used appropriately, sustainably and remain legitimately outside the waste hierarchy;
- Any temporary dewatering activities during construction would be undertaken in accordance with Environment Agency guidance, and if required, an Abstraction Licence and Environmental Permit (for the discharge) and would be limited to the depth and time required to facilitate construction activities;
- Establishment of a protocol in the event of any unexpected contamination being discovered during the construction phase;
- Measures to manage dust, waste, water, noise, vibration and soil during construction. The Construction Contractor(s) shall undertake daily site inspections to check conformance to the Management Plans;
- Fuels, oils and chemicals will be stored responsibly, away from sensitive water receptors. All refuelling, oiling and greasing of construction plant and equipment will take place above drip trays and also away from drains as far as is reasonably practicable. Appropriate spill kits will be made easily accessible for these activities;
- Establish an Emergency Action Plan for the construction phase which will outline procedures to be implemented in case of unplanned events, including but not limited to site flooding and pollution incidents;
- Runoff from construction working areas will be managed appropriately during construction with respect to both quantity and quality;
- All water discharges to be undertaken under the correct Environment Agency permits, with appropriate pre-treatment (e.g. de-silting) where required;
- Dewatering to be limited to the depth and time required to facilitate construction activities; and
- Construction work might affect the quality and availability of groundwater, especially for people using private water sources. Whenever possible, the project would be planned to avoid disturbing existing water supplies during both construction and operation. The need for measures to reduce these impacts will be determined as part of the ongoing EIA process.

10.6 Scope of the Assessment

10.6.1 The geology and hydrogeology assessment will consider the construction, operation, and maintenance of the English Onshore Scheme.

Potential Sensitive Receptors

10.6.2 A summary of the potential sensitive receptors considered for each phase of the development is set out for geology and hydrogeology below.

Geology

10.6.3 Potential sensitive receptors are considered to include:

- Human Health – site end users, off-site residents, visitors to both site end-users and nearby off-site residents;
- Buildings and infrastructure, for example buried concrete, services and water supplies;
- Controlled waters such as aquifers and watercourses; and
- Geological sites of regional and local importance.

10.6.4 Safeguarded minerals were not identified within the Scoping Boundary and therefore have not been considered further as a potential sensitive receptor.

Hydrogeology

10.6.5 Potential sensitive receptors associated with the groundwater environment include:

- Groundwater in aquifers. In accordance with the legislation, policy and guidance described in Section 10.2 (Relevant Legislation, Planning Policy and Technical Guidance), designated aquifers should be considered receptors in relation to groundwater quality and quantity;
- Groundwater abstractions; and
- GWDTEs.

Likely Significant Effects

10.6.6 **Table 10-11** outlines the likely significant effects which have been scoped into the geology and hydrogeology assessment. The proposed scope of the assessment has been determined using the approach described in **Part 2 Chapter 5: EIA Approach and Methodology**.

10.6.7 The potential for the English Onshore Scheme to result in likely significant effects takes into account the mitigation measures described in Section 10.5.

Table 10-11: Receptors and Impact Pathways for each phase of the English Onshore Scheme identified for Geology and Hydrogeology

Development Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in
Construction	Degradation of geological resources, including sites of regional and local importance.	Geological sites of regional and local importance	Yes – No SSSIs designated for their geological interest have been identified within the geology study area. Although no sites of regional or local geological importance have been identified within the geology study area, further review and engagement with the local authorities and geodiversity groups would be carried to identify key geological receptors.	Scoped in
Construction	Disturbance and handling of potentially contaminated soils during earthwork operations including soil stripping, excavation of the cable route placement and backfilling of the cable route.	Human health Controlled waters (aquifers and watercourses) GWDTEs	Yes – There is the potential for existing contamination (as a result of historic land uses) within the study area to be disturbed and mobilised. A ground investigation and potentially further detailed design specific investigation would be carried out to inform the assessment and design, however, potential significant effects cannot be ruled out.	Scoped in
Construction	A reduction in groundwater quality from turbidity and	Controlled waters (aquifers and watercourses)	Yes – Unlikely to be a long term significant adverse effect, however, risk	Scoped in

Development Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in
	sediment runoff due to earthwork activities.	GWDTes	and significance on groundwater receptors will be assessed as part of the ES.	
Construction	Creation of preferential contaminant pathways to groundwater resources through the installation of foundations to support above ground infrastructure and trenchless crossings.	Controlled waters (aquifers and watercourses) GWDTes	Yes – Where necessary, construction methods such as piling would be subject to foundation works risk assessment in line with Environment Agency guidance. Risks to groundwater from the use of trenchless technologies will be mitigated through assessment, consenting and robust method statements.	Scoped in
Construction	Disruption of groundwater flows due to earthwork operations including soil stripping, excavation and back filling of the cable route and installation of foundations.	Controlled waters (aquifers and watercourses) GWDTes	Yes – Shallow dewatering or groundwater control may be required. Groundwater flows supporting GWDTes may be disrupted by the works. Where the cables routes cross Source Protection Zones or GWDTes mitigation and/or monitoring may be required. Therefore, further assessment is required.	Scoped in
Operation	Disruption of shallow groundwater flow pathways within aquifer units due to permanent below	Controlled waters (aquifers and watercourses) GWDTes	Yes – the English Onshore Scheme have the potential to change groundwater levels and flows due	Scoped in

Development Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in
	ground infrastructure, such as the cable route and foundations.		to permanent below ground features such as foundations.	

Effects Scoped out from Further Assessment

10.6.8 **Table 10-12** summarises the effects scoped out of the geology and hydrogeology assessment, together with a justification for the outcome.

Table 10-12: Impact Pathways that have been Scoped Out for Geology and Hydrogeology

Development Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped out
Construction	Potential for the English Onshore Scheme, third party assets and land to be impacted by land instability and geohazards as a result of the earthwork and groundwork operations.	Buildings and infrastructure	No – Geohazards and land instability would be considered and managed through the developing engineering design, in line with relevant design standards and informed by ground investigations. The English Onshore Scheme would be designed to avoid adverse effects from land instability.	Scoped out
Construction	Potential introduction of contaminants through the use and refuelling of construction plant, and the handling of construction material and wastes.	Buildings and infrastructure Human health Controlled waters (aquifers and watercourses) GWDTEs	No – Appropriate controls would be set out within the Outline CoCP to manage the storage and handling of construction materials, excavated soils and wastes as detailed in Section 10.5. An emergency response/spill plan would be established with suitable response training established for site workers. Site drainage would be established to manage runoff from working areas.	Scoped out

Development Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped out
Construction	Discovery and disturbance of unforeseen contamination during earthwork operations, excavations and soil stripping.	Human Health Controlled waters (aquifers and watercourses) GWDTEs	No – As detailed in Section 10.5 a watching brief protocol would be specified for earthwork activities to observe for any unforeseen contamination, reducing the risk of disturbance and mobilisation. Suspected contaminated material would be handled and stored separately from other materials.	Scoped out
Construction	Storage of construction materials and wastes leading to the generation of potentially contaminated runoff.	Human Health Controlled waters (aquifers and watercourses) GWDTEs	No – Appropriate controls would be set out within the Outline CoCP to manage the storage and handling of construction materials, excavated soils and wastes as detailed in Section 10.5. Runoff from working areas would be managed appropriately during construction with respect to both quantity and quality.	Scoped out
Operation	Accidental spills/pollution into the environment e.g. uncontrolled leaks, spill from machinery at the converter stations, DCSS and substation.	Human health Controlled waters (aquifers and watercourses) GWDTEs	No – The study area will return to its current use except where the above ground infrastructure such as converter stations, DCSS and substation are proposed. There would be no significant fuel or oil storage, and other sources identified at the construction phase such as dust would no longer be a potential source to the receptors during operation.	Scoped out
Operation	Operational runoff from impermeable surfaces of the	Controlled waters	No – Rainfall runoff from above ground infrastructure would be sustainably attenuated	Scoped out

Development Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped out
	above ground infrastructure.	(aquifers and watercourses) GWDTes	(and if required treated) prior to discharge to the receiving water environment. There would be no other operational discharges to surface watercourses. The impacts during maintenance are anticipated to be mitigated through the design measures and good controls adopted during the construction phase.	

10.7 Assessment Methodology

Further Data to be Gathered / Processed

- 10.7.1 In addition to the data sources listed in **Section 10.4**, the following data sources are proposed to be used to inform the geology and hydrogeology sections within the PEIR and ES:
- Resources held by local geological and geoconservation interest groups including the Greater Lincolnshire Nature Partnership and Cambridgeshire Geological Society;
 - Site walkover surveys;
 - Historical mapping and environmental database information;
 - Aerial imagery;
 - Ground investigation factual reports/assessment reports if available;
 - Historical borehole records held by the BGS;
 - Records of active and defunct private water supplies from the local authorities;
 - Surveys of private water supplies; and
 - Surveys of GWDTes.

Proposed Methodology

- 10.7.2 The proposed assessment methodology for geology and hydrogeology would be based on professional judgement and previous experience together with highways guidance as set out in the DMRB LA 109 (Ref 10.24) and DMRB, LA 113 (Ref 10.53).
- 10.7.3 The baseline information would be used to identify potential source-pathway-receptor linkages and inform a risk-based assessment of the effects of the English Onshore Scheme in relation to geology and hydrogeology. The risk-based assessment would be undertaken following a tiered approach as supported by guidance provided in LCRM (Ref 10.19), with progression through the different Tiers (Tier 1 Preliminary Risk

Assessment, Tier 2 Generic Quantitative Risk Assessment and Tier 3 Detailed Quantitative Risk Assessment) dependent on the outcome of each previous Tier (therefore proportionate).

10.7.4 A source-pathway-receptor methodology is adopted as follows:

- A source/hazard (a substance or situation that has the potential to cause harm or pollution);
- A pathway (a means by which the hazard moves along/generates exposure); and
- A receptor/target.

10.7.5 The information from the data gathering will form a comprehensive but proportionate baseline for the ES. The baseline information will then be used to identify potential source-pathway-receptor linkages and inform a risk-based assessment of the effects on the English Onshore Scheme. This approach accords with published guidance (e.g. LCRM155) and will be transposed into an EIA classification.

10.7.6 For each potential effect, the receptor sensitivity and impact magnitude will be assigned using the criteria described in **Table 10-13** and **Table 10-14**.

Table 10-13: Receptor Sensitivity

Sensitivity	Geology	Hydrogeology
High	Very rare/rare or nationally important sites. Existing/ Mineral Preferred Areas, high sensitivity land use such as residential/public open spaces use.	Groundwater that is used for human consumption, and/or is within geological units that display a high level of water storage and may support water supply and/or river base flow on a strategic scale. Includes all Principal Aquifers and SPZ.
Medium	Regionally important sites, Mineral Safeguarded Areas and Mineral Consultation Areas, medium sensitive uses such as commercial or industrial uses.	Groundwater that is not currently used for human consumption, but which is within Secondary Aquifers that display generally good chemical quality (e.g. WFD Good chemical status) and/or groundwater quantities. Groundwater that is currently used for agricultural purposes (e.g. field irrigation).
Low	Local interested geology sites. Mineral present but outside Mineral Preferred Areas Mineral Safeguarded Areas and Mineral Consultation Areas. Low sensitivity land use such as highway and rail.	Groundwater that is not currently used for human consumption and is within Secondary Aquifers that display poor chemical quality (i.e. WFD Poor chemical status) and groundwater quantities. Groundwater that is

Sensitivity	Geology	Hydrogeology
		abstracted for low sensitivity industrial purposes (e.g. cooling water).
Negligible	Very low important geology site. No mineral identified. Undeveloped surplus land with no sensitive land use proposed.	Groundwater that does not contribute meaningfully towards river base flow and is not used, and does not have a potential to be used, for drinking water supply.

Table 10-14: Magnitude of Impact

Sensitivity	Geology	Hydrogeology
High	Permanent loss of geological feature/designation. Significant contamination significantly exceeding assessment criteria restricting future land use.	Release of Priority Hazardous Substances or substances regulated under ‘The Water Framework Directive (Standards and Classification) Directions (England and Wales) (2015)’ of the ‘Water Supply (Water Quality) Regulations (2000)’ at concentrations that may present a direct/imminent risk to abstractions. Physical or chemical effects on an aquifer (i.e. changes in groundwater levels, flows or quality) that substantively restrict its viability as an abstractable resource and/or its WFD status.
Medium	Partial loss of geological feature/designation. Contamination levels marginally exceeding assessment criteria and control/remediation required.	Release of Priority Hazardous Substances or substances regulated under “The Water Framework Directive (Standards and Classification) Directions (England and Wales) (2015)’ of the ‘Water Supply (Water Quality) Regulations (2000)’ at concentrations that exceed regulatory compliance criteria, and may lead to substantial localised degradation in groundwater quality, but not present a direct/imminent risk to

Sensitivity	Geology	Hydrogeology
Low	Minor change in geological feature/designation. Contamination below assessment criteria and remediation not required	abstractions. Physical or chemical effects on an aquifer (i.e. changes in groundwater levels, flows or quality) that limit its effectiveness as a resource and may affect its status. Release of Priority Hazardous Substances or substances regulated under ‘The Water Framework Directive (Standards and Classification) Directions (England and Wales) (2015)’ of the ‘Water Supply (Water Quality) Regulations (2000)’ at concentrations that may lead to minor localised degradation in groundwater quality, but have no significant potential to present a risk to abstractions. Reduction of groundwater levels/ quantities or changes in groundwater flows, but with little effect on the use or status of the groundwater resource.
Negligible	Very minor loss or detrimental alteration to 1 or more characteristics/features or elements of the geological feature/designation. Contamination levels substantially below assessment criteria and no control/remediation required	No/minimal measurable effect on groundwater levels, quantities, flows or chemical quality, or on the use or status of a groundwater resource.

Significance

- 10.7.7 Significance would be derived using the matrix set out in **Part 2 Chapter 5: EIA Approach and Methodology**.
- 10.7.8 There is no equivalent published assessment methodology that relates to impacts relating to geology (for example geological sites). For consistency, a source – pathway – receptor approach would be adopted to assess these effects (combination of receptor identification and associated sensitivity and magnitude of potential impacts) as stated above and in accordance with DMRB guidance.
- 10.7.9 The assessment will classify each potential effect as either negligible, minor, moderate or major. However, it should be noted that the output of the assessment is a risk classification, rather than a predicted effect. For example, minor ‘effects’ in relation to

health risks from exposure to soil contamination would reflect an assessment that there is a low/very low risk of significant effects occurring, rather than indicating that there is a predicted adverse effect that would be of a minor nature.

10.7.10 Where the outcome of the assessment is a moderate or major risk, then the effect (risk) will be considered significant and mitigation would be required. Where the outcome is a minor or negligible risk, then the effect (risk) will be considered not-significant and mitigation would not ordinarily be required.

10.8 Assessment Limitation and Assumptions

10.8.1 The following limitations and assumptions have been identified:

- A site walkover has not been carried out. Given the size of the study area, the likely limitations on access and the current uses as agricultural fields, specific areas of concern/interest will be targeted for surveying and reported in the PEIR (where available) and ES;
- For the purpose of this EIA Scoping Report, a high level summary of available setting information for the Scoping Boundary is presented which is based on available 3rd party publicly available desk based information;
- No ground investigation has been carried out to date for the English Onshore Scheme;
- Depths stated are based on metres below ground level and approximate distances to features;
- The English Onshore Scheme would predominantly comprise shallow open-cut trenches to an approximate depth of 1.5 m below ground level. Trenchless installations and piled foundations would be utilised locally within the Scoping Boundary, for example at watercourse crossings and the proposed above ground installations;
- Provision of Private Water Supply information from the local authorities will be available in suitable time to organise surveys and inform the ES; and
- No coolant or other chemicals will be associated with the cable in the permanent state of the English Onshore Scheme.

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11. Agriculture and Soils

11. Agriculture and Soils

11.1 Introduction

- 11.1.1 The agriculture and soils assessment will consider the potentially significant effects on soils, agricultural land and agricultural land holdings that may arise from the construction and operation of the English Onshore Scheme.
- 11.1.2 This chapter of the Scoping Report sets out the relevant legislation, planning policy context and technical guidance used to inform the scope of the assessment and summarises any consultation and engagement in relation to agriculture and soils undertaken to date. It provides an overview of the baseline conditions relevant to agriculture and soils within/around the Scoping Boundary, the measures which will be incorporated into the English Onshore Scheme to mitigate effects on agricultural and soil receptors, the likely significant effects to be considered within the assessment, and how these likely significant effects will be assessed for the purpose of an EIA.
- 11.1.3 This chapter should be read in conjunction and considered alongside the following chapters found in Volume 1:
- **Part 2, Chapter 4: English Onshore Scheme**
 - **Part 2, Chapter 5: EIA Methodology**
 - **Part 2, Chapter 6: Biodiversity**
 - **Part 2, Chapter 8: Landscape and Visual Amenity**
 - **Part 2, Chapter 9: Water Environment**
 - **Part 2, Chapter 10: Geology and Hydrogeology**
 - **Part 2, Chapter 15: Socio-economics, Recreation and Tourism**
 - **Part 4, Chapter 33: Greenhouse Gas Emissions**
 - **Part 4, Chapter 35: Cumulative Effects**
- 11.1.4 This chapter is supported by the following appendices and figures:
- **Volume 2, Appendix 6-A: Arboricultural Survey Methodology**
 - **Figure 11.1: Soilscape Mapping**
 - **Figure 11.2: Provisional ALC Mapping**
 - **Figure 11.3: Detailed ALC Mapping (Post-1988)**
 - **Figure 11.4: Agri-Environment Schemes**
 - **Figure 11.5: Woodland and Forestry Schemes**

11.2 Relevant Legislation, Planning Policy and Technical Guidance

- 11.2.1 This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the agriculture and soils assessment.

Legislation

11.2.2 A summary of the key legislation considered, but not limited to, in the scope of the agriculture and soils effects is outlined in **Table 11-1**.

Table 11-1: Legislation relevant to Agriculture and Soils

Legislation	Legislative Context	Section Considered
Environmental Act (2021) (Ref 11.1)	Outlines the targets to protect and improve the quality of environment for the next 15 years.	Section 11.5 Design and Control Measures
The Agricultural Land (Removal of Surface Soil) Act (1953) (Ref 11.2)	<i>“An Act to make it an offence to remove surface soil from land in certain circumstances; and for purposes connected therewith.”</i>	Section 11.5 Design and Control Measures

Planning Policy

11.2.3 A summary of the planning policies at both a national and local level relevant to the scope of the agriculture and soils effects is given in **Table 11-2** and **Table 11-3**.

Table 11-2: National Planning Policy relevant to Agriculture and Soils

Policy Reference	Policy Context	Section Considered
Overarching National Policy Statement for Energy (EN-1) (2024) (Ref 11.3)		
Paragraph 5.11.12	Sets out the preference for the use of poorer quality land (Grades 3b, 4 and 5) over Best and Most Versatile (BMV) land (defined as land in grades 1, 2 and 3a).	Section 11.4 Baseline Conditions
Paragraph 5.11.13	<i>“Applicants should also identify any effects and seek to minimise impacts on soil health and protect and improve soil quality taking into account any mitigation measures proposed.”</i>	Section 11.5 Design and Control Measures
Paragraph 5.11.14	<i>“Applicants are encouraged to develop and implement a Soil Management Plan which could help minimise potential land contamination. The sustainable reuse of soils needs to be carefully considered in line with good practice guidance where large quantities of soils are surplus to requirements or are affected by contamination.”</i>	Section 11.5 Design and Control Measures
Paragraph 5.11.34	This paragraph states that schemes should not be built on BMV land	Section 11.6 Scope of the Assessment

Policy Reference	Policy Context	Section Considered
	without justification, and poorer quality land should be used preferentially. Economic benefits of the land should also be accounted for.	
National Policy Statement for Electricity Networks (EN-5) (2024) (Ref 11.4)		
Paragraph 2.9.25 (final bullet point)	This paragraph highlights the requirement to minimise impacts on agricultural land and soil resources. That appropriate surveys should be undertaken to inform these assessments, and that mitigation should be in line with Department for Environment Food & Rural Affairs Construction Code of Practice for Sustainable Use of Soils on Construction Sites.	Section 11.5 Design and Control Measures
Paragraph 2.9.58	<i>“There is little evidence that exposure of crops, farm animals or natural ecosystems to transmission line EMFs [Electromagnetic Fields] has any agriculturally significant consequences.”</i>	Section 11.6 Scope of the Assessment
National Planning Policy Framework (NPPF) (2023) (Ref 11.5)		
Paragraph 180	<i>“Planning policies and decisions should contribute to and enhance the natural and local environment by: Protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils... Recognising the intrinsic character and beauty of the countryside...including the economic and other benefits of the BMV agricultural land...; and Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability.”</i>	Section 11.6 Scope of the Assessment
Paragraph 181, Footnote 62	This footnote states that schemes should not be built on BMV land without justification, and poorer quality land should be used preferentially.	Section 11.6 Scope of the Assessment

Policy Reference	Policy Context	Section Considered
	Emphasis on the availability of land for food production.	

Table 11-3: Local Planning Policy relevant to Agriculture and Soils

Local Authority Plan/Strategy	Summary of Relevant Policies Relating to Agriculture and Soils
East Lindsey District Council: East Lindsey Local Plan Core Strategy (Adopted 2018) (Ref 11.6)	<p>Strategic Policy 10 (SP10) – Design.</p> <p>This paragraph states that schemes should not be built on BMV land without justification, and poorer quality land should be used preferentially. Emphasis on maintaining character of the surrounding villages and countryside.</p> <hr/> <p>Strategic Policy 24 (SP24) - Biodiversity and Geodiversity;</p> <p>Paragraph 12.17 emphasises the multifaceted importance of soils to a landscape and the environment and highlights the role of soils in carbon capture. Reference is made to the Department for Environment Food & Rural Affairs Construction Code of Practice</p>
South East Lincolnshire Joint Strategic Planning Committee: South East Lincolnshire Local Plan (2011-2036) (Adopted 2019) (Ref 11.7)	<p>Paragraph 7.4.4</p> <p>This paragraph discusses the measures needed to address impacts on soils, with particular reference to the Department for Environment Food & Rural Affairs Construction Code of Practice</p> <hr/> <p>Paragraph 7.5.10</p> <p>This paragraph states the preference for lower quality agricultural land to be used where possible, as well as the importance of assessing the impacts on soils and agricultural land as a separate environmental receptor.</p>
Fenland District Council: Fenland Local Plan (2021-2040), Draft Local Plan Consultation, (2022) (Ref 11.8)	<p>Policy LP26: Carbon Sinks and Carbon Sequestration “Part A: Carbon Sinks”</p> <p>This policy highlights the ecological and environmental importance of peatland and peaty soils. It states that unavoidable damage to these resources will only be permitted if it can be demonstrated that:</p>

“a. the site is allocated for development; or
b. there is not a less harmful viable option to development of that site.”

It states that it must be evidenced that all has been done to reduce all possible harm and that where peat soils are to be removed that the soils must be stored in a way to limit carbon loss to the atmosphere.

Paragraph 17.17

This paragraph emphasises the importance of the area for food production and discourages development on BMV land.

Paragraph 17.18

This paragraph states that schemes should not be built on BMV land without justification, and poorer quality land should be used preferentially. Economic and other benefits of the land should also be accounted for.

Paragraph 17.19

This paragraph states the requirement for all developments where a loss of >1ha of BMV is anticipated will be required to demonstrate that there are no suitable alternatives. These developments will also require an Agricultural Land Classification (ALC) statement.

Policy LP18: Development in the *Countryside Part H: Protecting the best and most versatile agricultural land*

This paragraph states that schemes should not be built on BMV land without justification, and poorer quality land should be used preferentially. Economic and other benefits such as food production should also be accounted for.

It states that development on BMV will only be permitted if there are no alternatives on lower grade land, impacts on operations have been minimised through design, and there is a

Local Authority Plan/Strategy	Summary of Relevant Policies Relating to Agriculture and Soils
King's Lynn & West Norfolk Borough Council: Local Development Framework – Core Strategy (Adopted 2011) (Ref 11.9)	commitment to restore land to an equal or greater quality upon decommissioning.
Norfolk County Council: Norfolk County Council's Environmental Plan (2020) (Ref 11.10)	<p>Policy: Using and managing land sustainably</p> <p>This policy lays out the framework for the sustainable use and management of land, including the requirement for the improvement of soil health.</p>
Cambridgeshire County Council: Cambridge Local Plan (2018) (Ref 11.11)	<p>Paragraph 2.78</p> <p>This paragraph states that schemes should not be built on BMV land without justification, and poorer quality land should be used preferentially. It places emphasis on the availability of land for food production and other ecosystem services. It highlights to the need for design to target areas of lower grade land. It also makes reference to adhering to Department for Environment Food & Rural Affairs Construction Code of Practice to protect soil resources.</p> <p>Policy 8: Setting of the city</p> <p>The policy makes reference to agricultural land in relation to Development within designated green areas will only be supported where it:</p> <p>“...c. safeguards the best and most versatile agricultural land unless sustainable development considerations and the need for development are sufficient to override the need to protect the agricultural value of land; ...”.</p>

Technical Guidance

11.2.4 Relevant technical guidance is given below:

- Safeguarding our Soils. A strategy for England, Department for Environment Food & Rural Affairs, (2009) (Ref 11.12). This outlines how to better manage, reduce degradation and build resilience to increasing pressures on soil in order to provide a sustainable food supply.
- Guide to Assessing Development Proposals on Agricultural Land: Natural England, (2021) (Ref 11.13) (taking into account Technical Information Note 049. ALC

Protecting the Best and Most Versatile Agricultural Land: Natural England, (2012)) (Ref 11.14). This outlines how construction activities can manage soils sustainably while protecting them from damage and avoiding peat extraction.

- Working with Soil Guidance Note on Benefitting from Soil Management in Development and Construction: The British Society of Soil Science, (2022) (Ref 11.15). This document assists soil professionals in developing Soil Management Plans.
- Specification for topsoil (BS3882:2015): British Standards Institute, (2015) (Ref 11.16). This document outlines the specific characteristics required to be assessed for topsoil classification.
- Agricultural Land Classification of England and Wales, Revised Criteria and Guidelines for Grading the Quality of Agricultural Land: Ministry of Agriculture, Fisheries and Food, (1988) (Ref 11.17). This sets out the required methodology for the assessment of the quality of agricultural land across England and Wales.
- Construction Code of Practice for the Sustainable Use of Soils on Construction Sites: Department for Environment Food & Rural Affairs, (2009) (Ref 11.18). This document provides a practical guide to the protection of soil resources throughout construction work.
- Good Practice Guide for Handling Soils: Ministry of Agriculture, Fisheries and Food, 2000) (Ref 11.19). This document sets out good practice guidance for soil handling for a range of different earth-moving plant and approaches to protect soil quality.
- Good Practice Guide for Handling Soils in Mineral Workings, Institute of Quarrying, 2021 (Ref 11.20). This document is a practical guide containing theory and knowledge to best protect soil during handling.
- A New Perspective on Land and Soil in Environmental Impact Assessment: Institute of Environmental Management and Assessment (herein the 'IEMA Guidance'), (2022) (Ref 11.21). This document outlines the EIA assessment approach to ensure all soil functions are accounted for in the assessment.
- Design Manual for Roads and Bridges (DMRB) LA 112 Population and Human Health (Ref 11.22). This document sets out the EIA assessment approach to ensure that impacts to agricultural land holdings are accounted for within the assessment.

11.3 Consultation and Engagement

- 11.3.1 To date no engagement has been undertaken in relation to agriculture and soils. It is anticipated that feedback in relation to this topic and the full scope of works will be gained following consultation on this Scoping Report, both for the agriculture and soils chapter, and those related chapters identified in Section 11.1.
- 11.3.2 Natural England will be specifically consulted on the scope of the assessment and the soil and ALC survey methodology prior to the survey commencing.

11.4 Baseline conditions

Study Area

- 11.4.1 The study area for agriculture and soils comprises all agricultural land within the Scoping Boundary. This includes land within the English counties of East Lincolnshire,

Cambridgeshire and Norfolk. The Scoping Boundary study area is presented on **Figure 11.1: Soilscape Mapping**.

Data Gathering Methodology

- 11.4.2 Baseline data has been collated to determine the existing agriculture and soils conditions in the area that are likely to be affected by the English Onshore Scheme. A review of the existing baseline has been undertaken to establish an understanding of the baseline agriculture and soils environment and to identify areas that are likely to be sensitive to changes resulting from the development of the English Onshore Scheme. The baseline has been informed by a desk-based study which has drawn on the following sources of information:
- British Geological Survey (BGS) Geology Viewer (Ref 11.23)
 - Agricultural Land Classification – Provisional (England), available via MAGIC maps (Ref 11.24)
 - Post-1988 Agricultural Land Classification (England), available via MAGIC maps (Ref 11.24)
 - OS mapping and aerial photography (Ref 11.25)
 - National Soilscape Map of East Midlands and Eastern England (Ref 11.26)
 - Soil data and map from National Soils Resources Institute at Cranfield University (NSRI) (Ref 11.27)
 - Likelihood of BMV Agricultural Land map (Ref 11.28)
 - Climate data sets for ALC assessment (Ref 11.29)
- 11.4.3 Field data collection will be undertaken through a soil and ALC survey. The survey outcome will be used to determine the impact on agricultural land and soils as a result of the English Onshore Scheme.
- 11.4.4 The soil and ALC survey and assessment will be undertaken in accordance with the Soil Survey Field Handbook (Hodgson, 2022) (Ref 11.30) and the ALC guidelines (Ministry of Agriculture, Fisheries and Food, 1988) (Ref 11.17) (to provide a survey coverage of at least 1 auger per hectare (ha) where possible) and will characterise soil properties based on an examination of soil profiles, from which agricultural land grade as well as soil resilience can be calculated and assessed.
- 11.4.5 Natural England will be consulted on the soil and ALC survey methodology prior to the survey commencing.

Current Baseline

Soils

11.4.6

Within the Scoping Boundary, there are 14 different Soil Associations shown on available survey mapping (see **Figure 11.1: Soilscape Mapping**)The study area largely comprises deep loamy and clay mineral soils; however, peat soils are expected to be present east of the A14 and south of Steeping River. The 14 Associations are outlined on Soilscape (Ref 11.26) which summarises the broad regional differences in soil across England and Wales. These are described below:

- Saline 1: soils of variable texture flooded by high tides. Many are soft and unripened, others, often on higher sites or of sandy texture, are firm and ripened. Frequently calcareous;
- Sandwich: mainly deep well drained calcareous and non-calcareous sandy soils. Some sparsely vegetated unstable soils. Waterlogged soils in hollows locally. Shingle bars and spits locally extensive. Risk of wind erosion;
- Wallasea 2: deep stoneless clayey soils. Calcareous in places. Some deep calcareous silty soils. Flat land often with low ridges giving a complex soil pattern. Groundwater controlled by ditches and pumps;
- Holderness: slowly permeable seasonally waterlogged fine loamy soils and similar soils with only slight waterlogging. Narrow strips of clayey alluvial soils;
- Fladbury 2: stoneless clayey soils variably affected by groundwater some with sandy subsoils. Some similar fine loamy soils. Flat land. Risk of flooding;
- Wick 1: deep well drained coarse loamy and sandy soils locally over gravel. Some similar soils affected by groundwater. Slight risk of water erosion;
- Salop: slowly permeable seasonally waterlogged reddish fine loamy over clayey, fine loamy and clayey soils associated with fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging;
- Blackwood: deep permeable sandy and coarse loamy soils. Groundwater controlled by ditches;
- Downholland 1: deep stoneless humose clayey soils, calcareous in places. Some peat soils and deep humose calcareous silty soils. Flat land. Groundwater usually controlled by ditches and pumps. Risk of wind erosion;
- Downholland 2: deep stoneless clayey or calcareous silty soils, mainly with a humose surface horizon. Flat land. Groundwater controlled by ditches and pumps;
- Wisbech: deep stoneless calcareous coarse silty soils. Groundwater usually controlled by ditches or pumps. Flat land with low ridges. Risk of wind erosion locally;
- Agney: deep stoneless calcareous fine and coarse silty soils. Groundwater usually controlled by ditches and pumps. Flat land;
- Tanvats: deep stoneless fine and coarse silty and clayey soils with groundwater levels controlled by ditches and pumps. Flat land; and
- Rockcliffe: deep stoneless silty and fine sandy soils variably affected by groundwater depending on artificial drainage. Flat land.

Agricultural Land Classification

- 11.4.7 Provisional ALC mapping for the study area is presented **Figure 11.2: Provisional ALC Mapping**.
- 11.4.8 and shows that the southern half of the Scoping Boundary is comprised largely of Grade 1 land (excellent quality agricultural land). There is also a large proportion of land identified as Grade 2 (good quality agricultural land) in the central part of the Scoping Boundary, with the northern third being largely mapped as Grade 3 (good or moderate quality agricultural land).
- 11.4.9 The Provisional ALC mapping does not split Grade 3 land into Subgrades 3a and 3b. Subgrade 3a land, along with Grade 1 and Grade 2 land, comprises best and most versatile (BMV) agricultural land. This distinction can only be confirmed through a detailed ALC survey.



Figure 11-1 Soilsapes Mapping (Overview)

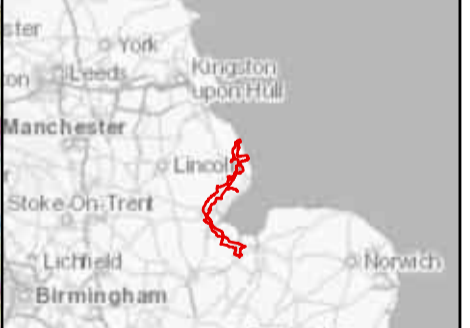
Legend

Scoping Boundary

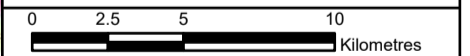


<https://www.landis.org.uk/soilsapes/>

Notes
This drawing is scaled at paper size A3, therefore any prints taken at smaller sizes will affect accuracy of the measurement units and should not be scaled against.



Coordinate System: British National Grid
Sheet X Centroid Coordinate: 540239.88E Sheet Y Centroid Coordinate: 350760.07N



BACKGROUND MAPPING INFORMATION HAS BEEN REPRODUCED FROM THE ORDNANCE SURVEY BY PERMISSION OF ORDNANCE SURVEY OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE. © CROWN COPYRIGHT AND DATABASE RIGHTS 2024 ORDNANCE SURVEY 0100031673.

Issue	Date	Remarks	Drawn	Checked	Approved
1	JUN 24	DRAFT	SB	BL	MW

Title

Figure 11-1
Soilsapes Mapping

nationalgrid

Figure Number

FIGURE 11-1

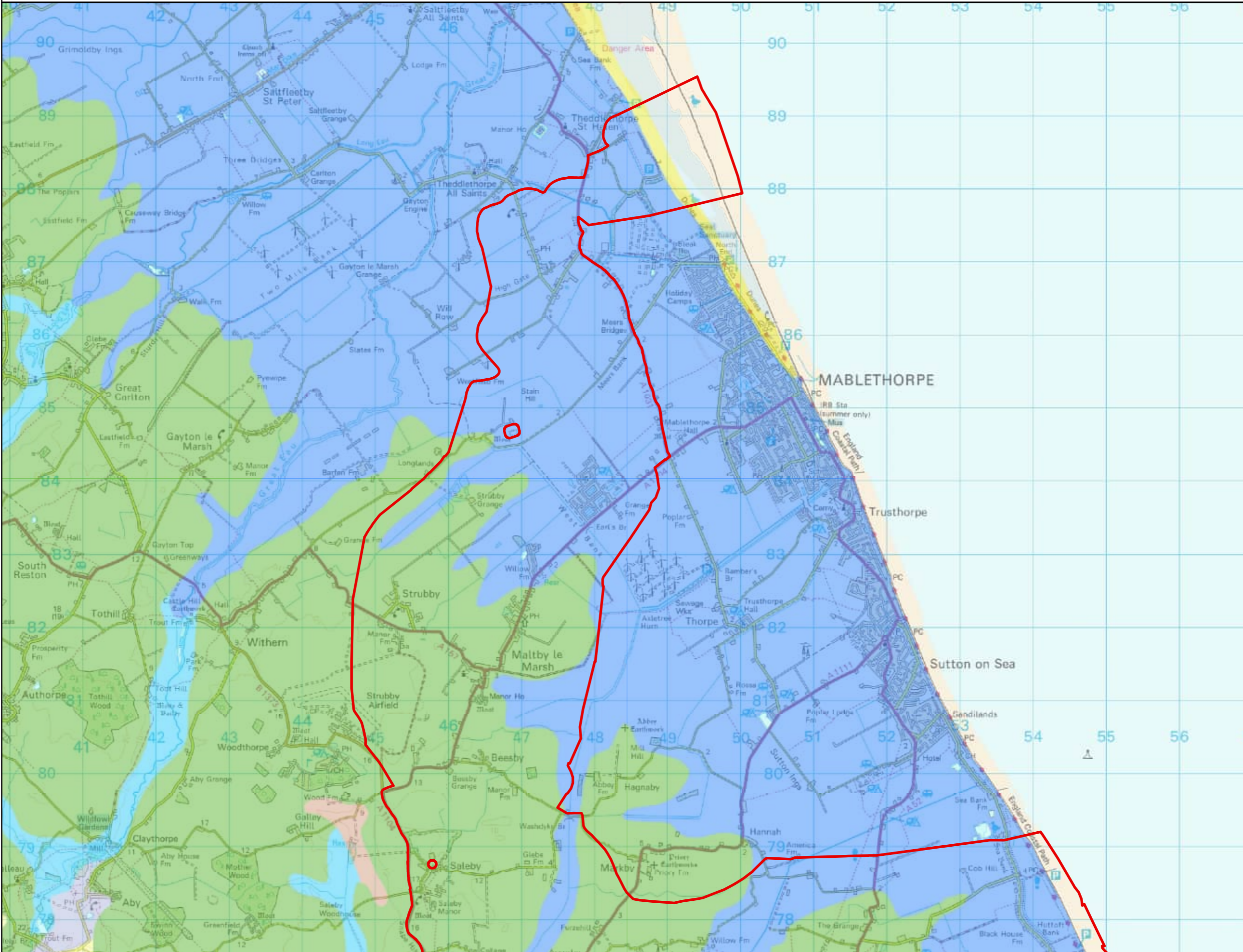
Drawing Reference

EGL-ARC-CONS-XX-DR-G-012

Scale	Sheet Size	Sheet	Issue
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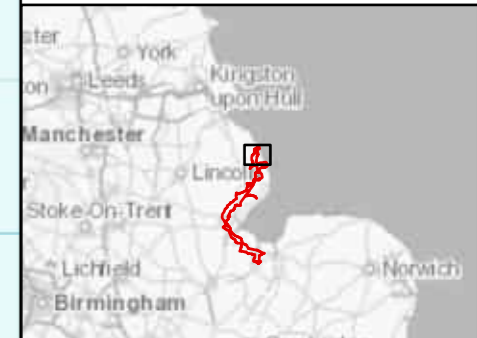
Figure 11-1 Soilscape Mapping



- Legend
- Scoping Boundary
 - Blanket bog peat soils
 - Fen peat soils
 - Freely draining acid loamy soils over rock
 - Freely draining floodplain soils
 - Freely draining lime-rich loamy soils
 - Freely draining sandy Breckland soils
 - Freely draining slightly acid but base-rich soils
 - Freely draining slightly acid loamy soils
 - Freely draining slightly acid sandy soils
 - Freely draining very acid sandy and loamy soils
 - Lime-rich loamy and clayey soils with impeded drainage
 - Loamy and clayey floodplain soils with naturally high groundwater
 - Loamy and clayey soils of coastal flats with naturally high groundwater
 - Loamy and sandy soils with naturally high groundwater and a peaty surface
 - Loamy soils with naturally high groundwater
 - Naturally wet very acid sandy and loamy soils
 - Raised bog peat soils
 - Restored soils mostly from quarry and opencast spoil
 - Saltmarsh soils
 - Sand dune soils
 - Shallow lime-rich soils over chalk or limestone
 - Shallow very acid peaty soils over rock
 - Slightly acid loamy and clayey soils with impeded drainage
 - Slowly permeable seasonally wet acid loamy and clayey soils
 - Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils
 - Slowly permeable wet very acid upland soils with a peaty surface
 - Very acid loamy upland soils with a wet peaty surface
 - Unsurveyed/Urban
 - Water body

<https://www.landis.org.uk/soilscape/>

Notes
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Coordinate System: British National Grid
Sheet X Centroid Coordinate: 548445.38E Sheet Y Centroid Coordinate: 384032.9N



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1	JUN 24	DRAFT	SB	BL	MW
Issue	Date	Remarks	Drawn	Checked	Approved

Title

**Figure 11-1
Soilscape Mapping**

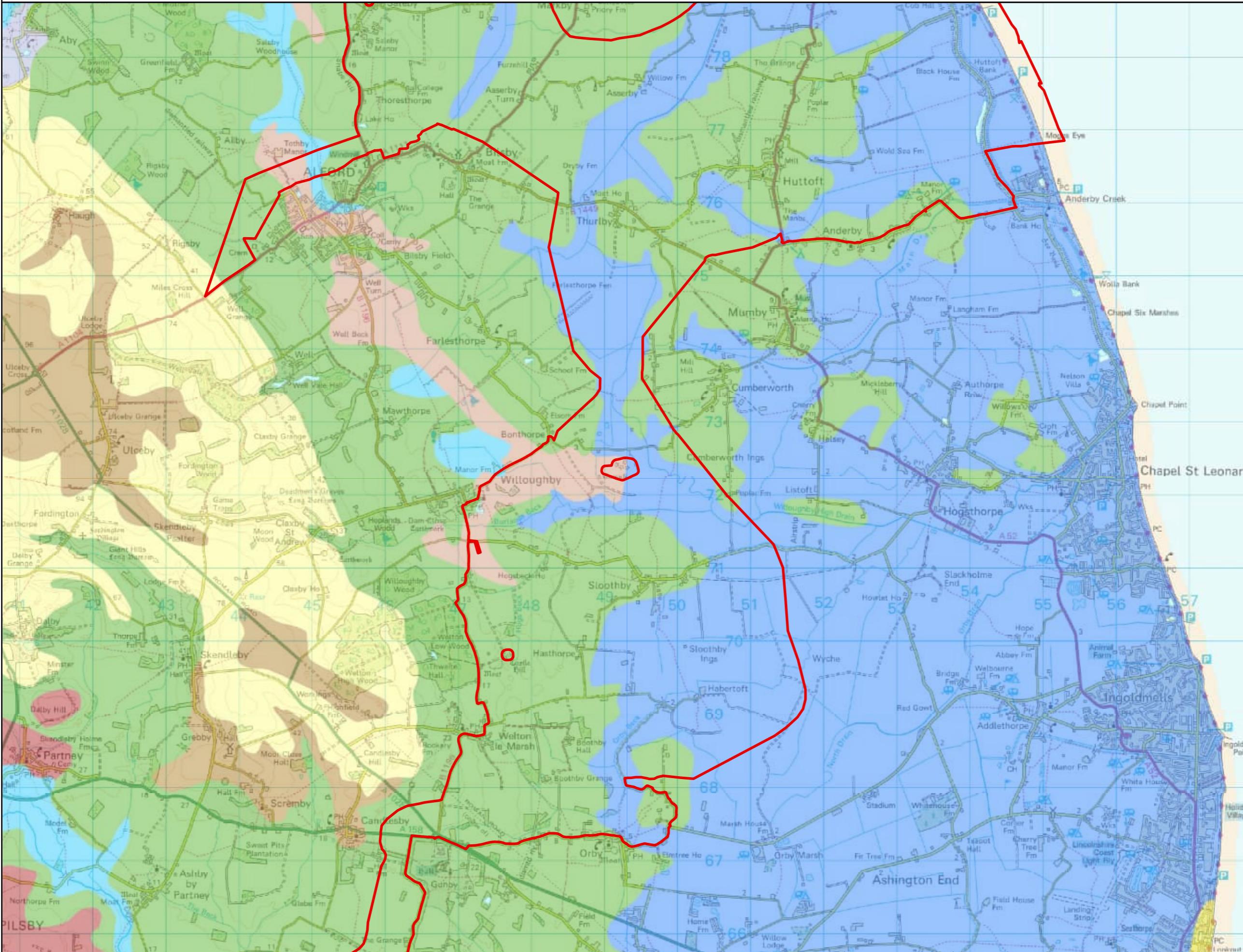
Figure Number
FIGURE 11-1

Drawing Reference
EGL-ARC-CONS-XX-DR-G-012

Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 1 OF 7	1



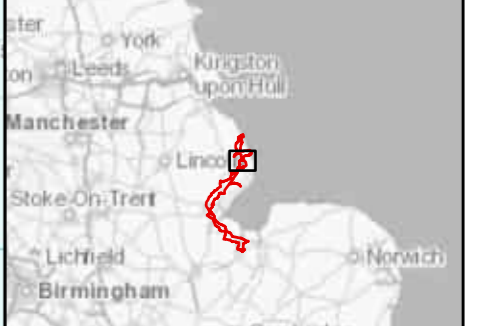
Figure 11-1 Soilsapes Mapping



- Legend
- Scoping Boundary
 - Blanket bog peat soils
 - Fen peat soils
 - Freely draining acid loamy soils over rock
 - Freely draining floodplain soils
 - Freely draining lime-rich loamy soils
 - Freely draining sandy Breckland soils
 - Freely draining slightly acid but base-rich soils
 - Freely draining slightly acid loamy soils
 - Freely draining slightly acid sandy soils
 - Freely draining very acid sandy loamy soils
 - Lime-rich loamy and clayey soils with impeded drainage
 - Loamy and clayey floodplain soils with naturally high groundwater
 - Loamy and clayey soils of coastal flats with naturally high groundwater
 - Loamy and sandy soils with naturally high groundwater and a peaty surface
 - Loamy soils with naturally high groundwater
 - Naturally wet very acid sandy and loamy soils
 - Raised bog peat soils
 - Restored soils mostly from quarry and opencast spoil
 - Saltmarsh soils
 - Sand dune soils
 - Shallow lime-rich soils over chalk or limestone
 - Shallow very acid peaty soils over rock
 - Slightly acid loamy and clayey soils with impeded drainage
 - Slowly permeable seasonally wet acid loamy and clayey soils
 - Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils
 - Slowly permeable wet very acid upland soils with a peaty surface
 - Very acid loamy upland soils with a wet peaty surface
 - Unsurveyed/Urban
 - Water body

<https://www.landis.org.uk/soilsapes/>

Notes
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Coordinate System: British National Grid
Sheet X Centroid Coordinate: 549399.24E Sheet Y Centroid Coordinate: 372223.16N



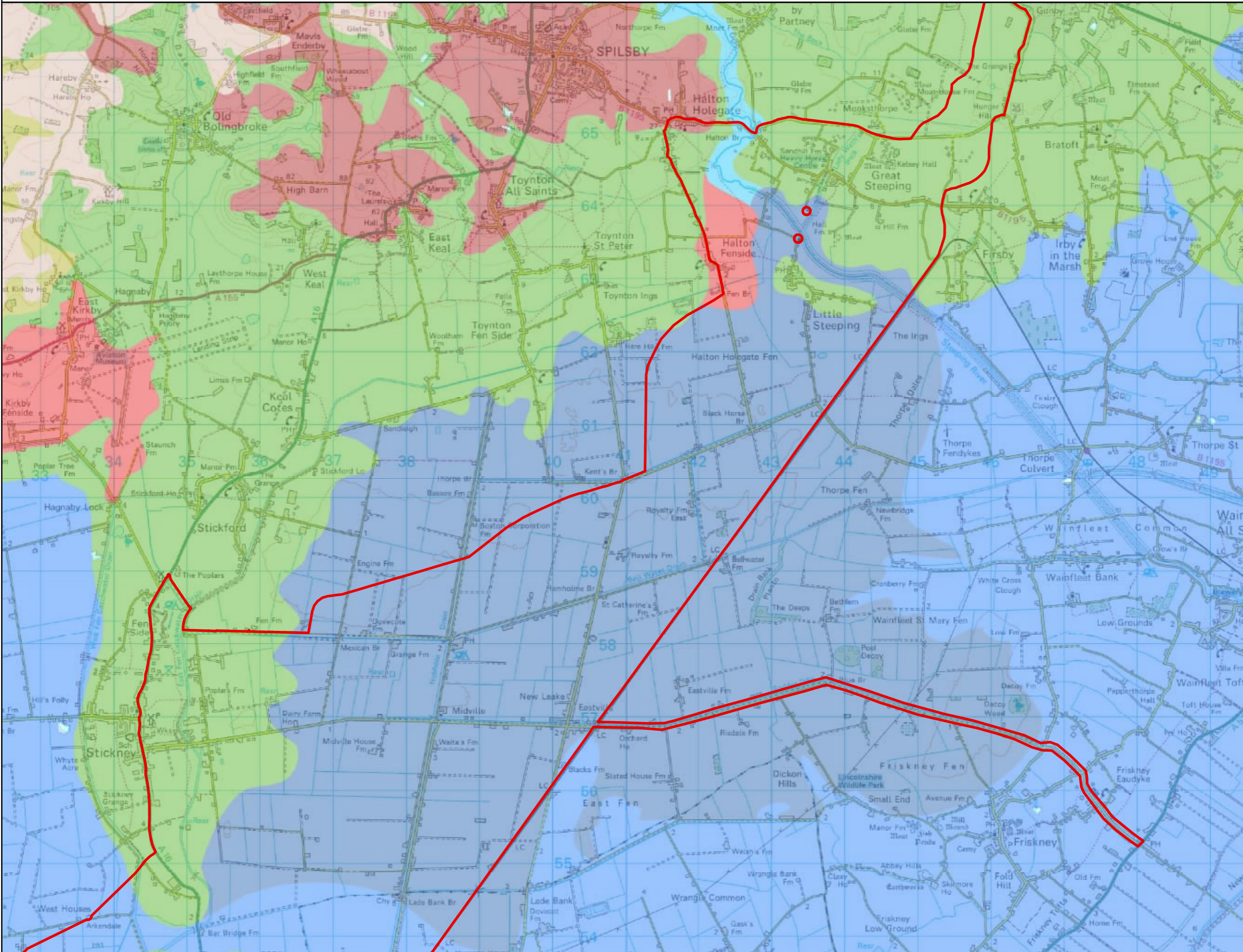
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1	JUN 24	DRAFT	SB	BL	MW
Issue	Date	Remarks	Drawn	Checked	Approved

Title					
Figure 11-1 Soilsapes Mapping					
Figure Number					
FIGURE 11-1					
Drawing Reference					
EGL-ARC-CONS-XX-DR-G-012					
Scale	Sheet Size	Sheet	Issue		
1:50,000	A3	SHEET 2 OF 7	1		



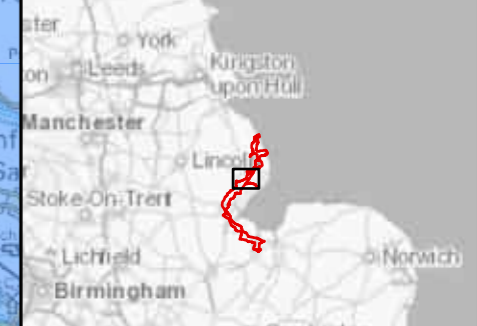
Figure 11-1 Soilscape Mapping



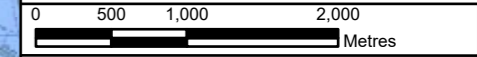
- Legend
- Scoping Boundary
 - Blanket bog peat soils
 - Fen peat soils
 - Freely draining acid loamy soils over rock
 - Freely draining floodplain soils
 - Freely draining lime-rich loamy soils
 - Freely draining sandy Breckland soils
 - Freely draining slightly acid but base-rich soils
 - Freely draining slightly acid loamy soils
 - Freely draining slightly acid sandy soils
 - Freely draining very acid sandy and loamy soils
 - Lime-rich loamy and clayey soils with impeded drainage
 - Loamy and clayey floodplain soils with naturally high groundwater
 - Loamy and clayey soils of coastal flats with naturally high groundwater
 - Loamy and sandy soils with naturally high groundwater and a peaty surface
 - Loamy soils with naturally high groundwater
 - Naturally wet very acid sandy over rock
 - Raised bog peat soils
 - Restored soils mostly from quarry and opencast spoil
 - Saltmarsh soils
 - Sand dune soils
 - Shallow lime-rich soils over chalk or limestone
 - Shallow very acid peaty soils over rock
 - Slightly acid loamy and clayey soils with impeded drainage
 - Slowly permeable seasonally wet acid loamy and clayey soils
 - Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils
 - Slowly permeable wet very acid upland soils with a peaty surface
 - Very acid loamy upland soils with a wet peaty surface
 - Unsurveyed/Urban
 - Water body

<https://www.landis.org.uk/soilscape/>

Notes
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Coordinate System: British National Grid
Sheet X Centroid Coordinate: 541021.2E Sheet Y Centroid Coordinate: 360260N



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1	JUN 24	DRAFT	SB	BL	MW
Issue	Date	Remarks	Drawn	Checked	Approved

Title
**Figure 11-1
Soilscape Mapping**



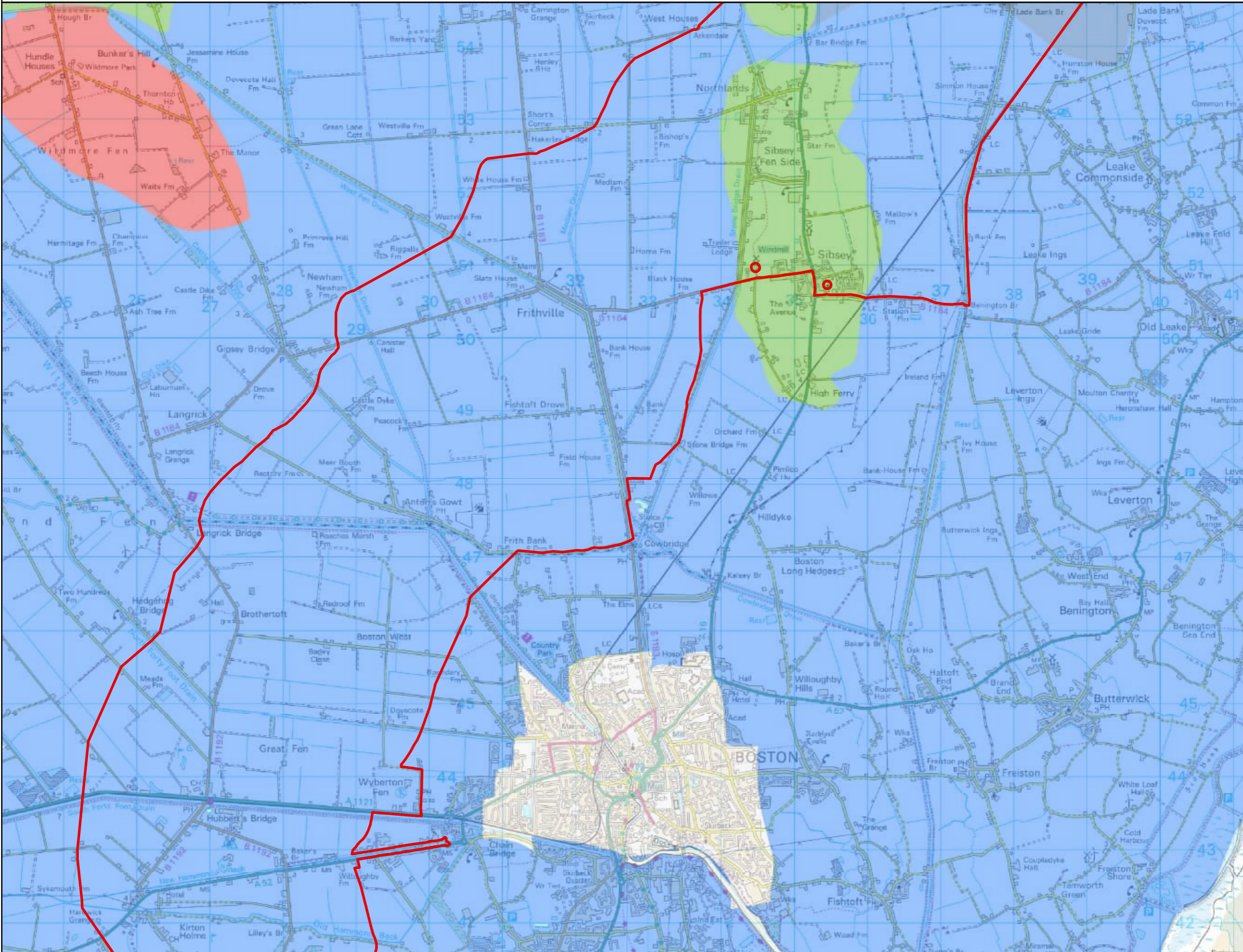
Figure Number
FIGURE 11-1

Drawing Reference
EGL-ARC-CONS-XX-DR-G-012

Scale	Sheet Size	Sheet	Issue
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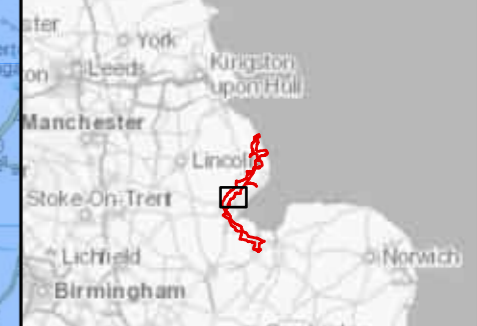
Figure 11-1 Soilsapes Mapping



- Legend**
- Scoping Boundary
 - Blanket bog peat soils
 - Fen peat soils
 - Freely draining acidic loamy soils over rock
 - Freely draining floodplain soils
 - Freely draining lime-rich loamy soils
 - Freely draining sandy Breckland soils
 - Freely draining slightly acid but base-rich soils
 - Freely draining slightly acid loamy soils
 - Freely draining slightly acid sandy soils
 - Freely draining very acid sandy loams
 - Lime-rich loamy and clayey soils with impeded drainage
 - Loamy and clayey floodplain soils with naturally high groundwater
 - Loamy and clayey soils of coastal flats with naturally high groundwater
 - Loamy and sandy soils with naturally high groundwater and a peaty surface
 - Loamy soils with naturally high groundwater
 - Naturally wet very acid sandy and loamy soils
 - Raised bog peat soils
 - Restored soils mostly from quarry and opencast spoil
 - Saltmarsh soils
 - Sand dune soils
 - Shallow lime-rich soils over chalk or limestone
 - Shallow very acid peaty soils over rock
 - Slightly acid loamy and clayey soils with impeded drainage
 - Slowly permeable seasonally wet acid loamy and clayey soils
 - Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils
 - Slowly permeable wet very acid upland soils with a peaty surface
 - Very acid loamy upland soils with a wet peaty surface
 - Unsurveyed/Urban
 - Water body

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Title
**Figure 11-1
Soilsapes Mapping**



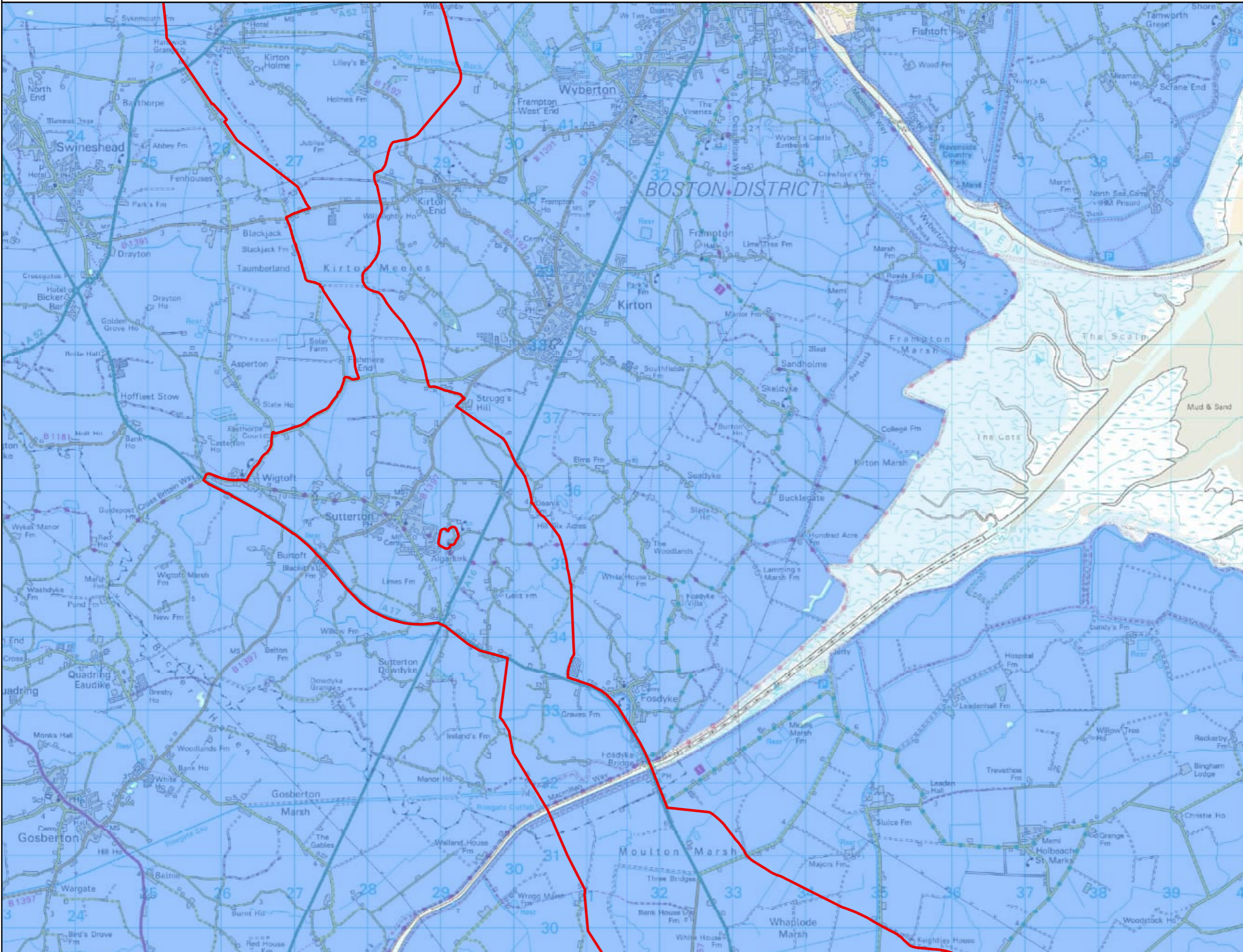
Figure Number
FIGURE 11-1

Drawing Reference
EGL-ARC-CONS-XX-DR-G-012

Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 4 OF 7	1



Figure 11-1 Soilsapes Mapping



- Legend
- Scoping Boundary
 - Soilsapes
 - Blanket bog peat soils
 - Fen peat soils
 - Freely draining acid loamy soils over rock
 - Freely draining floodplain soils
 - Freely draining lime-rich loamy soils
 - Freely draining sandy Breckland soils
 - Freely draining slightly acid but base-rich soils
 - Freely draining slightly acid loamy soils
 - Freely draining slightly acid sandy soils
 - Freely draining very acid sandy loamy soils
 - Lime-rich loamy and clayey soils with naturally high groundwater
 - Loamy and clayey floodplain soils with naturally high groundwater
 - Loamy and clayey soils of coastal flats with naturally high groundwater
 - Loamy and sandy soils with naturally high groundwater and a peaty surface
 - Loamy soils with naturally high groundwater
 - Naturally wet very acid sandy and loamy soils
 - Raised bog peat soils
 - Restored soils mostly from quarry and opencast spoil
 - Saltmarsh soils
 - Sand dune soils
 - Shallow lime-rich soils over chalk or limestone
 - Shallow very acid peaty soils over rock
 - Slightly acid loamy and clayey soils with impeded drainage
 - Slowly permeable seasonally wet acid loamy and clayey soils
 - Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils
 - Slowly permeable wet very acid upland soils with a peaty surface
 - Very acid loamy upland soils with a wet peaty surface
 - Unsurveyed/Urban
 - Water body

<https://www.landis.org.uk/soilsapes/>

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Sheet X Centroid Coordinate: 531553.29E Sheet Y Centroid Coordinate: 336163.14N



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Title
**Figure 11-1
Soilsapes Mapping**

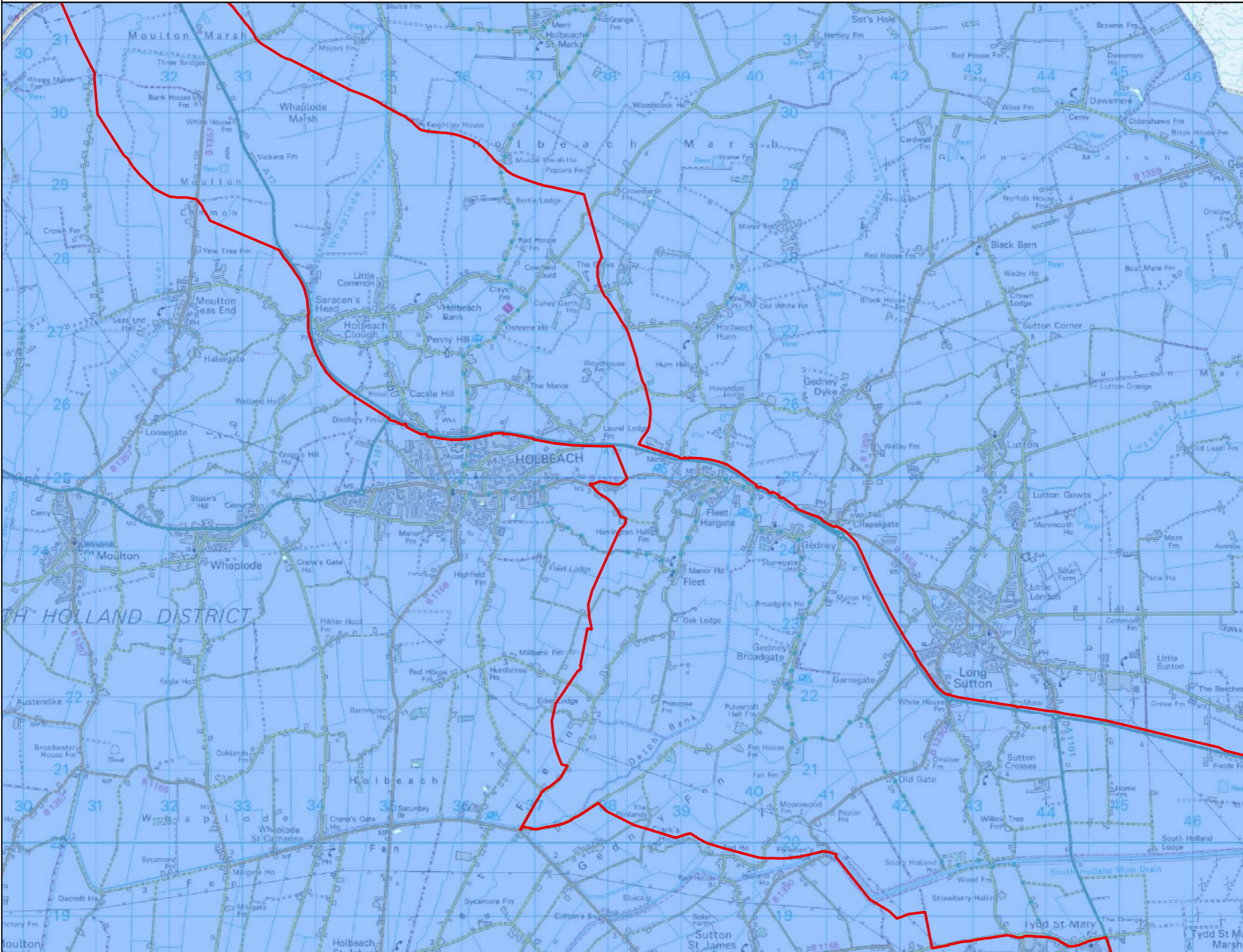
Figure Number
FIGURE 11-1

Drawing Reference
EGL-ARC-CONS-XX-DR-G-012

Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 5 OF 7	1



Figure 11-1 Soilscape Mapping



- Legend
- Scoping Boundary
 - Blanket bog peat soils
 - Fen peat soils
 - Freely draining acidic loamy soils over rock
 - Freely draining floodplain soils
 - Freely draining lime-rich loamy soils
 - Freely draining sandy Breckland soils
 - Freely draining slightly acid but base-rich soils
 - Freely draining slightly acid loamy soils
 - Freely draining slightly acid sandy soils
 - Freely draining very acid sandy and loamy soils
 - Lime-rich loamy and clayey soils with naturally high groundwater
 - Loamy and clayey floodplain soils with naturally high groundwater
 - Loamy and clayey soils of coastal flats with naturally high groundwater
 - Loamy and sandy soils with naturally high groundwater and a peaty surface
 - Loamy soils with naturally high groundwater
 - Naturally wet very acid sandy and loamy soils
 - Raised bog peat soils
 - Restored soils mostly from quarry and opencast spoil
 - Saltmarsh soils
 - Sand dune soils
 - Shallow lime-rich soils over chalk or limestone
 - Shallow very acid peaty soils over rock
 - Slightly acid loamy and clayey soils with impeded drainage
 - Slowly permeable seasonally wet acid loamy and clayey soils
 - Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils
 - Slowly permeable wet very acid upland soils with a peaty surface
 - Very acid loamy upland soils with a wet peaty surface
 - Unsurveyed/Urban
 - Water body

<https://www.landis.org.uk/soilscape/>

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Sheet X Centroid Coordinate: 538264.29E Sheet Y Centroid Coordinate: 324986.6N



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Title
**Figure 11-1
Soilscape Mapping**

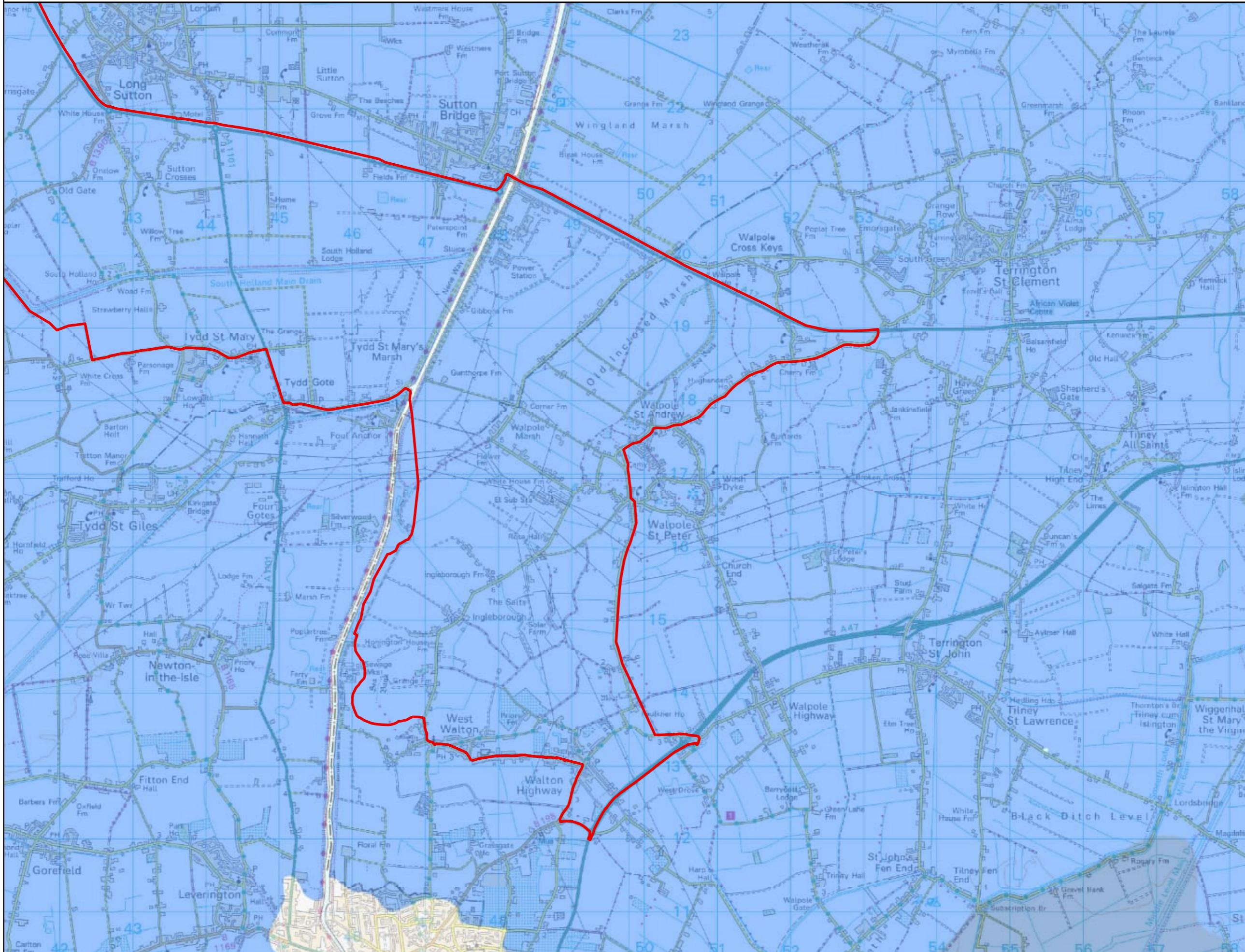
Figure Number
FIGURE 11-1

Drawing Reference
EGL-ARC-CONS-XX-DR-G-012

Scale	Sheet Size	Sheet	Issue
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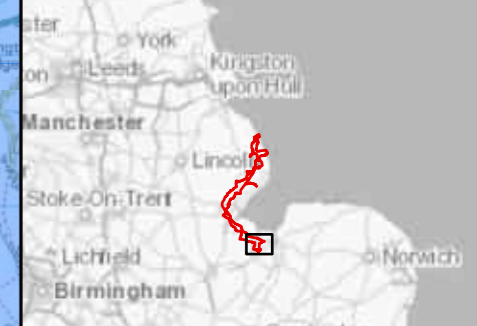
Figure 11-1 Soilsapes Mapping



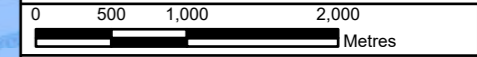
- Legend
- Scoping Boundary
 - Soilsapes
 - Blanket bog peat soils
 - Fen peat soils
 - Freely draining acid loamy soils over rock
 - Freely draining floodplain soils
 - Freely draining lime-rich loamy soils
 - Freely draining sandy Breckland soils
 - Freely draining slightly acid but base-rich soils
 - Freely draining slightly acid loamy soils
 - Freely draining slightly acid sandy soils
 - Freely draining very acid sandy loamy soils
 - Lime-rich loamy and clayey soils with impeded drainage
 - Loamy and clayey floodplain soils with naturally high groundwater
 - Loamy and clayey soils of coastal flats with naturally high groundwater
 - Loamy and sandy soils with naturally high groundwater and a peaty surface
 - Blanket bog peat soils
 - Restored soils mostly from quarry and opencast spoil
 - Sand dune soils
 - Shallow lime-rich soils over chalk or limestone
 - Shallow very acid peaty soils over rock
 - Slightly acid loamy and clayey soils with impeded drainage
 - Slowly permeable seasonally wet acid loamy and clayey soils
 - Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils
 - Slowly permeable wet very acid upland soils with a peaty surface
 - Very acid loamy upland soils with a wet peaty surface
 - Unsurveyed/Urban
 - Water body

<https://www.landis.org.uk/soilsapes/>

Notes
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Title
**Figure 11-1
Soilsapes Mapping**



Figure Number
FIGURE 11-1

Drawing Reference
EGL-ARC-CONS-XX-DR-G-012

Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 7 OF 7	1



Figure 11-2 Provisional Agricultural Land Classification Mapping (Overview)

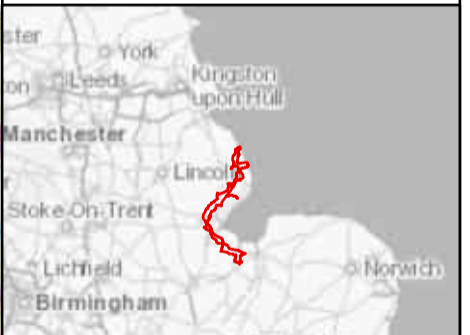
Legend

Scoping Boundary

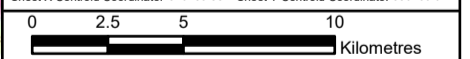


<https://magic.defra.gov.uk/magicmap.aspx>

Notes
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Coordinate System: British National Grid
Sheet X Centroid Coordinate: 540239.88E Sheet Y Centroid Coordinate: 350760.07N



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Title

Figure 11-2
Provisional Agricultural Land Classification Mapping

nationalgrid

Figure Number
FIGURE 11-2

Drawing Reference
EGL-ARC-CONS-XX-DR-G-013

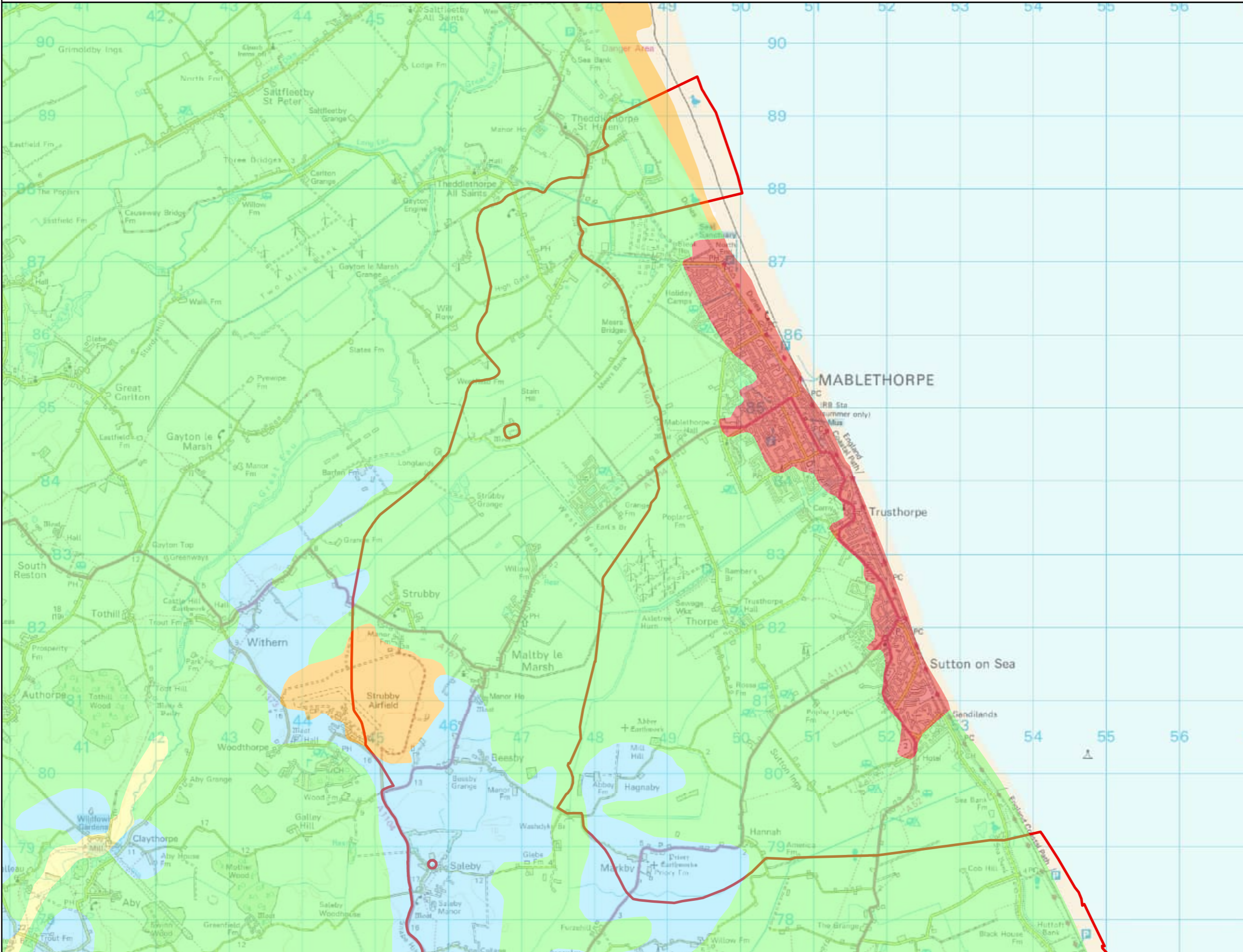
Scale	Sheet Size	Sheet	Issue
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Figure 11-2 Provisional Agricultural Land Classification Mapping

Legend

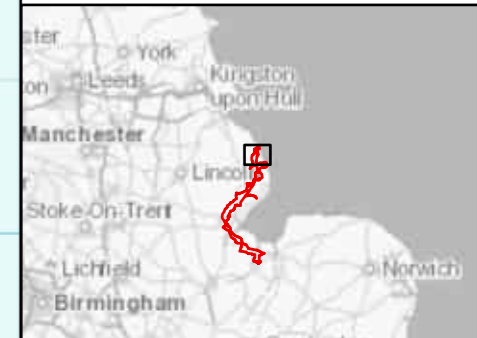
- Scoping Boundary
- Provisional Agricultural Land Classification**
- Grade 2
- Grade 3
- Grade 4
- Non Agricultural
- Urban



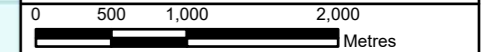
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Notes

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Coordinate System: British National Grid
Sheet X Centroid Coordinate: 548445.38E Sheet Y Centroid Coordinate: 394032.9N



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1	JUN 24	DRAFT	SB	BL	MW
Issue	Date	Remarks	Drawn	Checked	Approved

Title

Figure 11-2
Provisional Agriculture Land
Classification Mapping

nationalgrid

Figure Number: FIGURE 11-2

Drawing Reference: EGL-ARC-CONS-XX-DR-G-013

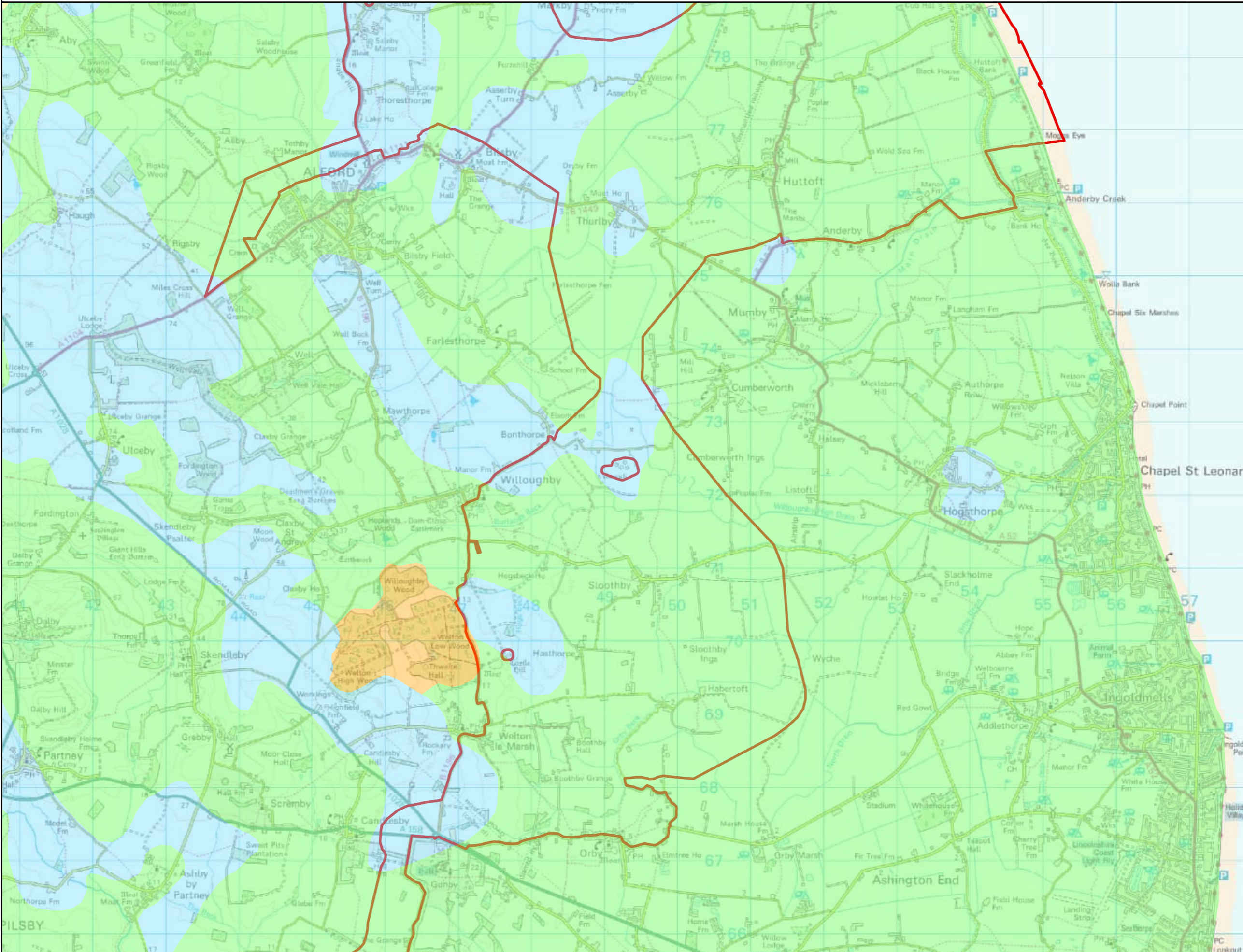
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Figure 11-2 Provisional Agricultural Land Classification Mapping

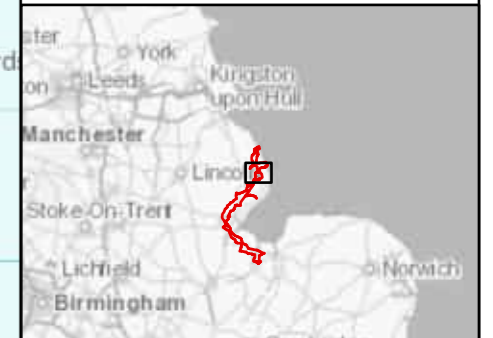
Legend

- Scoping Boundary
- Provisional Agricultural Land Classification
 - Grade 2
 - Grade 3
 - Grade 4
 - Non Agricultural



<https://magic.defra.gov.uk/magicmap.aspx>

Notes
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Coordinate System: British National Grid
 Sheet X Centroid Coordinate: 549309.24E Sheet Y Centroid Coordinate: 372223.16N



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Issue	Date	Remarks	Drawn	Checked	Approved

Title
 Figure 11-2
 Provisional Agriculture Land
 Classification Mapping

Figure Number
 FIGURE 11-2






Drawing Reference
 EGL-ARC-CONS-XX-DR-G-013

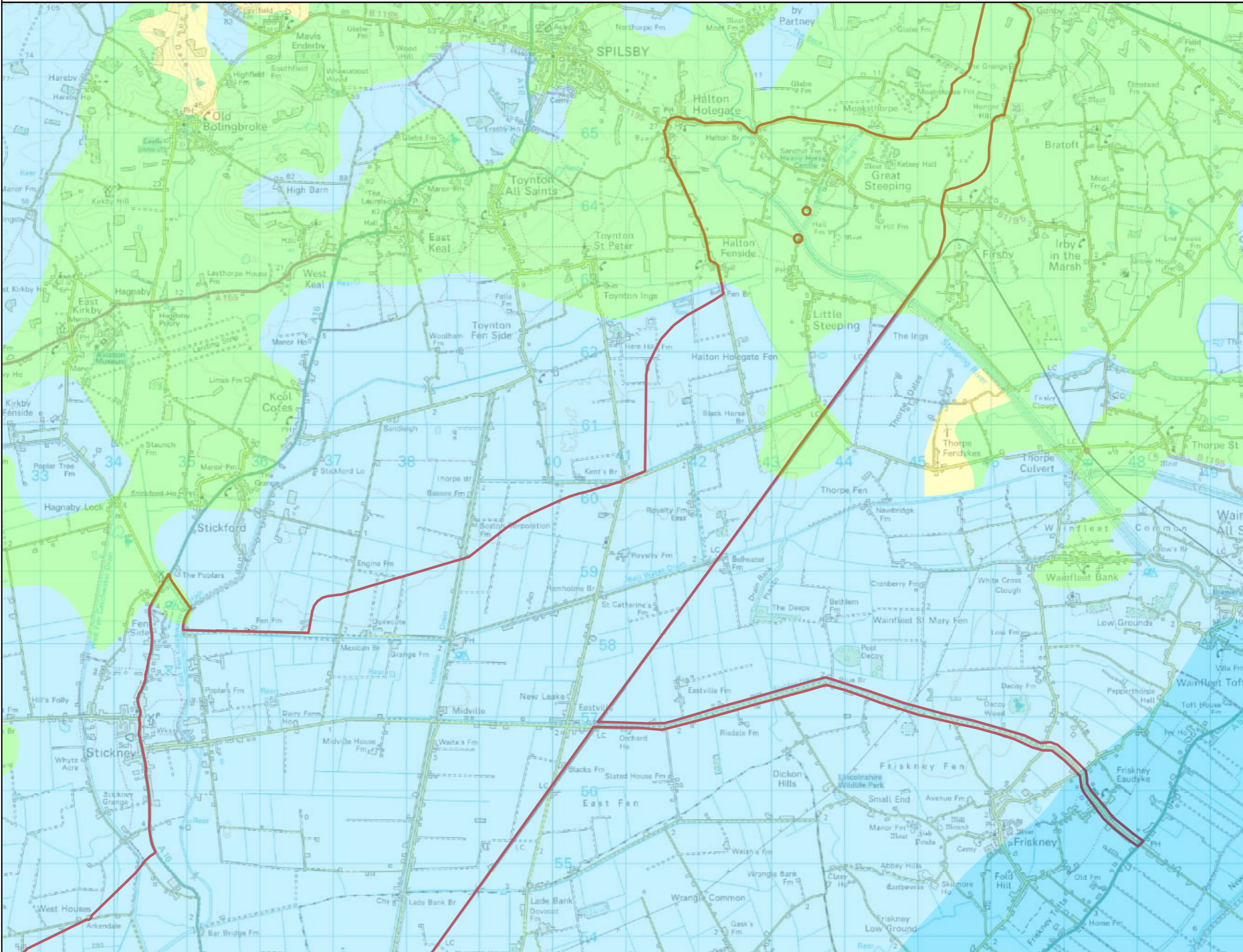
Scale	Sheet Size	Sheet	Issue
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Figure 11-2 Provisional Agricultural Land Classification Mapping

Legend

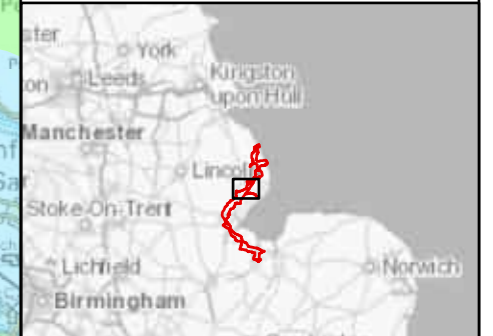
-  Scoping Boundary
- Provisional Agricultural Land Classification**
-  Grade 1
-  Grade 2
-  Grade 3
-  Grade 4



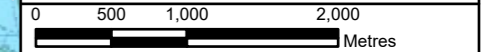
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Coordinate System: British National Grid
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Title

Figure 11-2
Provisional Agriculture Land
Classification Mapping



Figure Number
FIGURE 11-2

Drawing Reference
EGL-ARC-CONS-XX-DR-G-013

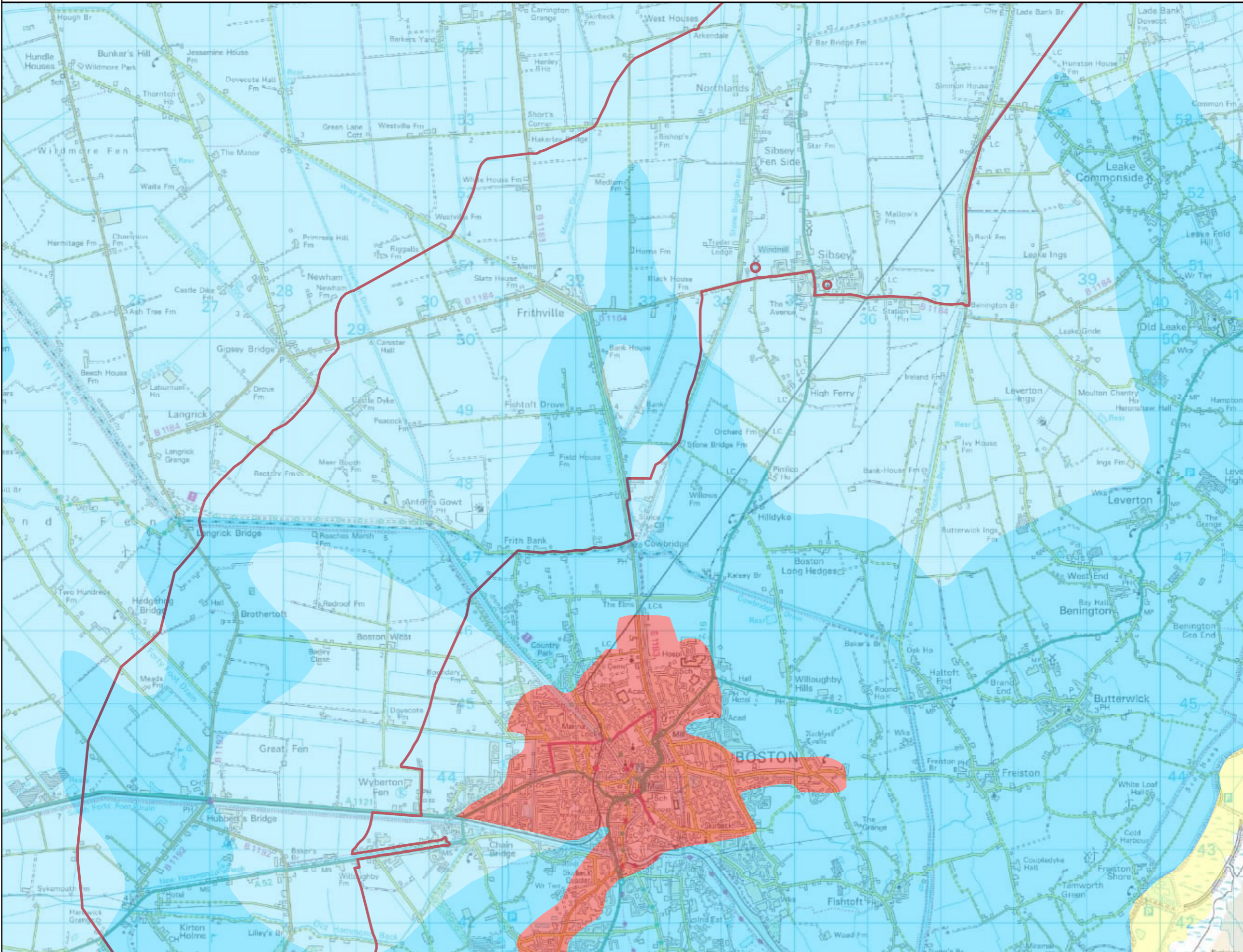
Scale	Sheet Size	Sheet	Issue
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Figure 11-2 Provisional Agricultural Land Classification Mapping

Legend

- Scoping Boundary
- Provisional Agricultural Land Classification**
- Grade 1
- Grade 2
- Grade 4
- Urban



<https://magic.defra.gov.uk/magicmap.aspx>

Notes
This drawing is scaled at paper size A3, therefore any prints taken at smaller sizes will affect accuracy of the measurement units and should not be scaled against.



Coordinate System: British National Grid
Sheet X Centroid Coordinate: 532708.17E Sheet Y Centroid Coordinate: 348074.66N



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Title

Figure 11-2
Provisional Agriculture Land
Classification Mapping



Figure Number
FIGURE 11-2

Drawing Reference
EGL-ARC-CONS-XX-DR-G-013

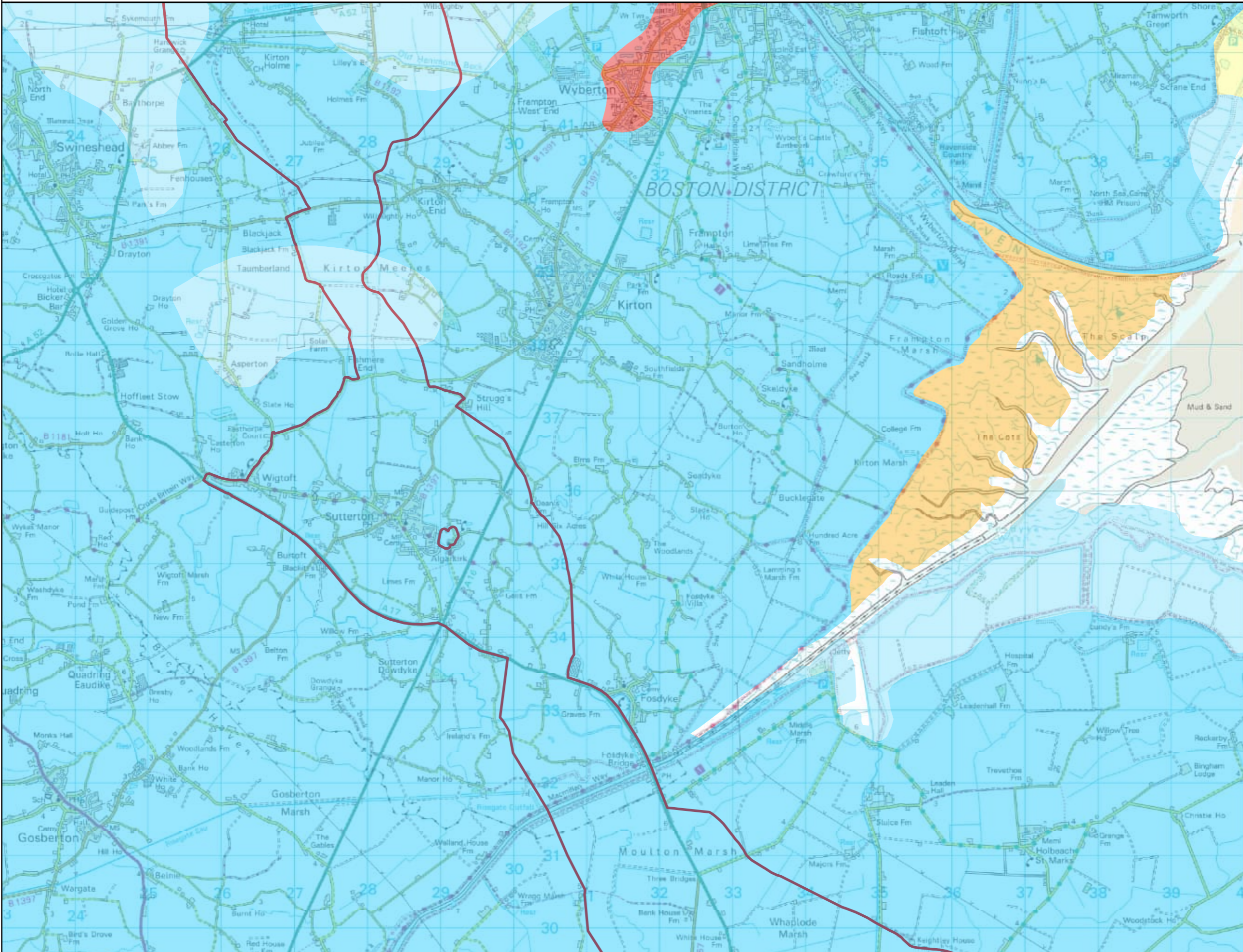
Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 4 OF 7	1



Figure 11-2 Provisional Agricultural Land Classification Mapping

Legend

- Scoping Boundary
- Provisional Agricultural Land Classification**
- Grade 1
- Grade 2
- Grade 4
- Non Agricultural
- Urban



<https://magic.defra.gov.uk/magicmap.aspx>

Notes

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Figure 11-2
Provisional Agriculture Land
Classification Mapping



Figure Number
FIGURE 11-2

Drawing Reference
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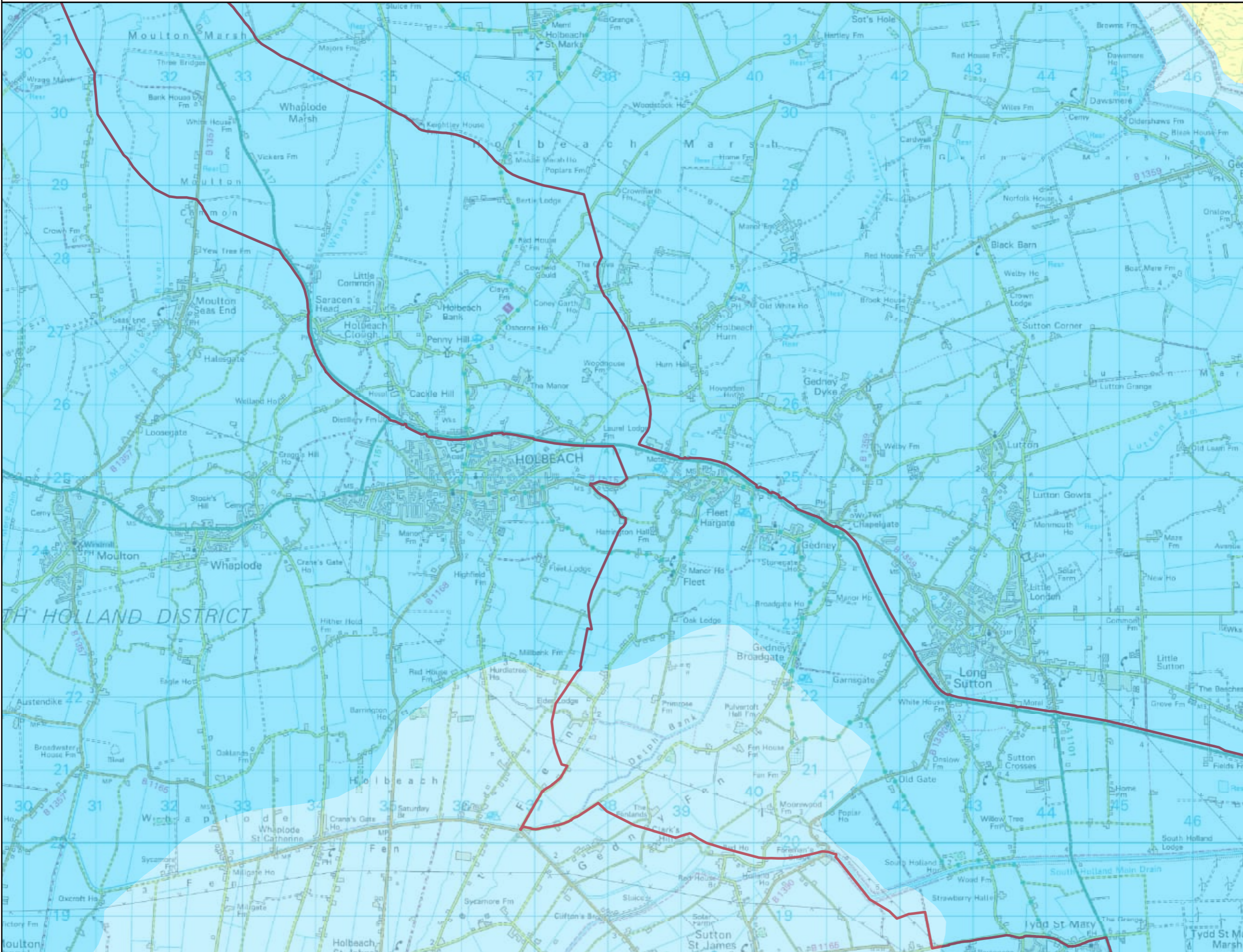
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1:50,000	A3	SHEET 5 OF 7	1



Figure 11-2 Provisional Agricultural Land Classification Mapping

Legend

- Scoping Boundary
- Provisional Agricultural Land Classification
- Grade 1
- Grade 2
- Grade 4



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Title

Figure 11-2
Provisional Agriculture Land
Classification Mapping



Figure Number
FIGURE 11-2





Drawing Reference
EGL-ARC-CONS-XX-DR-G-013

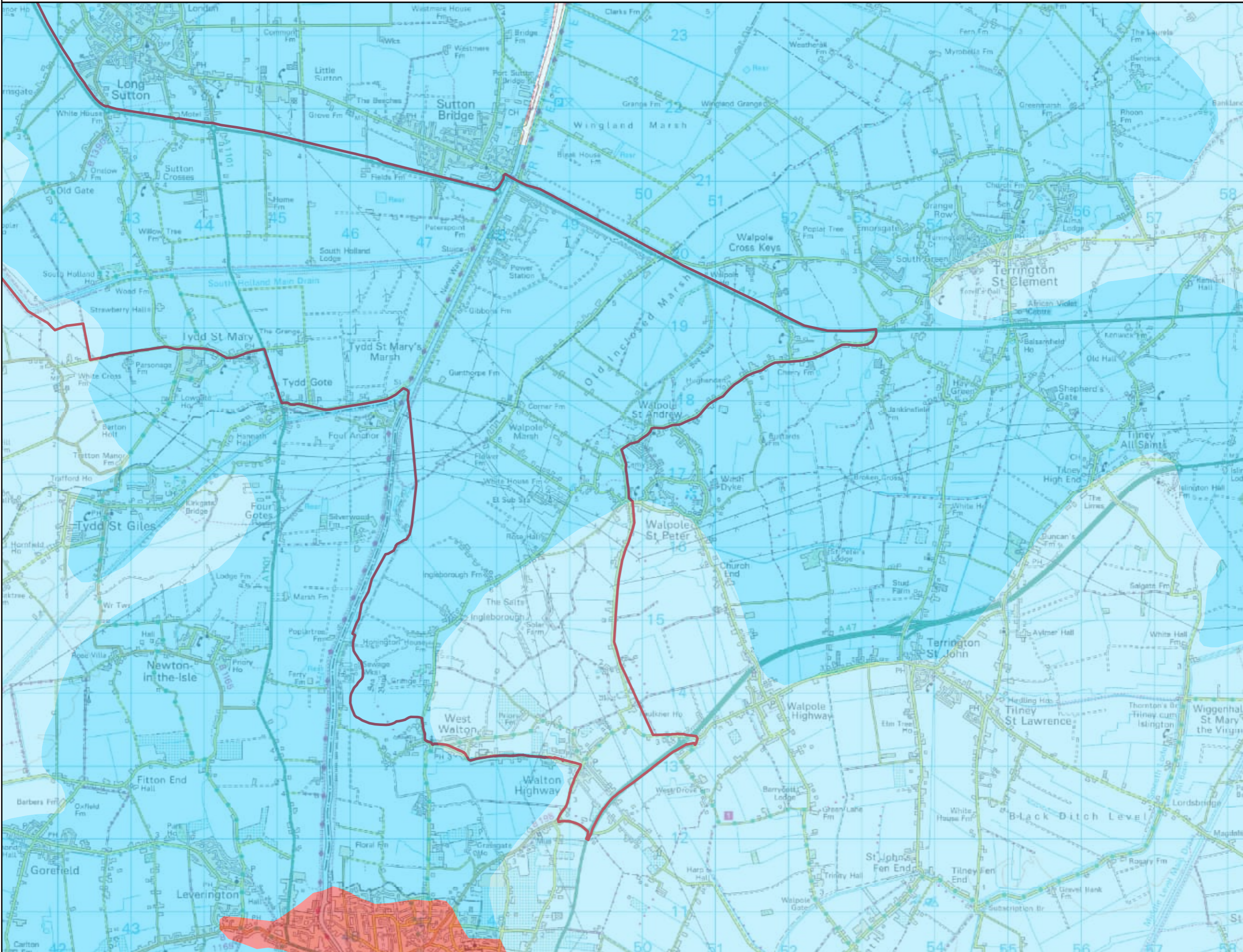
Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 6 OF 7	1



Figure 11-2 Provisional Agricultural Land Classification Mapping

Legend

-  Scoping Boundary
- Provisional Agricultural Land Classification
 -  Grade 1
 -  Grade 2
 -  Urban



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Notes
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Coordinate System: British National Grid
 Sheet X Centroid Coordinate: 549787.61E Sheet Y Centroid Coordinate: 316932.42N



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Title

 Figure 11-2
 Provisional Agriculture Land
 Classification Mapping



Figure Number
 FIGURE 11-2

Drawing Reference
 EGL-ARC-CONS-XX-DR-G-013

Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 7 OF 7	1

11.4.10 **Figure 11.3: Detailed ALC Mapping (Post-1988)** identifies that there are areas of detailed ALC mapping within the Scoping Boundary. These are areas of land that have previously been subject to a detailed ALC survey and the results are publicly available via MAGIC maps. **Figure 11.3: Detailed ALC Mapping (Post-1988)** indicates land as Grade 1 and Grade 2 east of Boston, Lincolnshire north of the A1121. Additionally, a detailed survey directly southeast of Sutton Bridge has identified land of Grade 1 and with a very small area of Grade 3a land. These findings are consistent with the Provisional ALC mapping within the Scoping Boundary.

Land Use

11.4.11 Satellite imagery indicates that the agricultural land within the Scoping Boundary is predominately arable land and grassland. Field boundaries are lines with hedges, trees and roads throughout Scoping Boundary. Extensive areas of land within the Scoping Boundary are covered by Countryside Stewardship or Environmental Stewardship Agreements (see **Figure 11.4: Agri-Environment Schemes**) and there are more limited areas covered by Woodland Grant Schemes and Felling Licences (see **Figure 11.5: Woodland and Forestry Schemes**).

Future Baseline

11.4.12 The Met Office's UK Climate Projects (UKCP18) predict that the future climate will consist of warmer winters with more intense rainfall events. However, the overall annual rainfall is expected to remain consistent with current levels as there is expected to be a change to a larger volume in winter and lower volume in summer. The increased intensity of rainfall events will increase the risk of soil erosion and runoff, risking reducing topsoil thickness and thus land quality if not properly mitigated.

11.4.13 The global annual temperature is predicted to increase by 2 °C. This increase in global temperature will increase soil surface cracking but also increase total field capacity days. However, these changes will be slight to negligible.

11.4.14 The overall future baseline of soils and land use will stay more or less the same although the climate change will have a slight impact on soils and land use and its management (Ref 11.31).

11.4.15 It is recognised that there are a number of other proposed and committed developments within the surrounding area that could alter the future baseline in the absence of the English Onshore Scheme. The potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined within **Volume 1, Part 4, Chapter 35: Cumulative Effects**



Figure 11-3 Detailed Agricultural Land Classification Mapping (Overview)

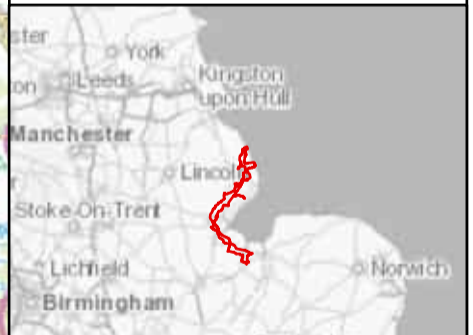
Legend

Scoping Boundary

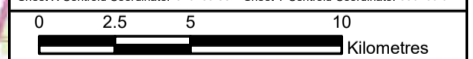


<https://magic.defra.gov.uk/magicmap.aspx>
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Notes
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Figure 11-3
Detailed Agricultural Land
Classification Mapping

nationalgrid

Figure Number

FIGURE 11-3

Drawing Reference

EGL-ARC-CONS-XX-DR-G-014

Scale	Sheet Size	Sheet	Issue
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Figure 11-3 Detailed Agricultural Land Classification Mapping (Overview)

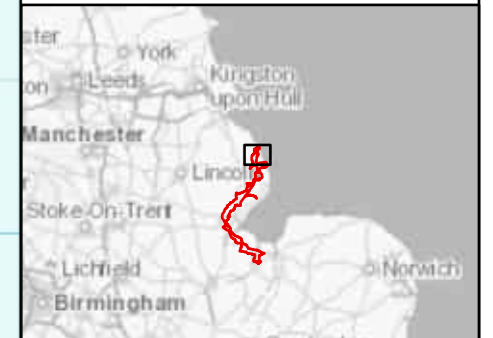
Legend

- Scoping Boundary
- Detailed Agricultural Land Classification
- Grade 1
- Grade 2
- Grade 3a
- Grade 3b
- Grade 4
- Grade 5
- Not Surveyed
- Other

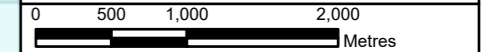
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Figure 11-3
Detailed Agricultural Land
Classification Mapping

nationalgrid

Figure Number: FIGURE 11-3

Drawing Reference: EGL-ARC-CONS-XX-DR-G-014

Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 1 OF 7	1

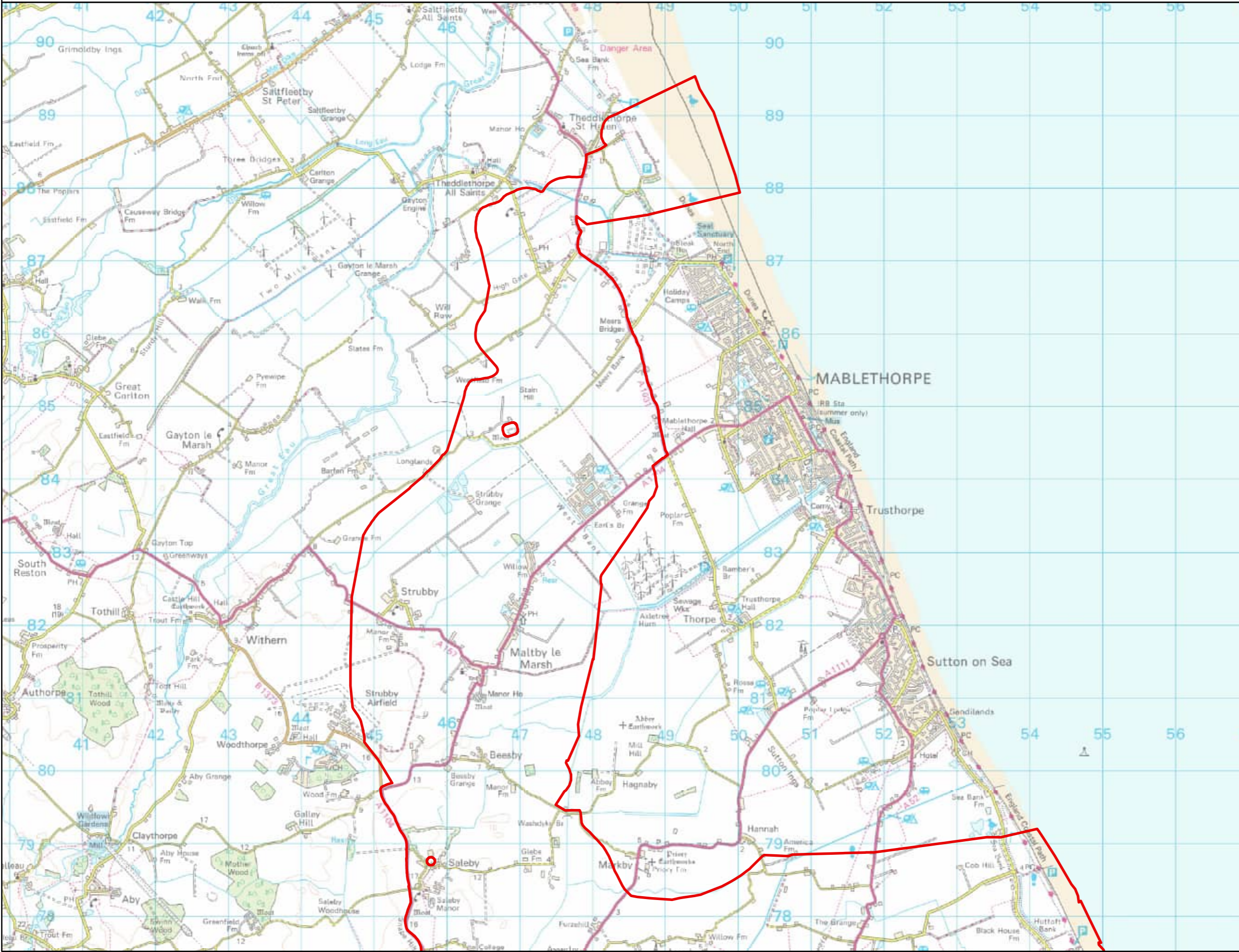
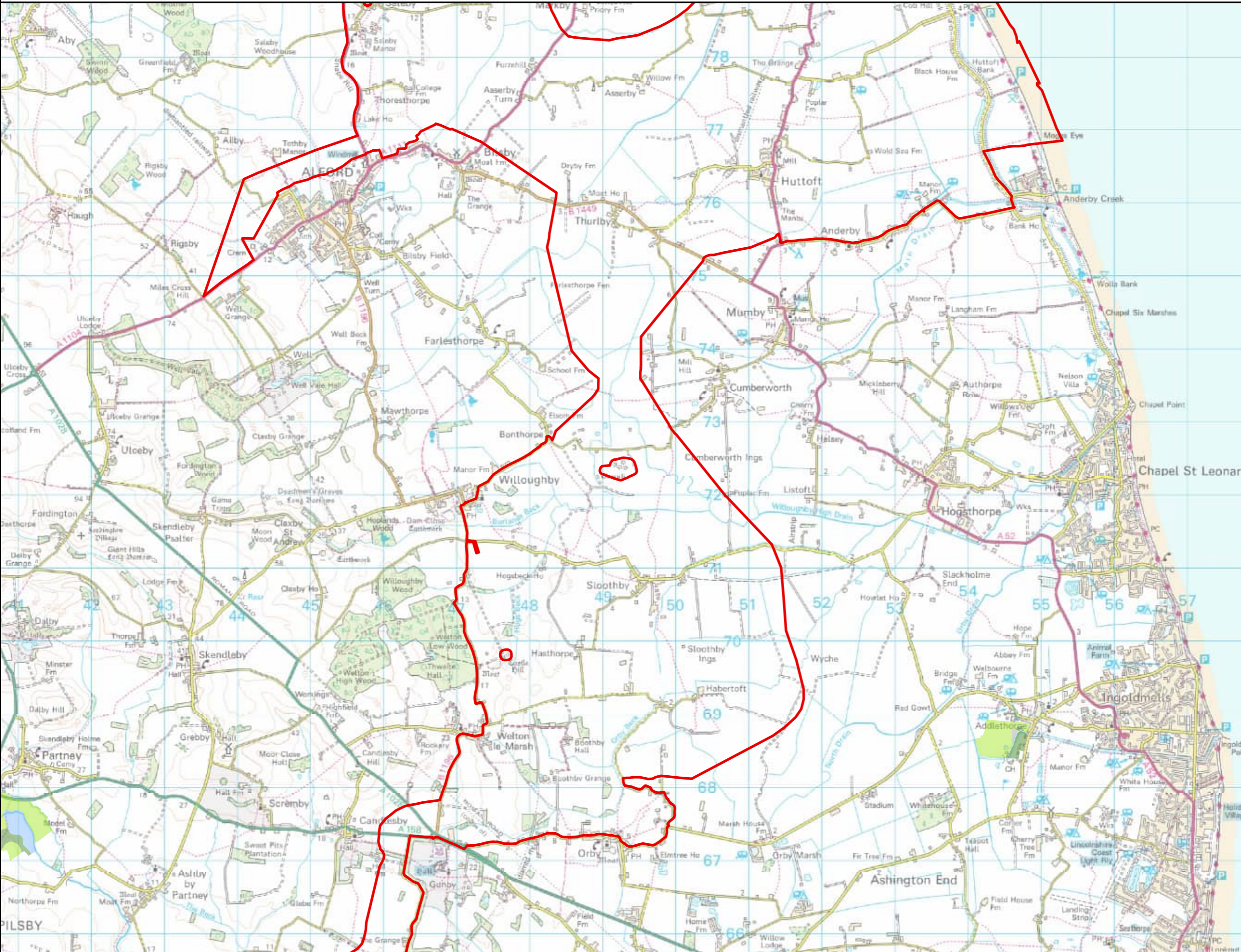


Figure 11-3 Detailed Agricultural Land Classification Mapping (Overview)



Legend

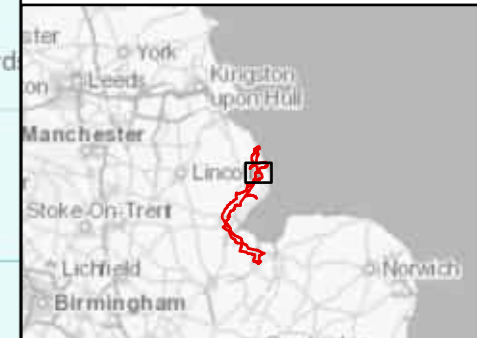
- Scoping Boundary

Detailed Agricultural Land Classification

- Grade 1
- Grade 2
- Grade 3a
- Grade 3b
- Grade 4
- Grade 5
- Not Surveyed
- Other

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0 500 1,000 2,000
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Title
 Figure 11-3
 Detailed Agricultural Land
 Classification Mapping

nationalgrid

Figure Number
 FIGURE 11-3

Drawing Reference
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Scale 1:50,000	Sheet Size A3	Sheet SHEET 2 OF 7	Issue 1
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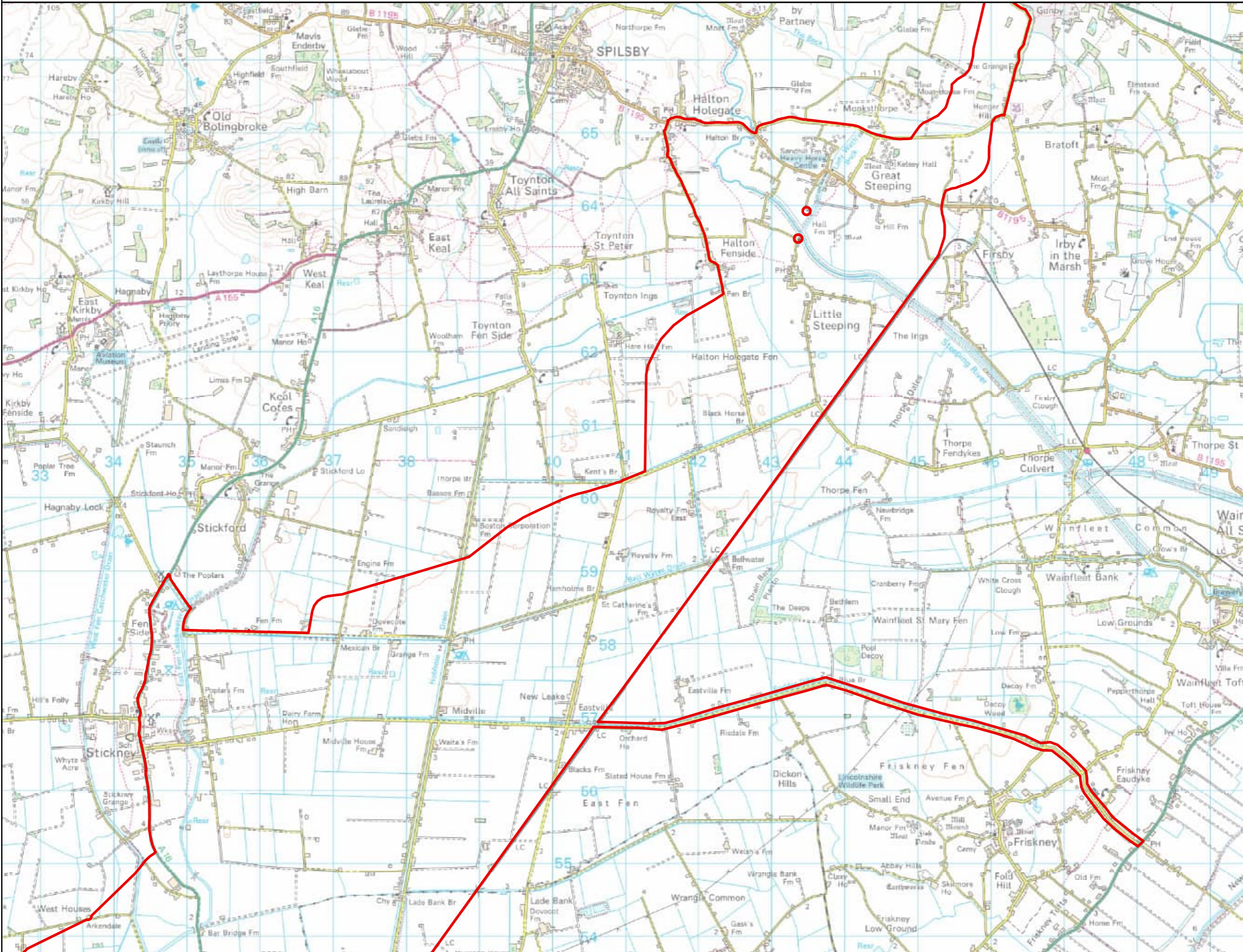
Figure 11-3 Detailed Agricultural Land Classification Mapping (Overview)

Legend

Scoping Boundary

Detailed Agricultural Land Classification

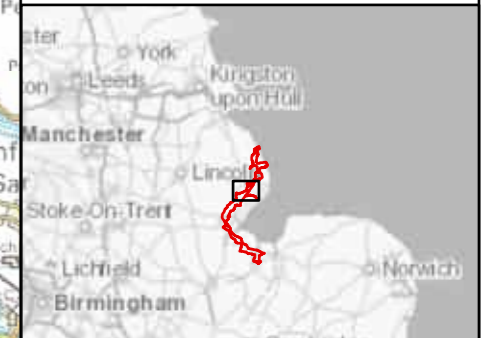
- Grade 1
- Grade 2
- Grade 3a
- Grade 3b
- Grade 4
- Grade 5
- Not Surveyed
- Other



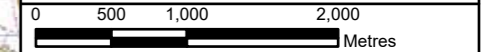
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Title
**Figure 11-3
Detailed Agricultural Land
Classification Mapping**

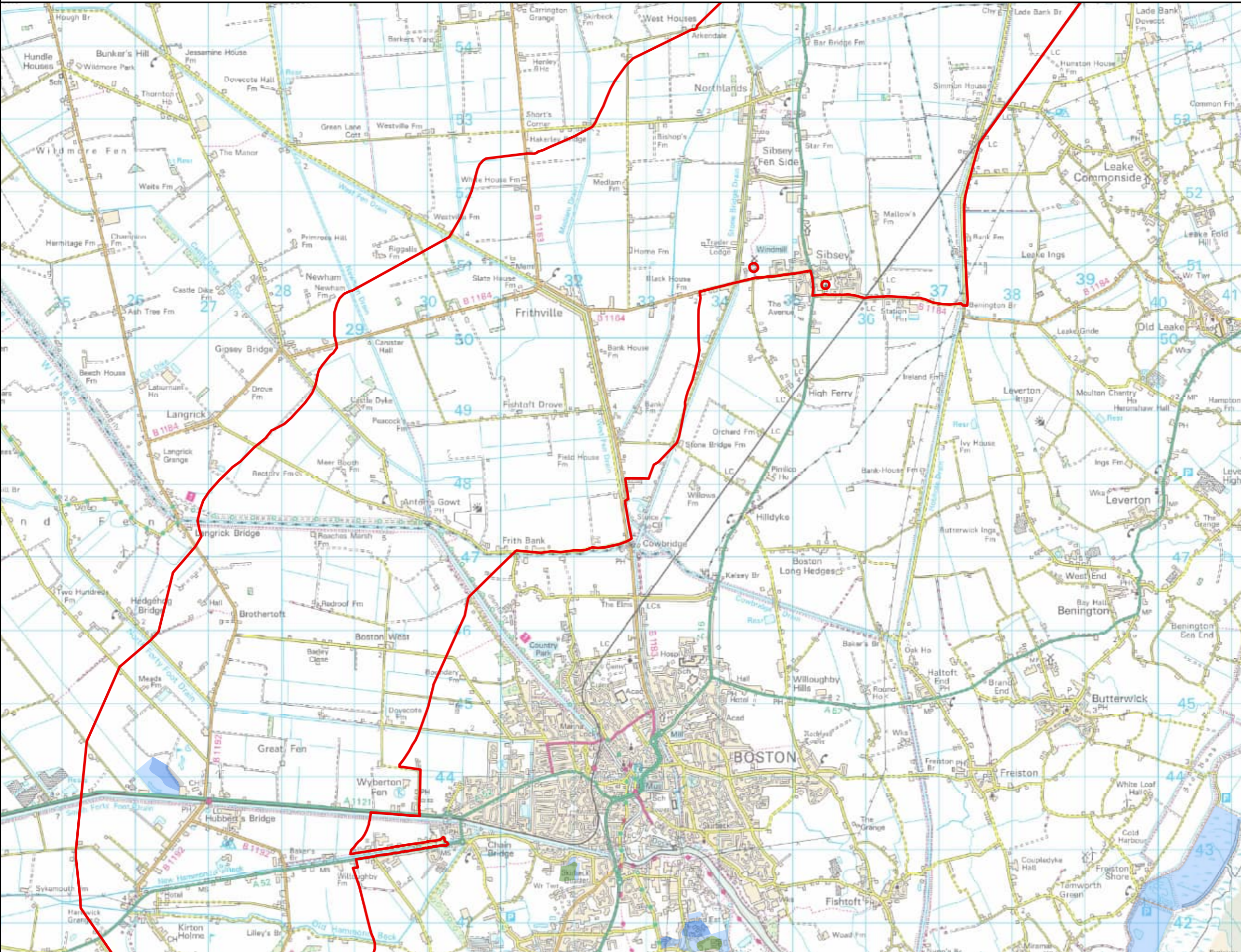


Figure Number
FIGURE 11-3

Drawing Reference
EGL-ARC-CONS-XX-DR-G-014

Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 3 OF 7	1

Figure 11-3 Detailed Agricultural Land Classification Mapping (Overview)



Legend

- Scoping Boundary

Detailed Agricultural Land Classification

- Grade 1
- Grade 2
- Grade 3a
- Grade 3b
- Grade 4
- Grade 5
- Not Surveyed
- Other

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**Figure 11-3
Detailed Agricultural Land
Classification Mapping**



Figure Number
FIGURE 11-3

Drawing Reference
EGL-ARC-CONS-XX-DR-G-014

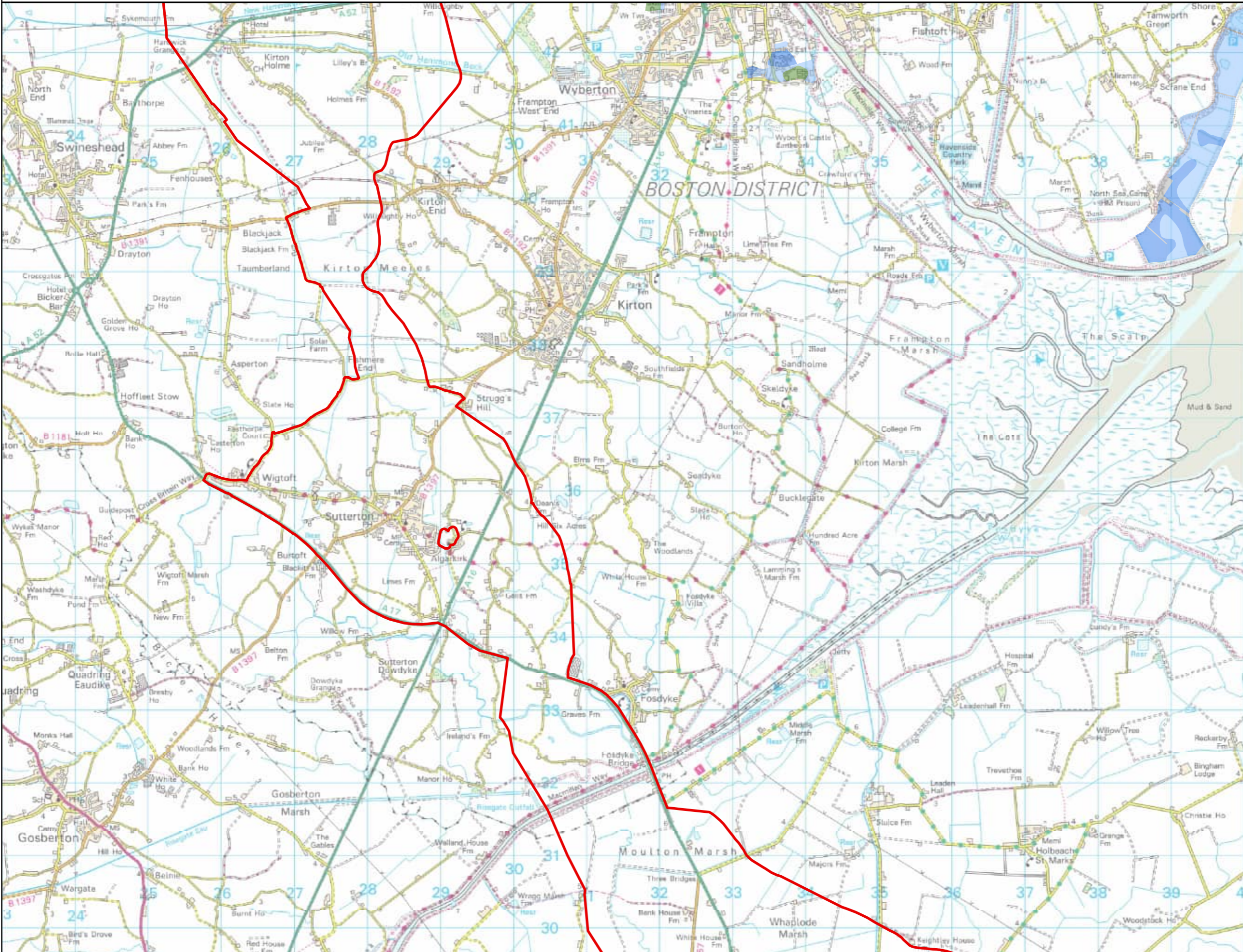
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Figure 11-3 Detailed Agricultural Land Classification Mapping (Overview)

Legend

- Scoping Boundary
- Detailed Agricultural Land Classification**
- Grade 1
- Grade 2
- Grade 3a
- Grade 3b
- Grade 4
- Grade 5
- Not Surveyed
- Other



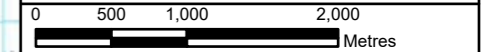
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Issue	Date	Remarks	Drawn	Checked	Approved

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 Figure 11-3
 Detailed Agricultural Land
 Classification Mapping

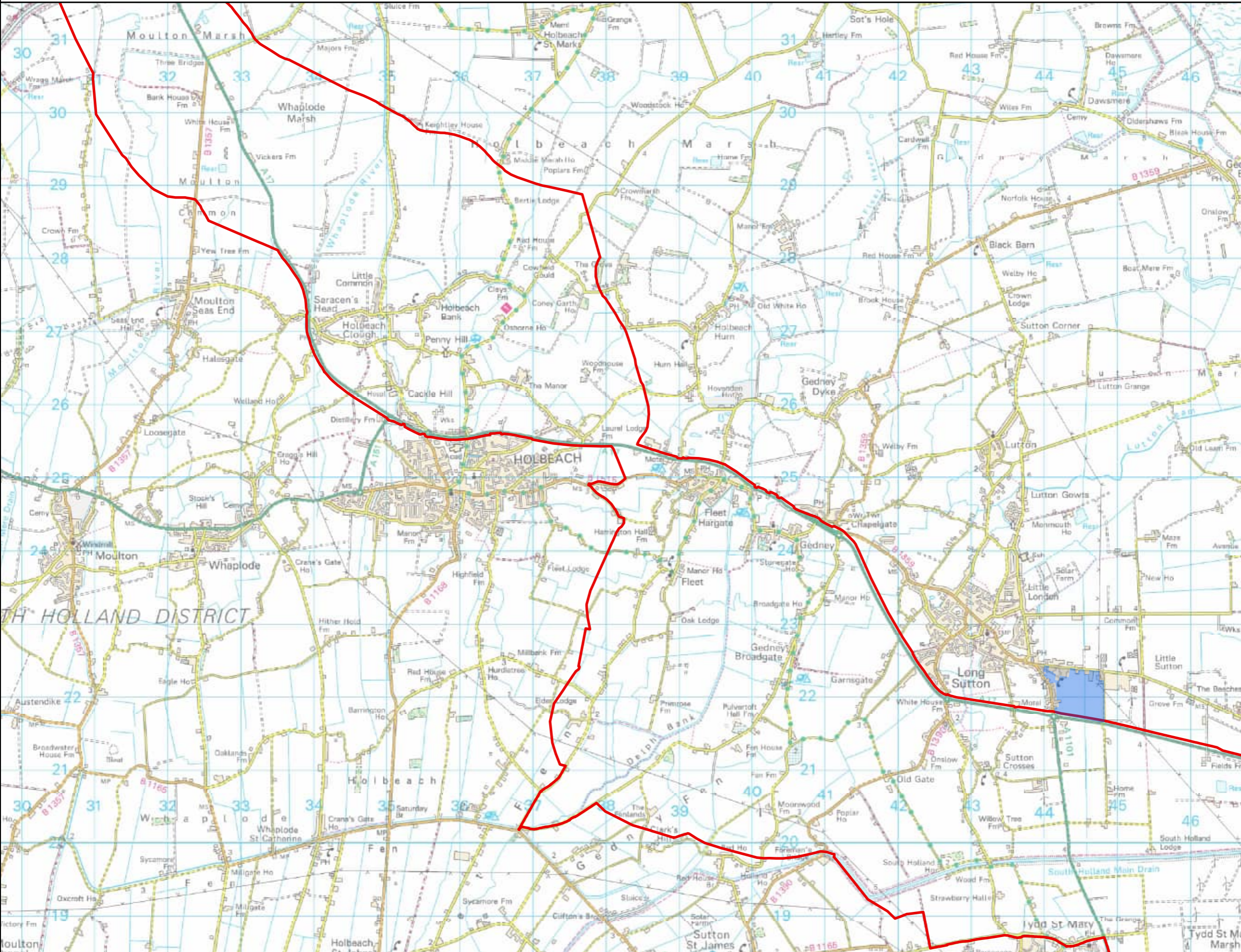


Figure Number
 FIGURE 11-3

Drawing Reference
 EGL-ARC-CONS-XX-DR-G-014

Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 5 OF 7	1

Figure 11-3 Detailed Agricultural Land Classification Mapping (Overview)



Legend

- Scoping Boundary

Detailed Agricultural Land Classification

- Grade 1
- Grade 2
- Grade 3a
- Grade 3b
- Grade 4
- Grade 5
- Not Surveyed
- Other

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Title

Figure 11-3
Detailed Agricultural Land
Classification Mapping

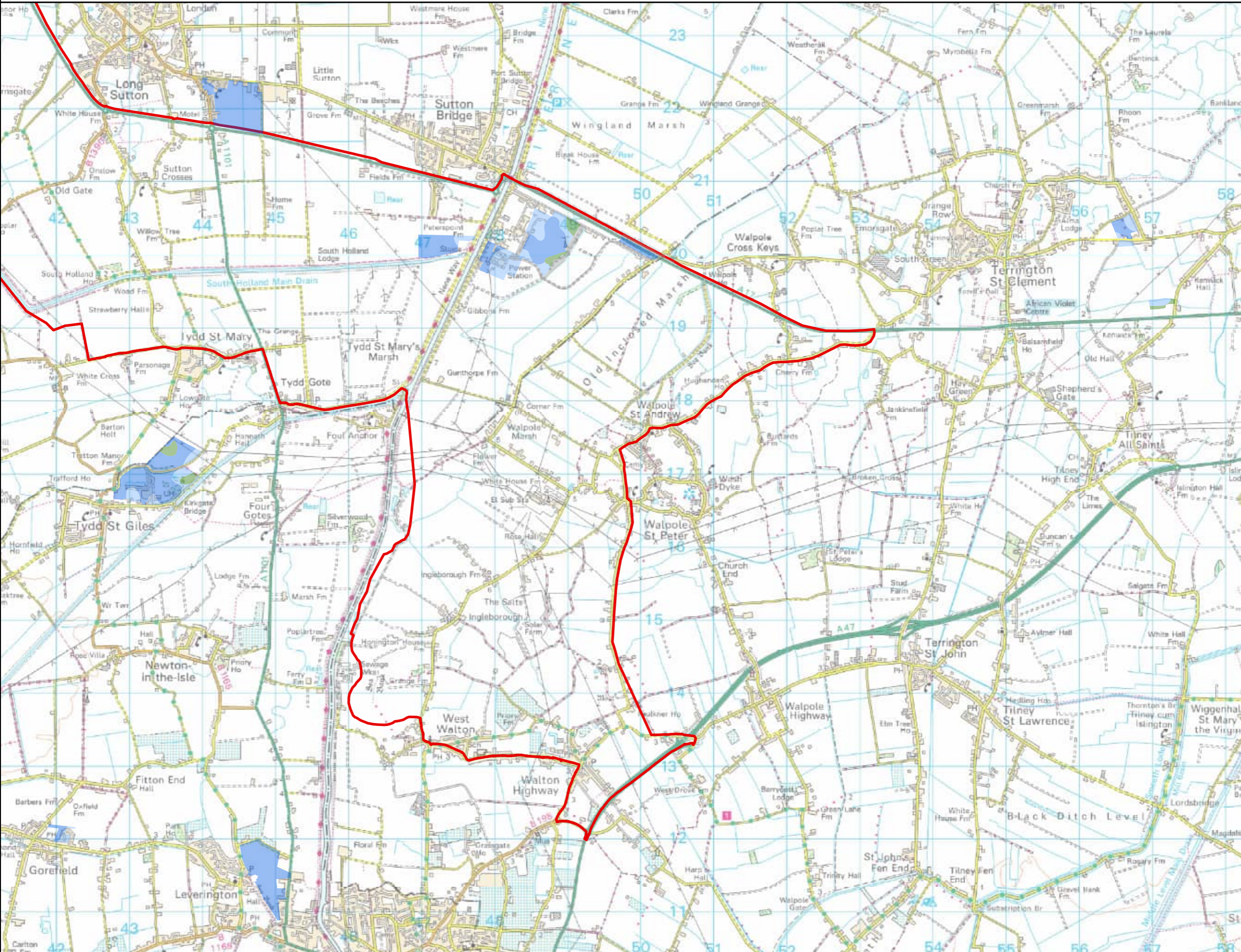


Figure Number
FIGURE 11-3

Drawing Reference
EGL-ARC-CONS-XX-DR-G-014

Scale 1:50,000	Sheet Size A3	Sheet SHEET 6 OF 7	Issue 1
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Figure 11-3 Detailed Agricultural Land Classification Mapping (Overview)



Legend

- Scoping Boundary
- Detailed Agricultural Land Classification**
- Grade 1
- Grade 2
- Grade 3a
- Grade 3b
- Grade 4
- Grade 5
- Not Surveyed
- Other

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 Metres
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Issue	Date	Remarks	Drawn	Checked	Approved

Title
 Figure 11-3
 Detailed Agricultural Land
 Classification Mapping



Figure Number
 FIGURE 11-3

Drawing Reference
 EGL-ARC-CONS-XX-DR-G-014

Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 7 OF 7	1



Figure 11-4 Agri-Environment Schemes (Overview)

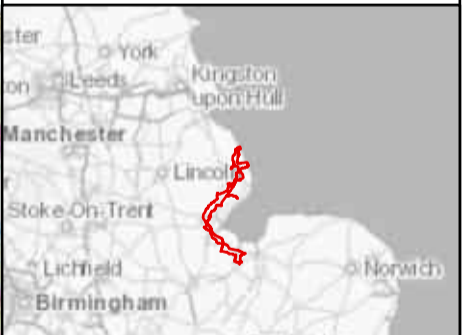
Legend

Scoping Boundary

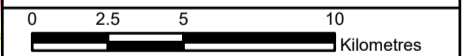


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Title

Figure 11-4
Agri-Environment Schemes

nationalgrid

Figure Number

FIGURE 11-4

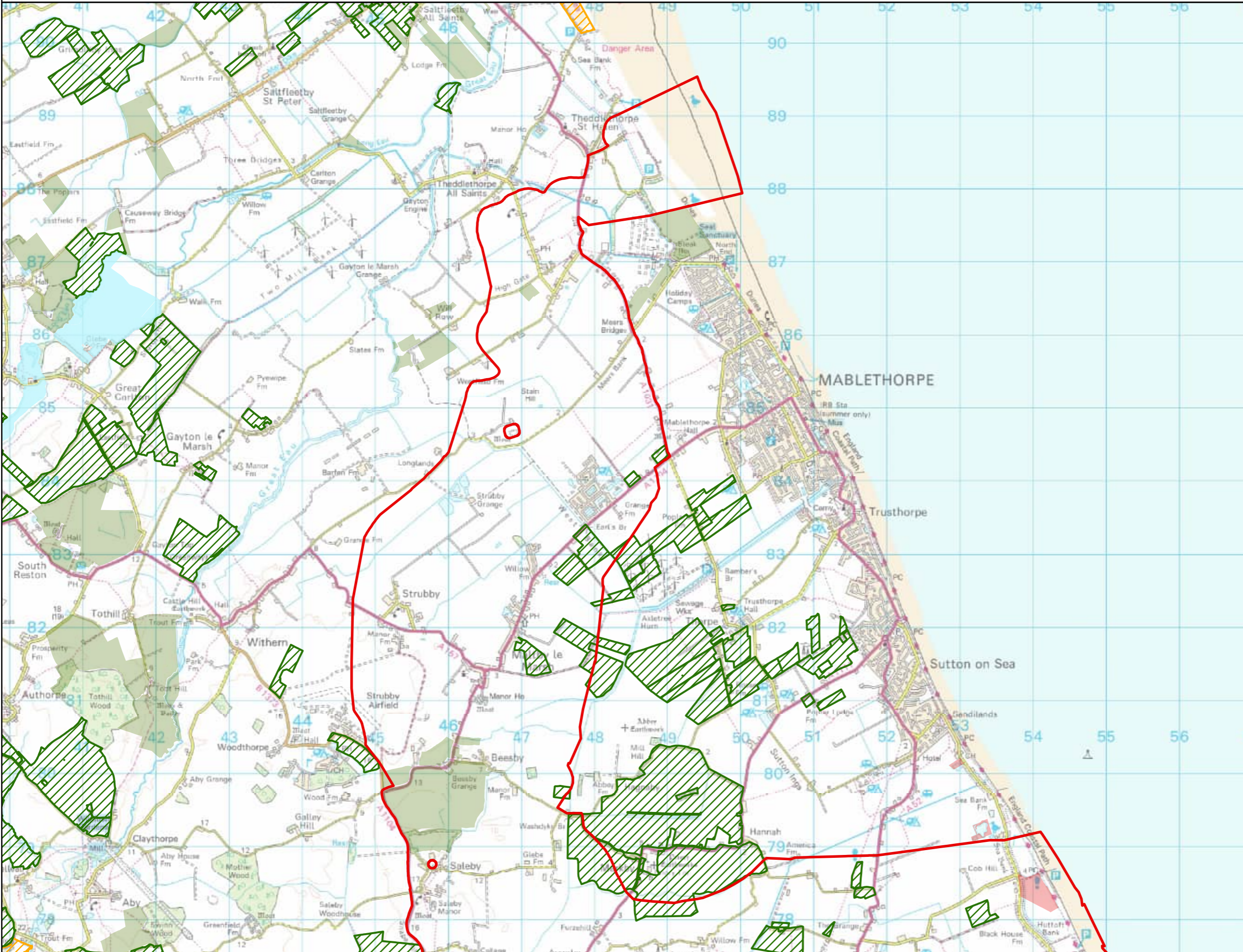
Drawing Reference

EGL-ARC-CONS-XX-DR-G-015

Scale	Sheet Size	Sheet	Issue
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Figure 11-4 Agri-Environment Schemes

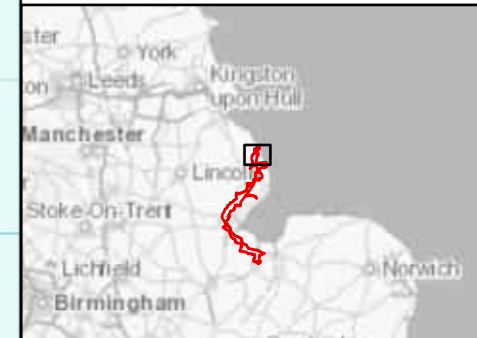


Legend

- Scoping Boundary
- Environmental Stewardship Agreements**
 - Entry Level plus Higher Level Stewardship
 - Higher Level Stewardship
 - Organic Entry Level plus Higher Level Stewardship
- Countryside Stewardship Agreement Management Areas**
 - Feasibility Study And Historic Building Restoration
 - Hedgerows And Boundaries
 - Higher Tier
 - Implementation Plan
 - Mid Tier
 - Tree Health Improvement

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Notes
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Title

Figure 11-4
Agri-Environment Schemes

nationalgrid

Figure Number: FIGURE 11-4

Drawing Reference: EGL-ARC-CONS-XX-DR-G-015

Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 1 OF 7	1



Figure 11-4 Agri-Environment Schemes

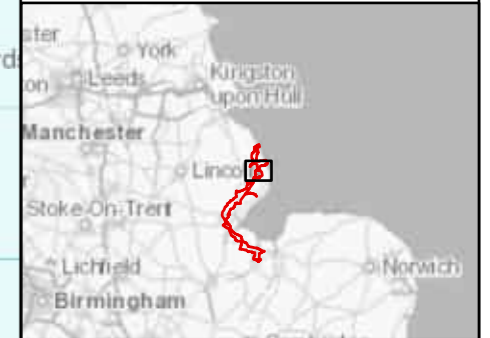
Legend

- Scoping Boundary
- Environmental Stewardship Agreements
 - Entry Level plus Higher Level Stewardship
 - Higher Level Stewardship
- Countryside Stewardship Agreement Management Areas
 - Feasibility Study And Historic Building Restoration
 - Hedgerows And Boundaries
 - Higher Tier
 - Implementation Plan
 - Mid Tier
 - Tree Health Improvement

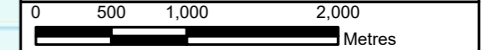
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Title

Figure 11-4
Agri-Environment Schemes

nationalgrid			
Figure Number	FIGURE 11-4		
Drawing Reference	EGL-ARC-CONS-XX-DR-G-015		
Scale	Sheet Size	Sheet	Issue
1:50,000	A3	SHEET 2 OF 7	1

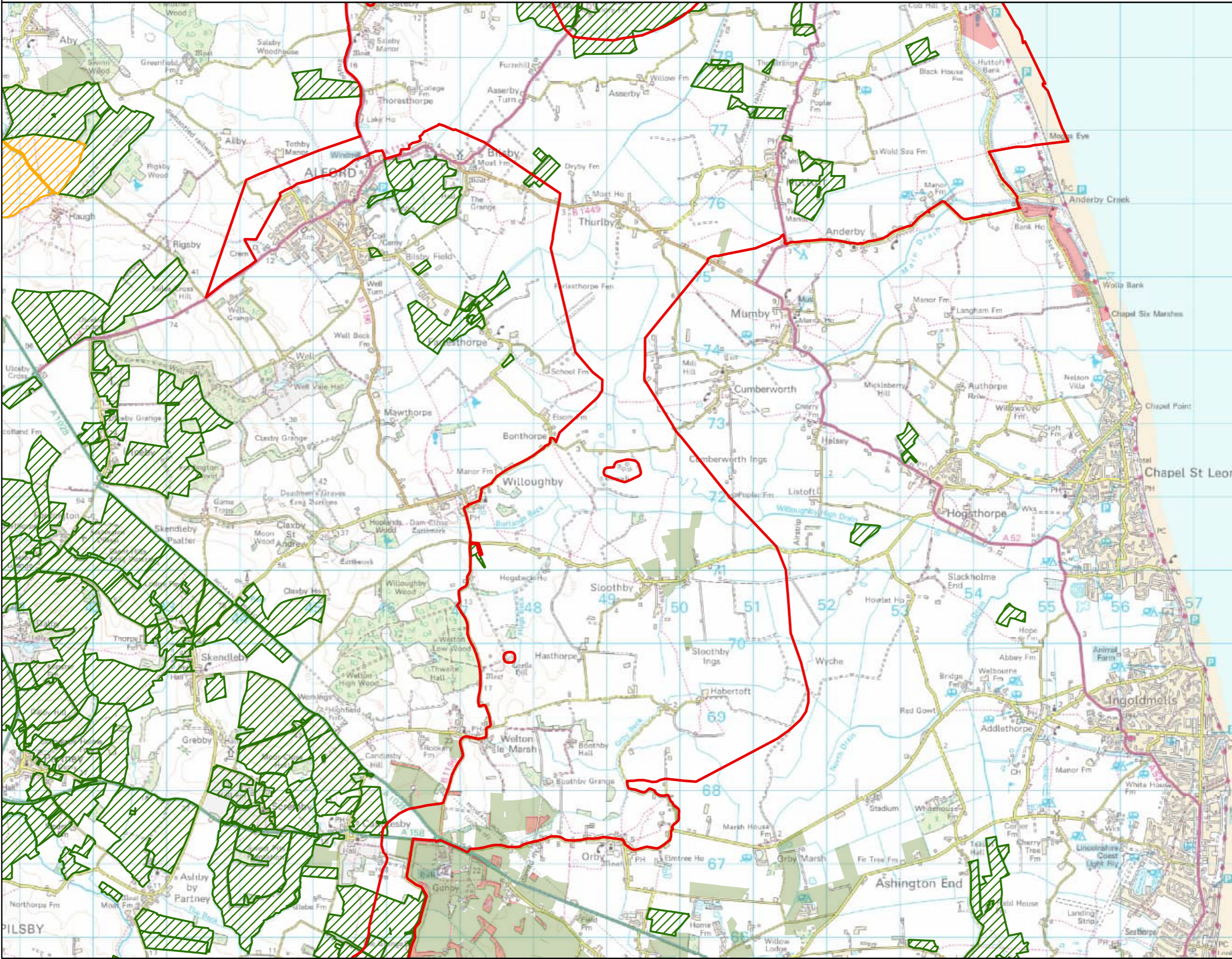




Figure 11-4 Agri-Environment Schemes

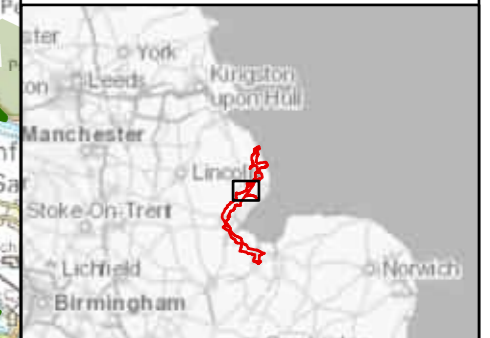
Legend

- Scoping Boundary
- Environmental Stewardship Agreements
 - Entry Level plus Higher Level Stewardship
 - Higher Level Stewardship
 - Organic Entry Level plus Higher Level Stewardship
- Countryside Stewardship Agreement Management Areas
 - Feasibility Study And Historic Building Restoration
 - Hedgerows And Boundaries
 - Higher Tier
 - Implementation Plan
 - Mid Tier
 - Tree Health Improvement

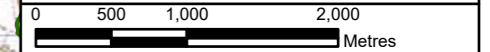
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Figure 11-4
Agri-Environment Schemes

nationalgrid

Figure Number
FIGURE 11-4

Drawing Reference
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Scale	Sheet Size	Sheet	Issue
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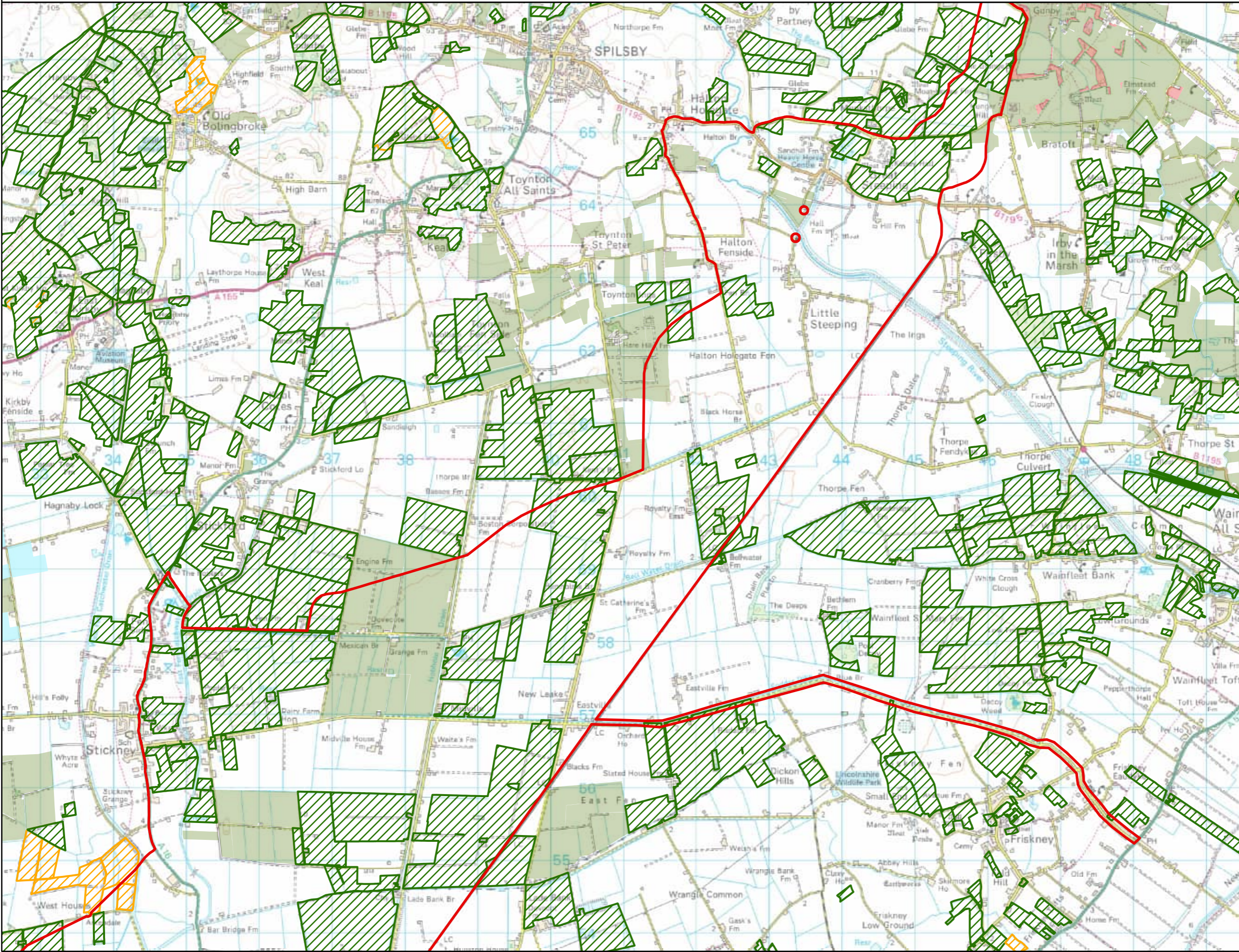




Figure 11-4 Agri-Environment Schemes

Legend

- Scoping Boundary
- Environmental Stewardship Agreements**
 - Entry Level plus Higher Level Stewardship
 - Higher Level Stewardship
 - Organic Entry Level plus Higher Level Stewardship
- Countryside Stewardship Agreement Management Areas**
 - Feasibility Study And Historic Building Restoration
 - Hedgerows And Boundaries
 - Higher Tier
 - Implementation Plan
 - Mid Tier
 - Tree Health Improvement

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Figure 11-4
Agri-Environment Schemes



Figure Number
FIGURE 11-4

Drawing Reference
EGL-ARC-CONS-XX-DR-G-015

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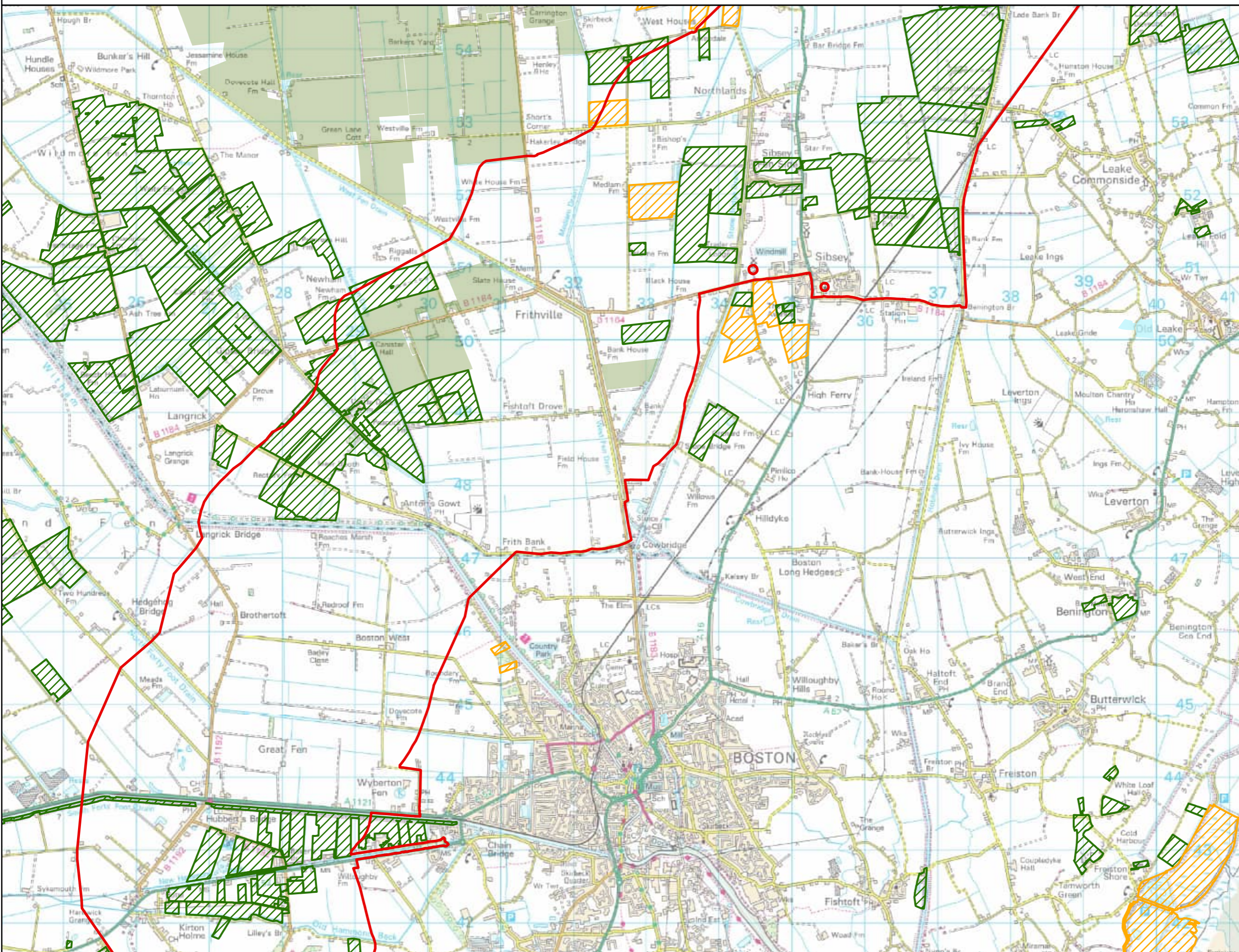
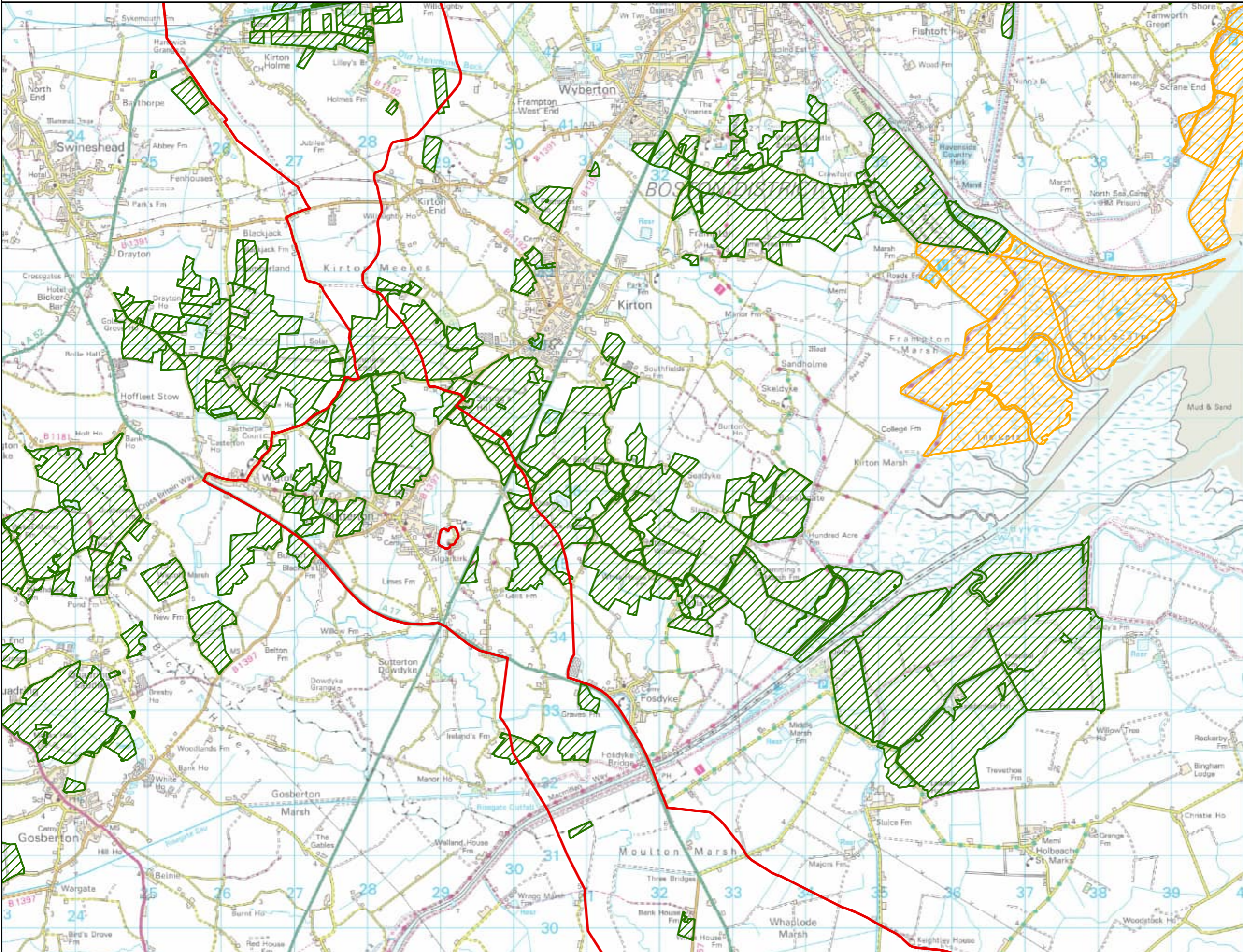




Figure 11-4 Agri-Environment Schemes

Legend

-  Scoping Boundary
-  Countryside Stewardship Agreement Management Areas
-  Feasibility Study And Historic Building Restoration
-  Hedgerows And Boundaries
-  Higher Tier
-  Implementation Plan
-  Mid Tier
-  Tree Health Improvement



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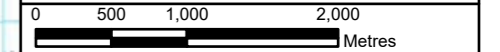
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Figure 11-4
Agri-Environment Schemes

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Figure Number

FIGURE 11-4

Drawing Reference









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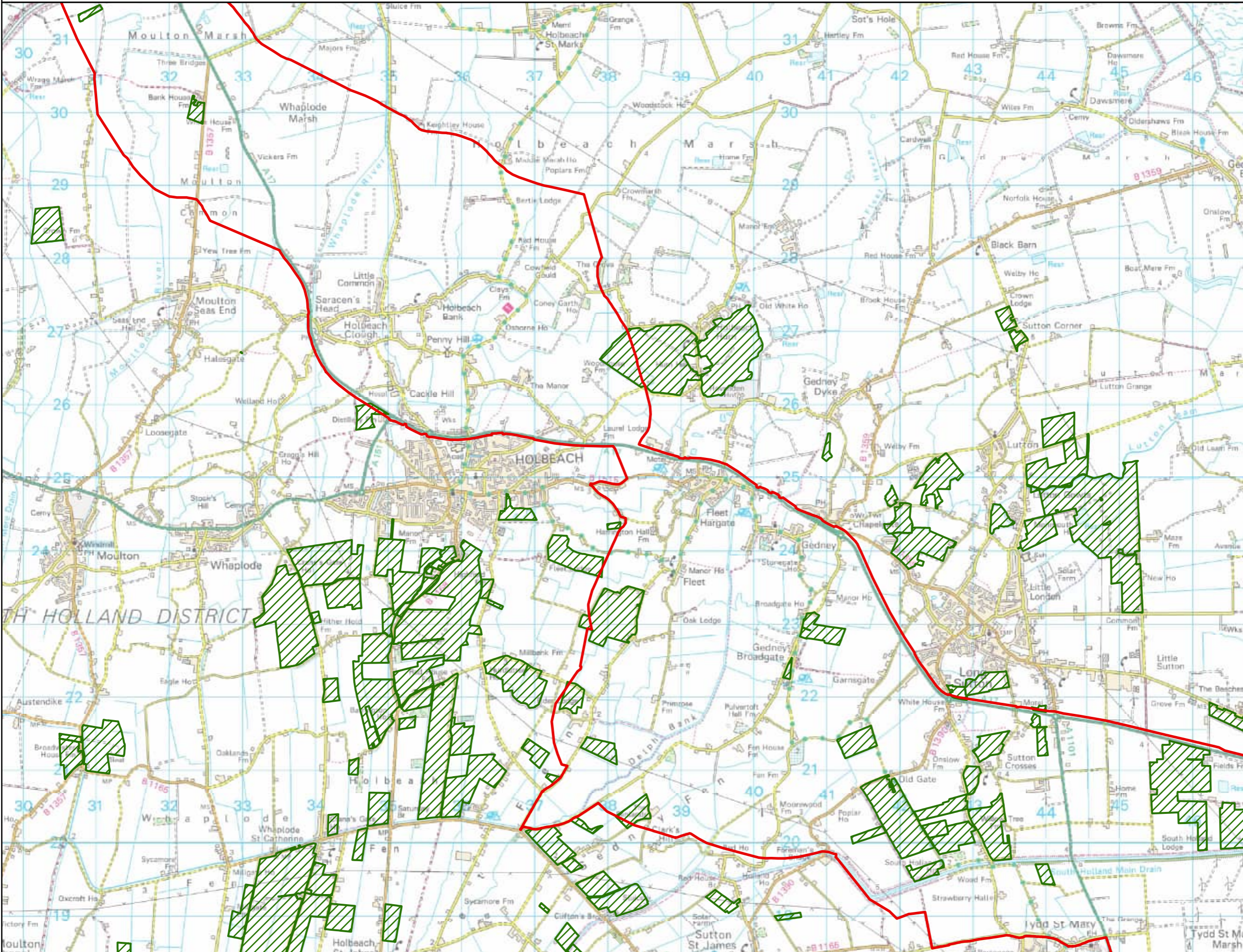
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Figure 11-4 Agri-Environment Schemes

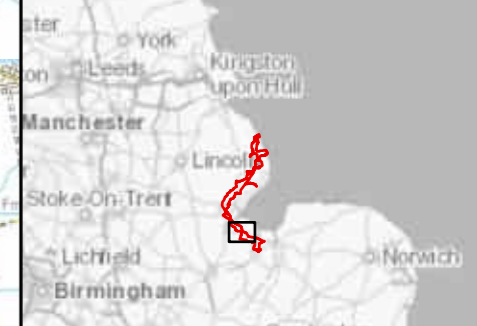
Legend

-  Scoping Boundary
- Environmental Stewardship Agreements**
-  Entry Level plus Higher Level Stewardship
- Countryside Stewardship Agreement Management Areas**
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-  Implementation Plan
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-  Tree Health Improvement



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 Figure 11-4
 Agri-Environment Schemes



Figure Number
 FIGURE 11-4









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Scale	Sheet Size	Sheet	Issue
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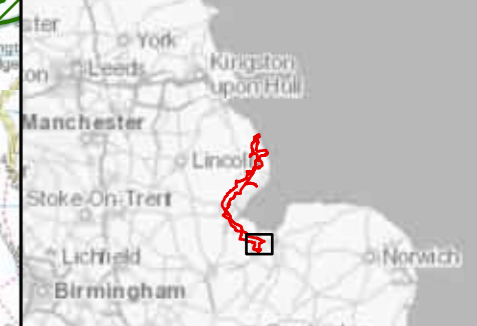
Figure 11-4 Agri-Environment Schemes

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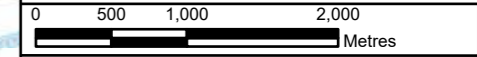
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-  Entry Level plus Higher Level Stewardship
- Countryside Stewardship Agreement Management Areas**
-  Feasibility Study And Historic Building Restoration
-  Hedgerows And Boundaries
-  Higher Tier
-  Implementation Plan
-  Mid Tier
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Figure 11-4
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Figure Number
FIGURE 11-4

Drawing Reference
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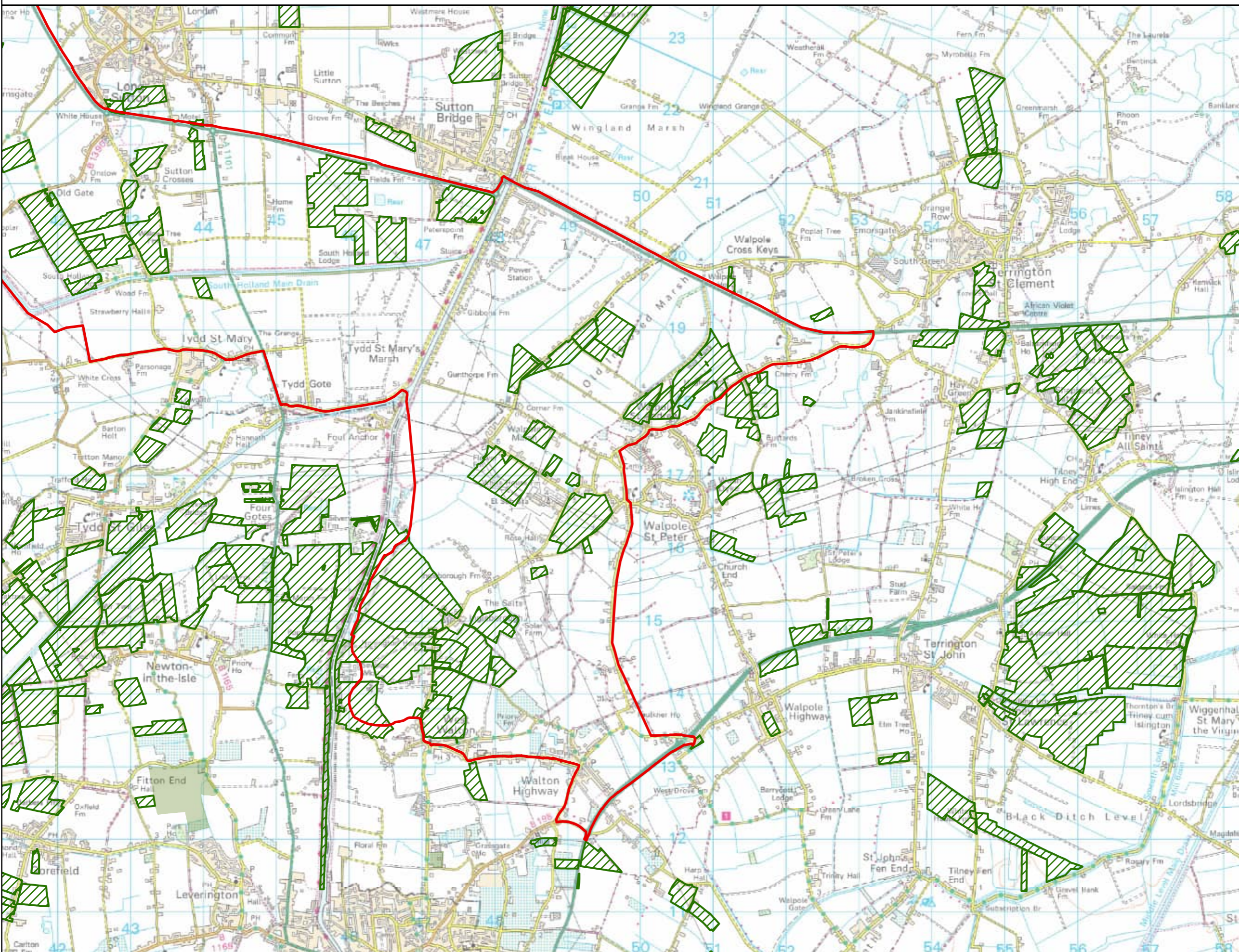




Figure 11-5 Woodland and Forestry Schemes (Overview)

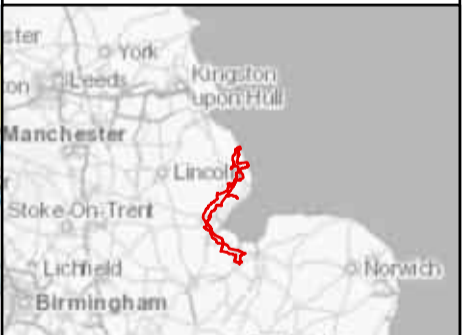
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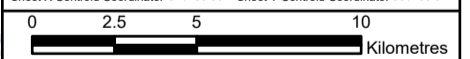


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Figure 11-5
Woodland and Forestry Schemes

nationalgrid

Figure Number

FIGURE 11-5

Drawing Reference

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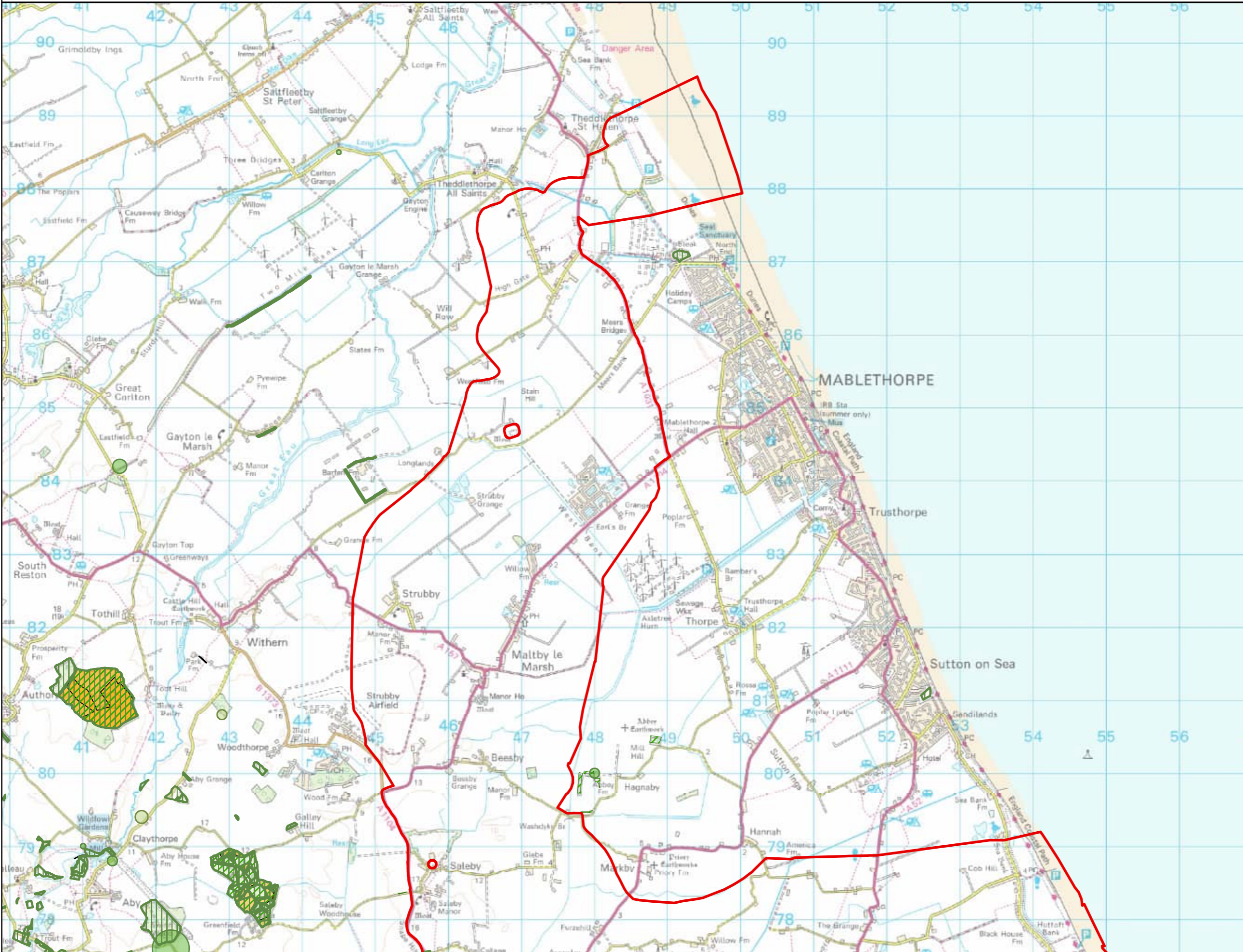
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Figure 11-5 Woodland and Forestry Schemes

Legend

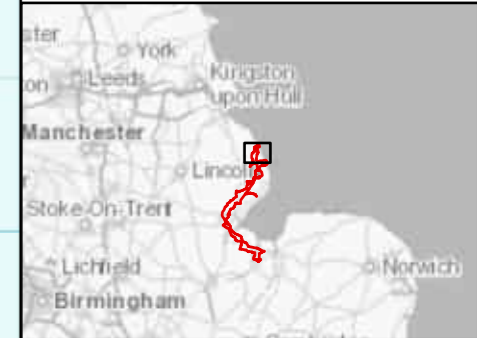
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- Woodland Grant Scheme 1
- Woodland Grant Scheme 2
- Woodland Grant Scheme 3
- Felling Licence Applications
- English Woodland Grant Schemes



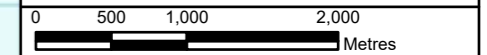
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Figure 11-5
Woodland and Forestry Schemes









Figure Number
FIGURE 11-5

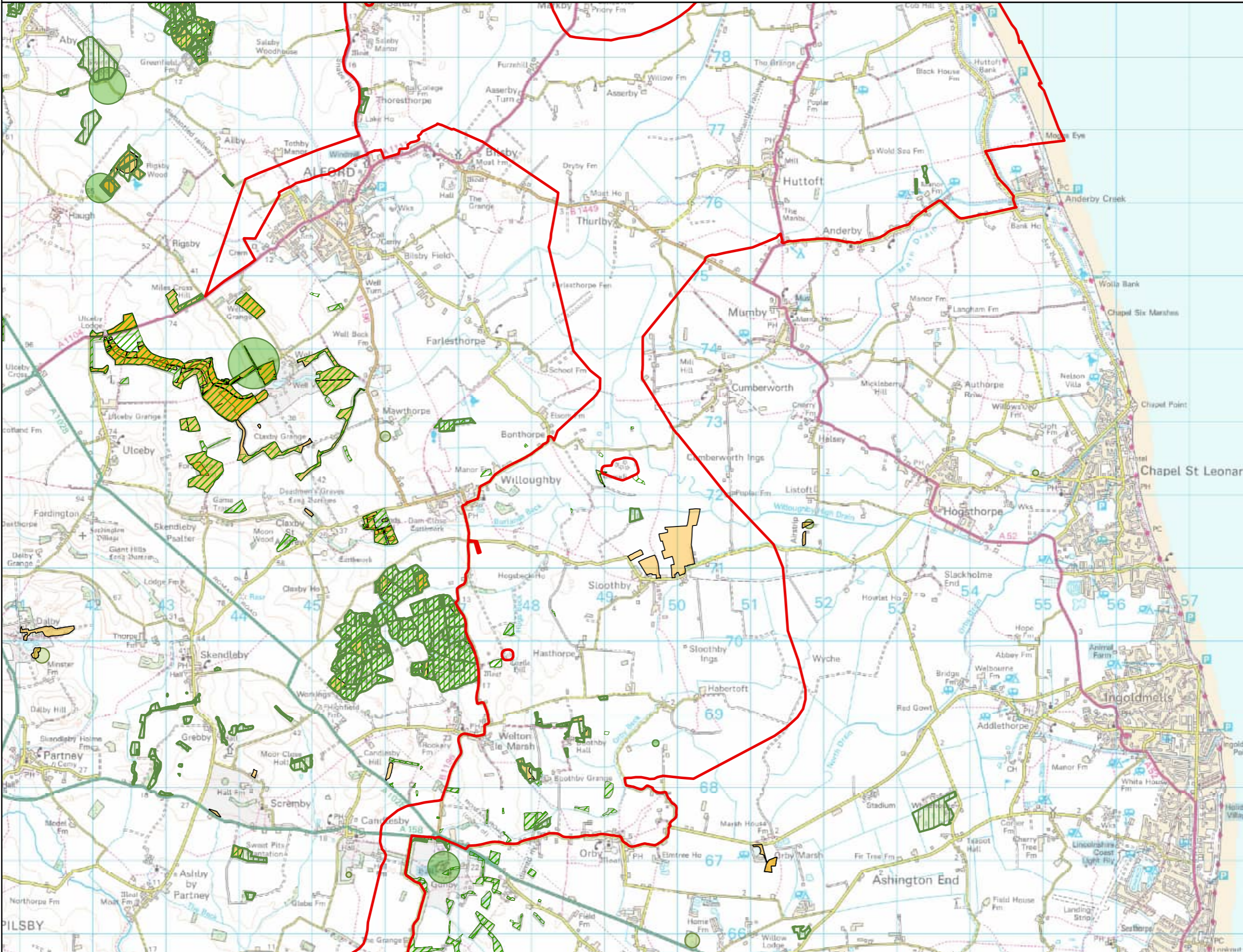
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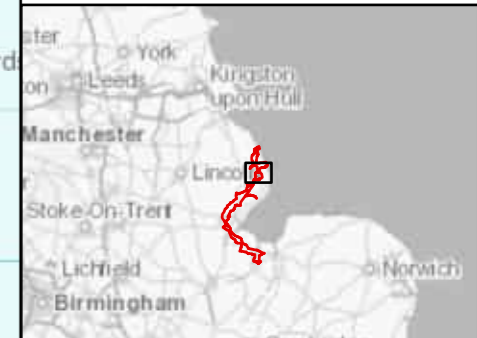
Figure 11-5 Woodland and Forestry Schemes

- Legend**
-  Scoping Boundary
 -  Woodland Grant Scheme 1
 -  Woodland Grant Scheme 2
 -  Woodland Grant Scheme 3
 -  Felling Licence Applications
 -  English Woodland Grant Schemes



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Figure 11-5
Woodland and Forestry Schemes


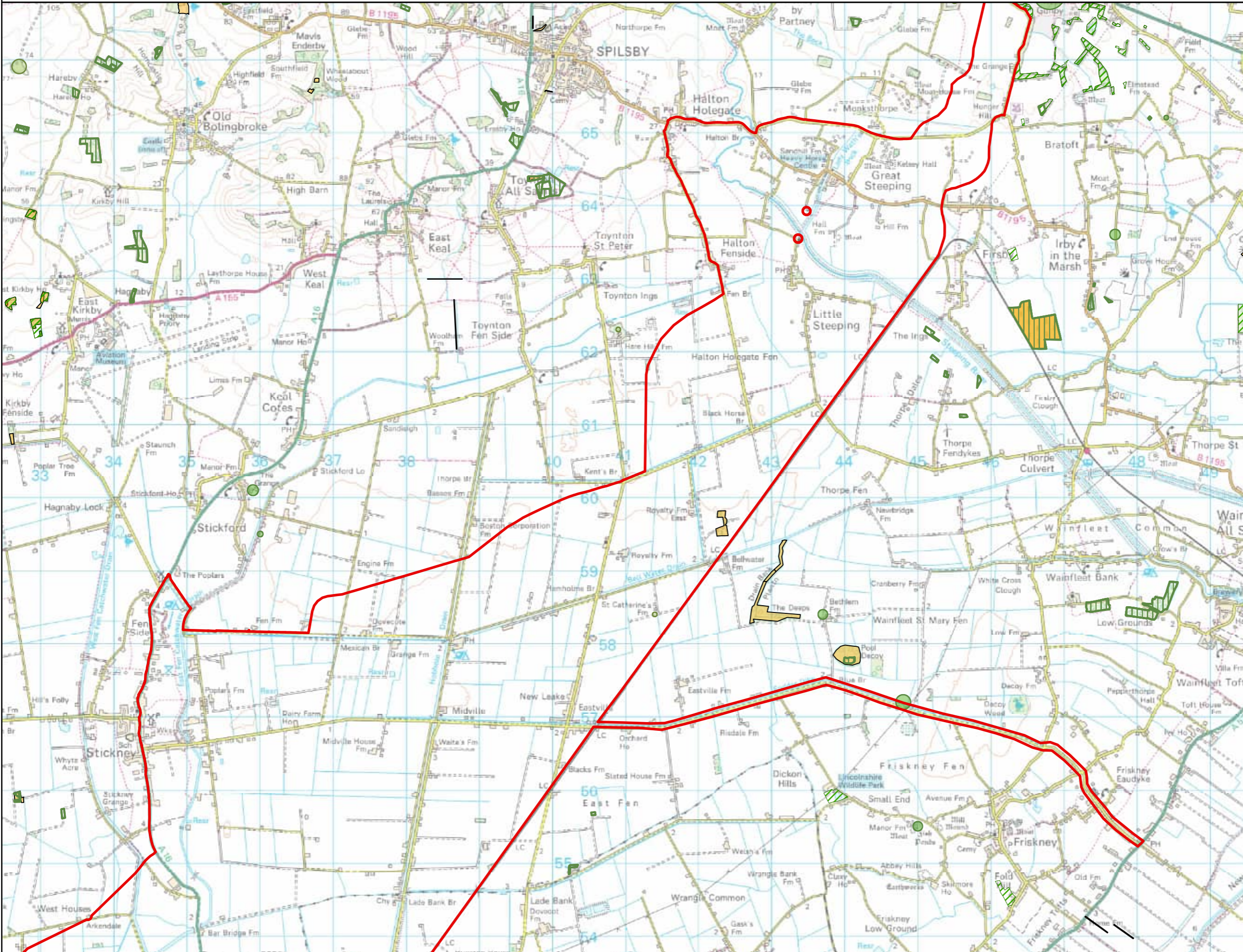
			
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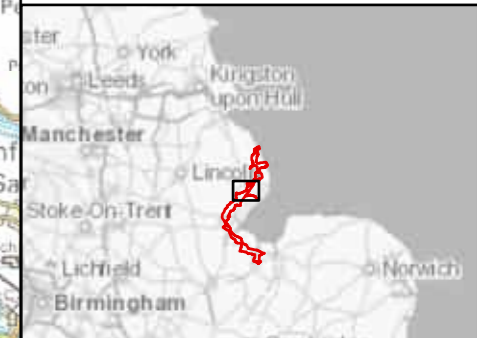
Figure 11-5 Woodland and Forestry Schemes

- Legend**
- Scoping Boundary
 - Woodland Grant Scheme 1
 - Woodland Grant Scheme 2
 - Woodland Grant Scheme 3
 - Felling Licence Applications
 - English Woodland Grant Schemes



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Figure 11-5
Woodland and Forestry Schemes



Figure Number
FIGURE 11-5

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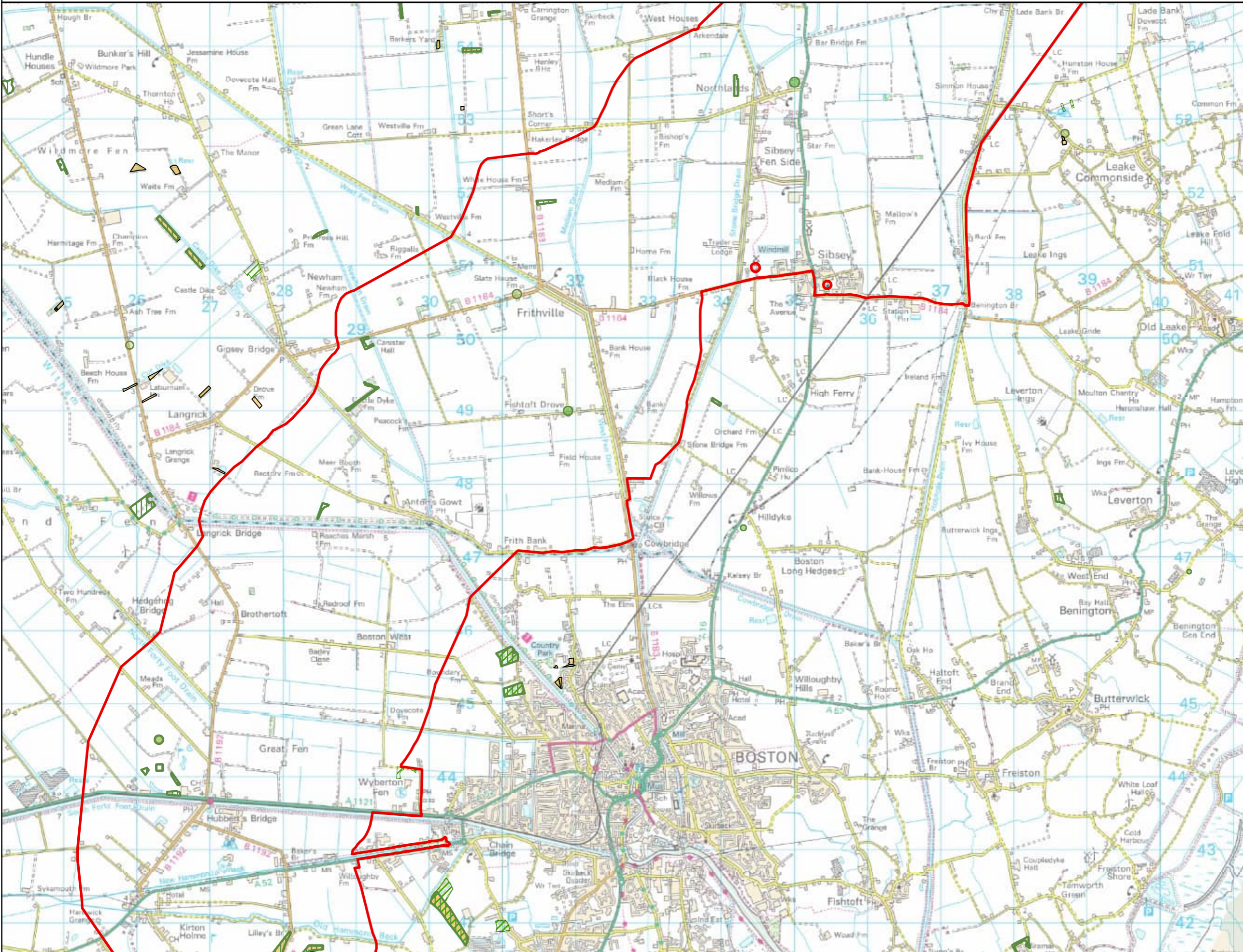
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Figure 11-5 Woodland and Forestry Schemes

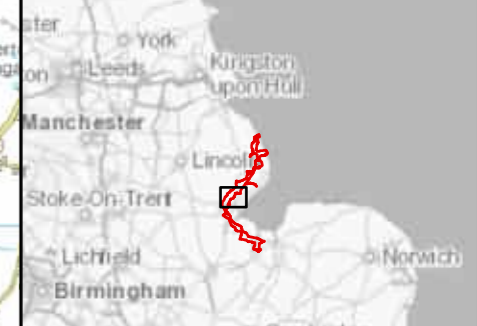
Legend

- Scoping Boundary
- Woodland Grant Scheme 1
- Woodland Grant Scheme 2
- Woodland Grant Scheme 3
- Felling Licence Applications
- English Woodland Grant Schemes



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Figure 11-5 Woodland and Forestry Schemes

Legend

-  Scoping Boundary
-  Woodland Grant Scheme 1
-  Woodland Grant Scheme 2
-  Woodland Grant Scheme 3
-  Felling Licence Applications
-  English Woodland Grant Schemes



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Woodland and Forestry Schemes

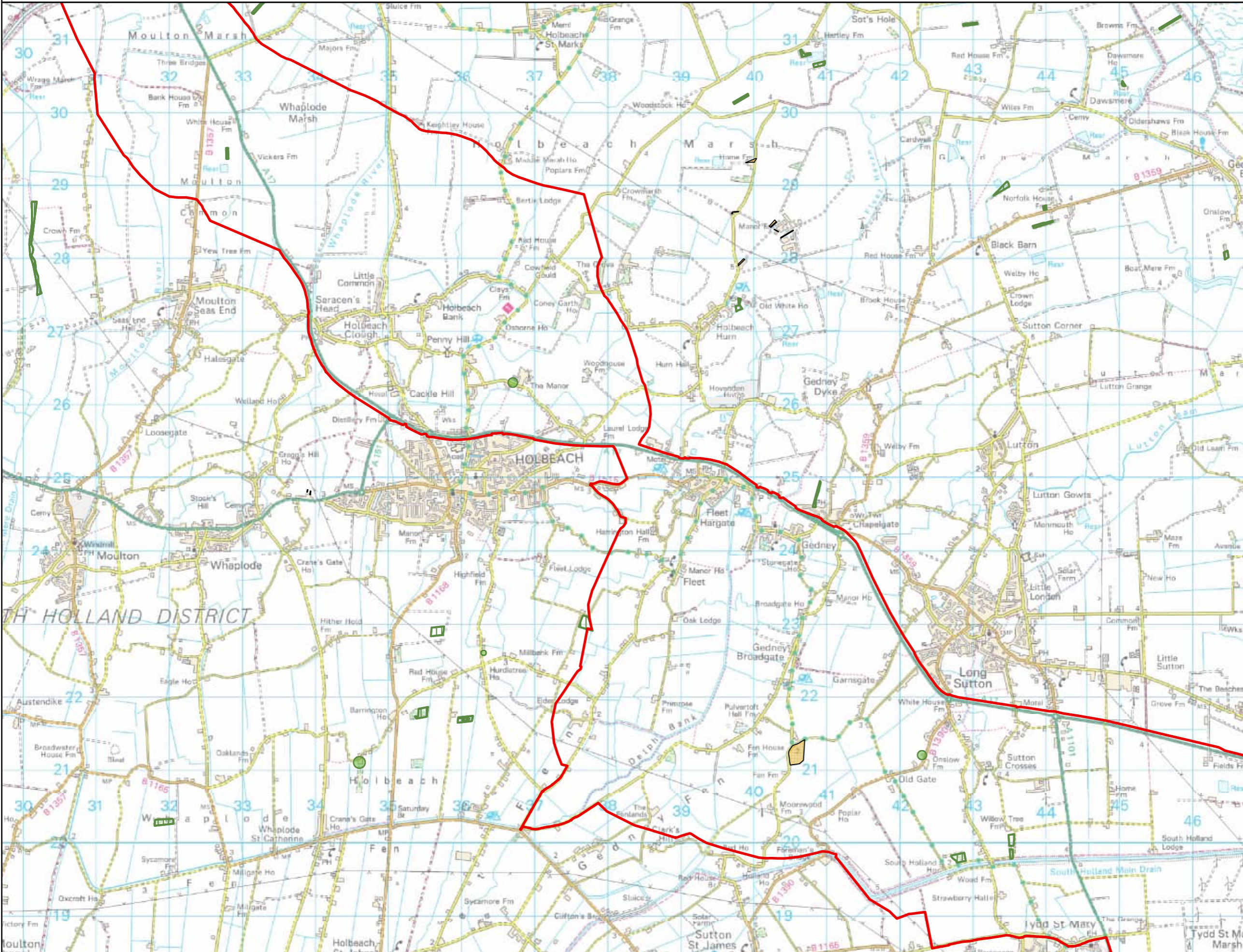
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Figure Number	FIGURE 11-5		
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Figure 11-5 Woodland and Forestry Schemes

Legend

- Scoping Boundary
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 Woodland and Forestry Schemes



Figure Number
 FIGURE 11-5

Drawing Reference
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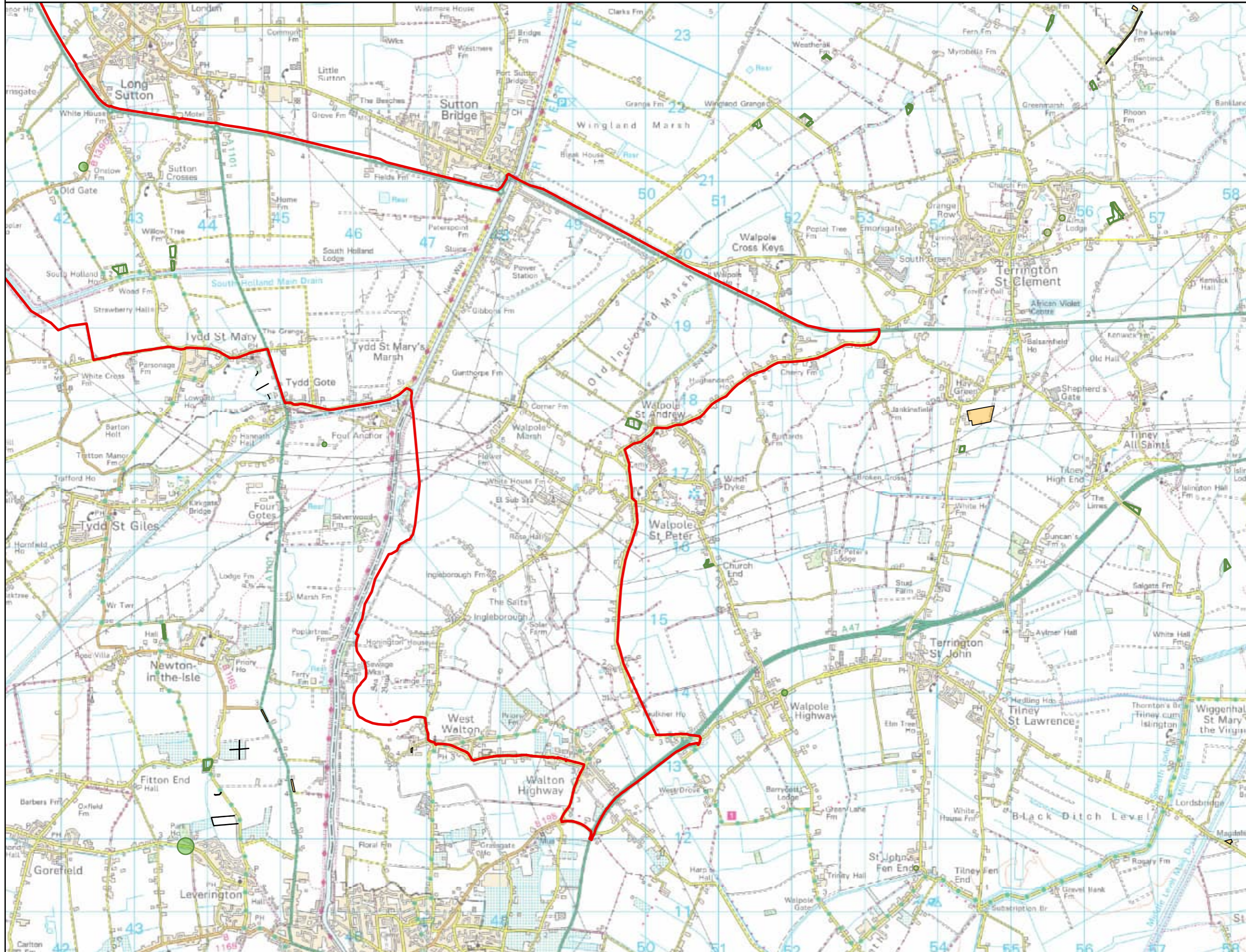
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Figure 11-5 Woodland and Forestry Schemes

Legend

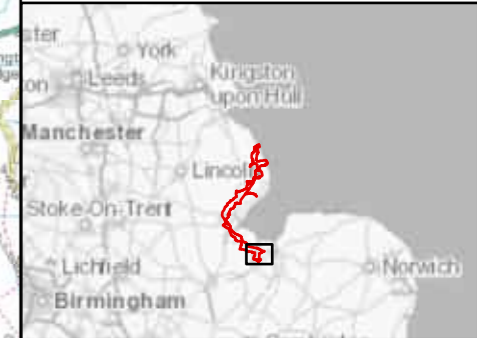
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Figure 11-5
Woodland and Forestry Schemes



Figure Number: FIGURE 11-5

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1:50,000	A3	SHEET 7 OF 7	1

11.5 Design and Control Measures

Construction Phase

11.5.1 A range of standard measures for the English Onshore Scheme are likely to be adopted throughout the duration of the construction phase. Design and control measures relevant to agriculture and soils and proportionate to risk would be fully outlined in the Outline Code of Construction Practice (Outline CoCP), prepared to accompany the ES. A summary of these measures is detailed below (which is not an exhaustive list):

- The project will be run in compliance with all relevant legislation, consents and permits;
- A Outline Code of Construction Practice (Outline CoCP), an Outline Landscape and Ecological Management Plan (Outline LEMP), an Outline Site Waste Management Plan (Outline SWMP) and an Outline Construction Traffic Management Plan (Outline CTMP) which will form part of the Outline CoCP, along with an Outline Soil Management Plan (Outline SMP) will be produced prior to construction. These are collectively referred to as ‘the Management Plans’;
- The Outline CoCP shall include measures to manage dust, waste, water, noise, vibration during construction. The Construction Contractor(s) shall undertake daily site inspections to check conformance to the Management Plans;
- A suitably experienced Environmental Manager will be appointed for the duration of the construction phase. In addition, a qualified and experienced Environmental Clerk of Works (ECoW) will be available during the construction phase to advise, supervise and report on the delivery of the mitigation methods and controls outlined in the Outline CoCP. The ECoW will monitor that the works proceed in accordance with relevant environmental DCO requirements and adhere to the required good practice and mitigation measures. The ECoW will be supported as necessary by appropriate specialists, including ecologists and arboriculturists;
- Construction workers will undergo training to increase their awareness of environmental issues as applicable to their role on the project. Topics will include but not be limited to:
 - pollution prevention and pollution incident response;
 - dust management and control measures;
 - location and protection of sensitive environmental sites and features;
 - adherence to protected environmental areas around sensitive features;
 - working hours and noise and vibration reduction measures;
 - working with potentially contaminated materials;
 - waste management and storage;
 - flood risk response actions; and
 - agreed traffic routes, access points, etc.
- A record of condition will be carried out (photographic and descriptive) of the working areas that may be affected by the construction activities, prior to works commencing.

This record will be available for comparison following reinstatement after the works have been completed to ensure that the standard of reinstatement at least meets that recorded in the pre-condition survey;

- Land used temporarily will be reinstated where practicable to its pre-construction condition (including ALC grade) and use. Hedgerows, fences, and walls (including associated earthworks and boundary features) will be reinstated to a similar style and quality to those that were removed, unless otherwise agreed;
- Earthworks and stockpiled soil will be protected by covering, seeding, or using water suppression where appropriate;
- Stone pads will be installed in areas where heavy equipment, such as cranes and piling rigs, are to be used. The stone pads will provide stable working areas and will reduce disturbance to the ground. The stone pad area will be stripped of the topsoil, which will be stored and reinstated in accordance with the Outline Soil Management Plan;
- A five-year aftercare period will be established for all reinstatement and mitigation planting;
- Soil management measures will be set out in the Outline Soil Management Plan. The Outline Soil Management Plan will include, but not be limited to, the following:
 - details of the soil resources present;
 - roles and responsibilities (and required competencies and training);
 - how topsoil and subsoil will be stripped and stockpiled;
 - suitable conditions for when handling soil will be undertaken, for example avoiding handling of waterlogged soil;
 - indicative soil storage locations;
 - how soil stockpiles will be designed taking into consideration site conditions and the nature/composition of the soil;
 - specific measures for managing sensitive soils;
 - suitable protective surfacing where soil stripping can be avoided, based on sensitivity of the environment and proposed works;
 - approach to reinstating soil that has been compacted, where required;
 - details of measures required for and objectives of soil restoration; and
 - requirements for monitoring.
- Where land is being returned to agricultural use, the appropriate soil conditions (for example through the replacement of stripped layers and the removal of any compaction) will be recreated; and
- Access to and from residential, commercial, community and agricultural land uses will be maintained throughout the construction period or as agreed through the landowner discussions. This may require signed diversions or temporary restrictions to access. The means of access to affected properties, facilities and land parcels will be communicated to affected parties at the start of the Project, with any changes communicated in advance of the change being implemented. Where field-to-field

access points require alteration as a result of construction, alternative field access will be provided in consultation with the landowner/occupier.

11.6 Scope of the Assessment

Potential Sensitive Receptors

11.6.1 The identified sensitive receptors in relation to agriculture and soils are:

- Agricultural land quality (as defined through the ALC system);
- Soils; and
- Land Use (including agricultural landholdings).

Likely Significant Effects

11.6.2 **Table 11-4** outlines the likely significant effects associated with the above sensitive receptors which have been scoped into the agriculture and soils assessment.

Table 11-4: Receptors and Impact Pathways relevant to Agriculture and Soils

Development Phase	Impact	Receptor	Potential for Significant Effects	Proposed to be Scoped in / out
Construction	Temporary and loss of agricultural land (including BMV land) during construction.	Agricultural Land Quality (ALC)	Yes – during the construction phase. The installation of the transmission line infrastructure, supporting structures, and associated access tracks would result in an unavoidable temporary and permanent loss of agricultural land which is likely to include BMV land. ¹⁴	Scoped In
	Impacts upon soil ecosystem services during construction.	Soil Ecosystems and Structure	Yes – Impacts on soil function and quality would occur once construction activities commence, as soil disturbance during soil stripping, stockpiling and re-use may result in structural damage and detrimental impacts on soil characteristics.	Scoped In

¹⁴ For the purpose of this assessment, it is assumed that the permanent loss of land occurs during the construction and therefore the impact is assessed during that phase. As such, there is no additional impact assessed during the operational phase of the English Onshore Scheme.

Temporary acquisition and permanent loss of agricultural land holdings during construction.	Agricultural Land Holdings	Yes – the temporary acquisition of land to accommodate construction activities would result in temporary disruption and severance to agricultural land holdings and the permanent loss of some land from agricultural land holdings resulting in reduction in the operational capacity and loss of income to farm businesses.	Scoped In
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Effects Scoped out from Further Assessment

11.6.3 **Table 11-5:** outlines the effects which have been scoped out of the agriculture and soils assessment with justification for outcome.

Table 11-5: Effects Scoped out relevant to Agriculture and Soils.

Development Phase	Impact	Receptor	Potential for Significant Effects	Proposed to be Scoped in / out
Maintenance	Temporary and permanent loss of agricultural land (including BMV land) during construction.	Agricultural Land Quality (ALC)	No – during the maintenance phase. Periodic vehicle access for routine maintenance and emergency repairs may require temporary access tracks and small compound areas but these are likely to be limited in extent and all	Scoped Out

Development Phase	Impact	Receptor	Potential for Significant Effects	Proposed to be Scoped in / out
			soil handling would be undertaken in line with published good practice; therefore, no likely significant effects are expected.	
	Impacts upon soil ecosystem services during maintenance.	Soil Ecosystems and Structure	No – Maintenance may also impact soil function and quality, but at a much smaller scale than construction. Any disturbance to soils during maintenance would also be undertaken in accordance with good practice soil handling methods, therefore no likely significant effects are expected and can be scoped out .	Scoped Out
	Temporary acquisition and permanent loss of agricultural land holdings during maintenance.	Agricultural Land Holdings	No – during the maintenance phase. Periodic vehicle access for routine maintenance and emergency repairs may require temporary access tracks and small compound areas but these are likely to be limited in extent and access arrangements would be designed to limit disturbance to landowners;	Scoped Out

Development Phase	Impact	Receptor	Potential for Significant Effects	Proposed to be Scoped in / out
			therefore, no likely significant effects.	
Operation	Effects upon soil ecosystem services.	Soil Ecosystems and Structure	No – No further soil disturbance (beyond normal land management activities) would be undertaken; therefore, no likely significant effects are expected.	Scoped Out

11.7 Assessment Methodology

Further Data to be Gathered / Processed

- 11.7.1 The IEMA Guidance (Ref 11.21) will be used to assess the impact on the sensitive receptors agricultural land quality (ALC) and soils. The DMRB LA112 (Ref 11.22) will be used to assess the impact on sensitive receptor agricultural landholding.
- 11.7.2 **Table 11-6 to Table 11-12** set out the criteria which would be used to determine the sensitivity of and the magnitude of impacts on agricultural land and soils through assessing soil quality, BMV land and agricultural landholdings. Once the magnitude and sensitivity of receptors has been identified this will be used to determine the significance of the effect. Effects that are deemed to be significant for the purpose of this assessment are those that are described as being moderate or major beneficial or adverse. Terminology used within the criteria tables are consistent with the terminology used within the IEMA guidance.

Table 11-6: Determination of Sensitivity of Soils and Agricultural Land

Receptor Sensitivity	Soil Resource and Function
Very High	<ul style="list-style-type: none"> ● Biomass production: ALC Grades 1 & 2 or Land Capability for Agriculture (LCA) Classes 1 & 2; ● Ecological habitat, soil biodiversity and platform for landscape: Soils supporting protected features within a European site (e.g., SAC, SPA, Ramsar); Peat soils; Soils supporting a National Park, or Ancient Woodland; ● Soil carbon: Peat soils; ● Soils with potential for ecological / landscape restoration; ● Soil hydrology: Very important catchment pathway for water flows and flood risk management; ● Archaeology, Cultural Heritage, Community Benefits and Geodiversity: Scheduled Ancient Monuments (SAMs) and adjacent areas; World Heritage and European designated sites; Soils with known archaeological interest; Soils supporting community / recreational / educational access to land covered by National Park designation; and ● Source of materials: Important surface mineral reserves that would be sterilised (i.e., without future access)

Receptor Sensitivity	Soil Resource and Function
High	<ul style="list-style-type: none"> ● Biomass production: ALC Grade 3a; ● Ecological habitat, soil biodiversity and platform for landscape: Soils supporting protected features within a UK designated site (e.g., United Nations Educational, Scientific and Cultural Organisation Geoparks, SSSI or Area of Outstanding Natural Beauty (AONB), Special Landscape Areas (SLAs) and Geological Conservation Review sites); Native Forest and woodland soils; Unaltered soils supporting seminatural vegetation; ● Soil carbon: Organo-mineral soils (e.g., peaty soils); ● Soil hydrology: Important catchment pathway for water flows and flood risk management; ● Archaeology, Cultural Heritage, Community Benefits and Geodiversity: Soils with probable but as yet unproven (prior to being revealed by construction) archaeological interest; historic parks and gardens; Regionally Important Geological Site (RIGS); Soils supporting community / recreational / educational access to RIGS and AONBs; and ● Source of materials: Surface mineral reserves that would be sterilised (i.e., without future access).
Medium	<ul style="list-style-type: none"> ● Biomass production: ALC Grade 3b or LCA Grade 3.2; ● Ecological habitat, soil biodiversity and platform for landscape: Soils supporting protected or valued features within non-statutory designated sites (e.g., LNRS, Local Geological Sites (LGSs), Sites of Nature Conservation Importance (SNCIs), SLAs; Non-Native Forest and woodland soils; ● Soil carbon: Mineral soils; ● Soil hydrology: Important minor catchment pathway for water flows and flood risk management; ● Archaeology, Cultural Heritage, Community Benefits and Geodiversity: Soils with possible but as yet unproven (prior to being revealed by construction) archaeological interest; Soils

Receptor Sensitivity	Soil Resource and Function
Low	<p>supporting community/ recreational / educational access to land; and</p> <ul style="list-style-type: none"> ● Source of materials: Surface mineral reserves that would remain accessible for extraction. <hr/> <ul style="list-style-type: none"> ● Biomass production: ALC Grade 4 and 5 or LCA Grades 4.1 to 7 or Urban soils; ● Ecological habitat, soil biodiversity and platform for landscape: Soils supporting valued features within non designated notable or priority habitats / landscapes. Agricultural soils; ● Soil carbon: Mineral soils; ● Soil hydrology: Pathway for local water flows and flood risk management; ● Archaeology, Cultural Heritage, Community Benefits and Geodiversity: Soils supporting no notable cultural heritage, geodiversity nor community benefits; Soils supporting limited community / recreational / educational access to land; and ● Source of materials: Surface mineral reserves that would remain accessible for extraction
Negligible	<p>As for low sensitivity, but with only indirect, tenuous, and unproven links between sources of impact and soil functions</p>

Table 11-7: Determination of sensitivity of soils to handling

Soil Texture, Field Capacity Days (FCD) and Wetness Class (WC)	Soil Texture, Field Capacity Days (FCD) and Wetness Class (WC)
High (low resilience to structural damage)	<ul style="list-style-type: none"> ● Soils with high clay and silt fractions (clays, silty clays, sandy clays, heavy silty clay loams and heavy clay loams) and organo-mineral and peaty soils where the FCD are 150 or greater; ● Medium-textured soils (silt loams, medium silty clay loams, medium clay loams and sandy clay loams) where the FCDs are 225 or greater; and ● All soils in wetness class (WC) V or WC VI.

Soil Texture, Field Capacity Days (FCD) and Wetness Class (WC)	Soil Texture, Field Capacity Days (FCD) and Wetness Class (WC)
Medium (medium resilience to structural damage)	<ul style="list-style-type: none"> Clays, silty clays, sandy clays, heavy silty clay loams, heavy clay loams, silty loams and organo-mineral and peaty soils where the FCDs are fewer than 150; Medium-textured soils (silt loams, medium silty clay loams, medium clay loams and sandy clay loams) where FCDs are fewer than 225; and Sands, loamy sands, sandy loams and sandy silt loams where the FCDs are 225 or greater or are in WC III and IV.
Low (high resilience to structural damage)	Soils with a high sand fraction (sands, loamy sands, sandy loams and sandy silt loams) where the FCDs are fewer than 225 and are in wetness classes WC I to WC II.

Table 11-8: Determination of sensitivity of agricultural land holdings

Receptor Sensitivity	Description
Very High	<ol style="list-style-type: none"> 1) Areas of land in which the enterprise is wholly reliant on the spatial relationship of land to key agricultural infrastructure; and 2) Access between land and key agricultural infrastructure is required on a frequent basis (daily).
High	<ol style="list-style-type: none"> 1) Areas of land in which the enterprise is dependent on the spatial relationship of land to key agricultural infrastructure; and 2) Access between land and key agricultural infrastructure is required on a frequent basis (weekly).
Medium	<ol style="list-style-type: none"> 1) Areas of land in which the enterprise is partially dependent on the spatial relationship of land to key agricultural infrastructure; and 2) Access between land and key agricultural infrastructure is required on a reasonably frequent basis (monthly).
Low	<ol style="list-style-type: none"> 1) Areas of land which the enterprise is not dependent on the spatial relationship of land to key agricultural infrastructure; and

Receptor Sensitivity	Description
Negligible	2) Access between land and key agricultural infrastructure is required on an infrequent basis (monthly or less frequent)
	1) Areas of land which are infrequently used on a non-commercial basis

Table 11-9: Determination of Magnitude Criteria for Impact on Soils and Agricultural Land

Magnitude of Impact (Change)	Description of Impacts Restricting Proposed Land Use
Major	<p>Permanent, irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading), over an area of more than 20 ha or loss of soil-related features as set out in Table 11-6 (including effects from 'Temporary Developments').</p> <p>Or</p> <p>Potential for permanent improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of more than 20 ha or gain in soil-related features set out in Table 11-6 (including effects from 'Temporary Developments').</p>
Moderate	<p>Permanent, irreversible loss of one or more soil functions or soil volumes, over an area of between 5 and 20 ha or loss of soil-related features as set out in Table 11-6 (including effects from 'Temporary Developments').</p> <p>Or</p> <p>Potential for improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of between 5 and 20 ha or gain in soil related features as set out in Table 11-6 (including effects from 'Temporary Developments').</p>
Minor	<p>Permanent, irreversible loss over less than 5ha or a temporary, reversible loss of one or more soil functions or soil volumes), or temporary, reversible loss of soil related features set out in Table 11-6.</p> <p>Or</p> <p>Potential for permanent improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of less than 5 ha or a temporary improvement in one or more soil functions due to remediation or</p>

Magnitude of Impact (Change)	Description of Impacts Restricting Proposed Land Use
Negligible	restoration or off-site improvement, or temporary gain in soil-related features set out in Table 11-6 . No discernible loss or reduction or improvement of soil functions or soil volumes that restrict current or proposed land use.

Table 11-10: Determination of Magnitude Criteria for Impact of Agricultural Land Holdings

Magnitude of Impact (Change)	Description of Impacts Restricting Proposed Land Use
Major	Private property and housing, community land and assets, development land and businesses and agricultural land holdings: 1) Loss of resource and / or quality and integrity of resource; Severe damage to key characteristics, features or elements. e.g., direct acquisition and demolition of buildings and direct development of land to accommodate highway assets; and / or 2) Introduction (adverse) or removal (beneficial) of complete severance with no / full accessibility provision.
Moderate	Private property and housing, community land and assets, development land and businesses and agricultural land holdings: 1) Partial loss of / damage to key characteristics, features or elements, e.g., partial removal or substantial amendment to access or acquisition of land compromising viability of property, businesses, community assets or agricultural holdings; and/or 2) Introduction (adverse) or removal (beneficial) of severe severance with limited / moderate accessibility provision.
Minor	Private property and housing, community land and assets, development land and businesses and agricultural land holdings: 1) A discernible change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements, e.g., amendment to access or acquisition of land resulting in changes to operating conditions that do not compromise overall viability of property, businesses,

Magnitude of Impact (Change)	Description of Impacts Restricting Proposed Land Use
	community assets or agricultural holdings; and / or 2) Introduction (adverse) or removal (beneficial) of severance with adequate accessibility provision.
Negligible	Private property and housing, community land and assets, development land and businesses and agricultural land holdings: 1) Very minor loss or detrimental alteration to one or more characteristics, features or elements. e.g., acquisition of non-operational land or buildings not directly affecting the viability of property, businesses, community assets or agricultural holdings; and / or 2) Very minor introduction (adverse) or removal (beneficial) of severance with ample accessibility provision.
No Change	No loss or alteration of characteristics, features, elements or accessibility; no observable impact in either direction.

Table 11-11: Determination of Significance Matrix

Nature of Receptor (Sensitivity / Value / Importance)	Nature of Impact (Magnitude / Probability / Reversibility)			
	Major	Moderate	Minor	Negligible
Very High	Large or Very Large	Moderate or Large	Slight or Moderate	Slight
High	Moderate or Large	Moderate	Slight	Neutral
Medium	Slight or Moderate	Slight	Neutral or Slight	Neutral
Low	Slight	Neutral	Neutral	Neutral
Negligible	Neutral	Neutral	Neutral	Neutral

Table 11-12: Significance Descriptors

Significance Category	Description
Very Large	Effects at this level are material in the decision-making progress

Significance Category	Description
Large	Effects at this level are likely to be material in the decision-making process
Moderate	Effects at this level can be considered to be material in the decision-making process
Slight	Effects at this level are not material in the decision-making process
Neutral	No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error

11.8 Assessment Limitations and Assumptions

- 11.8.1 The ALC assessment assumes that the auger borings at one auger per hectare are sufficient to determine the spatial distribution of ALC grades.

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12. Traffic and Transport

12. Traffic and Transport

12.1 Introduction

- 12.1.1 The traffic and transport assessment will consider the potentially significant effects on sensitive human and ecological receptors which may arise from the construction and operation of the English Onshore Scheme.
- 12.1.2 This chapter of the Scoping Report sets out the relevant legislation, planning policy context and technical guidance used to inform the assessment and summarises any consultation and engagement in relation to traffic and transport undertaken to date. It provides an overview of the baseline conditions relevant to traffic and transport within/around the **Figure 1-7: English Onshore Scheme Scoping Boundary**, the measures which will be incorporated into the English Onshore Scheme to mitigate traffic and transport effects, the likely significant effects to be considered within the assessment, and how these likely significant effects will be assessed for the purpose of an Environmental Impact Assessment (EIA).
- 12.1.3 This chapter should be read in conjunction and considered alongside the following chapters found in Volume 1:
- **Part 2 Chapter 4: English Onshore Scheme**
 - **Part 2, Chapter 5: EIA Methodology**
 - **Part 2, Chapter 13: Noise and Vibration**
 - **Part 2, Chapter 14: Air Quality**
 - **Part 2, Chapter 15: Socio-economics, Recreation, and Tourism**
 - **Part 2, Chapter 16: Health and Wellbeing**
 - **Part 4, Chapter 35: Cumulative Effects.**
- 12.1.4 This chapter is supported by the following figures:
- **Figure 12.1: Traffic and Transport Study Area**

12.2 Relevant legislation, planning policy and technical guidance

- 12.2.1 This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the traffic and transport assessment.

Legislation

- 12.2.2 A summary of the key legislation considered, but not limited to, in the scope of traffic and transport effects is outlined in **Table 12-1**.

Table 12-1: Legislation Relevant to Traffic and Transport

Legislation	Legislative Context	Section Considered
The Highways Act (1980) (Ref 12.1)	The Highways Act (1980) sets out the requirements pertaining to delivering highways infrastructure, managing existing highways and managing highway activity including off site highway works, for example, the creation of temporary site access.	All Sections
New Roads and Street Works Act (1991) (Ref 12.2)	The New Roads and Street Works Act (1991) provides a legislative framework for street works by undertakers and works for road purposes to the extent that these must be coordinated by street authorities.	Sections 12.5 Design and Control Measures
Traffic Management Act (2004) (Ref 12.3)	The Traffic Management Act (2004) provides powers to tackle congestion and disruption on the road network and requires local authorities, where possible, to ensure that traffic can move quickly and freely on their roads.	Section 12.7 Assessment Methodology

Planning Policy

- 12.2.3 A summary of the planning policies at both a national and local level relevant to the scope of Traffic and Transport effects is given in **Table 12-2** and **Table 12-3**.
- 12.2.4 The National Policy Statement for Electricity Networks Infrastructure (EN-5) (Ref 12.21) is not included in **Table 12-2** below as it does not give regard to traffic and transport considerations.

Table 12-2: National Planning Policy relevant to Traffic and Transport

Policy Reference	Policy Context	Section Considered
Overarching National Policy Statement for Energy (EN-1) (2024) (Ref 12.4)		
Paragraph 5.14.4	The consideration and mitigation of transport impacts is an essential part of Government's wider policy objectives for sustainable development as set out in Section 2.6 of NPS EN-1.	Section 12.6 Scope of the Assessment

Policy Reference	Policy Context	Section Considered
Paragraph 5.14.5 Paragraph 5.14.6	If a project is likely to have significant transport implications, the Environmental Statement (ES) should include a transport appraisal, developed in consultation. National Highways and Highways Authorities are statutory consultees where it is expected to affect the Strategic Road Network (SRN) and / or have an impact on the local road network. Applicants should consult with National Highways and Highways Authorities as appropriate on the assessment and mitigation to inform the application to be submitted.	Section 12.7 Assessment Methodology
Paragraph 5.14.7	Requirement, where appropriate, to prepare a Travel Plan (TP) and provide details of proposed measures to improve access by active, public, and shared transport to reduce the need for parking, contribute to decarbonisation, and improve user travel options.	Section 12.6 Scope of the Assessment
Paragraph 5.14.14	Where substantial Heavy Goods Vehicle (HGV) traffic is likely to occur the Secretary of State (SoS) may attach requirements to DCO consent to control numbers and routing of HGV movements, make sufficient provision for HGV parking and make arrangement for reasonably foreseeable abnormal disruption.	Section 12.6 Scope of the Assessment
Paragraph 5.14.18 Paragraph 5.14.19	The SoS should ensure the applicant has sought to mitigate substantial impacts on transport infrastructure. Where the proposed mitigation is insufficient the SoS should consider the requirements to mitigate adverse impacts arising from the development.	Section 12.6 Scope of the Assessment

National Planning Policy Framework (NPPF) (2023) (Ref 12.5)

Policy Reference	Policy Context	Section Considered
Paragraph 115	In terms of transport, a development should only be prevented or refused on highways grounds if there would be unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.	Section 12.6 Scope of the Assessment and Section 12.7 Assessment Methodology
Paragraph 117	All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a Transport Statement (TS) or Transport Assessment (TA) so that the likely impacts of the proposal can be assessed.	Section 12.6 Scope of the Assessment
National Highways		
Department for Transport Circular 01/2022 “The Strategic Road Network and the Delivery of Sustainable Development” (Ref 12.12)	Sets out the ways in which National Highways will engage with the development industry, public bodies and communities to assist the delivery of sustainable development. Environmental assessments must be comprehensive enough to establish the likely impacts on air quality, light pollution and noise arising from traffic generated by a development, along with the impacts from any proposed works to the SRN and identify measures to mitigate these impacts. Requirements and advice for undertaking environmental assessments in respect of transport impacts can be found in the Design Manual for Roads and Bridges (DMRB).	Section 12.3 Consultation and Engagement, Section 12.5 Design and Control Measures and Section 12.7 Assessment Methodology

Table 12-3: Local Planning Policy relevant to Traffic and Transport

Local Policy		
Policy Reference	Policy Context	Section Considered
Lincolnshire County Council Local Transport Plan 5 (Ref 12.7)		

Policy SH4	Seeks to reduce air, light and noise pollution created by the transport system, focussing on areas with designated Air Quality Management Areas (AQMA) and where impacts are felt by significant populations.	Section 12.7 Assessment Methodology
Policy E4	Identify and support a range of transport improvements to better connect employment centres with workforce and broaden the opportunities for those seeking employment to access and increasingly diverse range of opportunities.	Section 12.4 Baseline Conditions
Policy GREEN4	Deliver sustainable development by ensuring that new developments are designed to minimise the need to travel, minimise car use and support the use of more sustainable modes.	Section 12.7 Assessment Methodology
Norfolk Local Transport Plan 4 (2021 – 2036) (Ref 12.11)		
Policy 5 (Delivering a Sustainable Norfolk)	Working with partners to inform decisions about new development ensuring they are well connected to maximise use of sustainable and active transport options.	Section 12.3 Consultation and Engagement
Policy 6	County council will ensure that development is planned with active and sustainable travel in mind, contributions are secured for active travel infrastructure so that negative impact from developments is minimised, TP's for new developments are secured and enacted; and carbon is considered.	Section 12.5 Design and Control Measures
Transport Strategy and High Level Programme for Cambridge and South Cambridge (2014) (Ref 12.20)		
Policy TSCSC 5	Developers will be required to make provision to mitigate both the site specific and network impacts of their planning proposal.	Section 12.7 Assessment Methodology
Policy TSCSC 6	Outlines the requirement of a TA for applications producing a net increase of approximately 500 person trips per day	Section 12.7 Assessment Methodology
Policy TSCSC 14	Where there is a requirement for new distributor roads or through roads as a part of a development, adherence to the need to prioritise pedestrians, cyclists and public transport users will remain	Section 12.7 Assessment Methodology

East Lindsey District Council: East Lindsey Local Plan Core Strategy, 2018 (Adopted 2018) (Ref 12.6)

Strategic Policy 22 (SP22) (Transport and Accessibility)	SP22 outlines how East Lindsey will support accessibility and seek to reduce isolation.	Section 12.5 Design and Control Measures and Section 12.6 Scope of the Assessment
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South East Lincolnshire Local Plan (2011 – 2036) (Ref 12.7)

Policy 3 (Design of New Development)	Development proposals will demonstrate how the following issues directly related to transport will be secured; accessibility by a choice of travel modes and the provision of facilities for accessing and servicing the proposal.	Section 12.4 Baseline Conditions
Policy 6 (Developer Contributions)	<p>Developments will be expected to mitigate their impacts upon infrastructure, services, and the environment to ensure such developments are acceptable.</p> <p>Developer contributions will only be sought when they meet the tests set out in paragraph 56 of the NPPF, or any successor.</p> <p>Developers will either make direct provision or will contribute towards the provision of local and strategic infrastructure and services required by the development, either alone or cumulatively with other developments.</p>	Section 12.5 Design and Control Measures
Policy 33 (Delivering a More Sustainable Transport Network)	The Local Planning Authorities will work with partners to make the best use of, and seek improvements to, existing transport infrastructure and services within, and connecting to South East Lincolnshire, having considered first solutions that are based on better promotion and management of the existing network and the provision of sustainable forms of travel.	Section 12.3 Consultation and Engagement and Section 12.6 Scope of the Assessment
Policy 36 (Vehicle and Cycle Parking)	All new development, including change of use, should provide vehicle and cycle parking, in accordance with the minimum parking standards adopted by the Local Planning Authorities.	Section 12.5 Design and Control Measures and Section 12.6 Scope of the Assessment

King's Lynn & West Norfolk Site Allocations and Development Management Policies Plan (Ref 12.9)

Policy DM 12 (Strategic Road Network)	New development near strategic routes, or on side roads connecting to them, can add significant volumes of local traffic. This proposed policy approach is to not allow development that could undermine their function as long distance routes. Where appropriate, a TA will be required to demonstrate that development can be accommodated on the local road network.	Section 12.7 Assessment Methodology
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King’s Lynn & West Norfolk Borough Council Local Development Framework – Core Strategy (Ref 12.10)

Policy CS11 (Transport)	Development proposals should demonstrate that they have been designed to reduce the need to travel, promote sustainable forms of transport, and provide for safe and convenient access for all modes.	Section 12.5 Design and Control Measures and Section 12.7 Assessment Methodology
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Policy CS14 (Infrastructure Provision)	All development in the plan area will need to be accompanied by appropriate infrastructure (including off site infrastructure) in a timely way, with arrangements for its subsequent maintenance. Obligations will be sought from developers through Section 106 Agreements or other successor mechanisms.	Section 12.5 Design and Control Measures
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Fenland Transport Strategy (2023) (Ref 12.22)

Policy FTS7	Developers will be required to make provision to mitigate both the site specific and network impacts of their planning proposal. Mitigation measures will be secured by direct improvements carried out by the developer through a Section 106 agreement	Section 12.7 Assessment Methodology
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Technical Guidance

12.2.5 A summary of the relevant technical guidance is given in **Table 12-4**.

Table 12-4: Technical Guidance relevant to Traffic and Transport

Technical Guidance Document	Context	Sections Considered
Planning Practice Guidance Travel Plans, Transport	This Planning Practice Guidance (PPG) was published in March 2014. Together, PPGs and the NPPF	Section 12.7 Assessment Methodology

Assessments and Statements (2014) (Ref 12.14)	set out what the Government expects of local authorities. The overall aim is to ensure the planning system allows land to be used for new homes and jobs, while protecting valuable natural and historic environments. The guidance includes specific details in relation to the preparation of a TA, TS and TP.	
Environmental Assessment of Traffic and Movement (2023) (Ref 12.13)	The Institute of Environmental Management and Assessment (IEMA) Environmental Assessment of Traffic and Movement (EATM) guidelines provide practitioners with good practice advice on how to carry out the assessment of traffic and movement of people as part of a statutory EIA or non-statutory environmental assessment.	Section 12.7 Assessment Methodology
LA 101 - Introduction to Environmental Assessment (2019) (Ref 12.15)	LA 101 sets out the overarching requirements and principles that form an introduction to the environmental assessment of motorway and all-purpose trunk roads.	Section 12.7 Assessment Methodology
LA 103 - Scoping Projects for Environmental Assessment (2020) (Ref 12.16)	This document sets out the requirements for scoping motorway and all-purpose trunk road projects for environmental assessment.	Section 12.7 Assessment Methodology
LA 104 - Environmental assessment and monitoring (2020) (Ref 12.17)	This document sets out the requirements for environmental assessment of projects, including reporting and monitoring of significant adverse environmental effects.	Section 12.7 Assessment Methodology
LA 112 - Population and Human Health, Design Manual for Roads and Bridges (2020) (Ref 12.18)	This document sets out the requirements for assessing and reporting the environmental effects on population and health from construction, operation, and	Section 12.7 Assessment Methodology

12.3 Consultation and Engagement

- 12.3.1 To date no engagement been undertaken. However, in advance of the Preliminary Environmental Information Report (PEIR) and ES, engagement would be undertaken with the following key stakeholders relevant to traffic and transport:
- Lincolnshire County Council;
 - Norfolk County Council;
 - Cambridgeshire County Council (as the neighbouring local highway authority); and
 - National Highways (regarding any potential impacts on the SRN).
- 12.3.2 The consultation and engagement would discuss the proposed traffic and transport assessment methodology, covering:
- The scope of the assessment;
 - The proposed traffic growth to future year;
 - Committed highways schemes that may affect the future baseline;
 - Committed developments that may affect the future baseline;
 - Availability of existing traffic data and data collection techniques;
 - Potential traffic generation;
 - Management of traffic impacts on the Public Rights of Way (PRoW) network; and
 - Management of traffic impacts on the highway network including HGV management.

12.4 Baseline Conditions

Study Area

- 12.4.1 The study area for the traffic and transport assessment has been informed by:
- Roads providing access for construction and operational traffic generated by the English Onshore Scheme and points on the transport network that would be crossed by any element of the English Onshore Scheme. Temporary construction working areas and laydown areas would be required throughout the English Onshore Scheme and would be located within the **Figure 1-7: English Onshore Scheme Scoping Boundary**; and
 - The key routes outside of the **Figure 1-7: English Onshore Scheme Scoping Boundary** that construction and operational traffic would take to access the construction areas and permanent infrastructure of the English Onshore Scheme.
- 12.4.2 The Traffic and Transport study area will be refined based upon 'Rule 1' and 'Rule 2' of the IEMA EATM (Ref 12.13) guidelines which can be used to determine the effect of increased traffic volumes on links within the study area, as described below:

- Rule 1 - Include highway links where traffic flows (or HGV flows) are predicted to increase by more than 30%; and
- Rule 2 - Include any other specifically sensitive areas where traffic flows (or HGV flows) are predicted to increase by 10% or more.

12.4.3 The proposed transport study area is set out in **Figure 13.1: Traffic and Transport Study Area**.

12.4.4 There are a number of 'A', 'B', 'C' and unclassified roads within the study area which have the potential to be affected directly by the English Onshore Scheme, either by a crossing of the proposed infrastructure or as an access route. There are 151 classified unnumbered road links, 30 not classified road links, 174 unclassified road links, and 117 unknown road links. **Appendix 12.A** contains a full list of roads affected within the study area.

12.4.5 **Table 12-5** sets out the main 'A' and 'B'-roads within the study area. The links which are to be assessed within the EIA will be refined as more data is received with regards to the traffic flows associated with the construction phase and routing.

12.4.6 The study area will further be reviewed and amended in response to the identification of any additional impact pathways, estimates of construction traffic levels, identification of working and laydown areas and in response to feedback from consultation.

Table 12-5: Main 'A' and 'B'-Roads within the Traffic and Transport Study Area

Type of Road	Road Number	Road Name	Highway Authority
Section 1: Landfalls – Bilsby			
A-Roads	A1031	Mablethorpe Road	Lincolnshire County Council
		Saltfleet Road	Lincolnshire County Council
		Theddlethorpe Road	Lincolnshire County Council
A-Roads	A1104	-	Lincolnshire County Council
		Alford Road	Lincolnshire County Council
		Beesby Road	Lincolnshire County Council
		East Street	Lincolnshire County Council
		Sutton Road	Lincolnshire County Council
A-Roads	A1111	Alford Road	Lincolnshire County Council
		Alford Road	Lincolnshire County Council

	A157	-	Lincolnshire County Council
		Peter's Lane	Lincolnshire County Council
	A52	Mumby Road	Lincolnshire County Council
		Sutton Road	Lincolnshire County Council
B-Roads	B1373	-	Lincolnshire County Council
	B1449	-	Lincolnshire County Council
		Long Lane	Lincolnshire County Council
		Thurlby Road	Lincolnshire County Council
Section 2: Bilksby – Welton le Marsh			
B-Roads	B1196	-	Lincolnshire County Council
		Hanby Lane	Lincolnshire County Council
	B1449	-	Lincolnshire County Council
		Long Lane	Lincolnshire County Council
		Thurlby Road	Lincolnshire County Council
Section 3: Welton le Marsh – Little Steeping			
A-Roads	A1028	Bluestone Heath Road	Lincolnshire County Council
	A158	-	Lincolnshire County Council
B-Roads	B1195	-	Lincolnshire County Council
		Firsby Road	Lincolnshire County Council
		Old Church Lane	Lincolnshire County Council

		Spilsby Road	Lincolnshire County Council
	B1196	-	Lincolnshire County Council
		Hanby Lane	Lincolnshire County Council
		Main Road	Lincolnshire County Council

Section 4: Little Steeping – Sibsey Northlands

A-Roads	A16	Boston Road	Lincolnshire County Council
		Main Road	Lincolnshire County Council
	A52	Main Road	Lincolnshire County Council
B-Roads	B1184	Frithville Road	Lincolnshire County Council
		Hobhole Bank	Lincolnshire County Council
		Station Road	Lincolnshire County Council

Section 5: Sibsey Northlands – Hubbert’s Bridge

A-Roads	A16	Main Road	Lincolnshire County Council
B-Roads	B1183	Boston Road	Lincolnshire County Council
		Carrington Road	Lincolnshire County Council
		Horncastle Road	Lincolnshire County Council
		Main Road	Lincolnshire County Council
	B1184	Canister Lane	Lincolnshire County Council
		Frithville Road	Lincolnshire County Council
	B1184	Hale Lane	Lincolnshire County Council

	B1192	Langrick Road	Lincolnshire County Council
Section 6: Hubbert's Bridge – Moulton Seas End			
A-Roads	A1121	-	Lincolnshire County Council
		Boardsides	Lincolnshire County Council
	A16	-	Lincolnshire County Council
		Station Road	Lincolnshire County Council
	A17	-	Lincolnshire County Council
		Station Road	Lincolnshire County Council
		Washway Road	Lincolnshire County Council
	A52	Boston Road	Lincolnshire County Council
		Swineshead Road	Lincolnshire County Council
	B-Roads	B1192	Fen Drove
Holmes Lane			Lincolnshire County Council
Langrick Road			Lincolnshire County Council
Station Road			Lincolnshire County Council
B1391		Blackjack Road	Lincolnshire County Council
		Donington Road	Lincolnshire County Council
B1397		-	Lincolnshire County Council
		Boston Road	Lincolnshire County Council
		Spalding Road	Lincolnshire County Council

Section 7: Moulton Seas End – Foul Anchor

A-Roads	A1101	Main Road	Lincolnshire County Council
		Wisbech Road	Lincolnshire County Council
	A151	-	Lincolnshire County Council
	A17	-	Lincolnshire County Council
		Boston Road	Lincolnshire County Council
		Cowper's Gate	Lincolnshire County Council
		Main Road	Lincolnshire County Council
		Washway Road	Lincolnshire County Council
		Wisbech Road	Lincolnshire County Council
	B-Roads	B1168	Boston Road
B1357		Common Road	Lincolnshire County Council
B1359		-	Lincolnshire County Council
		Chapelgate	Lincolnshire County Council
		Main Road	Lincolnshire County Council
		Wisbech Road	Lincolnshire County Council
B1390		Cowper's Gate	Lincolnshire County Council
		St James Road	Lincolnshire County Council
		Wanton's Cross Gate	Lincolnshire County Council
B1515		-	Lincolnshire County Council

		Fleet Road	Lincolnshire County Council
Section 8: Foul Anchor – Walpole			
A-Roads	A17	-	Norfolk County Council
	A47	-	National Highways
B-Roads	B198	Lynn Road	Cambridgeshire County Council

Figure 12-1
Traffic and Transport Study Area



- Legend**
- Local Highway Authority Boundary
 - Strategic Road Network (SRN)
 - ▭ Traffic and Transport Study Area
 - ┌ Sheet Extents



Notes
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Date		Remarks	Drawn	Checked	Approved

Title
**Figure 12-1
Traffic and Transport Study Area**

Figure Number
Figure 12-1

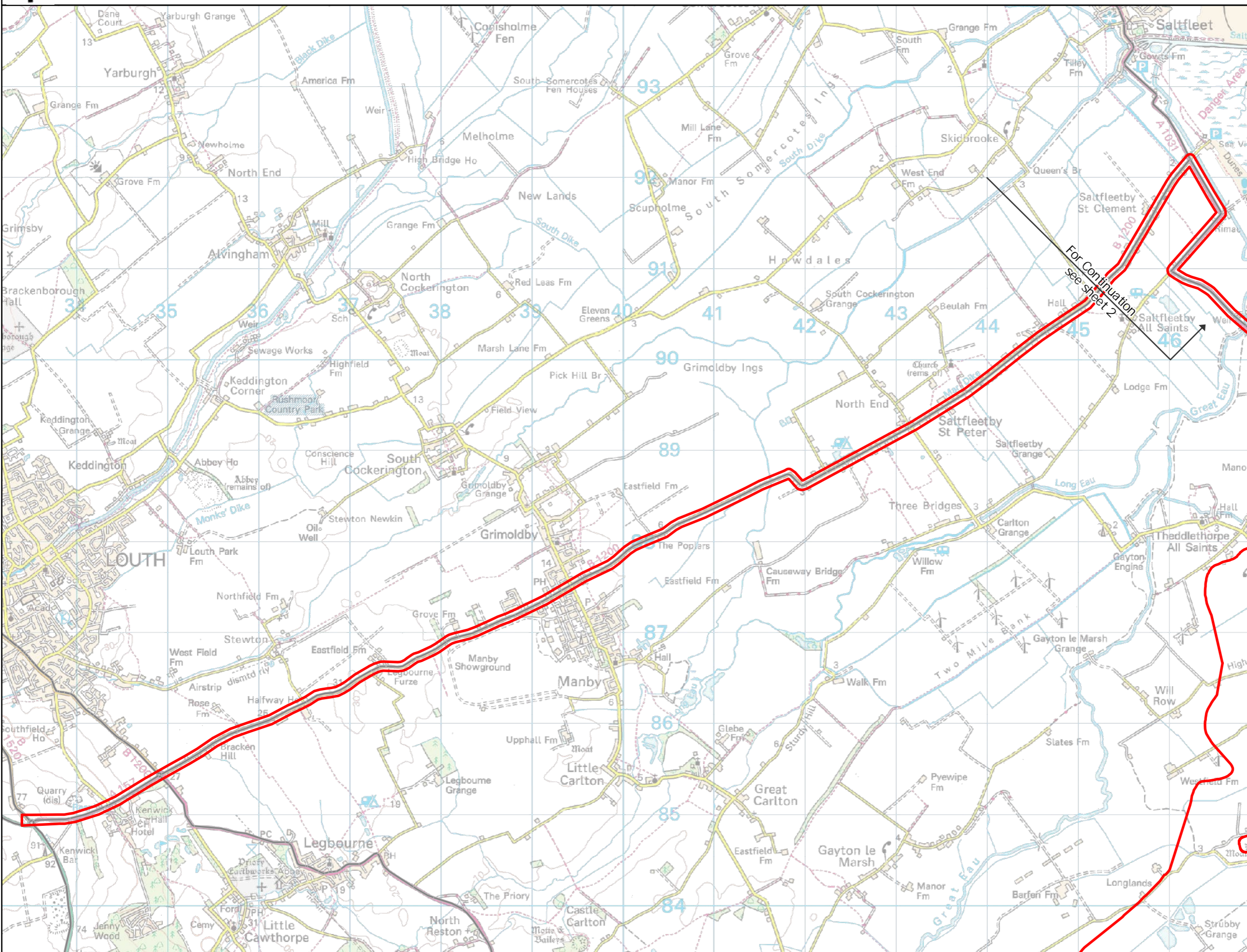
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Figure 12-1
Traffic and Transport Study Area

- Legend
- Local Highway Authority Boundary
 - ▭ Traffic and Transport Study Area



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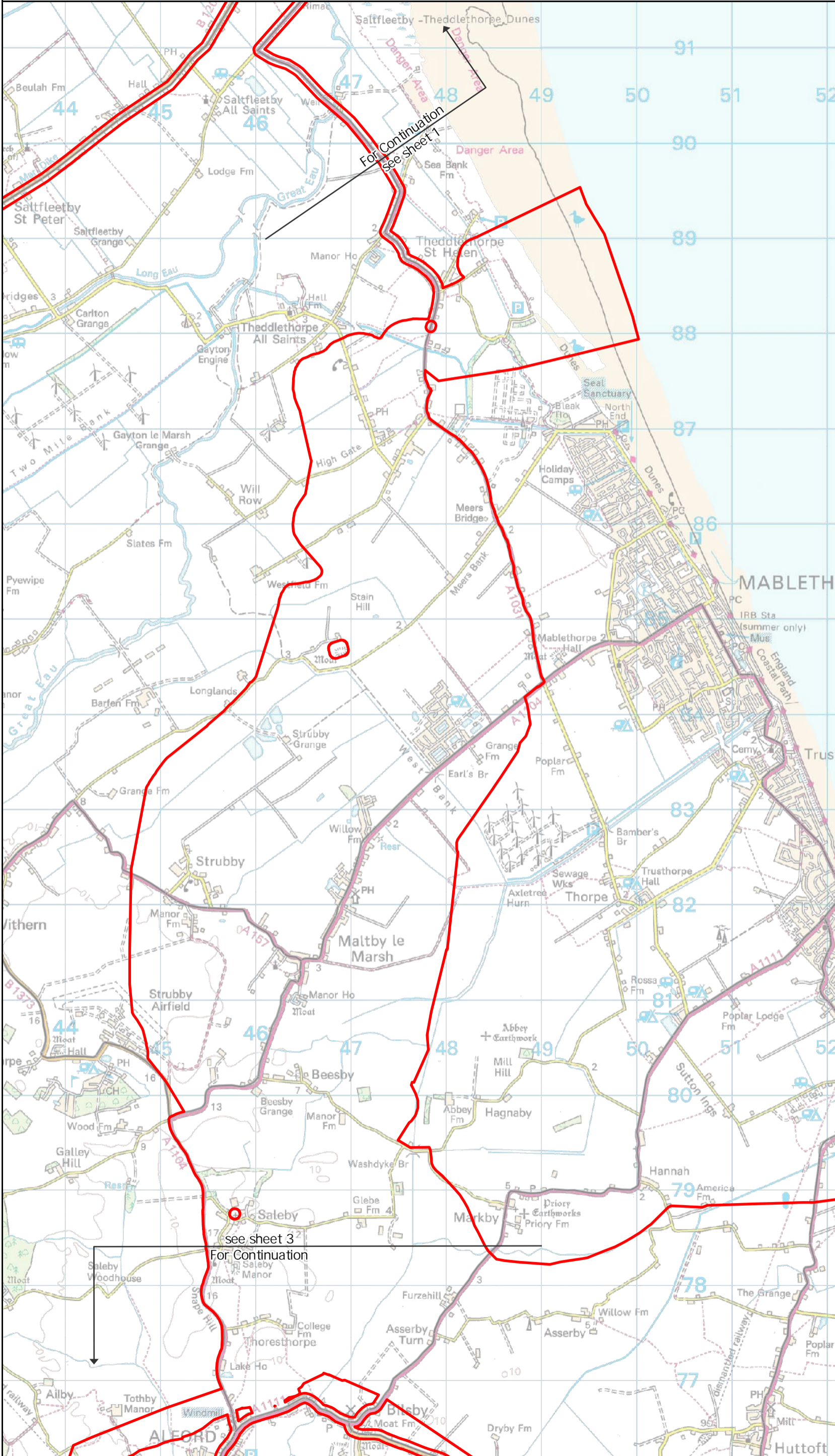
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Figure 12-1
Traffic and Transport Study Area

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Figure 12-1
Traffic and Transport Study Area

- Legend
- Local Highway Authority Boundary
 - ▭ Traffic and Transport Study Area



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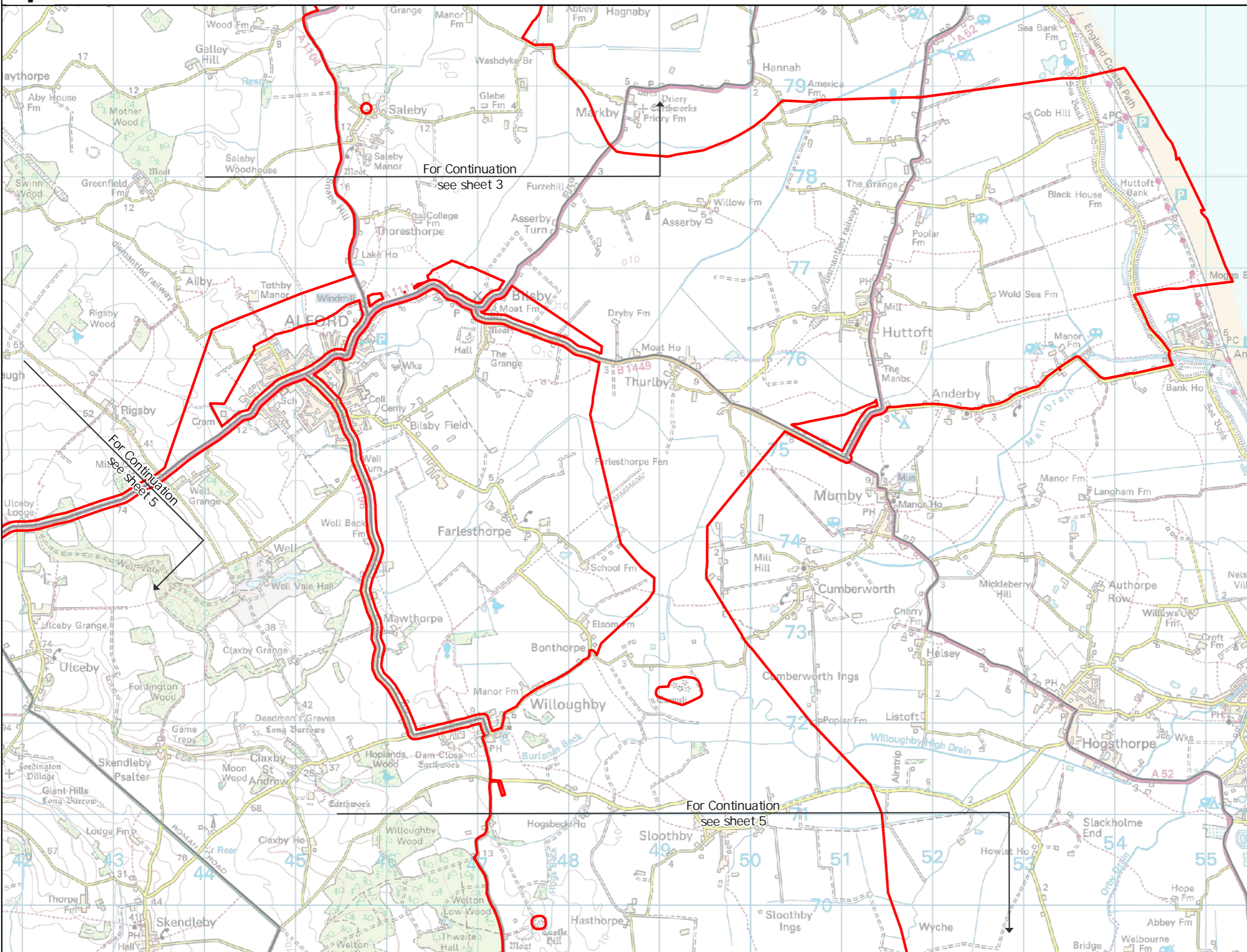
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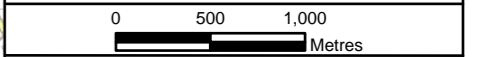
Figure 12-1
Traffic and Transport Study Area

- Legend
- Local Highway Authority Boundary
 - ▭ Traffic and Transport Study Area



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Traffic and Transport Study Area**

Figure Number
Figure 12-1

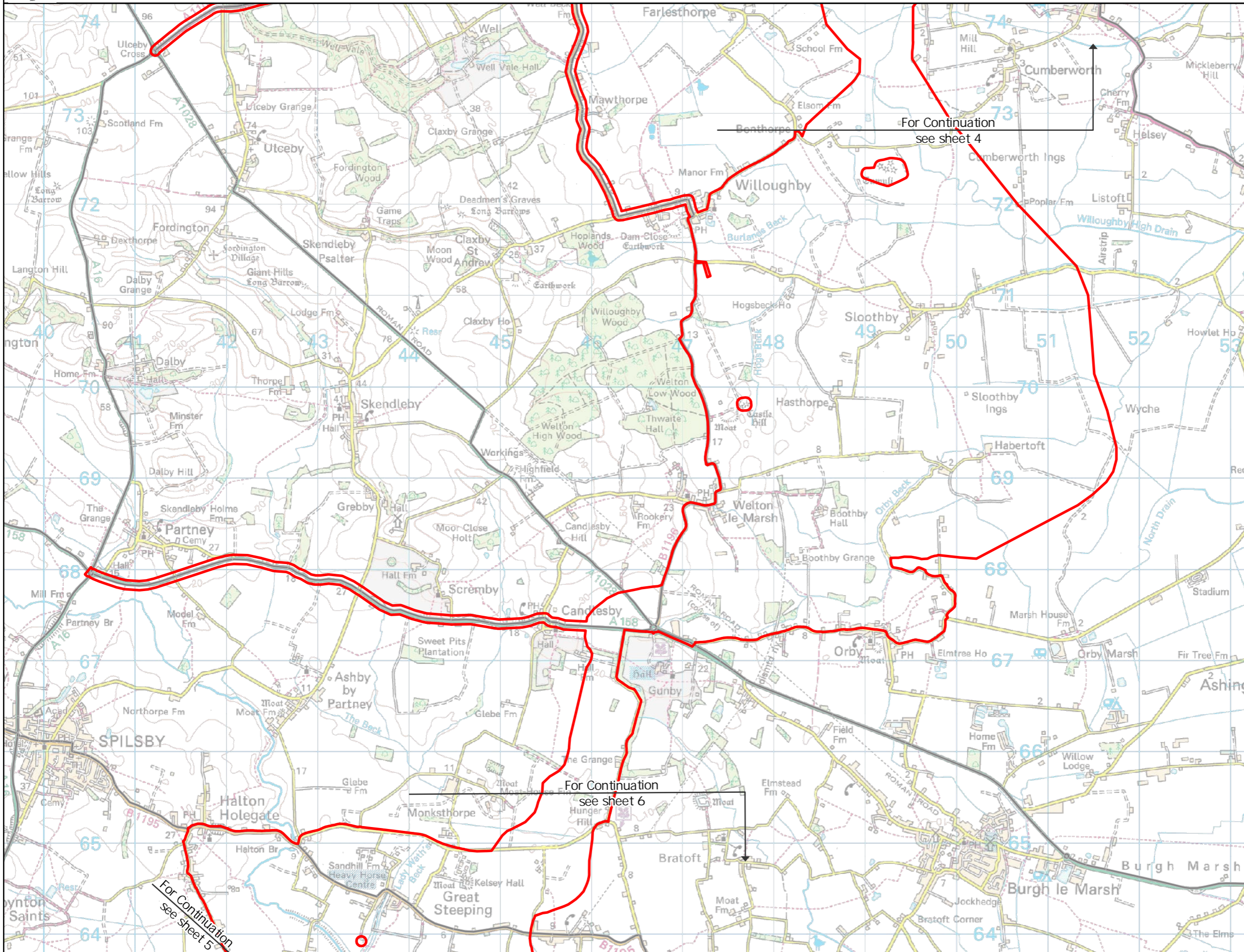
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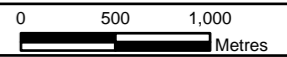
Figure 12-1
Traffic and Transport Study Area

- Legend
- Local Highway Authority Boundary
 - ▭ Traffic and Transport Study Area



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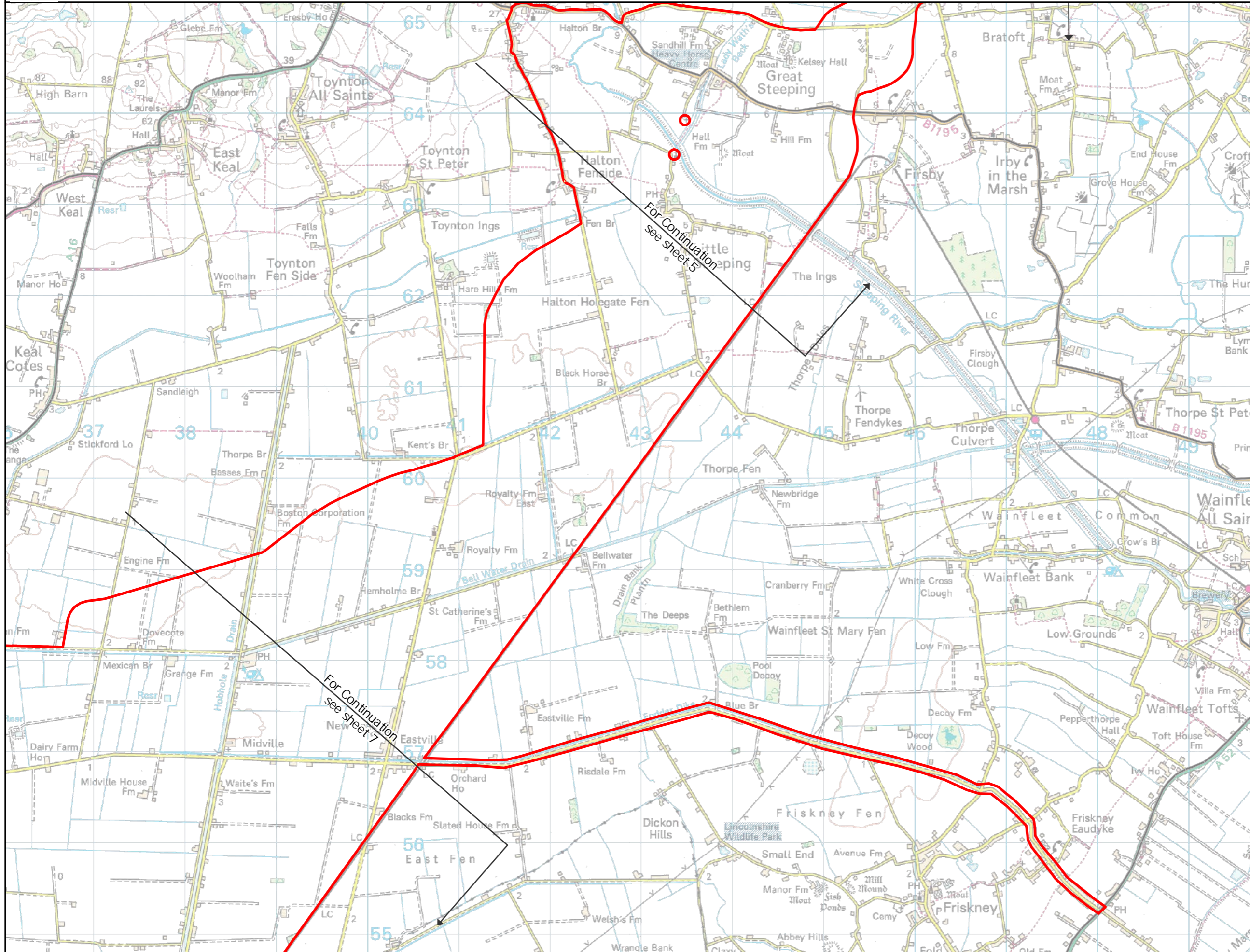
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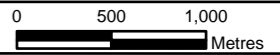
Figure 12-1
Traffic and Transport Study Area

- Legend
- Local Highway Authority Boundary
 - ▭ Traffic and Transport Study Area



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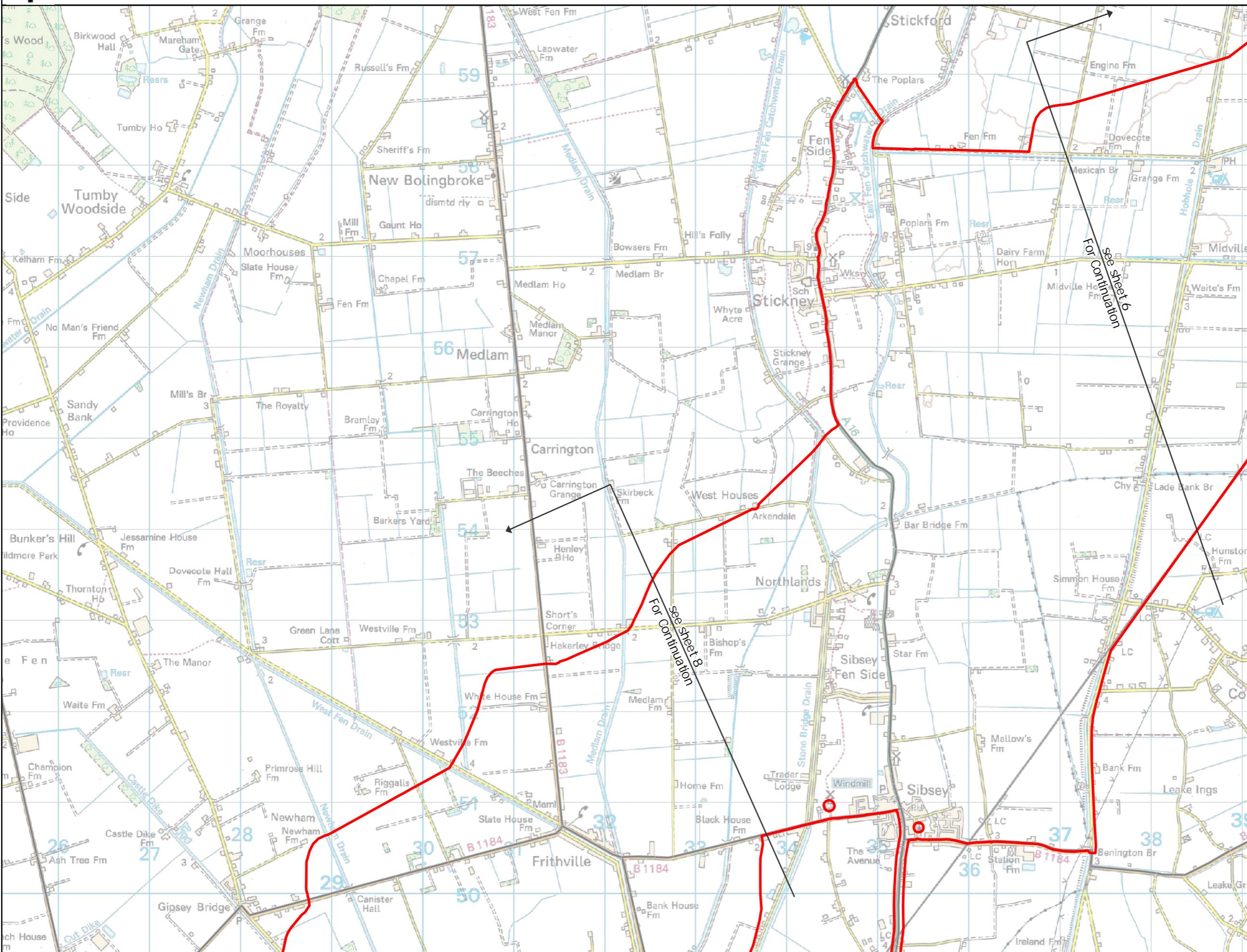


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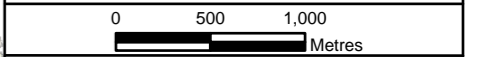
Figure 12-1
Traffic and Transport Study Area

- Legend
- Local Highway Authority Boundary
 - ▭ Traffic and Transport Study Area



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Figure Number
Figure 12-1

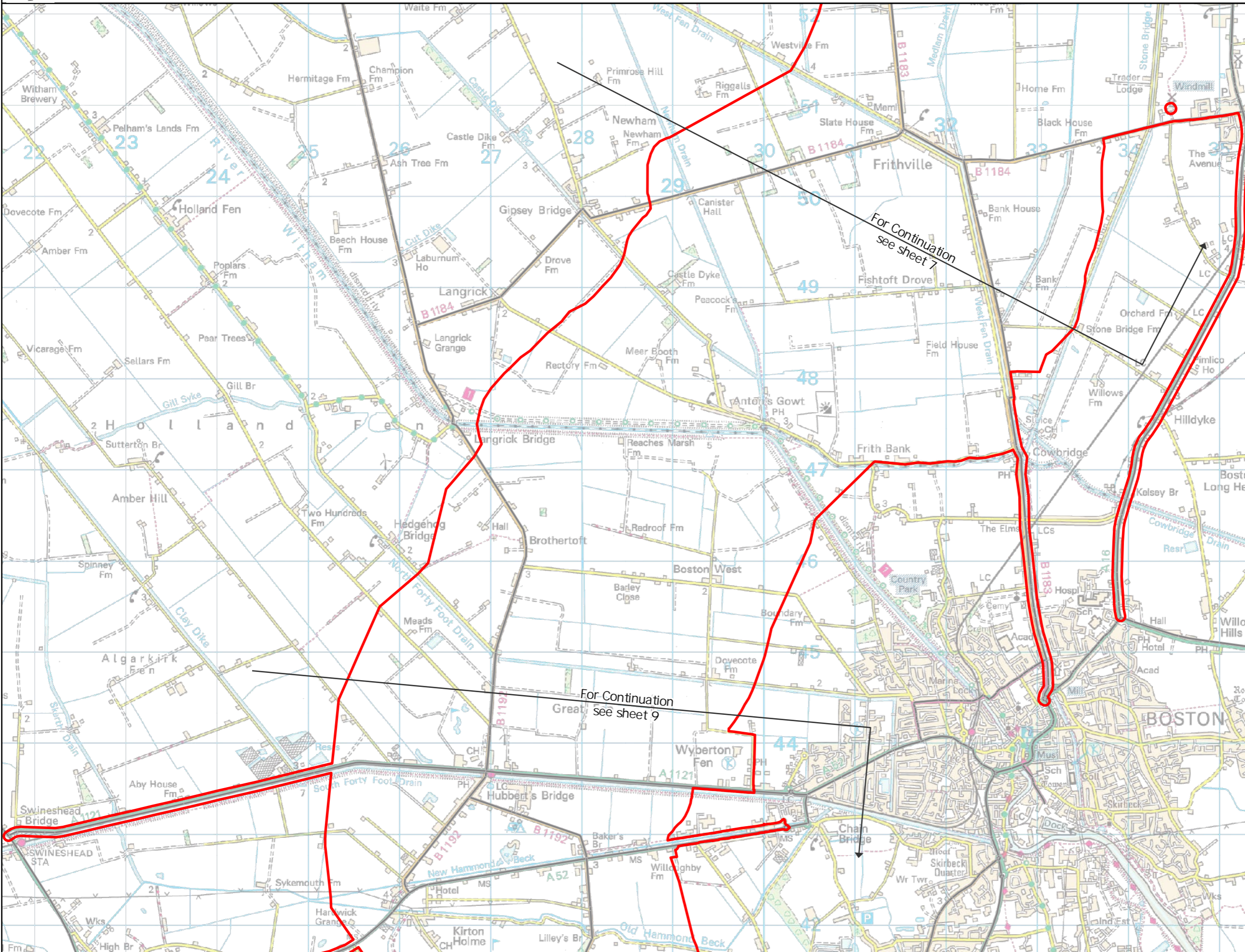
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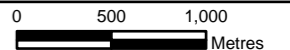
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Traffic and Transport Study Area

- Legend
- Local Highway Authority Boundary
 - ▭ Traffic and Transport Study Area



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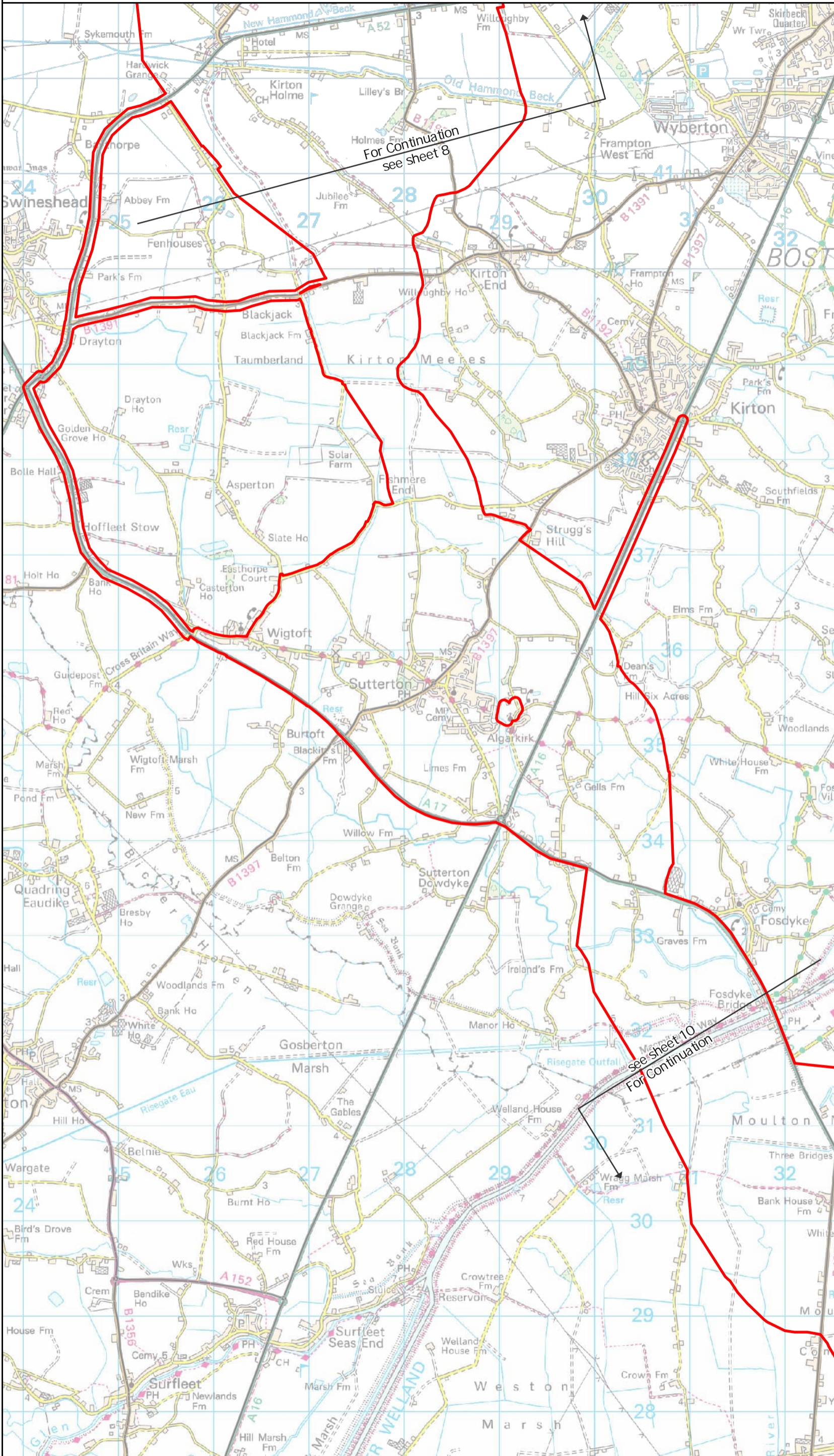
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**Figure 12-1
Traffic and Transport Study Area**



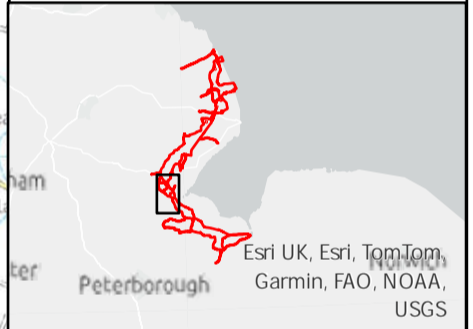
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Figure 12-1
Traffic and Transport Study Area



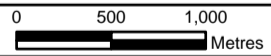
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- Local Highway Authority Boundary
- ▭ Traffic and Transport Study Area



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Title

Figure 12-1
Traffic and Transport Study Area



Figure Number
Figure 12-1

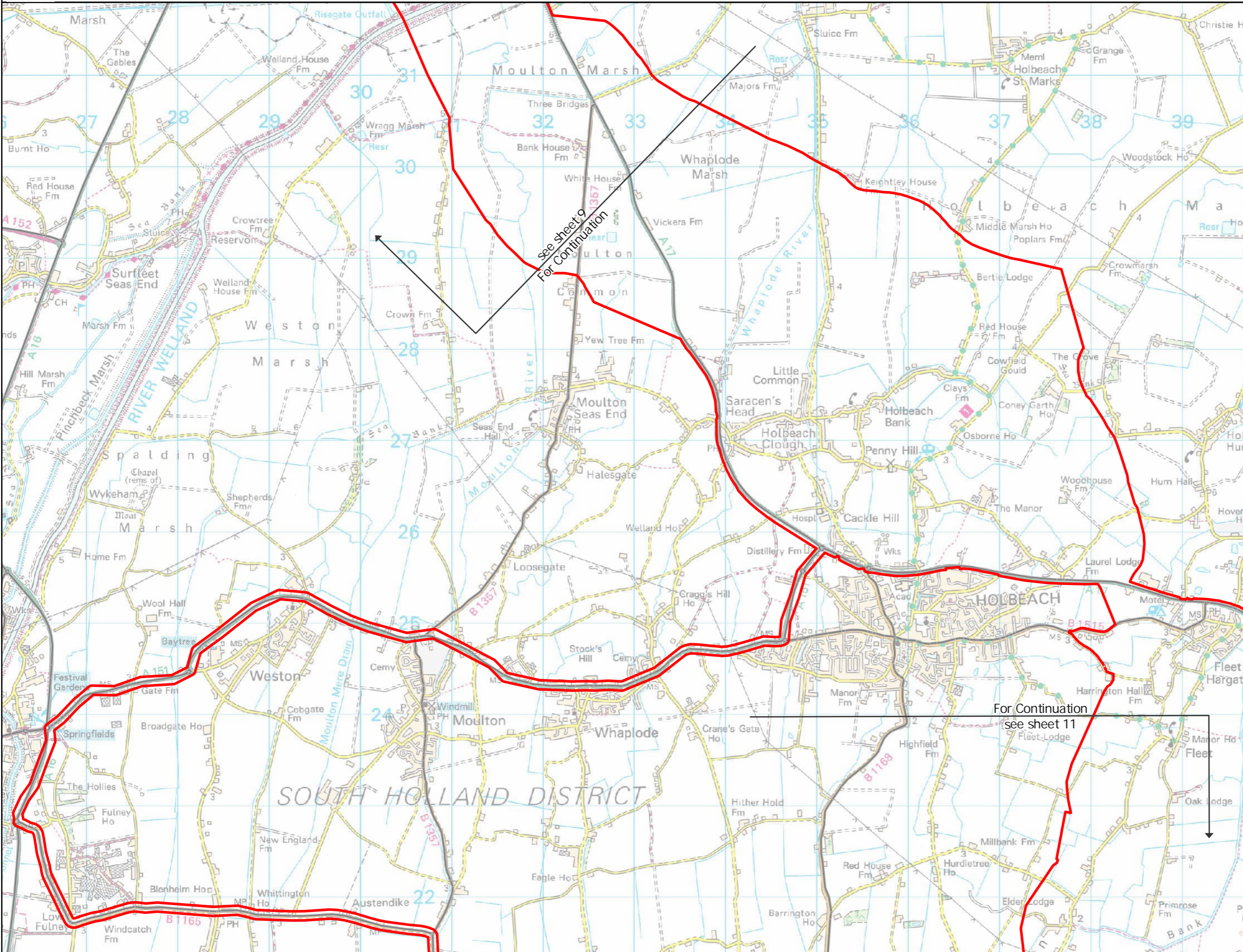
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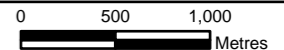
Figure 12-1
Traffic and Transport Study Area

- Legend
- Local Highway Authority Boundary
 - ▭ Traffic and Transport Study Area



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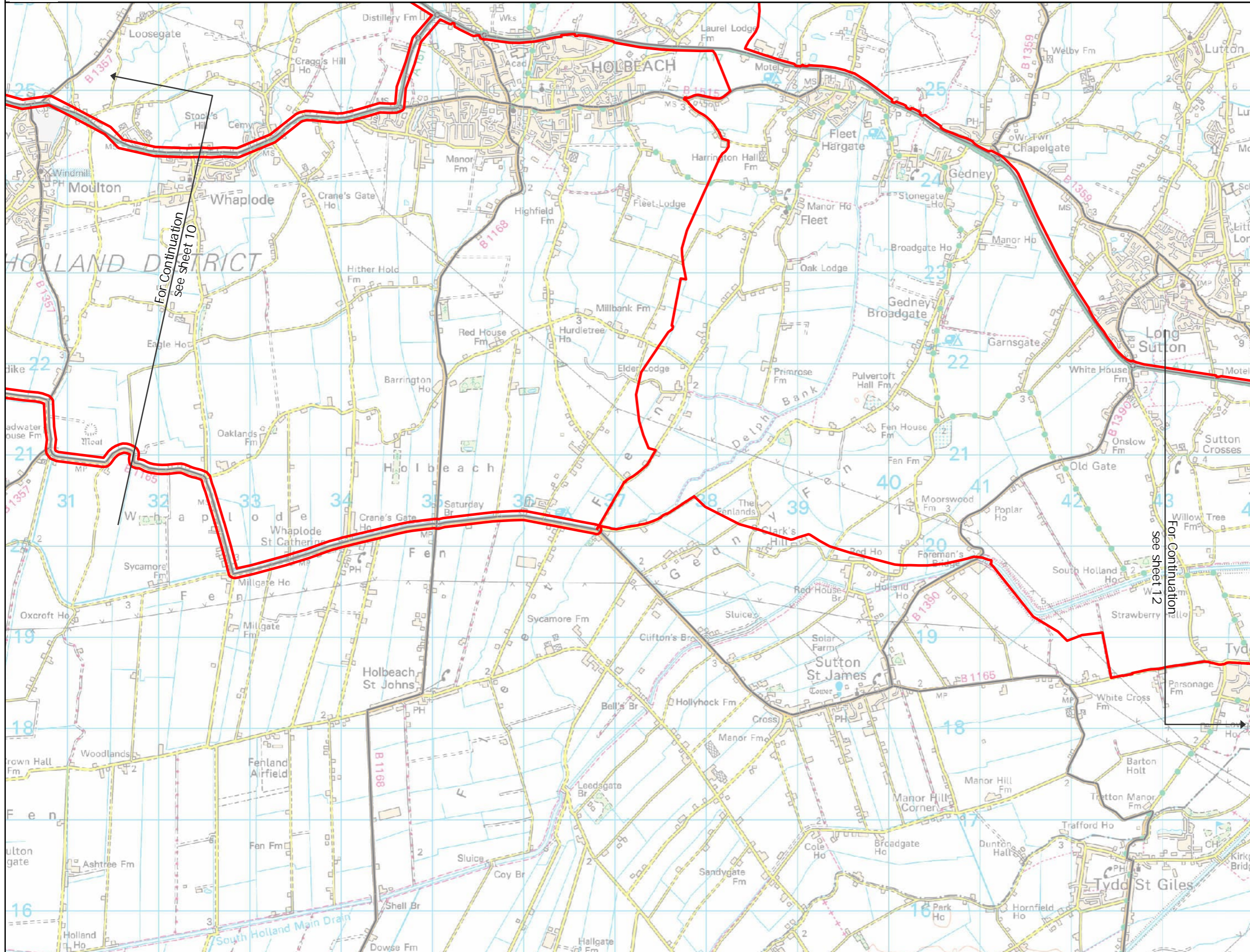
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Traffic and Transport Study Area**

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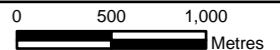
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Traffic and Transport Study Area

- Legend
- Local Highway Authority Boundary
 - ▭ Traffic and Transport Study Area



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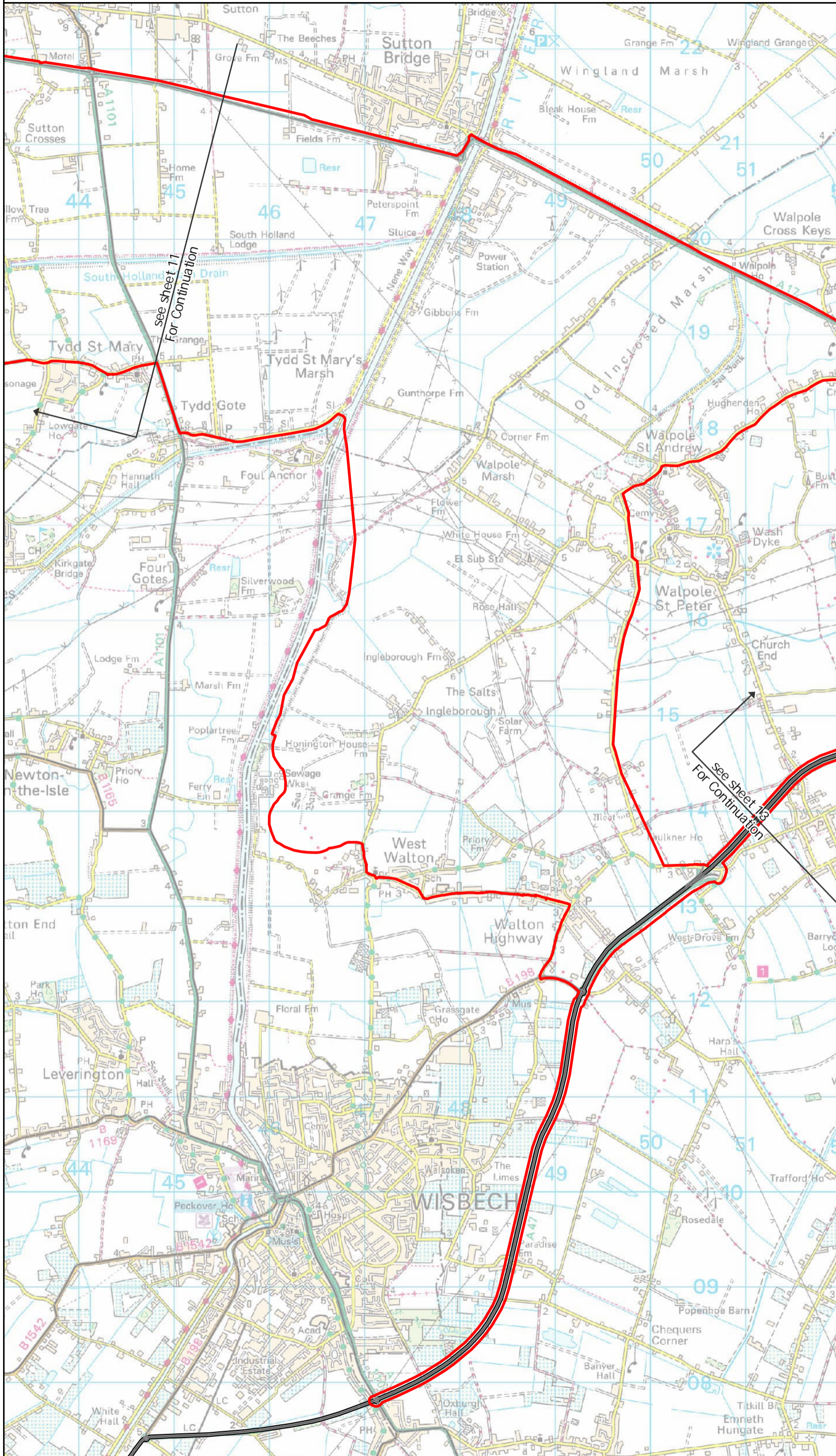
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Traffic and Transport Study Area**

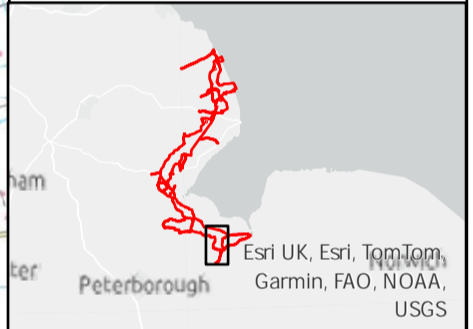


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Figure 12-1
Traffic and Transport Study Area

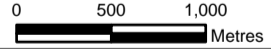


- Legend
- Local Highway Authority Boundary
 - Traffic and Transport Study Area
 - Strategic Road Network (SRN)



Notes
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Title
**Figure 12-1
Traffic and Transport Study Area**



Figure Number
Figure 12-1

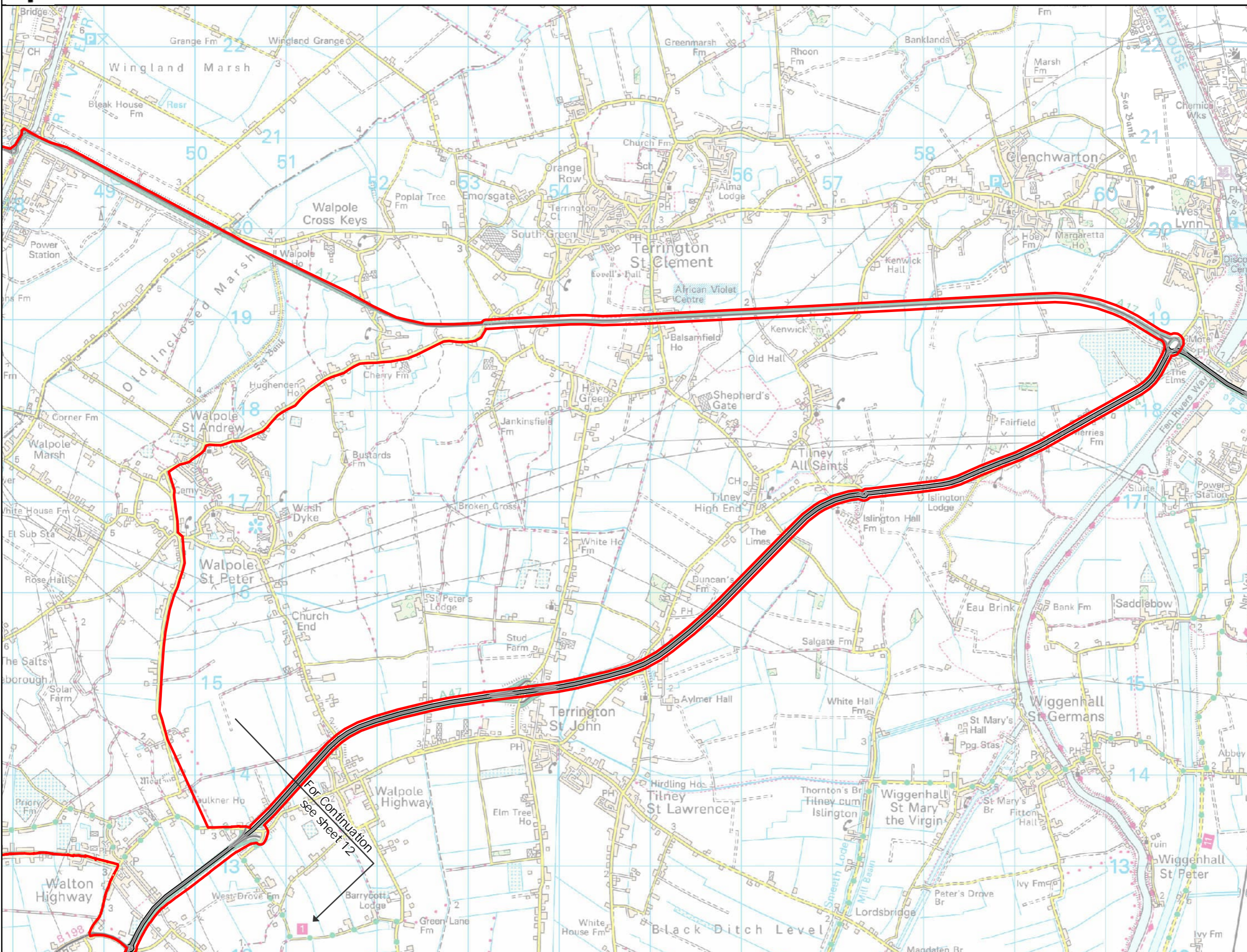
Drawing Reference
EGL-WSP-CONS-XX-DR-G-027 P01

Scale	Sheet Size	Sheet	Issue
1:40,000	A3	SHEET 12 OF 13	1



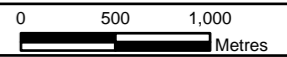
Figure 12-1
Traffic and Transport Study Area

- Legend
- Local Highway Authority Boundary
 - Traffic and Transport Study Area
 - Strategic Road Network (SRN)



Notes
This drawing is scaled at paper size A3, therefore any prints taken at smaller sizes will affect accuracy of the measurement units and should not be scaled against.

Coordinate System: British National Grid
Sheet X Centroid Coordinate: 554724.68E Sheet Y Centroid Coordinate: 317241.17N



BACKGROUND MAPPING INFORMATION HAS BEEN REPRODUCED FROM THE ORDNANCE SURVEY BY PERMISSION OF ORDNANCE SURVEY OF THE CONTROLLER OF HIS MAJESTY'S STATIONERY OFFICE. © CROWN COPYRIGHT AND DATABASE RIGHTS 2024 ORDNANCE SURVEY 0100031673.

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Title
**Figure 12-1
Traffic and Transport Study Area**



Figure Number
Figure 12-1

Drawing Reference
EGL-WSP-CONS-XX-DR-G-027 P01

Scale	Sheet Size	Sheet	Issue
1:40,000	A3	SHEET 13 OF 13	1

Data Gathering Methodology

- 12.4.7 The data sources used to inform this Scoping Report chapter are summarised below:
- **Census** - 'Location of usual residence and place of work by method of travel to work' for the category 'Driving Car or Van'. The Middle Layer Super Output Area (MSOA);
 - **Ordnance Survey (OS) Mapping** - Use of online mapping of 1:50,000 and 1:25,000 Ordnance Survey Mapping;
 - **Google Traffic** - Use of online congestion data from Google Maps. Traffic data for key local roads was reviewed. (Available online – <https://www.google.co.uk/maps>);
 - **Traffic Data** - Review data from Department for Transport permanent count locations at any locations identified as receptors;
 - **Personal Injury Collision Data** - A review of the personal injury collision (PIC) data within the Traffic and Transport study area;
 - **Google Street View** - Use of street view views of local road network from Google Maps. (Available online – <https://www.google.co.uk/maps>);
 - **PRoW Information** - PRoW information from the online map for Lincolnshire County Council. (Available online <https://lincs.locationcentre.co.uk/internet/internet.aspx?articleid=L4h7HM4AmHM~&preview=true>);
 - **National Cycle Network (NCN) Map** - Overview of the NCN within the study area;
 - **Local Cycle Maps** - Overview of the local cycle network within the study area;
 - **Bus Operators Website** - Bus Service information for the local area;
 - **Network Rail Map** - Network Rail website - Details of active rail lines in the study area;
 - **Rail Service Data** - Rail Service information for the local area; and
 - **Inland Waterway Data** - Inland waterway information for watercourses.
- 12.4.8 An initial desk-based baseline assessment will be undertaken to gather information on highway infrastructure, construction routes and restrictions. Bing Maps, Google Maps UK and Google Street View will be used to provide an overview of the study area and the transport network.
- 12.4.9 There will be site-based work required to inform the baseline, this could potentially include:
- Commissioned traffic counts - to supplement the existing traffic data from Department for Transport and Local Authorities;
 - NMU PRoW counts - to supplement any available existing data available from the Local Authorities; and
 - Site visit - a site visit will be required to inform the assessment and clarify the high-level desktop based assessments. Detailed notes and a photographic record will be undertaken on the site visit and consideration will be given to the identification of sensitive receptor locations.

12.4.10 These data sets will be collated, reviewed, and updated as the English Onshore Scheme progresses to enable completion of a robust assessment which will be presented in the PEIR and ES.

Current Baseline

12.4.11 This section sets out the traffic and transport information and data that would be relied upon to produce a detailed review of baseline conditions that would be contained within the PEIR and ES.

Traffic Data

12.4.12 Traffic data has been obtained from the latest available Department for Transport permanent counts to understand the existing traffic flow on the highway network within the study area. **Table 12-6** summarises the two-way traffic data on the 'A'-Roads.

Table 12-6: Average Annual Daily Traffic (AADT)

Road	Count ID	Two-way traffic flow	Year
A16 Main Road	46228	21,835	2022
A1111 Sutton Road	7516	9,206	2022
A1028 Bluestone Heath Road	8715	20,119	2022
A1031 Mablethorpe Road	17471	4,877	2022
A1101 Wisbech Road	37587	6,070	2022
A1104 Beesby Road	37590	3,698	2022
A1121 Boardsides	57598	8,818	2021
A151	802216	1,843	2019
A157 Peter's Lane	17471	4,877	2022
A158	81151	10,310	2022
A17 Boston Road	802216	1,843	2019
A17 Cowper's Gate	802221	154	2022
A17 Main Road	56216	23,680	2022
A17 Washway Road	56232	17,627	2022
A17 Wisbech Road	37587	6,070	2022
A52 Swineshead Road	940404	891	2019
A52 Mumby Road	802187	224	2022
A52 Boston Road	56543	6,682	2022
A52 Sutton Road	802187	224	2022

Personal Injury Collision Data

- 12.4.13 Highway safety is assessed by the frequency and severity of injury accidents that are attended by the police and recorded in official accident statistics. Intensification of use or changes in the composition of traffic have the potential to have an effect on collision rates.
- 12.4.14 The examination of recent collision statistics on routes within the study area will highlight any hotspots that need further examination. PIC records for the local highway network will be examined for the five-year period prior to the onset of the Covid-19 pandemic to allow for a full highway safety analysis to be undertaken which is unaffected by the Covid-19 pandemic, along with obtaining all PIC records since then to ensure a comprehensive analysis has been undertaken.

Public Rights of Way

- 12.4.15 Approximately 122 PRow would potentially be affected by the English Onshore Scheme. This includes 46 in the Boston and South Holland, 74 in East Lindsey, two in King's Lynn and West Norfolk. An initial list of the affected PRow is included at **Appendix 12.B** and will be updated during the preparation of the PEIR and finalised for the ES. For further baseline information see **Section 15.4 in Chapter 15: Socio-economics, Recreation, and Tourism**.
- 12.4.16 An assessment of all the affected PRow will be carried out and mitigation proposed where appropriate and reported in the PEIR and ES. Further detail will also be provided in an Outline Public Rights of Way Management Plan (PRowMP) provided to support the application.

Key Cycling Routes

- 12.4.17 A number of cycling routes within the **Figure 1-7: English Onshore Scheme Scoping Boundary** would potentially be affected by the English Onshore Scheme. This includes National Cycle Network (NCN) Route 1, a long-distance route in sections from Dover to the north of Scotland, and Sustrans South Wolds and Skegness cycle route ('the South Wolds Cycle Route'). For further baseline information see **Section 15.4 in Chapter 15: Socio-economics, Recreation, and Tourism**.
- 12.4.18 The details of the specific sections of the NCN as well as any other key local routes that could be impacted by the English Onshore Scheme will be defined in the PEIR and ES.

Future Baseline

- 12.4.19 In accordance with IEMA EATM (Ref 12.13) guidelines the assessment will be undertaken at the construction phase, year of opening of the English Onshore Scheme and/or the first full year of operation. Consideration will also be given to the phasing of the English Onshore Scheme.
- 12.4.20 The future baseline will take into account traffic growth as a result of new development which will be based on growth factors from the Department for Transport National Trip End Model (NTEM) (Ref 12.23) derived from the Trip End Model Presentation Programme (TEMPro). The use of TEMPro will include for cumulative traffic growth within the study area.
- 12.4.21 Engagement with the highway authorities will identify appropriate growth rates based on the traffic data available, future year of assessment and location of the English Onshore Scheme. This engagement will also seek to agree any significant development that may

need to be included as a specific committed development on top of the agreed TEMPro growth rate.

12.4.22 The future baseline will also consider the implications of changes to the transport infrastructure, such as changes to roads and or junctions and new infrastructure.

12.4.23 It is recognised that there are a number of other proposed and committed developments within the surrounding area that could alter the future baseline in the absence of the English Onshore Scheme. The potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined in **Part 4, Chapter 35: Cumulative Effects**.

12.5 Design and Control Measures

12.5.1 As there is a commitment to implementing these measures, and also to various standard sectoral practices and procedures, they are considered inherently part of the design of the English Onshore Scheme and have, therefore, been considered in the scoping assessment. Design and Control measures are listed in **Table 12-7**.

Table 12-7: Design and control measures

Receptor	Potential change and effect	Measure
Motorised and non-motorised users within the study area	Potential changes to the layout of the public highway and associated potential road safety effects.	All changes to the highway designed and carried out in accordance with appropriate design guidance.
Motorised and non-motorised users within the study area	Potential changes in traffic flows within the study area during the Construction/Decommissioning Phase and associated Traffic and Transport effects	Haul roads and loop road arrangements to be considered in the design of the English Onshore Scheme.
Motorised and non-motorised users within the study area	Potential changes in traffic flows within the study area during the Construction/Decommissioning Phase and associated Traffic and Transport effects	Outline CoCP
Non-motorised users within the study area	Changes in traffic flows within the study area during the Construction/Decommissioning Phase and associated Traffic and Transport effects	Outline PRoWMP

12.6 Scope of the Assessment

Potential Sensitive Receptors

12.6.1 The scope of the assessment provides comprehensive coverage of the routes surrounding the English Onshore Scheme and it will consider the implications of the construction and operation of the English Onshore Scheme. This will be focused on a series of traffic and transport receptors on the local and SRN. These receptor locations

will be defined as the English Onshore Scheme design develops in line with consultation with the relevant highway authorities. It is these receptors which will be taken forward into the assessment in relation to potential traffic and transport related effects.

12.6.2 Receptors are the users or beneficiaries of the highways network assets and facilities who travel within the vicinity of the English Onshore Scheme. IEMA EATM (Ref 12.13) guidelines identify the following user groups that may be affected:

- Non-motorised users;
- Public right of way users;
- Motorists and freight vehicles;
- Public transport; and
- Emergency services.

12.6.3 The IEMA EATM (Ref 12.13) guidelines also identify the following special interest that should be considered when defining sensitive receptors:

- People at home;
- People at work;
- Sensitive and/or vulnerable groups (including young age; older age; income; health status; social disadvantage; and access and geographic factors);
- Locations with concentrations of vulnerable users (e.g. hospitals, places of worships, schools);
- Retail areas;
- Recreational areas;
- Tourist attractions;
- Collision clusters and routes with safety concerns; and
- Junctions and highway links at (or over) capacity.

12.6.4 The IEMA EATM (Ref 12.13) guidelines indicate that the sensitive receptors within the study area will be assigned to the nearest highway link, and the relationship with the highway environment examined to understand the sensitivity of those receptors to change.

12.6.5 The highway link will then be assigned a sensitivity value according to the user groups and special interest potentially affected and this sensitivity to change is used in the assessment of significance.

Likely Significant Effects

12.6.6 **Table 12-8: Likely Significant Traffic and Transport Effects** outlines the likely significant effects associated with the above sensitive receptors which have been scoped into the traffic and transport assessment.

Table 12-8: Likely Significant Traffic and Transport Effects

Project phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
Construction	Severance, driver delay, pedestrian delay (incorporating delay to all non-motorised users), non-motorised user amenity, fear and intimidation, and road safety.	Non-motorised users, public right of way users, motorists and freight vehicles, public transport users, and emergency services.	Yes – There is the potential for significant effects where the assessment shows that the significance of effect is classified as significant for receptor/s.	Scoped in
Decommissioning	Severance, driver delay, pedestrian delay (incorporating delay to all non-motorised users), non-motorised user amenity, fear and intimidation, and road safety.	Non-motorised users, public right of way users, motorists and freight vehicles, public transport users, and emergency services.	Yes – There is the potential for significant effects where the assessment shows that the significance of effect is classified as significant for receptor/s.	Scoped in

Effects Scoped out of Assessment

12.6.7 **Table 12-9** outlines the effects which have been scoped out of the traffic and transport assessment.

Table 12-9: Effects scoped out of assessment

Development Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped out
Operation phase	Severance, driver delay, pedestrian delay (incorporating delay to all non-motorised users), non-motorised user amenity, fear and intimidation, and road safety.	Non-motorised users, PRow users, motorists and freight vehicles, public transport users, and emergency services.	No – during operation the converter station (including DCSS) would be operated by a small team and maintenance will be limited to routine activities that would not	Scoped out

			exceed the EATM thresholds therefore the magnitude of change and significance of effect will be negligible.	
Hazardous Loads	Severance, driver delay, pedestrian delay (incorporating delay to all non-motorised users), non-motorised user amenity, fear and intimidation, and road safety.	Roads, PRow and users of these routes.	No - no hazardous loads are anticipated and effects from these are therefore scoped out of the assessment.	Scoped out

12.6.8 These conclusions have been made based on the knowledge of the baseline environment and the nature of planned works.

12.6.9 It is considered that a Transport Assessment (TA) will not be required as the peak hour traffic flows associated with the English Onshore Scheme operational phase are anticipated to be very low and the operational phase has been scoped out. However, a transport technical note will be provided to supplement the ES/EIA Report to contain all movement-related forecasting and methodology upon which some of the other assessment chapters are based.

12.7 Assessment Methodology

Further Data to be Gathered / Processed

12.7.1 The overarching approach to the assessment methodology is set out in **Part 2, Chapter 5: EIA Approach and Methodology**. However, whilst this has informed the approach that has been used in this section, it is necessary to set out how this methodology will be applied, and adapted as appropriate, to address the specific needs of the transport assessment based on the appropriate guidance.

12.7.2 The IEMA EATM (Ref 12.13) guidelines set out that the following transport impacts that need to be considered in any traffic and transport assessment:

- Severance: the perceived division that can occur within a community when it becomes separated by major transport infrastructure. The term is used to describe a complex series of factors that separate people from places and other people;
- Driver Delay: traffic delays to non-development traffic;
- Pedestrian delay (incorporating delay to all non-motorised users): the ability of people to cross roads as a result of changes in traffic volume, composition and speed, the level of pedestrian activity, visibility and general physical conditions. Pedestrian delay and severance are closely related effects and be grouped together;

- Non-motorised user amenity: non-motorised user amenity is broadly defined as the relative pleasantness of a journey, considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic;
- Fear and intimidation: a further environmental impact that affects people is the fear and intimidation created by all moving objects. The extent of fear and intimidation is dependent on the total volume of traffic, the heavy vehicle composition, the speed these vehicles are passing, and the proximity of traffic to people;
- Road safety: the risk of accidents occurring where the English Onshore Scheme are expected to produce a change in the character of traffic;
- Road safety audits: The standard and prescribed Road Safety Audits (GG119 – Road Safety Audit DMRB) (Ref 12.24) will be used to review the road safety attributes of any proposed engineering changes in the adopted highway prior to submission of the PEIR and ES, if considered appropriate; and
- Hazardous loads/large loads: transportation of dangerous or hazardous loads by road.

12.7.3 The significance of an effect resulting from a development during construction or operation is most commonly assessed by reference to the sensitivity (or value) of a receptor and the magnitude of the change. This approach provides a mechanism for identifying areas where additional mitigation measures may be required to alleviate the risk presented by the English Onshore Scheme.

Receptor Sensitivity

12.7.4 The sensitive receptors within the agreed study area will be assigned to the nearest highway link, and the relationship with the highway environment examined to understand the sensitivity of those receptors to change in relation to all of the Traffic and Transport impacts being assessed.

12.7.5 The sensitivity of each highway link to be included in the assessment will be assigned a sensitivity in accordance with the advice provided in the IEMA EATM (Ref 12.13) guidelines, as summarised in **Table 12-10** and based on professional judgement. For example, if the route passes a school, care home or similar it would have a higher sensitivity due to the presence of vulnerable users. Similarly, if the route runs through the middle of a town or village, it will have a higher sensitivity than if there was limited direct access to the frontage of the infrastructure of the English Onshore Scheme.

Table 12-10: Receptor Sensitivity

Sensitivity	Description/Reason	Receptor
High	Receptors of high sensitivity to change in traffic flows: schools, colleges, playgrounds, accident blackspots, retirement homes and urban/residential homes without footways that are used by pedestrians and cyclists.	Residents/workers travelling to and from work or home on foot and by bicycle, school children, leisure walkers and equestrians.
Medium	Receptors of medium sensitivity to change in traffic flows including	Residents/workers travelling to and from work or home on foot

	congested junctions, doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, unsegregated cycle ways, community centres, parks, and recreation facilities.	and by bicycle, people visiting these land uses.
Low	Receptors with low sensitivity to change in traffic flows: places of worship, public open space, nature conservation areas, listed buildings, tourist/visitor attractions and residential areas with adequate footway provision.	Residents/workers travelling to and from work or home on foot or bicycle and people visiting these land uses.
Negligible	Receptors with negligible sensitivity to change in traffic flows including Motorways and Dual Carriageways and/or land uses sufficiently distant from affected routes and junctions.	Residents/workers travelling by foot or bicycle.

12.7.6 The sensitivity of a road link, or the immediate area through which it passes including PRow, is defined by the type of user groups who may use it. Vulnerable users include elderly residents and children. It is also necessary to consider footpath and cycle route networks that cross the roads within the study area.

12.7.7 In accordance with the IEMA EATM (Ref 12.13) guidelines, where the sensitivity of a road link is judged as medium or high, Rule 2 will be applied and where traffic flows are predicted to increase by 10% or more, an assessment of environmental effects will be undertaken.

12.7.8 Where the sensitivity is judged as low or negligible results, Rule 1 will be applied and where traffic flows are predicted to increase by more than 30%, or where the number of HGVs is predicted to increase by more than 30%, an assessment of environmental effects will be undertaken of the road link.

Magnitude of Change

12.7.9 The traffic generated by the English Onshore Scheme will be used to assess the impacts on the key links and junctions on the surrounding network. The likely effects of the English Onshore Scheme in environmental terms will be evaluated in accordance with IEMA EATM (Ref 12.13) guidelines as outlined in following sub-sections.

12.7.10 The guidelines acknowledge that for many effects, there are no simple rules or formulae which define thresholds of significance and there is, therefore, a need for interpretation and the application of professional judgement on the part of the assessor, backed up by data or quantified information. Such judgement will include the assessment of the number of people impacted and the sensitivity of those people, as well as the assessment of damage to various natural or cultural resources.

Severance and Pedestrian Delay (incorporating delay to all non-motorised users)

12.7.11 Severance occurs in a community when a major artery separates people from places and other people. Severance occurs from difficulty of crossing a road or where the road itself creates a physical barrier. Severance can be caused to pedestrians or motorists. IEMA EATM (Ref 12.13) guidelines state that historical guidance published by the Department for Transport suggested changes in total traffic flow of 30%, 60% and 90% result in slight, moderate, and substantial changes in severance respectively. EATM notes that this guidance no longer appears in Department for Transport guidance but has not been superseded by subsequent changes and is established through planning case law. On this basis, it is considered appropriate to continue using these indicators to assess severance. **Table 12-11** contains how the magnitude of impacts on sensitive receptors shall be reported within this preliminary assessment with respect to severance.

Table 12-11: Magnitude of Impact (Severance and Pedestrian Delay)

	Magnitude of Impact (degree of change)				
	No Change	Negligible	Minor	Moderate	Major
Severance / Pedestrian Delay	No change in traffic flow	Change in total traffic flow of <30%	Change in total traffic flow of 30% to 60%	Change in total traffic flow of 61% to 90%	Change in total traffic flow of >90%

Driver Delay

12.7.12 The use of industry standard junction capacity modelling programmes (Junctions 10 and LINSIG) provides a methodology to quantify junction delay. Driver delay is only likely to be significant where the existing study area highway network is at or close to capacity.

12.7.13 Magnitude of impact is derived using professional judgment informed by the increase in vehicle delay and whether a junction is at, or close to capacity. Alternatively, the forecast change in traffic flows can be used to assess magnitude of impact. Impacts to local network performance will be assessed and impacts to driver delay presented in the ES.

12.7.14 In accordance with EATM (2023), this approach is considered to be appropriate to assess driver delay.

Non-motorised User Amenity

12.7.15 NMU amenity is broadly defined as the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition, pavement width and separation between vehicles and pedestrians. The impact manifests itself in fear and intimidation, exposure to noise and vehicle emissions. EATM states that historical guidance published by the Department for Transport suggested that a doubling or halving of total traffic flow or the HGV composition could lead to perceptible adverse or beneficial impacts upon NMU amenity. IEMA EATM (Ref 12.13) guidelines note that this guidance no longer appears in Department for Transport guidance but has not been

superseded by subsequent changes and is established through planning case law. On this basis, it is considered appropriate to continue using these indicators to assess NMU amenity. **Table 12-12** contains how the magnitude of impacts on receptors shall be reported within this preliminary assessment with respect to NMU amenity.

Table 12-12: Magnitude of Impact (NMU Amenity)

	Magnitude of Impact				
	No Change	Negligible	Minor	Moderate	Major
NMU Amenity	No change in traffic flow	Changes in traffic flow (or HGV component) <30%	Changes in traffic flow (or HGV component) >30 and <50%	Changes in traffic flow (or HGV component) of 50% to 100%	Changes in traffic flow (or HGV component) of >100%

Fear and Intimidation

12.7.16 The IEMA EATM (Ref 12.13) guidelines state that the extent of fear and intimidation is dependent on the total volume of traffic, the heavy vehicle composition, the speed that these vehicles are passing and the proximity of traffic to people. IEMA EATM (Ref 12.13) guidelines provide a weighted system to provide an approximation of the likelihood of pedestrian fear and intimidation. The degree of hazard is assessed with reference to the established thresholds (a, b and c) (see **Table 12-13**) and a score is provided for each combination on a highway link under consideration (see **Table 12-14**). The magnitude of impact is approximated with reference to changes in the level of fear and intimidation from baseline conditions (see **Table 12-15**).

Table 12-13: Fear and Intimidation Degree of Hazard

Average traffic flow over 18-hour day – all vehicles/hour 2-way (a)	Total 18-hour heavy vehicle flow (b)	Average vehicle speeds (mph) (c)	Degree of hazard score
+1,800	+3,000	-> 40	30
1,200 – 1,800	2,000 – 3,000	30 – 40	20
600 – 1,200	1,000 – 2,000	20 – 30	10
<600	<1,000	<20	0

Table 12-14: Levels of Fear and Intimidation

Level of fear and intimidation	Total hazard score (a) + (b) + (c)
Extreme	71+
Great	41 – 70
Moderate	21 – 40

Small

0 - 20

Table 12-15: Magnitude of Impact (Fear and Intimidation)

Magnitude of impact	Change in step/traffic flows (AADT) from baseline conditions
High	Two step changes in level
Medium	One step change in level, but with >400 veh increase in average 18hr All Vehicle (AV) two-way all vehicles flow; and/or >500 Heavy Vehicle (HV) increase in total 18hr HV flow.
Low	One step change in level with <400 veh increase in average 18hr AV two-way all vehicle flow; and/or <500 HV increase in total 18hr HV flow.
Negligible	No change in step changes
No Change	No observable impact.

Road Safety

- 12.7.17 Road safety is assessed by the frequency and severity of injury accidents that are attended by the police and recorded in official accident statistics. Intensification of use or changes in the composition of traffic has the potential to have an effect on collision rates. The examination of recent collision statistics on routes within the study area will highlight any hotspots that need further examination.
- 12.7.18 The PIC records for the local highway network will be examined for the five-year period prior to the onset of the Covid-19 pandemic to allow for a full road safety analysis to be undertaken which is unaffected by the Covid-19 pandemic, along with obtaining all PIC records since then to ensure a comprehensive analysis has been undertaken. In accordance with IEMA EATM (Ref 12.13) guidelines, this approach is considered to be appropriate to assess road safety.
- 12.7.19 Magnitude of impact derived using professional judgment informed by the frequency and severity of recorded collisions within the study area and the forecast increase in traffic.

Road Safety Audits

- 12.7.20 The IEMA EATM (Ref 12.13) guidelines state that the standard and prescribed Road Safety Audits (GG 119 – Road Safety Audit DMRB) (Ref 12.24) should be used to review the road safety attributes of any proposed engineering changes in the adopted highway prior to submission.

Further Data to be Gathered / Processed

- 12.7.21 In addition to the data sources listed in **Section 12.4**, assessment within the PEIR and ES would be supported by the following additional information:

- Commissioned traffic counts - to supplement the existing traffic data from Department for Transport and Local Authorities;
- NMU PRow counts - to supplement any available existing data available from the Local Authorities;
- Site visit - a site visit will be required to inform the assessment and clarify the high-level desktop based assessments. Detailed notes and a photographic record will be undertaken on the site visit and consideration will be given to the identification of sensitive receptor locations; and
- Traffic generation as a result of the English Onshore Scheme will be identified as the project progresses and the transport related environmental effects will be assessed.

12.7.22 The scope and extent of data to be gathered in and processed will be discussed and agreed with the Local Highway Authorities through further technical discussions.

Determination of Significance

12.7.23 **Table 12-16** and **Table 12-17** combines sensitivity with the magnitude of impact (degree of change), classifying the effects as negligible, minor, moderate or major (adverse or beneficial). The significance matrices are based on Table 3.8.1 from LA104 (Ref 12.17) and adjusted where required.

Table 12-16: Significance Evaluation Matrix (Severance, Pedestrian Delay, NMU Amenity, Driver Delay)

		Magnitude of Change				No Change
		Major	Moderate	Minor	Negligible	
Receptor Sensitivity	Very High	Very Large (significant)	Large (significant)	Moderate (significant)	Slight (Not significant)	Neutral (not significant)
	High	Large (significant)	Moderate (significant)	Moderate (significant)	Slight (not significant)	Neutral (not significant)
	Medium	Moderate (significant)	Moderate (significant)	Slight (not significant)	Neutral (not significant)	Neutral (not significant)
	Low	Moderate (significant)	Slight (not significant)	Slight (not significant)	Neutral (not significant)	Neutral (not significant)
	Negligible	Slight (not significant)	Neutral (not significant)	Neutral (not significant)	Neutral (not significant)	Neutral (not significant)

Table 12-17: Significance Evaluation Matrix (Fear and Intimidation)

		Magnitude of Change				No Change
		High	Medium	Low	Negligible	
Very High	Very Large (significant)	Large (significant)	Moderate (significant)	Slight (Not significant)	Neutral (not significant)	

Receptor Sensitivity	High	Large (significant)	Moderate (significant)	Moderate (significant)	Slight (not significant)	Neutral (not significant)
	Medium	Moderate (significant)	Moderate (significant)	Slight (not significant)	Neutral (not significant)	Neutral (not significant)
	Low	Moderate (significant)	Slight (not significant)	Slight (not significant)	Neutral (not significant)	Neutral (not significant)
	Negligible	Slight (not significant)	Neutral (not significant)	Neutral (not significant)	Neutral (not significant)	Neutral (not significant)

12.7.24 The assessment of the significance of environmental effects shall also cover the following factors:

- The duration (long or short-term); permanence (permanent or temporary) and changes in significance (increase or decrease);
- Reversibility - e.g. is the change reversible or irreversible, permanent or temporary; and
- Feasibility and mechanisms for delivering mitigating measures, e.g. Is there evidence of the ability to legally deliver the environmental assumptions which are the basis for the assessment?

12.7.25 'Significant effects' comprise residual effects that are within the moderate, large or very large categories for the purposes of this EIA; neutral or slight effects are 'not significant'.

12.8 Assessment Limitations and Assumptions

12.8.1 The following limitations and assumptions have been identified:

- The construction phasing and associated construction worker profile will be developed with the Applicant and the Front End Engineering Design (FEED) team. This will feed into discussions regarding assessment scenarios and will be shared with the highway authorities; and
- The assessment presented in the PEIR and ES will include the latest design information available at the time of the submission. Where design information is not available, reasonable worst case assumptions will be made.

Bibliography

Ref 12.1 UK Government (1980). Highways Act 1980

Ref 12.2 Department for Transport. (1991). New Roads and Street Works Act 1991

Ref 12.3 Department for Transport. (2004). Traffic Management Act 2004

Ref 12.4 Department of Energy and Climate Change, (2023). Overarching National Policy Statement for energy (EN-1)

Ref 12.5 Ministry of Housing, Communities & Local Government. (2023). National Planning Policy Framework

Ref 12.6 East Lindsey Local Plan (2018)

Ref 12.7 Lincolnshire Local Transport Plan 5

Ref 12.8 South East Lincolnshire Local Plan (2011 – 2036)

Ref 12.9 King's Lynn & West Norfolk Site Allocations and Development Management Policies Plan (2011 – 2026)

Ref 12.10 King's Lynn & West Norfolk Borough Council Local Development Framework – Core Strategy (2011 – 2026)

Ref 12.11 Norfolk Local Transport Plan 4 (2021 – 2036)

Ref 12.12 Department for Transport and National Highways. (2022). Strategic road network and the delivery of sustainable development

Ref 12.13 Institute of Environmental Management and Assessment. (2023). Environmental Assessment of Traffic and Movement

Ref 12.14 Ministry of Housing, Communities & Local Government. (2014). Planning Practice Guidance. Travel Plans, Transport Assessments and Statements

Ref 12.15 Highways England. (2019). LA 101 - Introduction to environmental assessment

Ref 12.16 Highways England. (2020). LA 103 - Scoping projects for environmental assessment

Ref 12.17 Highways England. (2020). LA 104 - Environmental assessment and monitoring

Ref 12.18 Highways England. (2020). LA 112 - Population and human health

Ref 12.19 Institute of Environmental Assessment. Guidelines for the Environmental Assessment of Road Traffic

Ref 12.20 Transport Strategy and High Level Programme for Cambridge and South Cambridge (2014)

Ref 12.21 Department of Energy and Net Zero, (2023). National Policy Statement for Electricity Networks Infrastructure (EN-5)

Ref 12.22 Fenland Transport Strategy (2023)

Ref 12.23 Department for Transport National Trip End Model (NTEM)

Ref 12.24 Design Manual for Roads and Bridges. General Principles and Scheme Governance - GG 119 Road safety audit

13. Noise and Vibration

13. Noise and Vibration

13.1 Introduction

- 13.1.1 The noise and vibration assessment will consider the potentially significant effects on sensitive human and ecological receptors which may arise from the construction and operation of the English Onshore.
- 13.1.2 This chapter of the Scoping Report sets out the relevant legislation, planning policy context and technical guidance used to inform the scope of the assessment and summarises any consultation and engagement in relation to noise and vibration undertaken to date. It provides an overview of the baseline conditions relevant to noise and vibration within/around the Scoping Boundary, the measures which will be incorporated into the Project to mitigate noise and vibration effects, the likely significant effects to be considered within the assessment, and how these likely significant effects will be assessed for the purpose of an EIA.
- 13.1.3 This chapter should be read in conjunction and considered alongside the following chapters found in Volume 1:
- **Part 2 Chapter 4: English Onshore Scheme**
 - **Part 2, Chapter 5: EIA Methodology**
 - **Part 2, Chapter 6: Biodiversity**
 - **Part 2, Chapter 7: Cultural Heritage**
 - **Part 2, Chapter 8: Landscape and Visual Amenity**
 - **Part 2, Chapter 16: Health and Wellbeing**
 - **Part 4, Chapter 35: Cumulative Effects.**

13.2 Relevant Legislation, Planning Policy and Technical Guidance

- 13.2.1 This section identifies the relevant legislation, national and local policy and guidance which will inform the scope of the noise and vibration assessment.

Legislation

- 13.2.2 A summary of the key legislation considered, but not limited to, in the scope of noise and vibration effects is outlined in **Table 13-1**.

Table 13-1: Legislation relevant to noise and vibration

Legislation	Legislative Context	Section Considered
Environmental Protection Act (1990) (EPA) (as amended by the Noise and Statutory Nuisance Act 1993)	The EPA sets out: the definition of statutory nuisance due to noise; the duty on local authorities to	Section 13.5 Design and Control Measures Section 13.7 Assessment Methodology

Legislation	Legislative Context	Section Considered
(particularly Section 79) (Ref 13.1)	<p>investigate and abate nuisance; and defence against abatement because “<i>best practicable means</i>” has been employed to minimise noise (including vibration) for business premises. The EPA sets out the means for a person affected by noise nuisance to seek abatement through the courts.</p> <p>The Noise and Statutory Nuisance Act sets out an extension of powers to abate noise nuisance to a wider range of sources than the EPA.</p>	
The Control of Pollution Act (1974) (particularly Sections 60 and 61) (CoPA) (Ref 13.2)	<p>Sets out the Section 60 notice which local authorities can serve so as to impose requirements upon relevant construction activities with regard to the control of noise.</p> <p>Under Section 61 of the CoPA, the party that intends to carry out works to which Section 60 applies may apply to the local authority for consent and “<i>an application under this section shall contain particulars of –</i> <i>The works, and method by which they are to be carried out; and</i> <i>The steps proposed to be taken to minimise noise resulting from the works”.</i></p>	Section 13.5 Design and Control Measures and Section 13.7 Assessment Methodology

Planning Policy

13.2.3 A summary of the planning policies at both a national and local level relevant to the scope of noise and vibration effects is given in **Table 13-2** and **Table 13-3**.

Table 13-2: Planning Policy relevant to noise and vibration

Policy Reference	Policy Context	Section Considered
Overarching National Policy Statement for Energy (EN-1) (2024) (Ref 13.3)		
Paragraph 5.12.1-5.12.4	These paragraphs of EN-1 set the context of the potential adverse effects that excessive noise and vibration can have on human health, wildlife and buildings. Noise can also have an adverse impact on the value of a landscape and quality of enjoyment in an area.	Section 13.7 Assessment Methodology
Paragraph 5.12.5	<p>Sets out “<i>the factors that will determine the likely noise impact of a proposed development include:</i></p> <ul style="list-style-type: none"> • <i>the inherent operational noise from the proposed development, and its characteristics</i> • <i>the proximity of the proposed development to noise sensitive premises (including residential properties, schools and hospitals) and noise sensitive areas (including certain parks and open spaces)</i> • <i>the proximity of the proposed development to quiet places and other areas that are particularly valued for their soundscape or landscape quality</i> • <i>the proximity of the proposed development to sites where noise may have an adverse impact on protected species or other wildlife, including migratory species</i> • <i>the potential presence of unexploded ordnance on the seabed”.</i> 	Section 13.7 Assessment Methodology
Paragraph 5.12.6	<p>States that:</p> <p><i>“Where noise impacts are likely to arise from the proposed development, the</i></p>	Section 13.5 Design and Control Measures

Policy Reference	Policy Context	Section Considered
	<p><i>applicant should include the following in the noise assessment:</i></p> <ul style="list-style-type: none"> <li>● <i>a description of the noise generating aspects of the development proposal leading to noise impacts, including the identification of any distinctive tonal characteristics, if the noise is impulsive, whether the noise contains particular high or low frequency content or any temporal characteristics of the noise</i> <li>● <i>identification of noise sensitive receptors and noise sensitive areas that may be affected</i> <li>● <i>the characteristics of the existing noise environment</i> <li>● <i>a prediction of how the noise environment will change with the proposed development</i> <ul style="list-style-type: none"> <li>● <i>in the shorter term, such as during the construction period</i> <li>● <i>in the longer term, during the operating life of the infrastructure</i> <li>● <i>at particular times of the day, evening and night (and weekends) as appropriate, and at different times of year</i> <li>● <i>an assessment of the effect of predicted changes in the noise environment on any noise-sensitive receptors, including an assessment of any likely impact on health and quality of life / well-being where appropriate, particularly among those disadvantaged by other factors who are often</i> 	<p>Section 13.7 Assessment Methodology</p>

Policy Reference	Policy Context	Section Considered
	<p><i>disproportionately affected by noise-sensitive areas</i></p> <ul style="list-style-type: none"> <i>if likely to cause disturbance, an assessment of the effect of underwater or subterranean noise</i> <i>all reasonable steps taken to mitigate and minimise potential adverse effects on health and quality of life</i>". 	
Paragraph 5.12.7	The nature and extent of the noise assessment should be proportionate to the likely noise impact.	Section 13.7 Assessment Methodology
Paragraph 5.12.8	Applicants should consider the noise impact of ancillary activities associated with the development, such as increased road and rail traffic movements, or other forms of transportation.	Section 13.7 Assessment Methodology
Paragraph 5.12.9	<p>Paragraph states that: "<i>Operational noise, with respect to human receptors, should be assessed using the principles of the relevant British Standards and other guidance</i>".</p> <p>It further describes "<i>For the prediction, assessment and management of construction noise, reference should be made to any relevant British Standards and other guidance which also give examples of mitigation strategies</i>".</p>	Section 13.7 Assessment Methodology
National Policy Statement for Electricity Networks Infrastructure (EN-5) (2024) (Ref 13.4)		
Paragraph 2.9.26	All high voltage transmission lines have the potential to generate noise under certain conditions.	Section 13.5 Design and Control Measures Section 13.7 Assessment Methodology
Paragraph 2.9.27 - 2.9.26	<p>These paragraphs set the context of the potential for adverse noise effects that may be associated with the operation of overhead lines and overhead line fittings such as spacers, insulators and clamps.</p> <p>Paragraph 2.9.34 notes that transmission line audible noise is</p>	Section 13.6 Scope of the Assessment Section 13.7 Assessment Methodology

Policy Reference	Policy Context	Section Considered
Paragraph 2.9.37 – 2.9.39	<p><i>“generally categorised as ‘crackle’ or ‘hum’, according to its tonal content”.</i></p> <p>Paragraphs note the potential audible noise effects that can arise from substation equipment such as transformers, quadrature boosters and mechanically switched capacitors which can generate low frequency hum. EN-5 also state that</p> <p><i>“For the assessment of noise from substations, standard methods of assessment and interpretation using the principles of the relevant British Standards are satisfactory”.</i></p>	Section 13.7 Assessment Methodology
Paragraph 2.9.40 – 2.9.42	<p>It is noted within EN-5 that: <i>“For the assessment of noise from overhead lines, the applicant must use an appropriate method to determine the sound level produced by the line in both dry and wet weather conditions, in addition to assessing the impact on noise-sensitive receptors.</i></p> <p><i>For instance, the applicant may use an appropriate noise modelling tool or tools for the prediction of overhead line noise and its propagation over distance, such as an ISO 9613-2 or Technical Report TR(T)94.</i></p> <p><i>When assessing the impact of noise generated by overhead lines in wet weather relative to existing background sound levels, the applicant should consider the effect of varying background sound levels due to rainfall”.</i></p>	Section 13.6 Scope of the Assessment Section 13.7 Assessment Methodology
Noise Policy Statement for England (NPSE)		
Paragraph 1.6	<p>Sets out the long-term vision of Government noise policy, i.e. to <i>“promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development”.</i></p>	Section 13.5 Design and Control Measures Section 13.7 Assessment Methodology
Paragraph 1.7	<p>The NPSE vision is supported by aims to effectively manage and control environmental, neighbour and</p>	Section 13.5 Design and Control Measures

Policy Reference	Policy Context	Section Considered
Paragraph 2.20	<p>neighbourhood noise within the context of Government policy on sustainable development by avoiding significant adverse impacts, mitigating and minimising adverse impacts and contributing to the improvement of health and quality of life.</p> <p><i>“To identify ‘significant adverse’ and ‘adverse’ impact in line with the three aims of NPSE there are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organization:</i></p> <ul style="list-style-type: none"> • <i>No Observed Effect Level (NOEL): This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise</i> • <i>Lowest Observed Adverse Effect Level (LOAEL): This is the level above which adverse effects on health and quality of life can be detected. Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.</i> • <i>Significant Observed Adverse Effect Level (SOAEL). This is the level above which significant adverse effects on health and quality of life occur”.</i> 	Section 13.7 Assessment Methodology
Paragraph 2.24	<p><i>Where an impact lies somewhere between LOAEL and SOAEL all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development. This does not</i></p>	Section 13.5 Design and Control Measures Section 13.7 Assessment Methodology

Policy Reference	Policy Context	Section Considered
	<i>mean that such adverse effects cannot occur”.</i>	
Paragraph 2.22	<p>The NPSE notes that “<i>it is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations.</i></p> <p><i>Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise.</i></p> <p><i>However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available”.</i></p>	Section 13.7 Assessment Methodology
National Planning Policy Framework (NPPF) (2023) (Ref 13.5)		
Paragraph 180	<p>Planning decisions should mitigate and reduce to a minimum adverse impact and avoid noise giving rise to significant adverse impacts on health and the quality of life from noise from new development; tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value should be identified and protected.</p>	Section 13.5 Design and Control Measures Section 13.7 Assessment Methodology
Paragraph 170	<p>Planning decisions should contribute to and enhance the natural and local environment by preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of noise pollution.</p>	Section 13.5 Design and Control Measures Section 13.7 Assessment Methodology

Table 13-3: Local planning policy relevant to noise and vibration

Local Policy

South East Lincolnshire Local Plan 2011-2036 (Adopted March 2019) (South Holland and Boston) (Ref 13.6)

Local Policy

Policy 2 Development Management	<p><i>“Proposals requiring planning permission for development will be permitted provided that sustainable development considerations are met, specifically in relation to:</i></p> <p><i>[....]</i></p> <p><i>6. impact upon neighbouring land uses by reason of noise, odour, disturbance or visual intrusion;”</i></p>	Section 13.5 Design and Control Measures Section 13.7 Assessment Methodology
Policy 30 Pollution	<p><i>“Development proposals will not be permitted where, taking account of any proposed mitigation measures, they would lead to unacceptable adverse impacts upon:</i></p> <p><i>1. health and safety of the public;</i></p> <p><i>2. the amenities of the area;</i></p> <p><i>or</i></p> <p><i>3. the natural, historic and built environment;</i></p> <p><i>by way of:</i></p> <p><i>[....]</i></p> <p><i>5. noise including vibration;</i></p> <p><i>[...]</i></p> <p><i>Suitable mitigation measures will be provided, if required. Proposals will be refused if impacts cannot be suitably mitigated or avoided”.</i></p>	Section 13.5 Design and Control Measures Section 13.7 Assessment Methodology
Policy 31 Climate Change and Renewable and Low Carbon Energy	<p><i>“B. Renewable Energy</i></p> <p><i>With the exception of Wind Energy the development of renewable energy facilities, associated infrastructure and the integration of decentralised technologies on existing or proposed structures will be permitted provided, individually, or cumulatively, there would be no significant harm to:</i></p> <p><i>[...]</i></p>	Section 13.5 Design and Control Measures Section 13.7 Assessment Methodology

Local Policy

2. residential amenity in respect of: noise, fumes, odour, vibration, shadow flicker, sunlight reflection, broadcast interference, traffic;

[...]

Provision should be made for post-construction monitoring and the removal of the facility and reinstatement of the site if the development ceases to be operational. Proposals by a local community for the development of renewable and low carbon sources of energy, in scale with their community's requirements, including supporting infrastructure for renewable energy projects, will be supported and considered in the context of contributing to the achievement of sustainable development and meeting the challenge of climate change and against criteria B1-7".

East Lindsey Local Plan Core Strategy (Adopted July 2018) (Ref 13.7)

Strategic Policy 27 (SP27) – Renewable and Low Carbon Energy

"1. Large-scale renewable and low carbon energy development, development for the transmission and interconnection of electricity, and infrastructure required to support such development, will be supported where their individual or cumulative impact is, when weighed against the benefits, considered to be acceptable in relation to:

a) residential amenity;

c) the significance (including the setting) of a historic garden, park, battlefield, building, conservation area,

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Local Policy

archaeological site or other heritage asset;

d) sites or features of biodiversity or geodiversity importance, or protected species;

3. Development within or affecting the setting of the Lincolnshire Wolds Area of Outstanding Natural Beauty, and landscape areas defined as highly sensitive within the East Lindsey Landscape Character Assessment, will only be permitted in exceptional circumstances, where the development is in the public interest and considering the following:

c) any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be satisfactorily moderated.

3.[sic] The presumption will be for connecting cables to be placed underground, or use made of existing or replacement infrastructure (of the same size and scale) along existing routes to carry any additional base load cabling”.

Strategic Policy 28 (SP28) –
Infrastructure and S106
Obligations

“1. Infrastructure schemes will be supported provided they are essential in the national interest; contribute to sustainable development and respect the distinctive character of the district.

2. Infrastructure schemes should be accompanied by an impact assessment that shows how the proposal impacts on the landscape or local setting of the area, including individual and

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Methodology

Local Policy

cumulative effects. It should identify what steps have been taken to minimize its effects and the alternative options that have been considered”.

The Fenland Local Plan May (2014) (Ref 13.8)

Policy LP16 – Delivering and Protecting High Quality Environments across the District	<p><i>“High quality environments will be delivered and protected throughout the district. Proposals for all new development, including where appropriate advertisements and extensions and alterations to existing buildings, will only be permitted if it can be demonstrated that the proposal meets all of the following relevant criteria:</i></p> <p><i>façade does not adversely impact on the amenity of neighbouring users such as noise, light pollution, loss of privacy and loss of light.</i></p> <p><i>(I) identifies, manages and mitigates against any existing or proposed risks from sources of noise, emissions, pollution, contamination, odour and dust, vibration, landfill gas and protects from water body deterioration”.</i></p>	Section 13.5 Design and Control Measures Section 13.7 Assessment Methodology
Policy LP14 – Responding to Climate Change and Managing the Risk of Flooding in Fenland Part (A) Resource Use, Renewable Energy and Allowable Solutions	<p><i>“Renewable Energy: Renewable energy proposals will be supported and considered in the context of sustainable development and climate change. Proposals for renewable energy technology, associated infrastructure and integration of renewable technology on existing or proposed structures will be assessed both individually and cumulatively on their merits</i></p>	Section 13.5 Design and Control Measures Section 13.7 Assessment Methodology

Local Policy

taking account of the following factors;

[...]

- *Noise impact*

[...]

The granting or refusal of planning permission for wind turbines will be informed by up-to-date local evidence and, if produced as anticipated, a Resource Use Supplementary Planning Document.

Renewable energy proposals which will directly benefit a local community in the medium and long term and/or are targeted at residents experiencing fuel poverty will be particularly supported”.

King's Lynn and West Norfolk Core Strategy: Site Allocations and Development Management Policies Plan Adopted September 2016 (Ref 13.9)

Policy DM 20 – Renewable Energy

“Proposals for renewable energy (other than proposals for wind energy development) and associated infrastructure, including the landward infrastructure for offshore renewable schemes, will be assessed to determine whether or not the benefits they bring in terms of the energy generated are outweighed by the impacts, either individually or cumulatively, upon:

- *[...] Amenity (in terms of noise, overbearing relationship, air quality and light pollution)*

Development may be permitted where any adverse impacts can be satisfactorily mitigated against and such mitigation can be secured either by planning condition or by legal agreement”.

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Section 13.7 Assessment Methodology

Technical Guidance

13.2.4 A summary of the relevant technical guidance is given in **Table 13-4**.

Table 13-4: Technical Guidance relevant to Noise and Vibration

Technical Guidance Document	Context
National Planning Practice Guidance (Ref 13.10)	Guidance relating to the processes and tools that can be used through the planning system in England. It includes guidance relating to how planning can manage potential noise effects in new development
Institute of Environmental Management and Assessment (IEMA), Guidelines for Environmental Noise Impact Assessment (Ref 13.11)	Presents guidelines on how the assessment of noise effects should be presented within the Environmental Impact Assessment (EIA) process. The IEMA guidelines cover aspects such as; scoping, baseline, prediction and example definitions of significance criteria.
British Standard (BS) 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites. Noise' (herein referred as BS 5228-1) (Ref 13.12)	Provides guidance on the assessment and control of noise from construction sites, along with suggestions for the derivation of guideline levels for impact assessment.
BS 5228-2:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites. Vibration' (herein referred as BS 5228-2) (Ref 13.13)	Provides guidance on the assessment and control of vibration from construction sites, along with suggestions for the derivation of guideline vibration levels.
BS 7385-2:1993, Evaluation and measurement for vibration in buildings. Guide to damage levels from groundborne vibration' (herein referred as BS 7385-2) (Ref 13.14)	Guidance on the levels of ground borne vibration which could have the potential to lead to the damage of building structures.
Calculation of Road Traffic Noise (CRTN) 1988 (Ref 13.15)	Describes procedures for calculating noise from road traffic.
Design Manual for Roads and Bridges (DMRB) LA 111: Noise and Vibration (National Highways, 2020) (Ref 13.16)	Guidance document provides methodology for the assessment of noise from road traffic, particularly from new and altered roads. Also provides modifications to CRTN and a methodology for the assessment of noise and vibration from construction traffic.

<p>BS 4142:2014+A1:2019, Methods for rating and assessing industrial and commercial sound (herein referred as BS 4142) (Ref 13.17)</p>	<p>The standard is used to rate and assess sound of an industrial nature including, but not limited to, assessing sound from proposed, new, modified or additional sources of industrial sound, and sound at proposed new dwellings. It contains guidance on the monitoring and assessment of industrial and commercial sound sources (including fixed installations comprising mechanical and electrical plant and equipment) affecting sensitive receptors.</p>
<p>ISO 9613-2:2024 Acoustics Attenuation of sound during propagation outdoors Part 2: Engineering method for the prediction of sound pressure levels outdoors (Ref 13.18)</p>	<p>Defines a method for calculating the attenuation of sound during propagation outdoors in order to predict the levels of environmental noise at distances from a source.</p>

13.3 Consultation and Engagement

13.3.1 To date, no engagement in relation to noise and vibration has been undertaken. However, in advance of the PEIR and ES, engagement would be undertaken with the following key stakeholders relevant to noise and vibration to discuss the proposed assessment methodology:

- Lincolnshire County Council
- Norfolk County Council
- Cambridgeshire County Council
- East Lindsey District Council
- Boston Borough Council
- South Holland District Council
- Borough Council of King’s Lynn and West Norfolk
- Fenland District Council.

13.4 Baseline Conditions

Study Area

13.4.1 A number of specific study areas for the noise and vibration assessment will be defined as part of the PEIR. These study areas will be in accordance with appropriate guidance, as set-out below and through consultation with relevant stakeholders as noted in **Section 13.3**.

Construction Noise

- 13.4.2 For the assessment of construction noise the study area would comprise the closest Noise Sensitive Receptors (NSRs) within 300 m from the proposed construction works associated with the English Onshore Scheme. This is based on guidance contained within BS 5228-1 (Ref 13.12).

Construction Vibration

- 13.4.3 The proposed study area for construction vibration, based on guidance BS 5228-2 (Ref 13.13) comprises vibration sensitive receptors (VSRs) within 100 m from the closest construction activity with potential to generate vibration impacts.

Construction Traffic

- 13.4.4 Noise from construction traffic on the existing road network would be assessed for each applicable road affected and defined based on the traffic data. The assessment would consider the change in Basic Noise Level (BNL), calculated in line with the methodology described in technical memorandum CRTN (Ref 13.15), with a subsequent assessment of the impacts on NSRs within 50 m of routes where potential significant effects are identified.

Operation

- 13.4.5 The proposed study area for operational static facility noise including direct current switching stations, converter stations and any substations consists of the closest NSRs to these facilities to enable assessment in accordance with BS 4142 (Ref 13.17).

Data Gathering Methodology

- 13.4.6 The baseline assessment has been informed by a desk study which has drawn on the following information sources:
- 1:25,000 and 1:50,000 Ordnance Survey (OS) maps;
 - Aerial photography, Google Earth and Google Maps Street View;
 - Open source GIS data; and
 - Noise Important Area data (NIAs).

Current Baseline

- 13.4.7 This section sets out the noise and vibration information and data that would be relied upon to produce a detailed review of baseline conditions that would be contained within the PEIR and ES. The Scoping Boundary has been designed, as far as practicable, to avoid towns and large collections of noise and vibration sensitive receptors. A description of the option selection process is described in **Part 2 Chapter 3: Consideration of Alternatives**.
- 13.4.8 The Scoping Boundary does, however, cross, or partly cross, larger built-up settlements, including the outskirts of Boston (Wyberton Fen and Frampton Fen) and Holbeach (Cackle Hill). In addition, there are a number of settlements that fall within the Scoping Boundary as listed in **Table 13-5**:

Table 13-5: Settlements that fall within the Scoping Boundary

Settlement Name	Local Authority	Settlement Type
Theddlethorpe St Helen	East Lindsey	Village
Strubby	East Lindsey	Village
Maltby le Marsh	East Lindsey	Village
Beesby	East Lindsey	Village
Saleby	East Lindsey	Village
Huttoft	East Lindsey	Village
Anderby	East Lindsey	Village
Sloothby	East Lindsey	Village
Welton le Marsh	East Lindsey	Village
Orby	East Lindsey	Village
Halton Hologate	East Lindsey	Village
Great Steeping	East Lindsey	Village
Halton Fenside	East Lindsey	Village
Little Steeping	East Lindsey	Village
New Leake	East Lindsey	Village
Stickney	East Lindsey	Village
Eastville	East Lindsey	Village
Friskney Eaudyke	East Lindsey	Village
Northlands	East Lindsey	Village
Sibsey Fen Side	East Lindsey	Village
Sibsey	East Lindsey	Village
Frithville	East Lindsey	Village
Fishtoft Drove	East Lindsey	Village
Anton's Gowt	East Lindsey	Village
Hubbert's Bridge	Boston Borough Council	Village
Kirton Holme	Boston Borough Council	Village
Wigtoft	Boston Borough Council	Village
Sutterton	Boston Borough Council	Village

Settlement Name	Local Authority	Settlement Type
Algarkirk	Boston Borough Council	Village
Holbeach Bank	South Holland	Village
Holbeach Clough	South Holland	Village
Saracen's Head	South Holland	Village
Fleet Hargate	South Holland	Village
Fleet	South Holland	Village
Gedney	South Holland	Village
Tydd St Mary	South Holland	Village
Tydd Gote	South Holland	Village
Walpole Cross Keys	King's Lynn and West Norfolk	Village
Walpole Marsh	King's Lynn and West Norfolk	Village
Walpole St Andrew	King's Lynn and West Norfolk	Village
West Walton	King's Lynn and West Norfolk	Village
Walton Highway	King's Lynn and West Norfolk	Village

- 13.4.9 The Scoping Boundary crosses over or is close to a number of main transport routes, including the following national and regional roads:
- A-Roads (main trunk roads): A1028, A1101, A1121, A151, A158, A16, A17, A47, A1031, A1104, A1111, A157 and the A52.
 - B-Roads (lower traffic densities than the main trunk roads): B1168, B1183, B1184, B1192, B1195, B1196, B1357, B1359, B1373, B1390, B1391, B1397, B1449, B1515 and the B198.
- 13.4.10 The following railway lines are also within the Scoping Boundary:
- Boston to Sleaford line; and
 - Boston to Skegness line.
- 13.4.11 Noise Important Areas are determined via strategic noise maps and highlight the residential areas experiencing the highest 1% of noise levels from road and rail sources in England. There are 16 NIAs related to road traffic noise within the Scoping Boundary, as detailed in **Table 13-6**.

Table 13-6: NIAs within the Scoping Boundary

NIA identification number	Associated Road/Railway	Responsible Authority
11372	A17 (Road)	Lincolnshire County Council
11373	A17 (Road)	Lincolnshire County Council
11374	A17 (Road)	Lincolnshire County Council
11375	A17 (Road)	Lincolnshire County Council
11376	A17 (Road)	Lincolnshire County Council
11377	A17 (Road)	Lincolnshire County Council
7861	A17 (Road)	Lincolnshire County Council
7862	A17 (Road)	Lincolnshire County Council
7863	A17 (Road)	Lincolnshire County Council
7864	A17 (Road)	Lincolnshire County Council
13977	A17 (Road)	Lincolnshire County Council
7865	A17 (Road)	Lincolnshire County Council
7866	A17 (Road)	Lincolnshire County Council
7867	A17 (Road)	Lincolnshire County Council
7868	A17 (Road)	Lincolnshire County Council
7869	A17 (Road)	Lincolnshire County Council

13.4.12

13.4.13 The noise climate is expected to vary along the Scoping Boundary depending on the nature of the area. For example, close to noise sources, such as roads and railways and in built up areas, ambient noise levels are expected to be higher. Further away from road and rail sources and in rural areas, ambient and background noise levels are expected to be lower.

13.4.14 Ecological and heritage sites that maybe affected by noise and vibration would be considered within **Part 2 Chapter 6: Biodiversity** and **Chapter 7: Cultural Heritage**.

13.4.15 It is assumed that the existing vibration levels within the Scoping Boundary would be negligible when compared to construction vibration threshold values, which is likely to be the case even close to railways or busy main roads. The assessment, see **Section 13.7**, will therefore consider potential construction vibration impacts against threshold values assuming no significant existing vibration sources are present.

Future Baseline

13.4.16 In the absence of the English Onshore Scheme, it is expected that road traffic noise will steadily increase due to the natural growth in road traffic flows over time. With regards to the modelling of traffic, the future baseline will also take into account traffic growth as a result of new development based on growth factors from the Department for Transport

models. Ongoing engagement with local planning authorities will also identify any potential development which could also contribute to increases in future baseline ambient noise levels and these would be accounted for in the assessments where appropriate.

13.4.17

It is recognised that there are a number of other proposed and committed developments within the surrounding area that could alter the future baseline in the absence of the project. The potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined within **Part 4, Chapter 35: Cumulative Effects**.

13.5 Design and Control Measures

Design Phase

13.5.1

A range of standard measures design for the English Onshore Scheme are likely to be adopted in order to reduce noise and vibration effects throughout the duration of the operational phase, these measures will be inherent in the evolving design of the English Onshore Scheme:

- Undergrounding of HVAC and HVDC cables:
 - Undergrounding of the cables is considered to be a significant mitigation for operational electricity cable noise. The fact that the cables would not be exposed or overhead on pylons effectively minimises the occurrence of audible noise and tones from all types of cable and fittings, including insulators.
- Converter stations, direct current switching stations and substations – Noise Control Measures:
 - The proposed new substations would include any required noise mitigation measures by design. This may include plant selection, siting, screening and enclosure (as appropriate).
- Converter stations, direct current switching stations and substations – Vibration Control Measures:
 - Plant with moving parts, such as cooling equipment and transformers, would be mounted on suitable anti-vibration mounts to protect the plant from potential vibration impacts and also to attenuate vibration generated by the plant.

Construction Phase

13.5.2

A range of standard measures for the English Onshore Scheme are likely to be adopted throughout the duration of the construction phase. Outline measures relevant to noise and vibration would be outlined in the Outline Code of Construction Practice (Outline CoCP), prepared to accompany the ES; these will include but are not limited to be:

- Measures to manage dust, waste, water, noise, vibration and soil during construction. The Construction Contractor(s) shall undertake daily site inspections to check conformance to the CoCP (developed in accordance with the Outline CoCP) and other Management Plans.
- Suitably experienced Environmental Manager(s) will be appointed for the duration of the construction phase. In addition, qualified and experienced Environmental Clerk of Works will be available during the construction phase to advise, supervise and

report on the delivery of the mitigation methods and controls in the CoCP (developed in accordance with the Outline CoCP).

- Construction workers will undergo training to increase their awareness of environmental issues as applicable to their role on the English Onshore Scheme. Topics will include but not be limited to:
 - Location and protection of sensitive environmental sites and features;
 - Adherence to protected environmental areas around sensitive features;
 - Working hours, and noise and vibration reduction measures; and
 - Agreed traffic routes, access points, etc.
- Any activity carried out or equipment located within a construction compound that may produce a noticeable noise will be located as far as practicable away from sensitive receptors.
- Plant and vehicles will conform to relevant applicable standards for the vehicle type. Vehicles will be correctly maintained and operated in accordance with manufacturer's recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so.
- Materials and equipment will not be moved or handled unnecessarily.
- Construction Contractor(s) will be required to follow good construction practices (referred to as best practicable means (BPM)) as outlined in BS 5228-1 (Ref 13.12) and BS 5228-2 (Ref 13.13) to control noise and vibration respectively.
- Best Practicable Means measures will be identified within the Outline CoCP and may include housing continuous noisy plant in acoustic enclosures, siting semi-static equipment as far as reasonably practicable away from occupied buildings and fitting equipment with suitable enclosures or screening.
- In certain instances where construction noise or vibration may cause a potential significant adverse effect at nearby NSRs, applications for prior consent under Section 61 of the Control of Pollution Act 1974 may be submitted to the relevant local authority to ensure that BPM are applied to control noise and vibration. If required, this will be clearly stated in the ES and Outline CoCP.

13.6 Scope of the Assessment

Potential Sensitive Receptors

13.6.1 The NSRs are determined based on property type and usage. The sensitivity of NSRs is factored into the assessment criteria for noise and vibration impacts, with all considered receptors carrying the same level of sensitivity.

13.6.2 Sensitive receptors are defined as below, drawing from the guidance of DMRB LA 111 (Ref 13.16) relative to the setting of sensitive receptors:

- Residential dwellings;
- Hotels and Guest Houses;
- Schools and education premises;

- Hospitals and healthcare facilities;
- Care homes;
- Places of worship; and
- Community facilities including libraries.

13.6.3 Areas primarily used of leisure activities, public rights of way, sports facilities, sites of historic or cultural importance, sites of ecological importance, and parks are not covered within the noise and vibration chapter but are considered in **Part 2 Chapter 8: Landscape and Visual Amenity** and **Chapter 16: Health and Wellbeing**.

13.6.4 Industrial and commercial receptors would not generally be considered as noise and vibration sensitive receptors within the assessment unless agreed otherwise during consultation with the local planning authorities, as part of the consultation and engagement, for identified reasons.

Construction Phase - Noise Impact

13.6.5 Likely construction activities are outlined in **Part 2 Chapter 4: English Onshore Scheme**. The activities with the potential to cause noise impacts include:

- Construction and installation of underground HVAC and HVDC cables, including the excavation and backfill of trenches and earthwork operations.
- Construction of trenchless crossings, including at the proposed landfall sites.
- Fixed plant areas including the substation, converter stations and Direct Current Switching Station (DCSS) and other static plant facilities, as required.
- Construction related traffic movements.

Construction Phase - Vibration Impacts

13.6.6 Likely construction activities are outlined in **Part 2 Chapter 4: English Onshore Scheme**. The activities with the potential to cause vibration impacts include:

- piling;
- vibratory compaction;
- general construction vibration; and
- construction related traffic movements.

Operational Phase - Noise Impacts

13.6.7 The likely operational activities are outlined in **Part 2 Chapter 4: English Onshore Scheme**. The activities with the potential to cause noise impacts include:

- HVDC cables at the landfall location (for both the EGL 3 Project and the EGL 4 Project);
- approximately 100 km of onshore HVDC and 4 km of HVAC underground cables (for both the EGL 3 Project and the EGL 4 Project);
- two new converter stations at Walpole (one for the EGL 3 Project and one for EGL Project);

- a new 400 kV substation at Walpole;
- the operation of a short section of the existing Burwell to Walpole 4ZM 400 kV overhead line where reconductoring/realignment may be necessary to tie into the new Walpole Substation; and
- a new converter station and DCSS in the vicinity of the Lincolnshire Connection Substations (LCS) proposed by the NGET Grimsby to Walpole Project, in East Lindsey.

Operational Phase - Vibration Impacts

13.6.8 The likely operational activities are outlined in **Part 2 Chapter 4: English Onshore Scheme**. The activities with the potential to cause vibration impacts include:

- Vibration associated with the static plant facilities including converter stations, direct current switching stations and substations.

Operational Phase (Maintenance) - Noise Impacts

13.6.9 The likely maintenance activities are outlined in **Part 2 Chapter 4: English Onshore Scheme**. The activities with the potential to cause noise impacts include:

- Underground HVAC and HVDC cables – activities would be limited to non-intrusive inspections.
- Converter stations, DCSS and substation – activities would likely include vehicular transport of workers and new materials / equipment to the site. Faulty and old equipment would be removed.

Likely Significant Effects

13.6.10 **Table 13-7** outlines the likely significant effects which have been scoped into the noise and vibration assessment.

Table 13-7: Receptors and impact pathways for each phase of the English Onshore Scheme (Noise and Vibration)

Development Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
Construction	Construction noise resulting from the installation of HVAC / HVDC cables and trenchless crossings. Construction noise resulting from the construction of Static Plant facilities.	Receptors located within 300 m of areas of proposed construction activity.	Yes – There is the potential for significant effects in the absence of further design and control or additional mitigation measures.	Scoped in

Development Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
Construction	Noise generated by construction traffic.	Receptors located within 50 m of roads identified as construction traffic routes (not including motorways, where it is considered that construction traffic will not significantly alter flows) with the potential for an increase in road traffic noise of 1 dB(A) or more as a result of the addition of construction traffic to existing traffic levels.	Yes	Scoped in
Construction	Construction vibration generated from piling and ground stabilisation.	Receptors located within 100 m of locations where piling activities are expected to occur.	Yes	Scoped in
Operational	Noise associated with the static plant facilities including converter stations, direct current switching stations and substations.	The closest sensitive receptors from the proposed converter stations, substations and potential direct current switching station.	Yes	Scoped in
Operational	Noise associated with a short section of existing 400 kV overhead lines which requires reconductoring (where necessary).	The closest sensitive receptors from the proposed route of the 400 kV overhead line subject to reconductoring (where necessary).	Yes	Scoped in

13.6.11

Table 13-8 outlines the effects which have been **scoped out** of the noise and vibration assessment with appropriate justification.

Table 13-8: Effects scoped out of the noise and vibration assessment

Development Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
Construction	General construction vibration resulting from construction activities other than piling and ground stabilisation.	Receptors located within 100 m of locations where construction activities are expected to occur.	No Transport and Road Research Laboratory Supplementary Report 328 'Ground vibrations caused by road construction activities' (Ref 13.18), concluded that, 'at distances greater than 20m, the vibration levels measured were below the level of human perception because of attenuation in the ground and that it is unlikely that people would be disturbed by vibration from general construction activities at distances of 20m or more.'	Scoped out
Construction	Vibration associated with by construction traffic.	Receptors located within 10 m of roads identified as construction traffic routes (not including motorways, where it is considered that construction traffic will not significantly alter flows).	No Vibration from traffic is caused by the road surface. Assuming the road surfaces used by construction traffic are free from irregularities, significant effects would not be expected.	Scoped out
Operational	Noise associated with the operation of the underground Cables.	The closest sensitive receptors from the proposed cable route.	No Undergrounding of cables is considered to significantly mitigate operational noise from Cable surfaces to the point where they would not be audible above ground. As such significant effects would not be expected.	Scoped out
Operational	Vibration associated with the static plant facilities	The closest sensitive receptors from the proposed converter stations, substations	No All plant with moving parts would be mounted on suitable anti-vibration	Scoped out

Development Impact Phase	Receptor	Potential for significant effects	Proposed to be scoped in / out
	including converter stations, direct current switching stations and substations.	and potential direct current switching station.	mounts and vibration eliminated at source.
Maintenance	Noise and vibration associated with future maintenance of the underground HVAC and HVDC cables, and substations.	The closest sensitive receptors from the proposed converter stations, substations and potential direct current switching station.	No Maintenance activities are likely to be infrequent, localised, and short term. Activities would follow standard measures to reduce noise and vibration and therefore significant effects are not expected.

13.6.12 Once the alignment of the cable and location of the static facilities are concluded, there is a potential that aspects that present the potential for significant effects as detailed in **Table 13-7** could be further scoped out in consultation with the local planning authorities as a result of the lack of a suitable impact pathway.

13.7 Assessment Methodology

Further Data to be Gathered / Processed

- 13.7.1 In addition to the data sources listed in **Section 13.4**, assessment within the PEIR and ES would be supported by the following additional information:
- Extent and nature of construction phase activities potentially leading to noise emissions.
 - Traffic data for the construction, operation and maintenance phases.
 - Extent and nature of static plant facilities associated with the operation of the English Onshore Scheme.
 - Baseline noise surveys (as described below).

Baseline Noise Surveys

13.7.2 Baseline noise surveys proposed at the static plant facilities such as substations and converter stations. It is not proposed to undertake baseline noise surveys along the proposed HVDC and HVAC cable routes.

- 13.7.3 Baseline noise surveys would be conducted in accordance with the methodology described in BS 7445-1:2003 Description and measurement of environmental noise. Guide to quantities and procedures (BS 7445) (Ref 13.19).
- 13.7.4 The sound level meters would measure a range of parameters including the following:
- $L_{Aeq, T}$ – The A-weighted equivalent continuous sound pressure level over the measurement period T, representative of the ‘average’ sound pressure level over a given period, in this case 15 minutes.
 - $L_{A10, T}$ – The $L_{A,10}$ is defined as the noise level that is exceeded for 10% of the measurement period and is usually regarded as a descriptor of road traffic noise.
 - $L_{A90, T}$ – The L_{A90} is defined as the noise level that is exceeded for 90% of the measurement period and is usually regarded as a descriptor of the background noise level.
 - $L_{A,max}$ – The $L_{A,max}$ is the maximum A-weighted noise level during the sample period, measured using a fast time weighting.
- 13.7.5 The measurement periods and durations would be consulted on with the local planning authorities and would be undertaken by methods including:
- Unattended long term surveys for up to seven days; and
 - Attended surveys where equipment safety concerns arise for key weekday and weekend time periods.
- 13.7.6 Unattended surveys would be subject to the safety of equipment and land access provisions. All survey durations and locations would be consulted with the local planning authorities along the English Onshore Scheme to discuss and agree locations, durations and specifics of the surveys in advance.
- 13.7.7 Weather conditions would be monitored during the survey through the use of long-term meteorological stations linked to sound level meter equipment or through hand held anemometers and subjective description of the prevailing weather conditions.

Construction Phase - Noise Assessment

- 13.7.8 Construction noise impacts would be assessed in accordance with BS 5228-1 (Ref 13.12).
- 13.7.9 Construction noise levels would be calculated within the study area in accordance with the methodology described in Annex F of BS 5228-1 relating to threshold Categories linked to baseline noise climates. The predicted construction noise levels at NSRs would be compared against the lower noise thresholds (Category A) as detailed in Section E.3.2 of BS 5228-1 (the ‘ABC’ method) as a result of baseline assumptions in a rural setting. The Category A construction noise thresholds represent the lowest assessment criteria (typically used to assess impacts in rural areas) and are proposed to be used throughout the English Onshore Scheme as a worst-case unless there is a justification for a higher threshold Categories B or C to be set (e.g., via noise survey or Department for Environment Food & Rural Affairs noise mapping data) at specific locations.
- 13.7.10 The LOAEL and the SOAEL (as defined in **Table 13-2**) would be established in accordance with **Table 13-9**.

Table 13-9: Construction noise LOAELs and SOAELs at residential receptors

Time Period	LOAEL	SOAEL
Weekdays 7:00am to 7:00pm, and Saturdays 7:00am to 1:00pm	Baseline noise levels LAeq, T	75dB LAeq, T ^{*(1) *(2)}
Weekdays 7:00pm to 11:00pm, Saturdays 1:00pm to 11:00pm, and Sundays 7:00am to 11:00pm	Baseline noise levels LAeq, T	65dB LAeq, T ^{*(1) *(2)}
Night-time 11:00pm to 7:00am	Baseline noise levels LAeq, T	55dB LAeq, T ^{*(1) *(2)}

Notes:

^{*(1)} Based upon lowest eligibility for noise insulation as defined in Table E.2 of BS5228-1:2009 (+A1 2014). Additional note to noise insulation; in noisy environments an offer of insulation is made where a noise level 5 dB or more above the existing pre-construction ambient noise level for the corresponding times of day is measured; hence the threshold for SOAEL is set relative to the higher of these values and as such could increase in noisy environments with justification.

^{*(2)} If the ambient noise level exceeds the SOAEL values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total LAeq, T noise level for the period increases by more than 3 dB due to site noise.

13.7.11 Based on the criteria presented in Table 13-6, a semantic magnitude of impact scale has been defined relative to both environment, and health and quality of life impacts. As such, the following impact magnitudes are applicable:

- **Negligible:** Below LOAEL.
- **Minor:** Above or equal to LOAEL but below appropriate BS 5228-1 Category.
- **Moderate:** Above or equal to appropriate BS 5228-1 Category but below an SOAEL.
- **Major:** Above or equal to an SOAEL.

Construction Phase - Traffic Assessment

13.7.12 The LOAEL and the SOAEL for the construction traffic noise assessment would be established in accordance with **Table 13-10**.

Table 13-10: Construction traffic noise LOAELs and SOAELs

Time Period	Adverse effect level	L _{night, outside} noise level (dB)	LA ₁₀ noise level (dB)
Day	LOAEL	n/a	55dB LA _{10, 18façadeade}
	SOAEL	n/a	68dB LA _{10, 18hr facade}
Night	LOAEL	40dB L _{night, outside} (free field)	n/a
	SOAEL	55dB L _{night, outside} (free field)	n/a

13.7.13 Noise from construction traffic on the public highway would be calculated in accordance with CRTN and assessed against the criteria detailed in DMRB LA 111: Noise and vibration (Ref 13.16).

13.7.14 The Baseline noise levels from roads within the construction traffic study area would be calculated in accordance with CRTN for the ‘do-nothing’ and ‘do something’ scenarios in the construction year. The calculated baseline noise level values would be compared to determine the magnitude of the impact in line with the semantic scale below.

- **Negligible:** Less than 1.0dB change in road traffic noise.
- **Minor:** Greater than or equal to a 1.0dB, but less than a 3.0dB, change in road traffic noise.
- **Moderate:** Greater than or equal to a 3.0dB, but less than a 5.0dB, change in road traffic noise.
- **Major:** Greater than or equal to a 5.0dB change in road traffic noise.

Significance of Effects – Construction Noise and Traffic Noise

13.7.15 Significant effects for construction are then defined in accordance with DMRB LA 111 (Ref 13.16) on the following grounds.

“Construction noise and construction traffic noise shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding:

- *10 or more days or nights in any 15 consecutive days or nights; or,*
- *a total number of days exceeding 40 in any 6 consecutive months.”*

Construction Phase – Vibration Assessment

13.7.16 Construction vibration levels would be calculated and assessed in accordance with the methodologies described in BS5228-2 (Ref 13.13) relating to piling and ground stabilisation. No vibration baseline study is proposed within the ES and construction vibration levels would be compared against fixed assessment criteria detailed in BS5228-2.

13.7.17 Vibration levels from piling and ground stabilisation would be calculated in accordance with the methodology described in Annex E of BS 5228-2. Construction vibration effect threshold levels, including applicable LOAEL and SOAEL. These are presented in **Table 13-11**.

Table 13-11: Construction vibration effect magnitudes at residential receptors

Vibration Level mm/s PPV (Peak Particle Velocity)	Effect	Observed Adverse Effect Level
<0.3mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.	n/a
≥0.3 to <1.0mm/s	Vibration might be perceptible in residential environments.	
≥1.0 to <10mm/s	It is likely that vibration of this level in residential environments will cause complaint but can be	LOAEL

Vibration Level mm/s PPV (Peak Particle Velocity)	Effect	Observed Adverse Effect Level
	tolerated if prior warning and explanation has been given to residents.	
≥10mm/s	Vibration is likely to be intolerable for any more than a brief exposure to this level in most building environments.	SOAEL

13.7.18 Based on the above a semantic magnitude of impact scale has been defined relative to environment, and health and quality of life impacts. As such, the following impact magnitudes are applicable with regard to piling and ground stabilisation ground-borne vibration:

- **Negligible:** <0.3mm/s (as defined in **Table 13-11**).
- **Minor:** ≥0.3mm/s and <1.0mm/s (**Table 13-11**).
- **Moderate:** ≥1.0mm/s and <10.0mm/s (**Table 13-11**).
- **Major:** ≥10.0mm/s (**Table 13-11**).

13.7.19 Significant effects are then defined in accordance with DMRB LA 111 on the following grounds:

‘Construction vibration shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding:

- *10 or more days or nights in any 15 consecutive days or nights;*
- *a total number of days exceeding 40 in any 6 consecutive months.’*

Operational Phase – Noise Assessment (static plant)

13.7.20 BS 4142 (Ref 13.17) provides a methodology and criteria for assessing new or existing industrial sound sources by comparing the operational sound (rating level) at the location of a sensitive receptor, with the background sound levels that are currently experienced without the English Onshore Scheme.

13.7.21 The rating level is defined as the specific sound level, with the addition of character corrections to consider certain acoustic features that could potentially increase the significance of impact. A penalty will be applied to the specific sound level if a tone, impulsive or other characteristic occurs or is expected to be present for new or modified sound sources.

13.7.22 The assessment methodology outlined in BS 4142 indicates that the greater the difference of the rating level in comparison with the background sound level (L_{A90}) the greater the significance of the impact, as set out in **Table 13-12**.

Table 13-12: Operation vibration effect magnitudes at residential receptors

Effect	Observed Adverse Effect Level
<p>$\leq L_{A90} -0\text{dB}$ Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.</p>	n/a
<p>$> L_{A90} -0\text{dB}$ and $\leq L_{A90} +5\text{dB}$ The lower the rating level is, relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact.</p>	LOAEL
<p>$> L_{A90} +5\text{dB}$ and $\leq L_{A90} +10\text{dB}$ A difference of around + 5 dB is likely to be an indication of an adverse impact, depending on the context.</p>	
<p>$> L_{A90} +10\text{dB}$ A difference of +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.</p>	SOAEL

13.7.23 Based on **Table 13-12**, a semantic magnitude of impact scale has been defined relative to environment, and health and quality of life impacts. As such, the following impact magnitudes are applicable with regard to operational static plant noise:

- **Negligible:** $< L_{A90} -0\text{dB}$ (as defined in **Table 13-9**).
- **Minor:** $> L_{A90} -0\text{dB}$ and $\leq L_{A90} +5\text{dB}$ (**Table 13-9**).
- **Moderate:** $> L_{A90} +5\text{dB}$ and $\leq L_{A90} +10\text{dB}$ (**Table 13-9**).
- **Major:** $> L_{A90} +10\text{dB}$ (**Table 13-9**).

Operational Phase – Noise Assessment (Overhead Lines)

13.7.24 The assessment of overhead lines will be in accordance with the standard NGET methodology for considering noise associated with overhead lines as NSIPs: NGET Policy Statement PS(T)134 (Ref 13.20) and its supporting technical guidance, TGN(E)322 and TR(E)564.

13.7.25 PS(T)134 describes a methodology for predicting and assessing the environmental impact due to audible noise caused by new, reconducted, diverted or uprated overhead transmission lines, considering noise generation associated with operating voltage, conductor design and pylon geometry. To present a robust assessment the study will require to consider both “wet noise” and “dry noise”.

13.7.26 The health based noise criteria set out within PS(T)134 will be used within the scope of the assessment as it takes account of UK policy and evidence from multiple sources, including the World Health Organisation and BS 4142 (Ref 13.17). The guidance presents a three-tier ‘screening’ approach based on source to receptor distance.

- If predicted noise levels fail the Tier 1 test, a Tier 2 assessment is undertaken.
- If predicted noise levels fail the Tier 2 test, a Tier 3 assessment is undertaken.

- 13.7.27 This three-tier approach screens receptors out of further assessment where there would be no adverse impact, and leads to a greater detail of assessment where the screening concludes a risk of adverse impacts.
- 13.7.28 Tier 1 is a primary screening step based on ‘worst-case’ absolute wet noise effects and the pre-determined assessment criteria set out in PS(T)134;
- 13.7.29 Tier 2 is a further screening step based on combined absolute wet noise and dry noise effects and recalculated assessment criteria which take account of the annual average rainfall rate in the assessment area. This step takes account of the fact that wet noise occurs during periods of wet weather and therefore does not occur all the time; and
- 13.7.30 Tier 3, where required is a full assessment following the principles of BS 4142 for both wet noise and dry noise.

13.8 Assessment Limitations and Assumptions

- 13.8.1 The following limitations and assumptions have been identified that will form the basis of the ES:
- Assumptions have been made regarding the condition of the roads (including on site haul roads) when assessing the impact of construction traffic related vibration. Vibration is caused by irregularities in the road surface and for the purposes of the scope, there is an assumption that the roads used by construction traffic would be free from significant irregularities.
 - The assumption is made that, due to the rural setting of the English Onshore Scheme, baseline noise monitoring will not be conducted for undergrounding the HVAC and HVDC cables. It is also assumed that the lowest threshold criteria from BS5228-1 would apply for construction noise unless local factors suggest otherwise. This ensures a robust evaluation, as limits below the lowest threshold will not be set, presenting a worst-case assessment regarding the potential for significant effects.
 - Baseline noise surveys are necessary to determine baseline noise levels at NSR near fixed plant installations. The survey data, along with surveyor observations, form the basis of operational noise assessments for static plant facilities. Monitoring methods will be adapted based on external factors like land access and equipment safety, subject to discussion and agreement with local planning authorities during project advancement.

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Ref 13.19 British Standards Institution (2019). BS 7445-1:2003 Description and measurement of environmental noise. Guide to quantities and procedures (BS 7445). London: British Standards Institution.

Ref 13.20 National Grid (2021) PS(T)134 'Operational Audible Noise Policy for Overhead Lines (New Build, Reconductoring, Diversion and Uprating)' Issue 2

14. Air Quality

14. Air Quality

14.1 Introduction

- 14.1.1 The air quality assessment will consider the potentially significant effects on sensitive human and ecological receptors which that may arise from the construction and operation of the English Onshore Scheme.
- 14.1.2 This chapter of the Scoping Report sets out the relevant legislation, planning policy context and technical guidance used to inform the scope of the assessment and summarises any consultation and engagement in relation to air quality undertaken to date. It provides an overview of the baseline conditions relevant to air quality within/around the Scoping Boundary, the measures which will be incorporated into the English Onshore Scheme to mitigate air quality effects, the likely significant effects to be considered within the assessment, and how these likely significant effects will be assessed for the purpose of an EIA.
- 14.1.3 This chapter should be read in conjunction and considered alongside the following chapters found in Volume 1:
- **Part 2 Chapter 4: English Onshore Scheme**
 - **Part 2, Chapter 5: EIA Methodology**
 - **Part 2, Chapter 6: Biodiversity** (with regards to potential impacts and effects on ecological receptors)
 - **Part 2, Chapter 16: Health and Wellbeing**
 - **Part 4, Chapter 35: Cumulative Effects**
- 14.1.4 This chapter is supported by the following figures:
- **Figure 14.1: Air Quality Constraints.**

14.2 Relevant Legislation, Planning Policy and Technical Guidance

- 14.2.1 This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the air quality assessment.

Legislation

- 14.2.2 A summary of the key legislation considered, but not limited to, in the scope of air quality effects is outlined in **Figure 14.1: Air Quality Constraints.**

Table 14-1: Legislation relevant to air quality

Legislation	Legislative Context	Section Considered
Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe (Ref 14.1).	This sets legally binding limits for concentrations of specific air pollutants. It merges, consolidates and replaces the majority of previous EU air quality legislation, and incorporates the Fourth Daughter Directive. While the UK has now left the EU, the Air Quality Standards Regulations (2010) (as amended) (Ref 14.2) which implement the Directive still apply in UK legislation as 'retained EU law'.	Section 14.7 Assessment Methodology
The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations (2019) (Ref 14.3)	These regulations amend the Air Quality Standards Regulations (2010) to reflect the UK's departure from the EU.	Section 14.7 Assessment Methodology
The Air Quality (England) Regulations (2000) (Ref 14.4)	The Air Quality (England) Regulations (2000) set national air quality objective levels for local authorities to meet in England.	Section 14.7 Assessment Methodology
Air Quality (England) (Amendment) Regulations (2002) (Ref 14.5)	The Air Quality (England) (Amendment) Regulations (2002) set national air quality objective levels for local authorities to meet in England.	Section 14.7 Assessment Methodology
Part IV of the Environment Act (1995) (Ref 14.6)	The Environment Act (1995) contains provisions for protecting air quality in the UK and for local air quality management. It requires the UK Government to produce a national Air Quality Strategy (AQS) which contains standards, objectives and measures for improving ambient air quality, and defines Local Air Quality Management (LAQM). It introduced an obligation on local authorities to issue, where the air quality standards are not being met, an order designating an Air Quality Management Area (AQMA).	Section 14.4 Baseline Conditions and Section 14.7 Assessment Methodology
Environmental Protection Act (EPA) (1990) (Ref 14.7)	Part III of the Environmental Protection Act (1990) provides legislation around statutory nuisance, which applies to dust.	Section 14.7 Assessment Methodology (Construction Dust Assessment)

Legislation	Legislative Context	Section Considered
Environment (Miscellaneous Amendments) (EU Exit) Regulations (2020) (Ref 14.8)	Regulation 2 of the Environment (Miscellaneous Amendments) (EU Exit) Regulations (2020) updated the Air Quality Standards Regulations (2010) to include a Limit Value of 20 µg/m ³ for PM _{2.5} ¹⁵ from 2020. The Limit Values for nitrogen dioxide (NO ₂) and PM ₁₀ ¹⁶ remained the same concentration levels as the relevant AQS objectives.	Section 14.7 Assessment Methodology
Environment Act (2021) (Ref 14.9)	Creates the legislative framework by which statutory air quality targets are set by reference to plans such as the Environmental Improvement Plan (2021).	Section 14.7 Assessment Methodology
The Environmental Targets (Fine Particulate Matter) (England) Regulations (2023) (Ref 14.10)	The legislation sets out targets to reduce concentrations of PM _{2.5} to be equal to or less than 10 µg/m ³ by 2040. It also states that exposure to PM _{2.5} must be reduced by at least 35% by 2040.	Section 14.7 Assessment Methodology

Planning Policy

- 14.2.3 A summary of the key planning policies at both a national and local level relevant to the scope of air quality effects is given in **Table 14-2** and **Table 14-3**.
- 14.2.4 The National Policy Statement for Electricity Networks Infrastructure (EN-5) (Ref 14.11) is not included in **Table 14-2** below as it does not give regard to air quality considerations.

Table 14-2: National Planning Policy relevant to air quality

Policy Reference	Policy Context	Section Considered
Overarching National Policy Statement for Energy (EN-1) (2024) (Ref 14.12)		
Paragraph 5.2.2 to paragraph 5.2.7	These paragraphs prompt the consideration of environmental assessment levels (Limit Values and Objectives), human and ecological receptors as a means of informing any required air quality assessment.	Section 14.4 Baseline Conditions and Section 14.6 Scope of Assessment.
Paragraph 5.2.8	Outlines that:	Section 14.6

¹⁵ particulate matter less than 2.5 microns in diameter.

¹⁶ particulate matter less than 10 microns in diameter.

Policy Reference	Policy Context	Section Considered
	<p><i>“The ES should describe:</i></p> <ul style="list-style-type: none"> <i>• existing air quality concentrations and the relative change in air quality from existing levels;</i> <i>• any significant air quality effects, mitigation action taken and any residual effects, distinguishing between the project stages and taking account of any significant emissions from any road traffic generated by the project;</i> <i>• the predicted absolute emissions, concentration change and absolute concentrations as a result of the proposed project, after mitigation methods have been applied; and</i> <i>• any potential eutrophication impacts”.</i> 	<p>Scope of Assessment</p> <p>Section 14.7 Assessment Methodology</p>
	<p>Should the screening of traffic data for any of the proposed development’ stages indicate that detailed assessment is required, then dispersion modelling would be undertaken as part of the air quality assessment to determine the impact of pollutant concentrations resulting from the proposed development at relevant sensitive human and ecological receptors.</p>	
Paragraph 5.2.10	<p>Should the proposed development be expected to lead to a breach of any relevant statutory air quality limits, objectives or targets, or affect the ability of a non-compliant area to achieve compliance, relevant mitigation to reduce significant adverse environmental effects will be proposed.</p>	<p>Section 14.7 Assessment Methodology</p>
Paragraph 5.2.14	<p>This paragraph explains that with regards to decision making, the SoS would give air quality considerations substantial weight where a project leads to a new breach of Limit Values and/or statutory air quality objectives, or where it makes an existing breach worse. It also adds that air quality considerations will be important where substantial increases in pollutant concentrations below these thresholds.</p> <p>Therefore, changes in pollutant concentrations in AQMAs and on Department for Environment Food & Rural Affairs Pollution Climate Mapping (PCM) links (as a means of assessing compliance risk with Limit Values) are expected to be key considerations for the proposed development.</p>	<p>Section 14.7 Assessment Methodology</p>

Policy Reference	Policy Context	Section Considered
Paragraphs 5.2.15 to 5.2.17	These sections state that air quality would be given substantial weight if located near sensitive human and ecological receptors. If the applicant cannot justify the location or provide a suitable plan of mitigation, the SoS would refuse consent.	Section 14.6 Scope of Assessment
Paragraph 5.1.17	This paragraph re-emphasises that air quality environmental assessment levels (statutory Limit Values and Objectives) must be taken into account in decision making, but that consent would be refused if the construction and/or operational phase of the proposed development lead to non-compliance with a Limit Value.	Section 14.7 Assessment Methodology
National Planning Policy Framework (NPPF) (2023) (Ref 14.13)		
<i>Paragraph 192</i>	The NPPF states that decisions and policies should regard Limit Values or national Objectives and take into account AQMAs and Clean Air Zones as well as cumulative impacts. Mitigation should be identified.	Section 14.7 Assessment Methodology
National Planning Practice Guidance (NPPG) (Ref 14.14)		
Air Quality	Provides guidance on the relevant principals of air quality assessment; including the regulatory framework, the role of plan making, available air quality information, when assessment is required, what potential air quality issues require consideration, the level of detail required, and mitigation.	Section 14.7 Assessment Methodology
Environmental Improvement Plan (2023) (Ref 14.15)		
Goal 2 – Clean air	Details government actions to reduce air pollution over next 25 years to achieve ‘clean air’ as a means of complying with concentration and emissions reduction targets, such as those facilitated by the Environment Act (2021). The delivery plan focusses on reducing domestic emissions, empowering local authorities to deliver clean air, maintaining and improving the regulatory framework for industrial emissions, reducing agricultural ammonia emissions and reducing emissions from transport.	

Table 14-3: Local Planning Policy relevant to air quality

Local Authority Plan/Strategy	Summary of Relevant Policies Relating to Air Quality
East Lindsey District Council: East Lindsey Local Plan Core Strategy, (2018) (Adopted 2018) (Ref 14.16)	SP23: Landscape The Biodiversity and Geodiversity section of SP23 (Landscape) outlines that developments can impact upon sites protected for their biodiversity importance, this includes air pollution caused by increased traffic movements and operational needs of a given development.
Boston Borough Council and South Holland District: South East Lincolnshire Local Plan, (2011-2036) (Adopted 2019) (Ref 14.17)	This is a regional plan which is shared partnership between Boston Borough Council, South Holland District and Lincolnshire County Council. Policy 30: Pollution Indicates that development proposals would not be permitted where, taking account for mitigation measures, they would lead to adverse effects upon air quality. Assessment must include: <ul style="list-style-type: none">• impact on the given development from poor air quality from identified sources;• impact on air quality from the given development; and• impact on amenity from existing uses.
Borough Council of King's Lynn and West Norfolk: Local Development Framework – Core Strategy, (2011) (Adopted 2011) (Ref 14.18)	Policy CS08: Sustainable Development Indicates that new development be required to demonstrate its ability to respond to the context and character of places in West Norfolk by ensuring that the scale, density, layout and access will enhance the quality of the environment.
Fenland District Council: Fenland Local Plan, (2014) (Adopted 2014) (Ref 14.19)	Policy LP16: Delivering and Protecting High Quality Environments across the District Outlines that proposals for all new developments will only be permitted if it can be demonstrated that the proposal meets the following criteria: <ul style="list-style-type: none">• protects and enhances biodiversity on and surrounding the proposal site, considering locally designated sites and the special

protection given to internationally and nationally designated sites; and

- identifies, manages and mitigates against any existing or proposed risks from sources of emissions and pollution.
-

Technical Guidance

14.2.5

The following relevant guidance, specific to air quality assessment, has informed this Scoping Report and will inform the assessment within the PEIR and ES:

- Ministry of Housing Communities and Local Government (2019). *National Planning Policy Guidance* (NPPG)
- The Institute of Air Quality Management (IAQM) (2024) *Guidance on the assessment of dust from demolition and construction* (Ref 14.20) – provides a mechanism for the assessments to consider both the magnitude of emissions and sensitivity of an area to define the level of risk of dust soiling and human health impacts during the construction phase. Defining the construction dust risk levels allows proportionate mitigation measures to be adopted. This guidance is referred to hereafter as the ‘IAQM construction dust guidance’.
- IAQM (2017) *Land-Use Planning & Development Control: Planning For Air Quality* (Ref 14.21) – applicable in assessing the effect of changes in exposure of members of the public resulting from developments. It provides guidance on how to decide whether an air quality assessment is required, how to undertake a suitable assessment of air quality impacts and whether these are to be considered significant or not, and how to identify whether additional mitigation is required. This guidance would be used to inform the assessment methodology for construction and operational phase vehicle emissions. This guidance is referred to hereafter as the ‘IAQM development control guidance’.
- IAQM (2020) *A guide to the assessment of air quality impacts on designated nature conservation sites* (Ref 14.22) – This document has been produced by the IAQM to assist its members in the assessment of the air quality impacts of development on designated nature conservation sites. It may also be useful for ecologists, who use the results of air quality assessments (AQAs) to evaluate the effects of air pollution on habitats and species, by increasing their understanding of the information provided by air quality specialists. This document focuses on air quality assessments in support of HRA, but it’s principles can be used as the basis for assessing the air quality impact on national or local designated nature conservation sites. This guidance is referred to hereafter as the ‘IAQM guidance on the assessment of ecological sites’.
- Department for Environment Food & Rural Affairs (2022) *Local Air Quality Management Technical Guidance (LAQM.TG (22))* (Ref 14.23) – provides best practice principles for the technical assessment of local air quality including the use of monitoring data, selection of receptors and verification procedure. LAQM.TG (22) also provides guidance for the application of Department for Environment Food & Rural Affairs tools and resources used for the technical assessment of air quality.

- National Highways (2019) *Design Manual for Roads and Bridges LA 105 Air Quality* (Ref 14.24) – applicable in screening the requirement for assessment of designated ecological sites and compliance risk assessment.

14.3 Consultation and Engagement

14.3.1 To date no engagement in relation to air quality has been undertaken. However, in advance of the PEIR and ES, engagement would be undertaken with the following key stakeholders relevant to air quality to discuss the proposed assessment methodology:

- Lincolnshire County Council;
- Norfolk County Council;
- Cambridgeshire County Council;
- East Lindsey District Council;
- Boston Borough Council;
- South Holland District Council;
- Borough Council of King's Lynn & West Norfolk;
- Fenland District Council; and
- Natural England (should (following design development) ecologically designated sites screen into assessment).

14.4 Baseline Conditions

Environmental Assessment Levels

Air Quality Objectives and Limit Values

14.4.1 The AQS objectives and Limit Values relevant to this assessment are shown in **Table 14-4** and are expressed as a maximum ambient concentration not to be exceeded, either without exception or with a permitted number of exceedances, within a specified timescale. AQS objectives and Limit Values are mostly identical in relation to the concentrations of pollutants and the averaging periods that are applied, but there are differences in how they should be interpreted and assessed. Local authorities are required to demonstrate best efforts to achieve the AQS objectives, whereas the UK Government is legally required to achieve the Limit Values in the shortest time possible. The legislation associated with the adoption of the AQS objectives and Limit Values is provided in **Table 14-1**.

Table 14-4: Air Quality Strategy objectives and Limit Values

Pollutant	Air Quality Strategy Objectives Compliance Date		Limit Values	
	Concentration and averaging period	Compliance Date	Concentration and averaging period	Compliance Date
NO ₂	200 µg/m ³ (1-hour mean, not to be exceeded more than 18 times per year)	31 Dec 2005	200 µg/m ³ (1-hour mean, not to be exceeded more than 18 times per year)	01 Jan 2010
	40 µg/m ³ (annual mean)	31 Dec 2005	40 µg/m ³ (annual mean)	01 Jan 2010
PM ₁₀	50 µg/m ³ (24-hour mean, not to be exceeded more than 35 times per year)	31 Dec 2010	50 µg/m ³ (24-hour mean, not to be exceeded more than 35 times per year)	01 Jan 2010
	40 µg/m ³ (annual mean)	31 Dec 2004	40 µg/m ³ (annual mean)	01 Jan 2005
PM _{2.5}	25 µg/m ³ (annual mean)	2020	20 µg/m ³ (annual mean)	01 Jan 2020
PM _{2.5} (Population Exposure Reduction Target)	Target of 35% reduction in population exposure by 2040	31st December 2040	N/a	N/a
PM _{2.5} (Annual Mean Concentration Target)	10 µg/m ³ not to be exceeded at any relevant monitoring station	31st December 2040	N/a	N/a
NO _x *	30 µg/m ³ (annual mean)	31 Dec 2000	30 µg/m ³ (annual mean)	19 July 2001

* NO_x critical level for the protection of vegetation and ecosystems. The NO_x Limit Value only applies to locations more than 20 km from towns with more than 250,000 inhabitants or more than 5 km from other built-up areas, industrial installations, or motorways.

14.4.2 Compliance with Limit Values is reported by Department for Environment Food & Rural Affairs at a zonal/agglomeration level. Zones/agglomerations are only reported as compliant when the assessment undertaken by Department for Environment Food & Rural Affairs demonstrates that the zone achieves the Limit Values. This approach is designed to report the maximum concentration within the zone and determine the date by which the entire zone would comply with the Limit Value. Department for Environment Food & Rural Affairs PCM model is used to determine whether the pollution from roads exceeds the Limit Values. The predictions within the PCM model are based on a 4 m distance from the road, regardless of the distance from the road

where there is a qualifying feature (area of exposure within 15 m of the PCM link). Further detail on how compliance with Limit Values would be assessed is presented in Section 14.7.

14.4.3 The assessment of AQS objectives is undertaken by local authorities. Local authorities determine the areas that exceed the AQS objectives and are therefore required to be designated as AQMAs. These areas can range from an individual property to the whole of the authority’s administrative area.

14.4.4 **Table 14-5** shows the key differences in relation to the locations where the Limit Values and AQS objectives apply. These differences are important when determining whether the Project complies with the air quality decision making criteria detailed in NPS (EN-1).

Table 14-5: Assessment differences between AQS Objectives and Limit Values

Relevant Exposure/locations	AQS Objectives	Limit Values
Relevant exposure in relation to assessment of air quality threshold	The AQS objectives only apply where members of the public are likely to be regularly present for the averaging period of the objective. For example, annual mean AQS objectives only apply at locations such as residential properties and not in areas where exposure occurs over shorter timescales (e.g., gardens and footpaths).	Department for Environment Food & Rural Affairs assessment of compliance with the Air Quality Directive (Directive 2008/50/EC) is that the annual mean Limit Values apply anywhere with public access regardless of the averaging period, and specifically next to PCM links (e.g., a footpath would be included for the assessment of the annual mean Limit Value).
Locations where air quality legislation applies	Anywhere that there is relevant public exposure	Only areas identified by Department for Environment Food & Rural Affairs in its PCM model.
Locations excluded from where air quality legislation applies	Inside buildings, vehicles and natural or man-made structures, e.g., within tunnels. Areas where members of public don’t have access, e.g., commercial premises, workplaces	<p>Within 25 m of junctions</p> <p>Greater than 15 m for running lane</p> <p>Public access across carriageways e.g. footbridges/tunnels</p> <p>Inside buildings, vehicles and natural or man-made structures, e.g., within tunnels.</p> <p>Areas where members of public don’t have access, e.g., commercial premises, workplaces</p>

Study Area

Construction Dust Risk Assessment

- 14.4.5 A construction dust risk assessment would be undertaken to establish the requisite level of mitigation required in order to control dust during construction. The IAQM construction dust guidance provides the relevant assessment methodology for undertaking the dust risk assessment.
- 14.4.6 In accordance with the IAQM construction dust guidance, the study area for the construction phase dust risk assessment will be:
- Up to 250 m from the locations of demolition, construction and earthworks activities for human receptors and up to 50 m for ecological receptors.
 - Up to 50 m from the route(s) used by construction vehicles on the public highway, up to 250 m from the English Onshore Scheme entrance(s).
- 14.4.7 The precise location of the components of the English Onshore Scheme include temporary working areas which are not known at this stage. The Scoping Boundary has therefore been designed to represent the area within which the English Onshore Scheme would potentially be located. At this stage, as route alignment of the English Onshore Scheme has not yet been finalised, the construction dust study area would be revisited once this information becomes available, however it will include up to 250 m from the edge of the Site Boundary. The construction phase study area also includes the first 50 m of any road within 250 m from the main Site entrance(s) used by the construction vehicles to account for trackout (the transportation and release of dust originating from the construction site along the road network from the action/movement of construction vehicles).
- 14.4.8 The IAQM construction dust guidance is generally more readily applicable to discrete development sites rather than long construction corridors such as the one proposed. However, it is envisaged that the construction dust risk assessment would be broken down and reported in geographical sections to account for variations in sensitivity of area and the calculated dust emission magnitude activities. This is to ensure a proportional approach to the level of mitigation required.

Construction and Operational Phase Vehicle Emissions: Human Receptors

- 14.4.9 The number of vehicles associated with the construction, and operation/maintenance phases of the English Onshore Scheme is not yet known.
- 14.4.10 The IAQM development control guidance details its own indicative traffic flow change criteria that, if met, may highlight the need for an assessment. It is anticipated that detailed assessment of vehicle emissions would provisionally be scoped out for the operational/maintenance phase of the Projects as traffic flows are largely expected to be below the IAQM screening criteria; however, it is provisionally anticipated that detailed assessment of vehicle emissions associated with the construction phase of the English Onshore Scheme would be scoped in. This would be confirmed upon receipt and screening of the traffic data. The screening criteria for vehicle emissions assessment is as follows:
- A change in Light Duty Vehicle (LDV) flows of >100 Annual Average Daily Traffic (AADT) within or adjacent to an Air Quality Management Area (AQMA), or >500 AADT elsewhere.

- A change in Heavy Duty Vehicle (HDV) flows of >25 AADT within or adjacent to an AQMA, or >100 AADT elsewhere.
- Where a road is realigned by 5 m or more and is within an AQMA.
- Where a junction is added or removed close to existing receptors.
- Where there are one or more substantial combustion processes where there is a risk of impacts at relevant receptors.

14.4.11 Any human sensitive receptors (e.g. residential properties, hospitals, schools and care homes) within 200 m of any traffic links that meet the above traffic screening criteria, would be part of the study area. These would be assessed in a proportionate manner; those receptors closest to the roads comprising the study area and/or those receptors in existing areas of poor air quality would be assessed.

Construction and Operational Phase Vehicle Emissions Assessment: Ecological Receptor Impact

14.4.12 Ecological receptors are defined as any international, national, and locally designed sites of ecological importance which are potentially sensitive to impacts from air pollution. These include:

- Sites of Special Scientific Interest (SSSI)
- Special Protection Areas (SPA)
- Special Areas of Conservation (SAC)
- Ramsar Sites
- National Nature Reserves (NNR)
- Local Nature Reserves (LNR)
- Local Wildlife Sites (LWS)
- Ancient Woodland (AW)

14.4.13 Effects from vehicle emissions on ecological receptors are screened in if the flow change criteria set in National Highways' DMRB LA 105 Guidance are met. Roads which meet any of the criteria below are collectively referred to as the 'affected road network' (ARN). The guidance states relevant international, national, and locally designed sites of ecological importance within 200 m of roads meeting one or more of the following criteria should be assessed:

- A change in traffic flows \geq 1,000 vehicles per day.
- A change in HDV flows of \geq 200 vehicles per day.
- a change in speed band.
- a change in carriageway alignment by \geq 5 m.

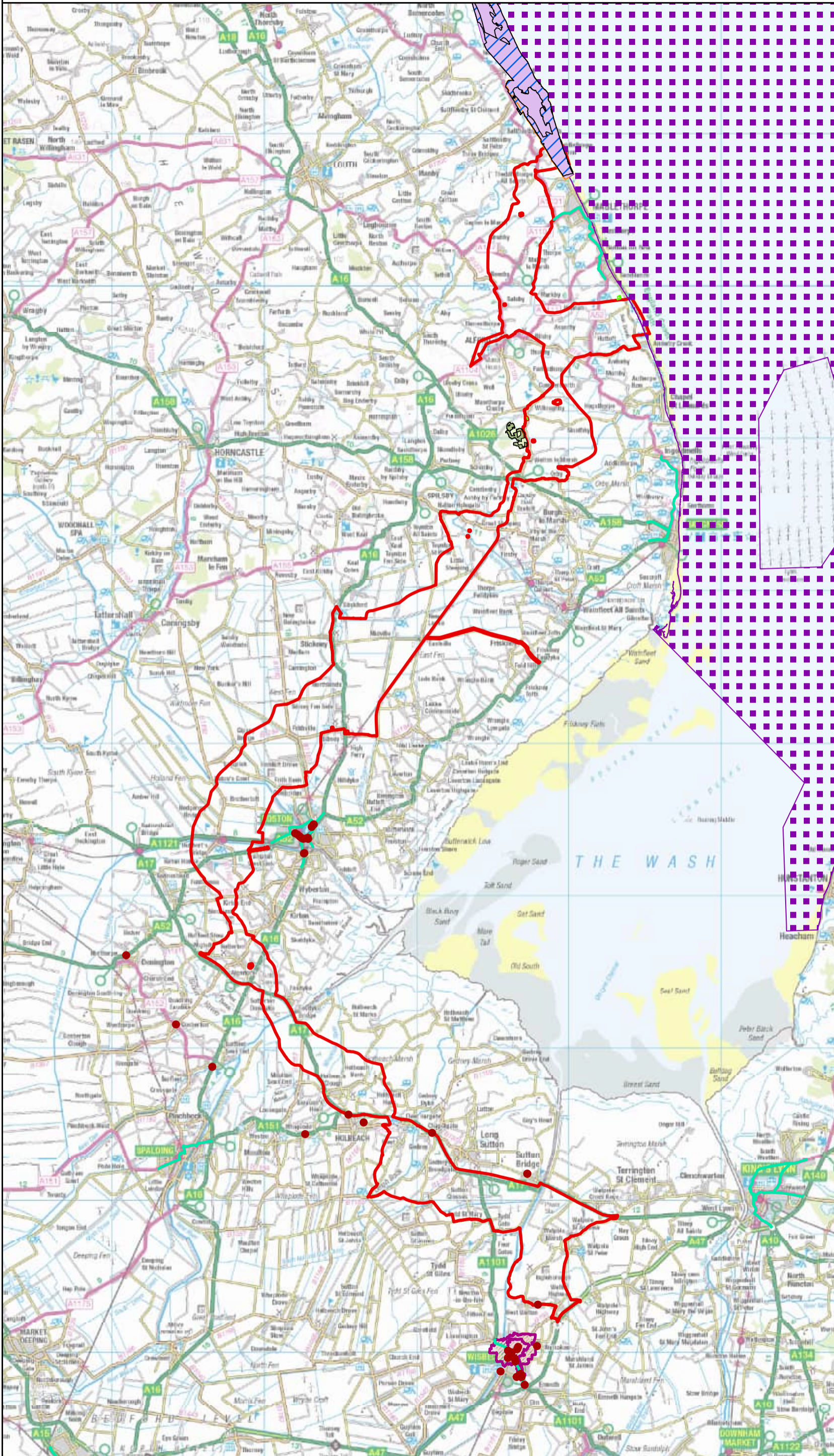
14.4.14 Ecological sites sensitive to impacts from air pollutants which fall within 200 m of roads meeting these criteria would be assessed.

14.4.15 Those international and nationally designated ecological sites (SPA, SAC, SSSI, Ramsar, NNR, and AW) that are located in the vicinity of the Scoping Boundary are displayed in Figure 14.1: Air Quality Constraints. The locations of locally designated

sites such as Local Wildlife Sites would be requested from the relevant records centres once the study area is defined at PEIR stage.

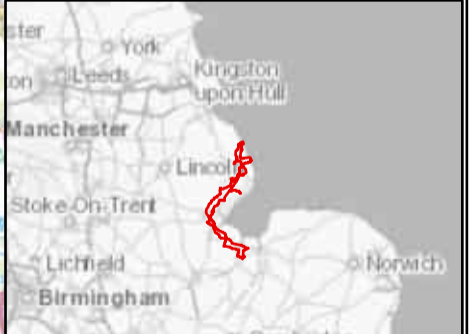


Figure 14-1 Air Quality Constraints (Overview)



- Legend**
- Scoping Boundary
 - Ancient & Semi-Natural Woodland
 - Ancient Replanted Woodland
 - Air Quality Management Areas
 - National Nature Reserve
 - Ramsar Sites
 - Special Areas of Conservation
 - Special Protection Areas
 - Sites of Special Scientific Interest
 - Local Air Quality Monitoring Sites
 - Defra Pollution Climate Mapping (PCM)

Notes
 This drawing is scaled at paper size A3, therefore any prints taken at smaller sizes will affect accuracy of the measurement units and should not be scaled against.



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Title
 Figure 14-1
 Air Quality Constraints



Figure Number
 FIGURE 14-1








Drawing Reference
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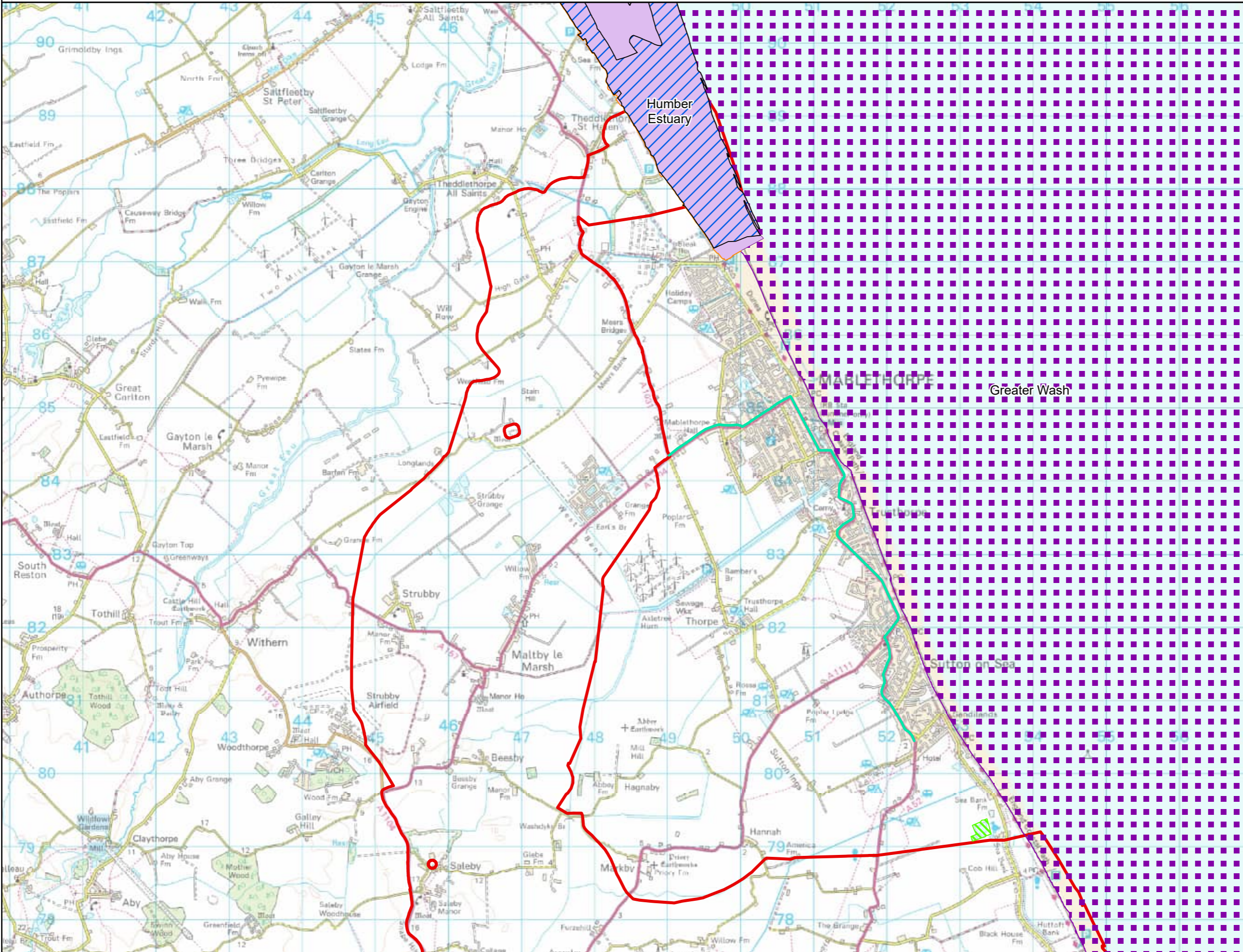
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Figure 14-1 Air Quality Constraints

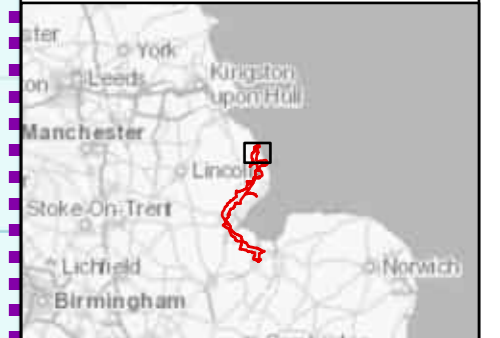
Legend

-  Scoping Boundary
-  Sites of Special Scientific Interest
-  Special Protection Areas
-  Special Areas of Conservation
-  Ramsar Sites
-  National Nature Reserve
-  Defra Pollution Climate Mapping (PCM)

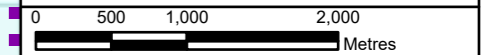


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Figure 14-1
Air Quality Constraints



Figure Number
FIGURE 14-1







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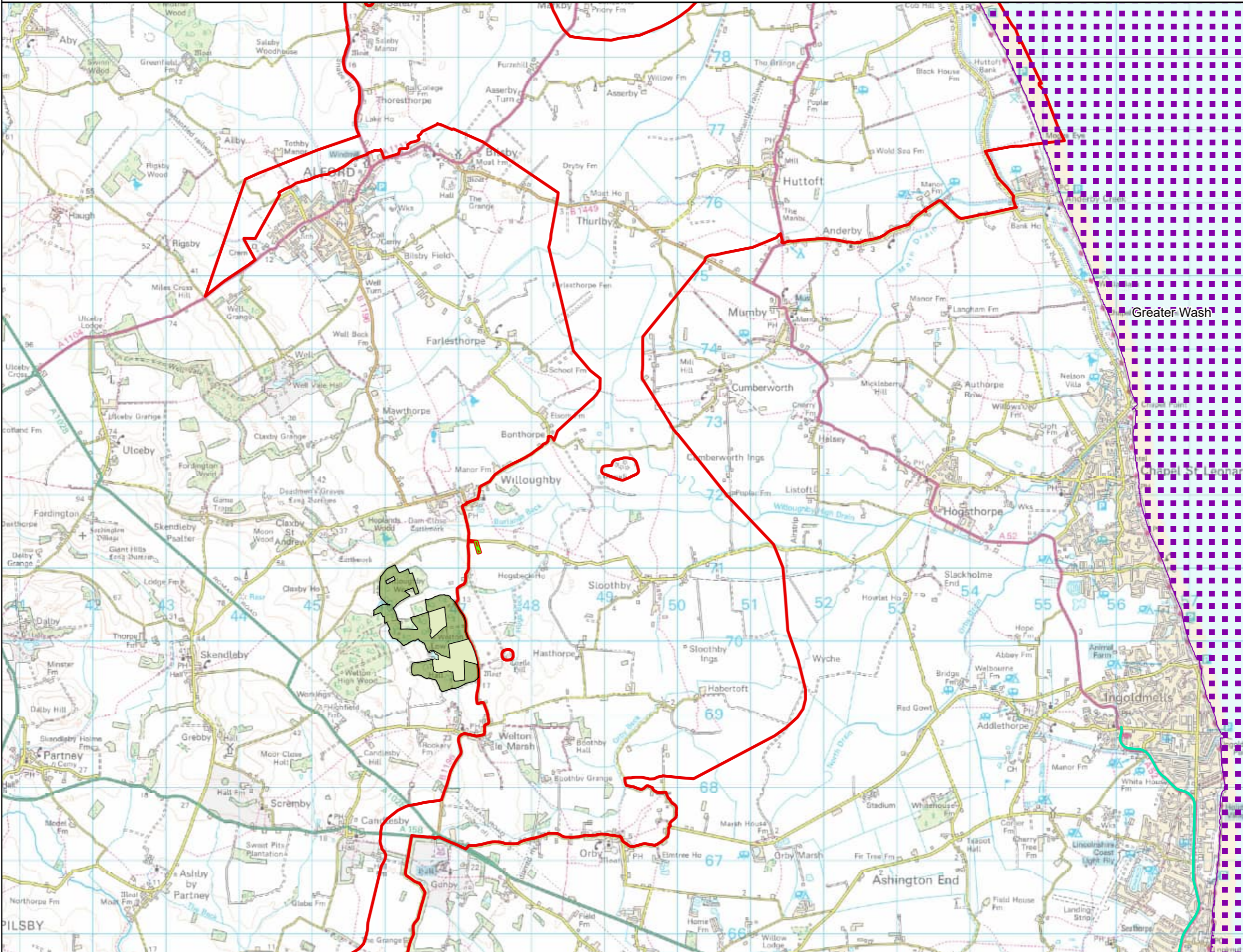
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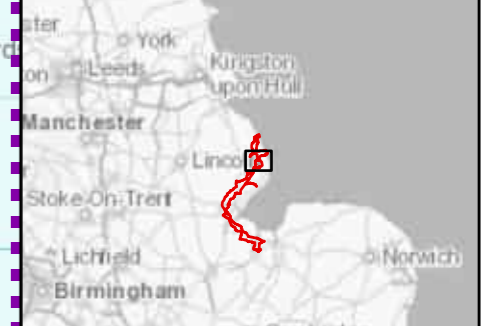
Figure 14-1 Air Quality Constraints

Legend

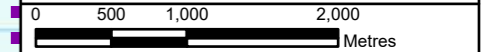
-  Scoping Boundary
-  Sites of Special Scientific Interest
-  Special Protection Areas
-  Ancient & Semi-Natural Woodland
-  Ancient Replanted Woodland
-  Defra Pollution Climate Mapping (PCM)



Notes
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Title
 Figure 14-1
 Air Quality Constraints



Figure Number
 FIGURE 14-1


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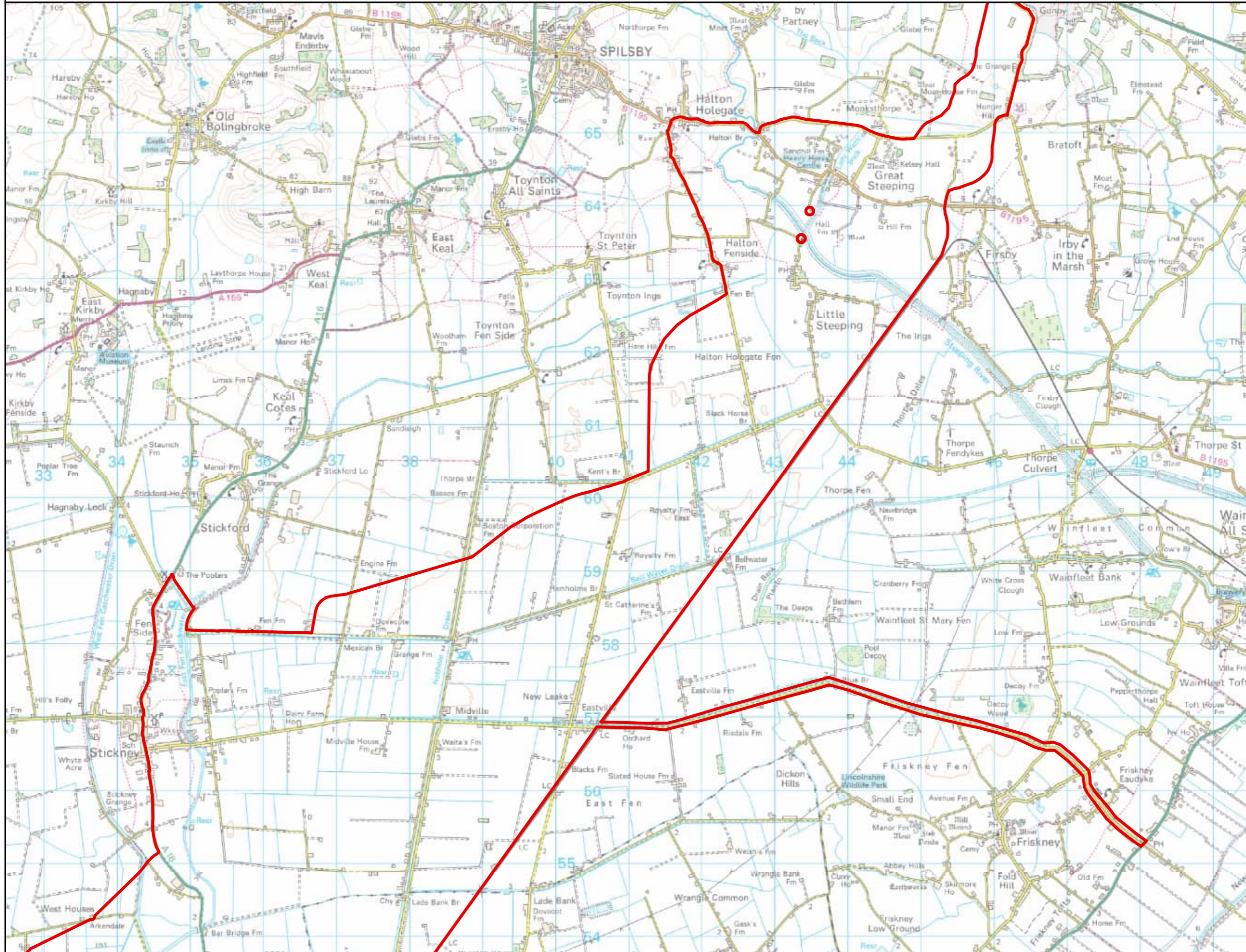
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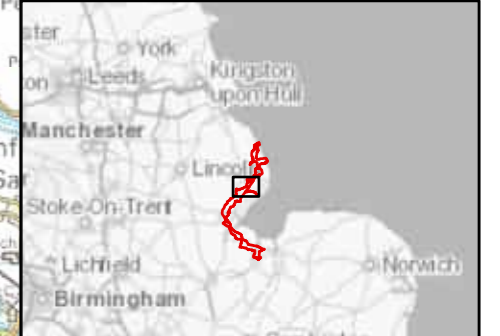
Figure 14-1 Air Quality Constraints

Legend

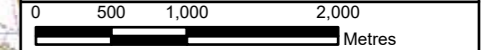
 Scoping Boundary



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Figure 14-1
Air Quality Constraints



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FIGURE 14-1





Drawing Reference
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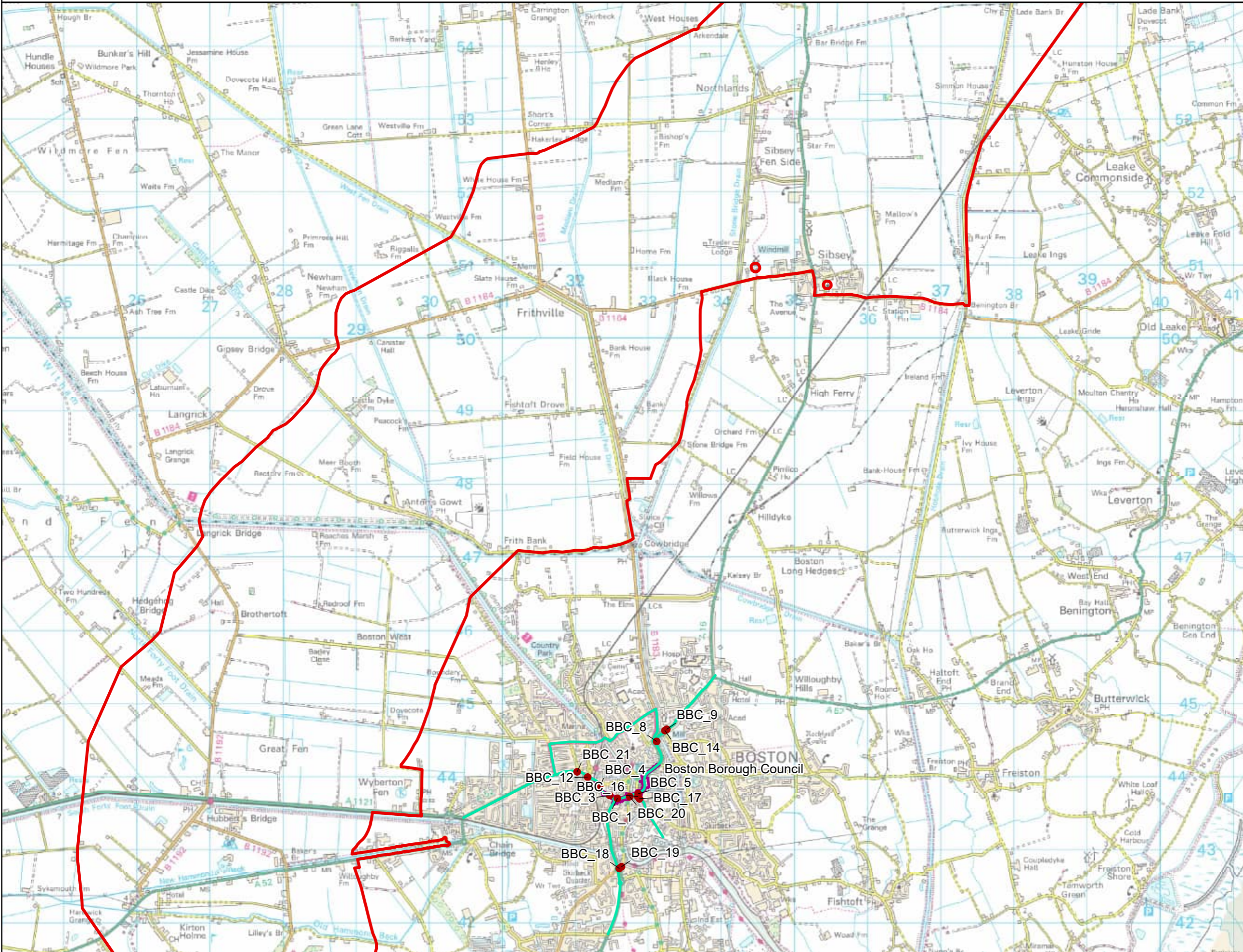
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Figure 14-1 Air Quality Constraints

Legend

-  Scoping Boundary
-  Air Quality Management Areas
-  Defra Pollution Climate Mapping (PCM)
-  Local Air Quality Monitoring Sites

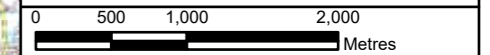


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Title

Figure 14-1
Air Quality Constraints


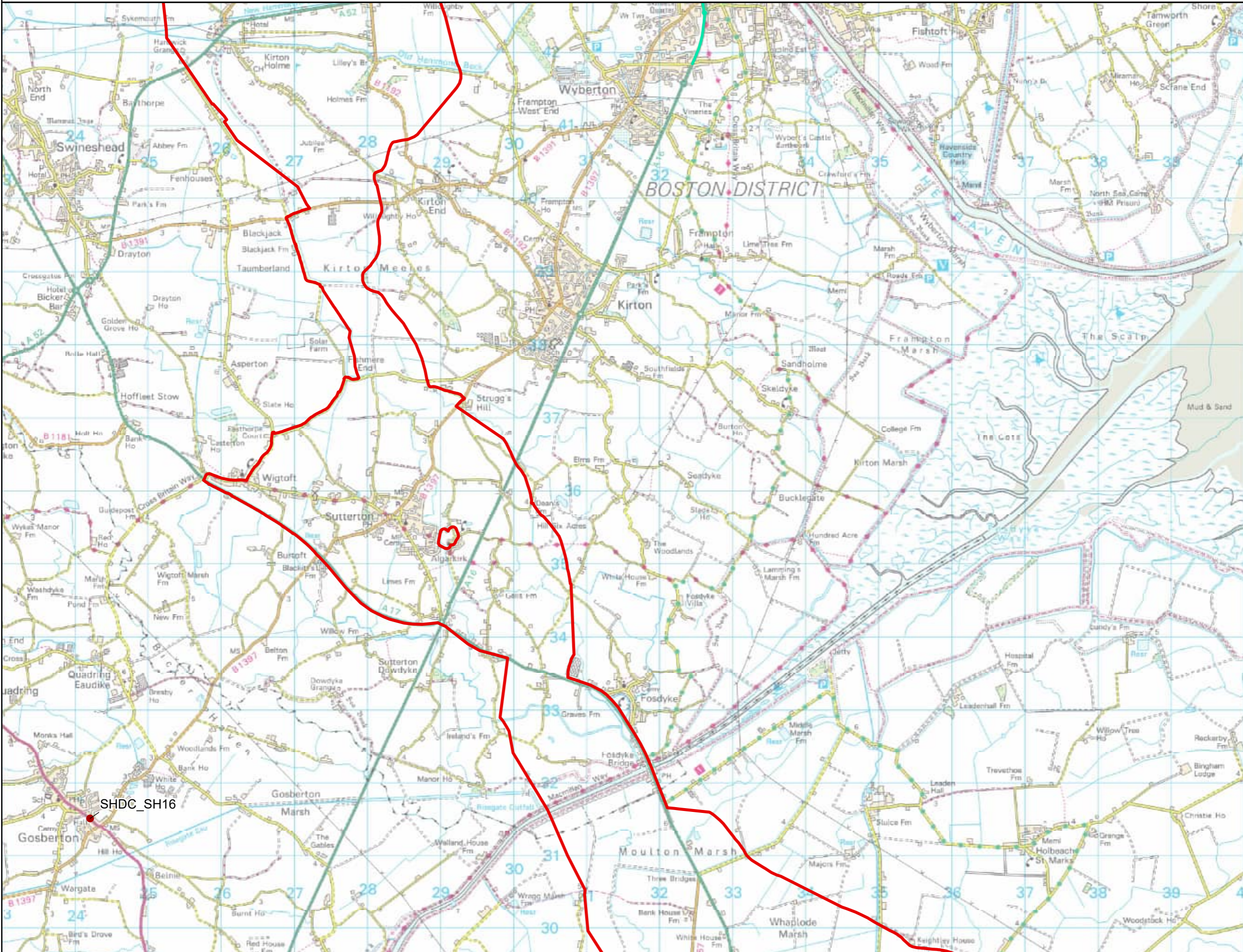
			
Figure Number	FIGURE 14-1		
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Figure 14-1 Air Quality Constraints

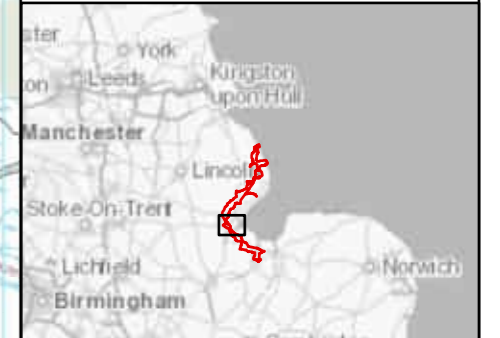
Legend

- ▭ Scoping Boundary
- Defra Pollution Climate Mapping (PCM)
- Local Air Quality Monitoring Sites



Notes

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Figure 14-1
Air Quality Constraints



Figure Number
FIGURE 14-1



Drawing Reference
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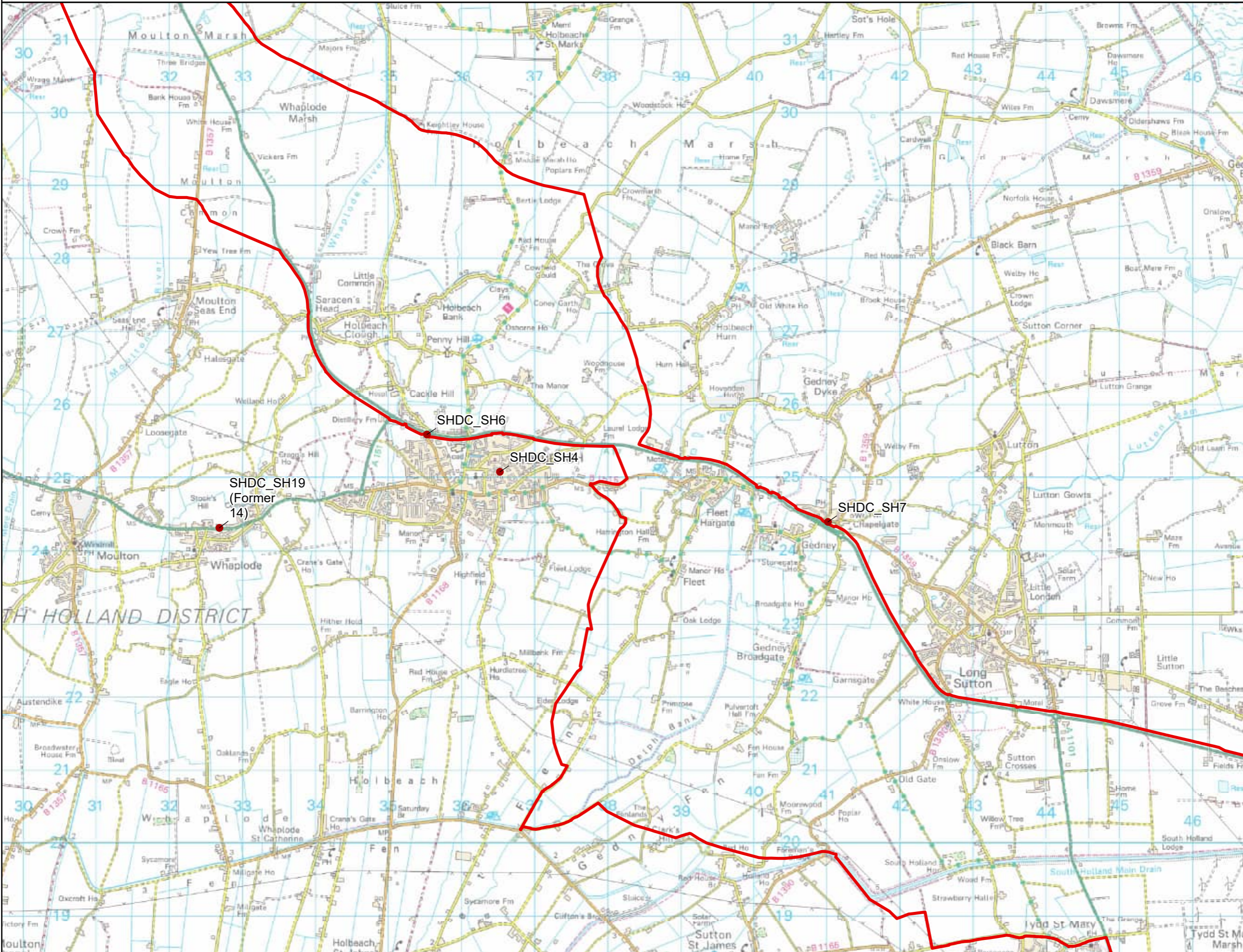
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Figure 14-1 Air Quality Constraints

Legend

-  Scoping Boundary
-  Local Air Quality Monitoring Sites

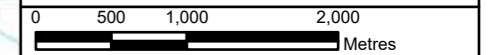


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Figure 14-1
Air Quality Constraints



Figure Number
FIGURE 14-1

Drawing Reference
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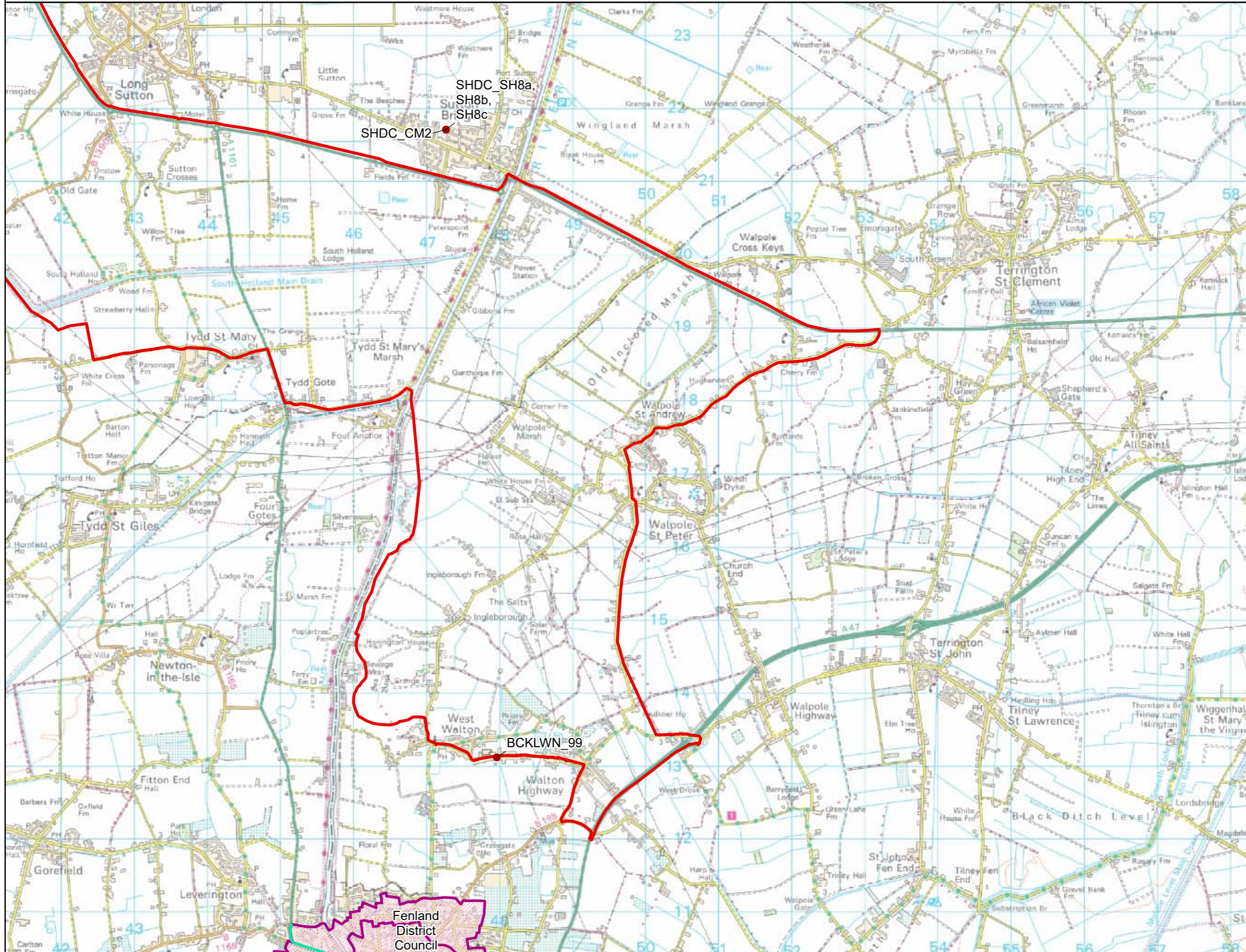
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Figure 14-1 Air Quality Constraints

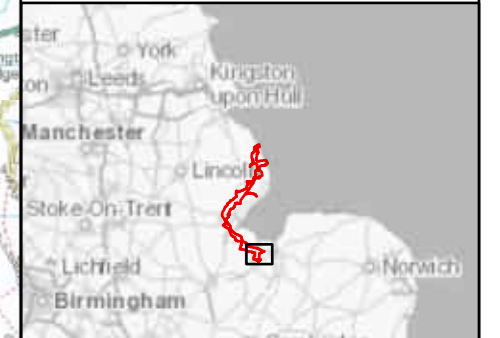
Legend

- Scoping Boundary
- Air Quality Management Areas
- Defra Pollution Climate Mapping (PCM)
- Local Air Quality Monitoring Sites



Notes

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Figure 14-1 Air Quality Constraints



Figure Number

FIGURE 14-1

Drawing Reference

EGL-ARC-CONS-XX-DR-G-001

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Compliance Risk Assessment

- 14.4.16 The requirement to undertake a compliance risk assessment would be evaluated in accordance with the DMRB LA 105 Guidance. An assessment would be carried out on those roads which both meet the DMRB traffic change criteria (the same as cited for ecological effects, described above) and intersect those roads forming Department for Environment Food & Rural Affairs PCM model.
- 14.4.17 The compliance risk study area encompasses qualifying features (such as footpaths, residential properties, schools etc) which lie within 15 m of where the two road networks intersect.
- 14.4.18 The number of vehicles associated with the construction, and operation/maintenance phases of the English Onshore Scheme is not yet known, therefore at this stage it is not known whether the need for a compliance risk assessment is required. Confirmation of the need for a compliance risk assessment shall be confirmed upon receipt and screening of the traffic data and presented in the PEIR if required.

Data Gathering Methodology

- 14.4.19 Baseline data has been collated to determine the existing air quality conditions in the area that is likely to be affected by the English Onshore Scheme. A review of the existing baseline has been undertaken to establish an understanding of the baseline air quality environment, to identify areas that are likely to be sensitive to changes in emissions resulting from the English Onshore Scheme. The baseline assessment has been informed by a desk-based study which has drawn on the following sources of information:
- Department for Environment Food & Rural Affairs UK AIR website (2024) (Ref 14.25) - to establish predicted background concentrations for NO₂, PM₁₀ and PM_{2.5} and to review AQMA designated by local authorities.
 - Magic.Defra.gov.uk website (2024) (Ref 14.26) - to identify ecological sites within and near to the Scoping Boundary.
 - Department for Environment Food & Rural Affairs Pollution Climate Mapping Model website (2024) (Ref 14.27) – to identify projections of NO₂, PM₁₀ and PM_{2.5} across the study area.
 - Annual Status Reports (ASRs) for the local authorities intersecting the Scoping Boundary – to identify local authority monitoring data. The following ASRs were available online during April 2024:
 - East Lindsey District Council (2022) (Ref 14.28) Combined Annual Status Report (Covering the monitoring period between 2016 and 2020)
 - Boston Borough Council (2022) (Ref 14.29) Annual Status Report 2022 (covering 2021 data)
 - South Holland District Council (2023) (Ref 14.30) Annual Status Report 2023 (covering 2022 data)
 - Borough Council of King's Lynn & West Norfolk (2023) (Ref 14.31) 2023 Air Quality Annual Status Report (ASR) (Covering 2022 data)

- Fenland District Council (2023) (Ref 14.32) 2023 Air Quality Annual Status Report (ASR) (Covering 2022 data)

Current Baseline

14.4.20 This section sets out the air quality information and data that would be relied upon to produce a detailed review of baseline conditions that would be contained within the PEIR and ES. It is split into subsections, for each of the local authorities which cover the Scoping Boundary, these subsections are ordered sequentially following the route of the Scoping Boundary from north to south.

Air Quality Management Areas and Local Authority Monitoring

14.4.21 As required by the Environment Act (1995), the local authorities covering the study area have undertaken review and assessment of air quality within their area of jurisdiction, producing ASRs which appraise local air quality over the most recent full calendar year. This process informs the declaration of AQMAs, which are areas where monitoring has concluded that there are exceedances of AQS objectives.

14.4.22 A review of the most recently published ASRs has been undertaken for each of the local authorities covering the study area. It should be noted that 2020 and 2021 monitoring data, reported in the 2021 and 2022 ASRs, would have been affected by the COVID-19 lockdowns and therefore do not reflect typical data. Where only the 2021 and earlier ASRs are publicly available, more recent data (post 2021) would be sought from the local authorities to inform the PEIR and ES.

14.4.23 Local authorities generally undertake air quality monitoring in those areas where people are likely to be exposed to higher pollutant concentrations (e.g. urban areas, transport corridors, near industrial installations).

14.4.24 Those local authority monitoring sites located inside the Scoping Boundary, and those sites located within 5 km of the Scoping Boundary are displayed in **Figure 14.1: Air Quality Constraints**.

East Lindsey District Council

14.4.25 A review of the most recent available ASR published by East Lindsey District Council (published during 2021) shows that only non-automatic (diffusion tube) monitoring was undertaken in 2020. The monitoring data shows no exceedances of the AQS objectives and thus no AQMAs have been declared.

14.4.26 The 2020 monitoring data presented in the 2021 ASR, indicates that all monitoring sites are located well outside of the Scoping Boundary. The closest diffusion tube sites to the Scoping Boundary are triplicate site SK1-3 and site SK4, which are located approximately 7 km east of the Scoping Boundary in Skegness. In 2020, monitored annual average NO₂ concentrations at these sites were well below the AQS objective. In 2020, sites SK1-3 and SK4 monitored annual average NO₂ concentrations of 21.5 µg/m³ and 18.7 µg/m³. It should be noted however that there is low data capture for the 2020 monitoring dataset, which is likely due to the COVID-19 lockdowns. As such more recent monitoring data would be sought from East Lindsey District Council to inform the PEIR and ES.

14.4.27 As the above sites are located approximately 7 km east of the Scoping Boundary, in the urban area of Skegness, concentrations within the rural area of the Scoping Boundary

are likely to be lower than those recorded by East Lindsey District Council at these locations.

14.4.28 East Lindsey District Council did not monitor PM₁₀ and PM_{2.5} during 2021.

Boston Borough Council

14.4.29 A review of the most recent available ASR published by Boston Borough Council (published during 2022) shows that only diffusion tube monitoring was undertaken in 2021. The monitoring data shows one exceedance of the NO₂ AQS objective at diffusion tube Site 1 (Haven Bridge Road), which measured an annual average NO₂ concentration of 44.6 µg/m³ in 2021. This site is situated within Boston Borough Councils Haven Bridge AQMA (approximately 3 km east of the Scoping Boundary), which was declared in 2001 for exceedances of the annual mean NO₂ AQS objective. Review of the Department for Environment Food & Rural Affairs UK Air website (2024) indicates that to date this AQMA is still declared for exceedances of the annual mean NO₂ AQS objective. Site 1 is located adjacent to the A16 (John Adams Way) in the urban area of Boston town centre, as such concentrations monitored at this site are not representative of the rural area of the Scoping Boundary.

14.4.30 The closest diffusion tube site to the Scoping Boundary is Site 21, which is located approximately 2 km east of the Scoping Boundary on Liquorpond Street. In 2021, Site 21 measured an annual average NO₂ concentration of 24.7 µg/m³, which is well below the AQS objective. As this site is located approximately 2 km from the Scoping Boundary in the urban area of Boston, concentrations within the rural area of the Scoping Boundary are likely to be lower than those recorded by Boston Borough Council at this location. However, as mentioned above monitoring data from 2021 would have been affected by the COVID-19 lockdowns and therefore more recent monitoring data would be sought from Boston Borough Council to inform the PEIR and ES.

14.4.31 Boston Borough Council did not monitor PM₁₀ and PM_{2.5} during 2021.

South Holland District Council

14.4.32 A review of the most recent available ASR published by South Holland District Council (published 2023) shows that the local authority undertook both automatic (NO₂ and PM₁₀) and diffusion tube monitoring within their area of jurisdiction during 2022.

14.4.33 In 2022, all automatic and diffusion tube monitoring sites within South Holland District Council's area of jurisdiction measured annual average NO₂ concentrations well below the AQS objective. As such the local authority has not declared any AQMA's.

14.4.34 South Holland District Council diffusion tube sites SH6 (Boston Road A17) and SH7 (Gedney A17) are located on the border of the Scoping Boundary, in 2022 these sites respectively measured annual average NO₂ concentrations of 27.6 µg/m³ and 21.6 µg/m³. Both 2022 monitored annual average concentrations are well below the NO₂ AQS objective and indicate that pollutant concentrations in the rural area of the Scoping Boundary can be considered as low.

14.4.35 The closest automatic site to the Scoping Boundary is CM2, which is located at Westermere School in Sutton Bridge (approximately 600 m north of the Scoping Boundary). In 2022, this site measured an annual average NO₂ concentration of 7.8 µg/m³ and a PM₁₀ concentration of 14.5 µg/m³, indicating that pollutant concentrations in close proximity to the Scoping Boundary are low.

14.4.36 South Holland District Council did not monitor PM_{2.5} during 2022.

Borough Council of King's Lynn & West Norfolk

- 14.4.37 Review of the most recent available ASR published by the Borough Council of King's Lynn & West Norfolk (published 2023) shows that the local authority undertook both automatic and diffusion tube monitoring within their area of jurisdiction during 2022.
- 14.4.38 In 2022, all automatic and diffusion tube monitoring sites within Borough Council of King's Lynn and West Norfolk's area of jurisdiction measured annual mean NO₂, PM₁₀ and PM_{2.5} concentrations below the relevant AQS objectives; however, the Borough Council of King's Lynn and West Norfolk **Figure 14.1: Air Quality Constraints** and details are set out below:
- Gaywood Clock AQMA: Declared in 2009 for annual mean NO₂ – Located approximately 10 km east of the Scoping Boundary.
 - Railway Road AQMA: Declared in 2003 for annual mean NO₂ – Located approximately 9 km east of the Scoping Boundary.
- 14.4.39 Diffusion tube Site 99 is located on the border of the Scoping Boundary, on the outskirts of West Walton on School Road. In 2022, this site measured an annual average NO₂ concentration of 7.4 µg/m³, which is well below the AQS objective. As this site is located on the border of the Scoping Boundary, it realistically represents the pollutant concentrations in that rural area.
- 14.4.40 The closest automatic site to the Scoping Boundary that measures NO₂ is CM1SG (Southgates Park, King's Lynn), which is located approximately 9 km east of the Scoping Boundary. In 2022, this site measured an annual average NO₂ concentration of 14.0 µg/m³, which is well below the AQS objective.
- 14.4.41 The closest automatic site to the Scoping Boundary that measures PM₁₀ and PM_{2.5} is OS1PS (Page Stair Lane, King's Lynn), which is located approximately 8.5 km east of the Scoping Boundary. In 2022, this site measured an annual average PM₁₀ and PM_{2.5} concentrations of 19.0 µg/m³ and 7.0 µg/m³, both of which are well below the respective AQS objectives.
- 14.4.42 The monitoring data indicates that pollutant concentrations within the vicinity of the urban area of King's Lynn are below the respective AQS objectives. As such pollutant concentrations within the rural area of the Scoping Boundary located approximately 9 km away can be considered to be low in comparison to those measured within King's Lynn.

Fenland District Council

- 14.4.43 Review of the most recent available ASR published by Fenland District Council (published 2023) shows that diffusion tube monitoring was undertaken by Fenland District Council in 2022. Fenland District Council do not undertake automatic monitoring, however as part of the Part A Environmental Permit at Whittlesey brick pits, monitoring of Sulphur Dioxide (SO₂) is undertaken using automatic monitors.
- 14.4.44 In 2022, all diffusion tube monitoring sites within Fenland District Councils area of jurisdiction monitored annual average NO₂ concentrations below the AQS objective. However, in 2022 Fenland District Council still declared four AQMAs, three in Wisbech and one in Whittlesey (approximately 30 km from the Scoping Boundary). Details of the closest AQMAs to the Scoping Boundary are outlined below:

- Wisbech AQMA No.1 (SO₂): Declared in 2001 for 15-minute mean Sulphur Dioxide (SO₂). Caused by emissions from local industrial processes – located approximately 1.5 km southwest of the Scoping Boundary at the closest point.
- Wisbech AQMA No.3 (NO₂): Declared in 2001 for annual mean NO₂. Caused by emissions from local industrial processes and road/haulage vehicles associated with new developments – located approximately 1.5 km southwest of the Scoping Boundary at the closest point.
- Wisbech AQMA No.2 (PM₁₀): Declared in 2001 for 24-hour mean PM₁₀. Caused by emissions from local industrial processes – located approximately 2.5 km southwest of the Scoping Boundary at the closest point.

14.4.45 The above AQMAs are displayed in **Figure 14.1: Air Quality Constraints**.

14.4.46 The closest diffusion tube site to the Scoping Boundary is Site S13, which is located within Wisbech AQMA No.3 and is approximately 3 km southwest of the Scoping Boundary. In 2022 Site S13 measured an annual average NO₂ concentration of 27.1 µg/m³, which is well below the AQS objective. As this site is located within the urban area of Wisbech, concentrations within the rural area of the Scoping Boundary are likely to be lower than those recorded by Fenland District Council at this location.

14.4.47 Fenland District Council did not monitor PM₁₀ and PM_{2.5} during 2022.

Background Pollutant Concentrations

14.4.48 The character of the area within the Scoping Boundary is largely rural and suburban. Due to the nature of rural and suburban areas, background pollutants are generally observed to be low.

14.4.49 A review of the available modelled background concentrations for the Scoping Boundary and surrounding area has been carried out using Department for Environment Food & Rural Affairs predicted (modelled) annual mean background concentrations provided in 1 km x 1 km grid squares. **Table 14-6** below shows the minimum, maximum and average background concentrations for NO₂, PM₁₀ and PM_{2.5} across the Scoping Boundary and surrounding area.

Table 14-6: Summary of Department for Environment Food & Rural Affairs modelled background Pollutant Concentrations across the Scoping Boundary and Local Area

	2024 Predicted background concentration (µg/m ³)		
	NO ₂	PM ₁₀	PM _{2.5}
Annual Mean AQS Objective	40	40	20
Minimum (Grid Square X, Y coordinate)	5.1 (568500,288500)	10.5 (556500,357500)	6.6 (543500,401500)
Maximum (Grid Square X, Y coordinate)	12.5 (546500,308500)	17.6 (537500,362500)	9.7 (563500,318500)
Average	6.4	14.7	8.2

- 14.4.50 The maximum predicted 2024 background NO₂ concentration is located within the urban area of Wisbech, approximately 4.5 km southwest of the Scoping Boundary. The maximum PM₁₀ predicted background is located approximately 1 km south of East Keal within East Lindsey District Councils area of jurisdiction (approximately 4 km west of the Scoping Boundary). The maximum PM_{2.5} predicted background concentration is located in King's Lynn, which is approximately 10 km east of the Scoping Boundary.
- 14.4.51 **Table 14-6** above indicates that background pollutant concentrations around the Scoping Boundary and surrounding area are low, which is consistent with the rural nature of the location.

PCM Model Compliance

- 14.4.52 Department for Environment Food & Rural Affairs assesses and reports to the Secretary of State on the status of air quality in the UK, by reference to the Government's Limit Values for each pollutant.
- 14.4.53 The assessment of compliance with the government's Limit Values is undertaken using both monitoring (Department for Environment Food & Rural Affairs Automatic Urban and Rural Network (AURN)) and modelling from Department for Environment Food & Rural Affairs Pollution Climate Mapping (PCM) model.
- 14.4.54 For the purposes of Department for Environment Food & Rural Affairs assessment and reporting, the UK is divided into 43 zones and agglomerations; there are 28 agglomeration zones (large urban areas) and 15 non-agglomeration zones. A zone can only become compliant when monitoring and modelling locations throughout that zone meet the relevant Limit Values.
- 14.4.55 The English Onshore Scheme are located in the Eastern and East Midlands non-agglomeration zone. Within the Eastern non-agglomeration zone the maximum predicted 2024 annual mean NO₂ concentration is 37.4 µg/m³ (PCM Census ID: 802078346). This PCM link is located on the A40 (Western Avenue) in West London and would not be affected by the English Onshore Scheme in the construction or operational phases, due to its distance from the English Onshore Scheme.
- 14.4.56 Within the East Midlands non-agglomeration zone the maximum predicted 2024 annual mean NO₂ concentration is 33.4 µg/m³ (PCM Census ID: 802017304). This PCM link is located on the A52 (Clifton Boulevard) in Nottingham, which is located approximately 70 km west of the Scoping Boundary. Therefore, this concentration is not representative of the rural area where the Scoping Boundary is located, and it is anticipated that this link would not be affected by the English Onshore Scheme during the construction and operational phases.
- 14.4.57 The maximum predicted 2024 annual mean NO₂ concentrations in the Eastern and East Midlands non-agglomeration zones are below the LV of 40 µg/m³.
- 14.4.58 Department for Environment Food & Rural Affairs predicts PM₁₀ and PM_{2.5} in the years 2020, 2025 and 2030. Within the Eastern non-agglomeration zone the maximum predicted 2025 annual mean PM₁₀ and PM_{2.5} concentrations are 22.1 µg/m³ and 13.3 µg/m³ (PCM Census ID: 802018648). This PCM link is located on the A1055 (Meridian Way) in Edmonton North London and would not be affected by the English Onshore Scheme in the construction or operational phases due to the great distance separating these two locations. Within the East Midlands non-agglomeration zone the maximum predicted 2025 annual mean PM₁₀ and PM_{2.5} concentrations are 23.3 µg/m³ and 12.6 µg/m³ (PCM Census ID: 802077419). This PCM link is located on the A45 (London

Road) Slip Road of the Hardingstone roundabout exit (around 2 km south of Northampton) and would not be affected by the English Onshore Scheme in the construction or operational phases.

14.4.59 The maximum predicted 2025 annual mean PM₁₀ and PM_{2.5} concentrations in the Eastern and East Midland non-agglomeration zones are below the assessment respective Limit Values of 40 µg/m³ and 20 µg/m³.

14.4.60 There are no PCM links which fall within the Scoping Boundary, however there are PCM links located near to Mablethorpe, Wisbech, and Boston, which are presented on Figure 14.1. Therefore, the scope of the compliance risk may go beyond the current Scoping Boundary if changes in traffic above the DRMB criteria occur on roads outside of the Scoping Boundary in either or both of the construction and operational phases.

Baseline Summary

14.4.61 Baseline data has been collected for the local authorities which cover the Scoping Boundary. Review of the local authorities' most recent and publicly available ASRs, show that monitored concentrations of NO₂, PM₁₀ and PM_{2.5} are largely below the AQS objectives. There are two local authorities (Borough Council of King's Lynn and West Norfolk and Fenlands District Council) which have declared AQMAs. Borough Council of King's Lynn and West Norfolk has declared two AQMAs for exceedances of the annual mean NO₂ AQS objective. Although there are no monitored exceedances in Fenland District Council's area of jurisdiction, they have declared three AQMAs in the vicinity of the scoping corridor for exceedances of the 15-minute mean SO₂, 24-hour mean PM₁₀ and the annual mean NO₂ AQS objectives.

14.4.62 A review of modelled background concentrations for the local authorities covering the Scoping Boundary, has been undertaken using Department for Environment Food & Rural Affairs predicted annual mean background concentrations. Background concentrations are well below the AQS objectives.

14.4.63 The available monitoring data and background pollutant concentrations, indicate that the Scoping Boundary is situated in an area where existing air pollutant concentrations are low. This is consistent with the conditions generally seen in rural areas, such as that where the Scoping Boundary is located.

14.4.64 Department for Environment Food & Rural Affairs PCM model has been reviewed and indicates that there are no PCM links which fall within the Scoping Boundary, however there are PCM links located near to Mablethorpe, Wisbech, and Boston.

Future Baseline

14.4.65 The future baseline relates to known or anticipated changes to the current baseline in the future which should be assessed as part of the English Onshore Scheme in the PEIR and ES.

14.4.66 Background pollutant concentrations are predicted to decrease in future years, as evidenced by trends observed from local authority monitoring data and future predicted Department for Environment Food & Rural Affairs background map concentrations.

14.4.67 Traffic emissions are likely to contribute to baseline air pollutant concentrations in the vicinity of the English Onshore Scheme. While vehicle numbers are likely to increase, emissions (per vehicle) are predicted to decrease over time due to new technology, increasingly stringent emission regulations and cleaner fuel formulations.

14.4.68 Consented developments in the surrounding area may increase traffic flows in the vicinity of the English Onshore Scheme. This may therefore result in localised increases in air pollutant concentrations as compared to the existing baseline.

14.4.69 It is recognised that there are a number of other proposed and committed developments within the surrounding area that could alter the future baseline in the absence of the English Onshore Scheme. The potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined within **Part 2 Chapter 5: EIA Approach and Methodology**.

14.5 Design and Control Measures

14.5.1 A high-level optioneering study (the CPRSS as described in **Part 2 Chapter 3: Consideration of Alternatives**) has been undertaken to identify the preferred routing and siting of the proposed infrastructure to ensure that environmental effects would be avoided. As part of the English Onshore Scheme design process, a number of design and control measures will be proposed to reduce the potential for impacts on human and ecological receptors sensitive to air quality. These measures will evolve as part of design development and in response to consultation. These measures will be fed iteratively into the assessment process. These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements.

14.5.2 As there is a commitment to implementing these design and control measures these have been considered in the scoping assessment.

Construction Phase

14.5.3 A range of standard measures for the English Onshore Scheme are likely to be adopted throughout the duration of the construction phase. Design and Control measures relevant to air quality and proportionate to risk would be fully outlined in the Outline Code of Construction Practice (Outline CoCP), prepared to accompany the ES. A summary of these measures is detailed below (which is not an exhaustive list):

- The Construction Contractor(s) shall undertake daily site inspections to check conformance to the CoCP (developed in accordance with the Outline CoCP) and other Management Plans.
- Any activity carried out or equipment located within a construction compound that may produce a noticeable nuisance, including but not limited to dust, noise, vibration and lighting, will be located away from sensitive receptors such as residential properties or ecological sites, where practicable.
- Vehicles will be correctly maintained and operated in accordance with manufacturer's recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so.
- Materials and equipment will not be moved or handled unnecessarily. When loading and unloading materials from vehicles, including cable drums and excavated materials, drop heights will be limited.
- Wheel washing will be provided at each main compound access point on to the highway. An adequate supply of water will always be available at these locations.

Road sweepers will be deployed on public roads where necessary to prevent excessive dust or mud deposits.

- Earthworks and stockpiled soil will be protected by covering, seeding or using water suppression where appropriate.
- Site management measures such as the logging of incidents and complaints.
- Monitoring measures such as carrying out site inspections, soiling checks, and checking compliance with Outline Dust Management plan, etc.
- Preparing and maintaining the site (for example, locate dust causing activities away from receptors, barriers, cleaning, enclosed specific operations with high potential for dust production, cover stockpiles, etc).
- Operating vehicle/machinery and sustainable travel: for example, ensure compliance with Non-Road Mobile Machinery (NRMM) standards, do not allow unnecessary idling, use mains electricity where practicable to avoid use of generators, create a travel plan and impose a maximum speed limit of 15mph on surfaced and 10mph on unsurfaced haul roads and work areas.
- Operations-based measures to reduce or eliminate ambient dust such as employing dust suppressants, use enclosed chutes, reduce drop heights, etc.
- If relevant, apply measures to demolition activities such as damping down, avoid use of explosive blasting, soft strip interiors before demolition.
- Measures should be applied where earthworks are being undertaken such as prompt revegetation. Where it is not possible to revegetate use hessian, mulches or tackifiers or cover with topsoil as soon as practicable.
- Measures to be applied to general construction activities include the avoidance of scabbling, keeping aggregates damp, ensure fine powder materials are delivered enclosed and stored in silos, ensuring bags are sealed after use etc.
- Trackout measures to reduce emissions from the action and movement of vehicles include wheel washes, cleaning of access and local roads, avoid dry sweeping of large areas, ensure that vehicle-borne materials are covered, install hard surfaces are laid for longer haul routes, etc.

14.6 Scope of the Assessment

14.6.1 The air quality assessment will consider the construction, operation and maintenance phases of the English Onshore Scheme.

Potential Sensitive Receptors

14.6.2 **Table 14-7** provides a summary of the impact pathways and sensitive receptors during each of the phases of the English Onshore Scheme.

Table 14-7: Receptors and impact pathways for each phase of the English Onshore Scheme

Development Phase	Impact	Receptor
Construction	Dust deposition and health impacts from elevated PM concentrations.	Sensitive ecological and human receptors within 250 m of the construction boundary or within 50 m of roads up to 250 m from the Site entrance(s).
	Increase in NO ₂ , PM ₁₀ and PM _{2.5} concentrations from vehicle emissions.	Sensitive human receptors within 200 m of roads that may be affected by the English Onshore Scheme.
	Increase in NO _x and NH ₃ concentrations and nitrogen deposition rates from vehicle emissions.	Sensitive ecological receptors within 200 m of roads that may be affected by the English Onshore Scheme.
	Increase in local air pollutant concentrations and nitrogen deposition rates from NRMM emissions.	Sensitive human receptors within 200 m of roads, haulage routes and plant locations that may be affected by the English Onshore Scheme.
	Increase in NO _x and NH ₃ concentrations and nitrogen deposition rates from NRMM	Sensitive ecological receptors within 200 m of roads, haulage routes and plant locations that may be affected by the English Onshore Scheme.
Operation/Maintenance	Increase in NO ₂ , PM ₁₀ and PM _{2.5} concentrations from vehicle emissions.	Sensitive human receptors within 200 m of roads that may be affected by the English Onshore Scheme.
	Increase in NO _x and NH ₃ concentrations and nitrogen deposition rates from vehicle emissions.	Sensitive ecological receptors within 200 m of roads that may be affected by the English Onshore Scheme.

Likely Significant Effects

14.6.3 **Table 14-8** outlines the likely significant effects associated with the above impact pathways and sensitive receptors which have been scoped into the air quality assessment.

Table 14-8: Receptors, impact pathways for scoped-in impacts of each phase for the English Onshore Scheme (Air Quality)

Development phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
Construction	Dust deposition and health impacts from elevated PM concentrations caused by construction activities.	Sensitive ecological and human receptors within 250 m of the construction boundary or within 50 m of roads up to 250 m from the Site entrance(s).	Yes – There is the potential for significant effects if standard measures are not adopted or if the measures suggested are not stringent enough to the risk level that is established.	Scoped in
	Increase in local air pollutant concentrations from vehicle emissions.	Sensitive human receptors within 200 m of roads that may be affected by the English Onshore Scheme.	Yes – There is the potential for significant effects should screening of construction traffic flows show vehicle trips exceed the IAQM criteria.	Scoped in
	Increase in local air pollutant concentrations and nitrogen deposition rates from vehicle emissions.	Sensitive ecological receptors within 200 m of roads that may be affected by the English Onshore Scheme.	Yes – There is the potential for significant effects should screening of construction traffic flows show vehicle trips exceed the DMRB criteria.	Scoped in

Effects Scoped out from Further Assessment

14.6.4 **Table 14-9** below summaries the effects scoped out of the air quality assessment together with justification for the outcome.

Table 14-9: Effects scoped out of the air quality assessment

Development Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped out
Construction	Increase in local air pollutant concentrations	Sensitive human and ecological receptors within	No – due to the temporary and transient nature and incorporation of best	Scoped out

Development Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped out
	and nitrogen deposition rates from NRMM emissions.	200 m of roads, haulage routes and plant locations that may be affected by the English Onshore Scheme.	practice measures (Outline CoCP) and compliance with NRMM standards.	
Operation/ Maintenance	Increase in local air pollutant concentrations and nitrogen deposition rates from operation and maintenance phase vehicle emissions.	Sensitive human and ecological receptors within 200 m of roads that may be affected by the English Onshore Scheme.	No – Vehicle trips associated with the operation and maintenance phase are anticipated to be below the IAQM and DMRB screening criteria and therefore impacts are considered to be non-significant.	Scoped out
	Increase in local air pollutant concentrations and nitrogen deposition rates from NRMM emissions.	Sensitive human and ecological receptors within 200 m of roads, haulage routes and plant locations that may be affected by the English Onshore Scheme.	No – due to infrequent, temporary and transient nature and compliance with NRMM standards.	Scoped out

14.6.5

Assessment of emissions from NRMM associated with the construction phase are provisionally scoped out at this stage; Department for Environment Food & Rural Affairs (Local Air Quality Management (Technical Guidance.22)) states that experience of assessment of exhaust emissions from NRMM and site traffic is unlikely to lead to a significance effect on local air quality if subject to suitable controls and site management (such as those summarised in Section 14.27). It also states that in the vast majority of cases, NRMM does not need to be quantitatively assessed and consideration of controls and management would provide sufficient screening. Professional judgment would be applied and justified when further information on construction activities and their location is available.

14.7 Assessment Methodology

Further Data to be Gathered / Processed

14.7.1 In addition to the data sources listed in Section 14.4, assessment within the PEIR and ES would be supported by the following additional information:

- Extent and nature of construction phase activities potentially leading to dust emissions.
- Traffic data for the construction, operation and maintenance phases.
- Extent and nature of NRMM during construction phase.

Construction Phase Dust Risk Assessment

Sensitivity

14.7.2 The sensitivity of the area to dust impacts, can be defined as low, medium, or high sensitivity, in accordance with IAQM construction dust guidance.

14.7.3 The influencing factors to define receptor sensitivity to dust impacts are as follows:

- High – where human receptors are expected to be present continuously for extended periods of time e.g. residential properties, hospitals, schools and care homes. Internationally or nationally designated ecological sites.
- Medium – where users would expect to enjoy a reasonable level of amenity and value could be diminished by dust soiling e.g. parks and places of work. Nationally designated ecological sites.
- Low – where enjoyment of amenity would not reasonably be expected and exposure would be for limited periods e.g. footpaths, shopping streets and car parks. Locally designated ecological sites.

Magnitude

14.7.4 The scale and nature of the works determines the magnitude of dust arising as small, medium or large.

14.7.5 The relevant criteria to define the potential magnitude of dust emissions includes the following factors:

- Small – demolition volume under 12,000 m³, demolition activities less than 6 m above ground level, total site area less than 18,000 m², soil type with large grain size, total building volume less than 12,000 m³, construction material with low potential for dust release, less than 20 HDV trips per day, unpaved road length less than 50 m etc.
- Medium – demolition volume 12,000 m³ - 75,000 m³, demolition activities between 6 m – 12 m above ground level, total site area 18,000 m² – 110,000 m², moderately dusty soil type, potentially dusty construction material, total building volume 12,000 m³ - 75,000 m³, 20 to 50 HDV trips per day, unpaved road length 50 – 100 m etc.
- Large – on-site crushing and screening, demolition volume greater than 75,000 m³, demolition activities greater than 12 m above ground level, total site area greater than 110,000 m², more than 10 heavy earth moving vehicles active at any one-time,

total building volume greater than 75,000 m³, on site concrete batching, sandblasting, more than 50 HDV trips per day, unpaved road length greater than 100 m etc.

Significance

14.7.6 The IAQM construction dust guidance categorises the unmitigated risk of dust impacts on human health and amenity (rather than ascribe a significance of effect) as a means of identifying the level of dust emissions mitigation required to ensure that residual effects are 'not significant'. A higher dust risk rating requires more stringent mitigation measures to limit or eliminate residual effects.

Vehicle Emissions Assessment: Human Receptors

14.7.7 Assessment of human impacts from vehicle emissions would be undertaken should the screening of traffic data meet the criteria set out by the IAQM development control guidance. If these criteria are not exceeded, then the guidance considers air quality impacts associated with a project in terms of traffic emissions to be negligible and no further assessment is required.

Sensitivity

14.7.8 Should screening of the relevant data indicate that any of the IAQM criteria are met, then potential impacts at sensitive receptors would be assessed by calculating the impact in NO₂ and PM_{2.5/10} concentrations resulting from the English Onshore Scheme.

14.7.9 Department for Environment Food & Rural Affairs LAQM.TG (22) defines a sensitive receptor as a location representative of human exposure to a pollutant, over a time period relevant to the objective that is being assessed against, where the AQS objectives are considered to apply, as detailed in **Table 14-10**.

Table 14-10: Examples of where the AQS objectives apply

Averaging period	Objectives should apply at	Objectives should not apply at
Annual Mean	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes etc.	Building façades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
24-Hour Mean	All locations where the annual mean objective would apply, together with	Kerbside sites (as opposed to locations at the building façade), or any other location where public

Averaging period	Objectives should apply at	Objectives should not apply at
	hotels and gardens of residential properties.	exposure is expected to be short term.
1-Hour Mean	<p>All locations where the annual mean and 24-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets).</p> <p>Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where reasonably be expected to spend one hour or more.</p> <p>Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer.</p>	Kerbside sites where the public would not be expected to have regular access.

Magnitude

14.7.10 Detailed dispersion modelling would be undertaken using Cambridge Environmental Research Consultant's (CERC) Atmospheric Dispersion Modelling System software (ADMS) to predict pollutant concentrations at selected receptors within 200 m of those roads which exceeded the traffic change criteria as detailed in IAQM development control guidance. The magnitude of change would be calculated, and total concentrations compared against relevant AQS objectives.

Significance

14.7.11 The significance of effects would be assessed in accordance with the IAQM development control guidance dependent upon the percentage change in concentration between the 'without and with the English Onshore Scheme scenarios', relative to the relevant air quality objectives, as presented in **Table 14-11**.

Table 14-11: IAQM Impact descriptors for individual receptors

Long term average concentration at receptor in assessment year	% Change in concentration relative to Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76 – 94% of AQAL	Negligible	Slight	Moderate	Moderate
95 – 102% of AQAL	Slight	Moderate	Moderate	Substantial
103 – 109% of AQAL	Moderate	Moderate	Substantial	Substantial

Long term average concentration at receptor in assessment year	% Change in concentration relative to Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

14.7.12 The IAQM development control guidance notes that the impact descriptors in **Table 14-9** are for individual receptors only and the overall significance of effect should be determined using professional judgement, taking into the degree of impact and factors such as:

- The existing and future air quality in the absence of the English Onshore Scheme.
- The extent of current and future populations exposure to the impact.
- The influence and validity of any assumptions adopted when undertaking the prediction of impacts.

Vehicle Emissions Assessment: Compliance Risk Assessment

14.7.13 The assessment of the risk of non-compliance with Limit Values (for NO₂, PM₁₀ and PM_{2.5}) would be scoped in for further assessment should the DMRB traffic change criteria be met as a result of changes in traffic attributed to the English Onshore Scheme in either or both of the construction and operational phases. The IAQM does not currently offer any guidance with regards to the assessment of compliance risk, therefore this aspect of the air quality assessment has utilised the compliance risk assessment methodology detailed in National Highways DMRB LA 105.

14.7.14 The methodology recommends that the user overlays the ARN (as per the DMRB traffic change criteria, detailed in Section 14.4), to analyse whether it overlaps with any PCM links. DMRB LA 105 states that compliance risk is to be assessed in those locations where the two road networks intersect, this is known as the Compliance Risk Road Network (CRRN).

14.7.15 The next step is to identify whether or not there are any qualifying features adjacent to the CRRN. Qualifying features include public access (e.g. footpath) and sensitive receptors (e.g. residential properties, schools etc) within 15m of the running lane / kerbside.

14.7.16 The impact of the English Onshore Scheme (i.e. the change in concentrations at receptors) on compliance with the Limit Values in the assessed future year(s) is undertaken in accordance with DMRB LA 105, whereby the contribution of the English Onshore Scheme is added to future baseline concentrations for the relevant assessment year of the English Onshore Scheme.

14.7.17 A zone can only become compliant when locations throughout that zone meet the relevant Limit Value. DMRB LA 105, however, considers the impact of a scheme on the individual links in the PCM model within the zone.

14.7.18 DMRB LA 105 guides the user to provide the answers to three key questions:

- Would the development (or English Onshore Scheme) result in a compliant zone becoming non-compliant?

- Would it delay Department for Environment Food & Rural Affairs data for achieving compliance?
- Would it result in an overall increase in pollutant concentration on PCM links that exceed?

14.7.19 The answers to these questions provide an indication as to whether the English Onshore Scheme would represent a risk to compliance with the Limit Values. If the answer to these questions is no, then it can be concluded that the English Onshore Scheme do not represent a risk to the UK's reported compliance with the Limit Values.

14.7.20 If a development is assessed as having a high risk of non-compliance (i.e. if the answers to one or more of the questions above is yes), then a specific Air Quality Action Plan must be carried which contains actions designed to further mitigate impacts and so reduce the risk of the English Onshore Scheme impacting on compliance.

Vehicle Emissions Assessment: Ecological Impacts

14.7.21 Assessment of ecological impacts from vehicle emissions would be undertaken should the below flow change criteria set out in National Highways' DMRB LA 105 be met; it states relevant international, national, and locally designed sites of ecological importance sensitive to air pollutants within 200m of roads meeting any of the following criteria should be assessed:

- A change in traffic flows (LDV + HDV) $\geq 1,000$ vehicles/day as AADT24.
- A change in HDV flows ≥ 200 vehicles/day as AADT24.
- a change in speed band.
- a change in carriageway alignment by ≥ 5 m.

14.7.22 The ecological assessment would be carried out in accordance with the assessment principles detailed in the IAQM guidance on the assessment of ecological sites.

14.7.23 Quantitative estimates of change in Oxides of Nitrogen (NO_x) and nitrogen deposition would be calculated at those sites which screen in against the above criteria.

14.7.24 The assessment of change in NO_x and nitrogen deposition in designated sites of ecological importance includes the following:

- Identification of designated sites within 200 m of the DMRB LA 105 of the ARN, which have designated features sensitive to air pollutants. If the site is found to not be specifically affected by the source, then no further assessment is required.
- Calculation of annual mean NO_x concentrations and nitrogen deposition at the designated sites with and without the English Onshore Scheme. This would be determined by modelling the dispersion of the emissions and estimating dry deposition of nitrogen at the designated site with and without the English Onshore Scheme. This would be done by modelling a series of receptors in a transect (spaced at 10 m intervals) extending into the site from the closest point between the designated site and the nearest affected road (out to a distance of 200 m from the road).
- Where related changes in nitrogen deposition (as a result of the English Onshore Scheme) are expected to be less than or equal to 1 % of the site relevant lower critical load (LCL) then impacts are expected to be **Not Significant**. Where the change is greater than 1 %, the impact is sufficiently large that it cannot be screened

out and therefore it could have a potential **Significant** effect and warrants further interpretation by the ecologist.

14.7.25

It should be noted that road traffic can contribute to nitrogen deposition as a result of emissions of NO_x and ammonia (NH₃). Vehicles generate NH₃ due to the technologies used to control emissions of other pollutants such as NO_x. An increase in nitrogen deposition can then lead to adverse effects on ecological receptors depending on the nitrogen deposition in relation to the LCL of the habitat in question. Therefore, the assessment of ecological impacts will account for emissions of NH₃.

14.8 Assessment Limitations and Assumptions

14.8.1

The following limitations and assumptions have been identified:

- There is limited detail available for NRMM during the construction and maintenance phases and regarding the potential use of diesel generators at this stage. It is assumed that emissions would be temporary and transient in nature and therefore negligible in terms of air quality impacts and significance, however this will be confirmed in the PEIR and ES once further information is available.
- It is unlikely that the effect of the English Onshore Scheme on average daily speeds during the construction phase or operational phase would be quantified. Advice will be taken from the Traffic and Transport specialists on the speeds to set on each road in order to calculate an emission rate, should road vehicles require assessment in either phase. Best practice guidance regarding the manual adjustment of speeds as detailed in Department for Environment Food & Rural Affairs LAQM TG.22 would be applied alongside professional judgement to reflect any potential congestion.
- The decision to screen in or screen out certain assessment elements has been informed by existing information, or where there is an absence of information the decision has been informed by experience and professional judgement. It should be noted that additional elements may be scoped in, or conversely scoped out over the course of the pre-application phase should information or data arise which justifies such a decision.

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- Ref 14.10 His Majesty's Stationery Office (2023) The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023
- Ref 14.11 Department for Energy Security and Net Zero (2023) National Policy Statement for Electricity Networks Infrastructure (EN-5)
- Ref 14.12 Department for Energy Security and Net Zero (2023) Overarching National Policy Statement for Energy (EN-1)
- Ref 14.13 Department for Levelling Up, Housing and Communities (2023). National Planning Policy Guidance (NPPG).
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15. Socio- economics, Recreation and Tourism

15. Socio-economics, Recreation and Tourism

15.1 Introduction

15.1.1 The socio-economics, recreation and tourism assessment will consider the potentially significant effects on sensitive human and economic receptors that may arise from the construction and operation of the English Onshore Scheme.

15.1.2 This chapter of the Scoping Report sets out the relevant legislation, planning policy context and technical guidance used to inform the scope of the assessment and summarises any consultation and engagement in relation to socio-economics, recreation and tourism undertaken to date. It provides an overview of the baseline conditions relevant to socio-economics, recreation and tourism within/around the Scoping Boundary, the measures which will be incorporated into the English Onshore Scheme to mitigate socio-economics, recreation and tourism effects, the likely significant effects to be considered within the assessment, and how these likely significant effects will be assessed for the purpose of an EIA.

15.1.3 This chapter should be read in conjunction and considered alongside the following chapters found in Volume 1:

- **Part 2 Chapter 4: English Onshore Scheme**
- **Part 2, Chapter 5: EIA Methodology**
- **Part 2, Chapter 8: Landscape and Visual Amenity**
- **Part 2, Chapter 11: Agriculture and Soils**
- **Part 2, Chapter 12: Traffic and Transport**
- **Part 2, Chapter 13: Noise and Vibration**
- **Part 2, Chapter 14: Air Quality**
- **Part 2, Chapter 16: Health and Wellbeing**
- **Part 4, Chapter 35: Cumulative Effects**

15.1.4 This chapter is supported by the following figures:

- **Figure 15-1: Socio-economic 500 m Study Area**
- **Figure 15-2: 5 km Study Area Boundary – Tourism**

15.1.5 The scope of this socio-economics, recreation and tourism chapter considers those receptors which have the potential to experience changes to accessibility, severance, provision of facilities and restriction of use. This scope differs from the assessment of human health and wellbeing (as outlined in **Part 2 Chapter 16: Health and Wellbeing**) as it focuses on the inconvenience or disadvantage to a population or user group and how the construction or operation of the English Onshore Scheme affect their ability to undertake certain activities, or facilitates or provides opportunity for them to undertake certain activities. It does not consider this from the perspective of how this may impact

an individual’s health and wellbeing; this is assessed separately in **Part 2 Chapter 16: Health and Wellbeing** and means that some receptors e.g. pedestrian routes, may be discussed in both chapters but applying different metrics and assessment methodologies.

15.2 Relevant Legislation, Planning Policy and Technical Guidance

15.2.1 This section identifies the relevant legislation, national and local policy, and guidance which has informed the scope of the socio-economics, recreation and tourism assessment.

Legislation

15.2.2 There is no legislation that is directly relevant to the assessment of socio-economics in terms of scope specification, or that provides appropriate standards and thresholds for determining significance of effects. For tourism and recreation, relevant legislation is outlined in **Table 15-1** below.

Table 15-1: Legislation relevant to recreation and tourism

Legislation	Legislative Context	Section Considered
Environment Act, (2021) (Ref 15.1)	The Environment Act outlines targets, plans and policies for improving the natural environment. Part 1 (Environmental Targets) Regulation 1 (1) states: <i>“The Secretary of State may by regulations set long-term targets in respect of any matter which relates to (a) the natural environment, or (b) people’s enjoyment of the natural environment”</i> .	Section 15.4 Baseline Conditions and Section 15.7 Assessment Methodology
Countryside and Rights of Way (CROW) Act, (2000) (Ref 15.2)	The CROW Act makes provision for, and aims to protect public access to the countryside. It extends the right of public access, including to woodlands, the Green Belt, waters and grasslands, and for connectivity purposes.	Section 15.4 Baseline Conditions and Section 15.7 Assessment Methodology
Equality Act, (2010) (Ref 15.3)	The Equality Act outlines legislation to protect people from discrimination in the workplace and in wider society, addressing the key protected characteristics of: age; disability; gender reassignment; marriage and civil partnership; pregnancy and	Section 15.4 Baseline Conditions and Section 15.7 Assessment Methodology

Legislation	Legislative Context	Section Considered
	maternity; race; religion or belief; sex; and sexual orientation.	
Localism Act, (2011) (Ref 15.4)	The Localism Act gives rights and powers to both communities and individuals. It is relevant in the context of the Project due to its proximity to recreational facilities.	Section 15.4 Baseline Conditions

Planning Policy

15.2.3 A summary of the planning policies at both a national and local level relevant to the scope of socio-economics, recreation and tourism effects is outlined in **Table 15-2**.

Table 15-2: Planning Policy relevant to socio-economics, recreation and tourism

Policy Reference	Policy Context	Section Considered
National Policy		
<i>Overarching National Policy Statement (NPS) for Energy (EN-1) (2024) (Ref 15.5)</i>		
Section 5.13	Sets out an overall approach to energy infrastructure from a socio-economic perspective.	Has influenced this Scoping chapter as a whole.
Section 5.13.4	Details some of the likely economic impacts that should be considered as part of any assessment.	
Section 5.13.10	States that it may be concluded “ <i>that limited weight is to be given to assertions of socio-economic impacts that are not supported by evidence (particularly in view of the need for energy infrastructure as set out in the NPS</i> ”.	
<i>NPS for Electricity Networks Infrastructure (EN-5) (2024) (Ref 15.6)</i>		
N/A	Supports EN-1 by providing guidance on new electricity networks infrastructure to ensure it is well designed. It includes advice on landscape and visual and noise and vibration matters which may have a bearing on the socio-economic, tourism and recreation assessment.	Has influenced this Scoping chapter as a whole. Likely significant effects are outlined in Section 16.6
<i>National Planning Policy Framework (NPPF) (Ref 15.7)</i>		

Policy Reference	Policy Context	Section Considered
Paragraph 86a Paragraph 97c	Sets out national planning policies in accordance with the relevant NPS. Chapter 6 includes policies aimed at building a strong, competitive economy and Chapter 8 includes policies aimed at promoting healthy and safe communities.	Has influenced this Scoping chapter as a whole. Relevant national and local policies are outlined in this section (Section 15.2)
Local Policy		
<i>Lincolnshire County Council: Lincolnshire Minerals and Waste Local Plan Core Strategy and Development Management Policies, (2016) (Ref 15.8)</i>		
Policy DM1: Presumption in favour of sustainable development	When considering development proposals, the County Council will take a positive approach that reflects the presumption in favour of sustainable development contained in the NPPF.	Has influenced this Scoping chapter as a whole. Relevant local planning policy matters are considered within Section 15.6: Potential Receptors, Likely Significant Effects, and Potential Effects Scoped Out From Further Assessment
<i>East Lindsey District Council: East Lindsey Local Plan Core Strategy, (2018) (Ref 15.9)</i>		
Strategic Policy 2 (SP2): Sustainable Development	When considering development proposals, the Council will take a positive approach that reflects the presumption in favour of sustainable development contained in the NPPF.	Has influenced this Scoping chapter as a whole. Relevant local planning policy matters are considered within Section 15.6: Potential Receptors, Likely Significant Effects, and Potential Effects Scoped Out From Further Assessment
Strategic Policy 13 (SP13): Inland Employment	The Council will support growth and diversification of the local economy by identifying and protecting employment land, and by supporting proposals that strengthen the rural economy.	Has influenced this Scoping chapter as a whole. Relevant local planning policy matters are considered within Section 15.6: Potential Receptors, Likely Significant Effects, and Potential Effects Scoped Out From Further Assessment
Strategic Policy 15 (SP15): Widening the Inland Tourism and Leisure Economy	The Council will support quality tourism facilities and attractions where then benefit the tourism and leisure economy and provide employment opportunities.	
Strategic Policy 17 (SP17): Coastal East Lindsey	The Council will give a high priority to development that extends and diversifies all-year round employment opportunities, contributes directly to the local economy, infrastructure or extends and diversifies the tourism market.	
Strategic Policy 19 (SP19): Holiday Accommodation	Whilst the Council supports development that adds to the tourism and employment opportunities on the coast, it will seek to limit the negative	

Policy Reference	Policy Context	Section Considered
	environmental impacts resulting from this type of development.	
Strategic Policy 20 (SP20): Visitor Economy	The Council will support developments which adds to the scope of holiday facilities and attractions at local holiday destinations, and where the proposals support the economy and conforms to sustainable development principles.	
Strategic Policy 26 (SP26): Open Space, Sport and Recreation	The Council will support development that facilitates the Council’s aspiration to increase participation in sports and physical activity. The Council will safeguard, expand, enhance and promote access to sports and recreational facilities and open spaces.	
<i>Boston Borough Council and South Holland District Council: South East Lincolnshire Local Plan 2011-2036, (2019) (Ref 15.10)</i>		
Policy 7: Improving South East Lincolnshire’s Employment Land Portfolio	The South East Lincolnshire authorities will, in principle, support proposals which assist in the delivery of economic prosperity and jobs in the area.	Has influenced this Scoping chapter as a whole. Relevant local planning policy matters are considered within Section 15.6: Potential Receptors, Likely Significant Effects, and Potential Effects Scoped Out From Further Assessment
Policy 9: Promoting a Stronger Visitor Economy	Proposals for tourism and visitor development which utilise and enrich the natural and built environment and existing attractions of South East Lincolnshire to the benefit of the local economy, visitors and local communities will be supported.	
Policy 32: Community Health and Well-Being	Development shall contribute to: the creation of socially-cohesive and inclusive communities; reducing health inequalities; and improving the community’s health and well-being.	
<i>Borough Council of Kings Lynn and West Norfolk: Local Development Framework - Core Strategy, (2011) (Ref 15.11)</i>		
Policy CS08: Sustainable Development	In preparing for population growth in the Borough it is imperative that proposals for new development and redevelopment are based on sound design principles. The Council will support developments of high quality design and promote and encourage opportunities that achieve high	Has influenced this Scoping chapter as a whole. Relevant local planning policy matters are considered within Section 15.6: Potential Receptors, Likely Significant Effects, and Potential Effects

Policy Reference	Policy Context	Section Considered
	standards of sustainability and energy efficiency.	Scoped Out From Further Assessment
Policy CS10: The Economy	<p>The local economy is to be developed sustainably to facilitate job growth in the local economy and increase the proportion of higher skilled jobs.</p> <p>Retail, tourism, leisure, and cultural industries are key elements of the economic and social vibrancy of the Borough, and contribute to the regeneration and growth of the area. The Council will promote opportunities to improve and enhance the visitor economy.</p> <p>The Council will support the rural economy and diversification through a rural exception approach to new development within the countryside.</p>	
Policy CS13: Community & Culture	<p>To ensure that people have the opportunity to exercise and improve their health the Council will support proposals that protect, retain or enhance sports, leisure and recreation facilities.</p> <p>The Council recognises the importance of community facilities and services to improving people's quality of life, reducing inequality and improving community cohesion.</p>	
<i>Fenland District Council: Fenland Local Plan, (2014) (Ref 15.12)</i>		
Policy LP1: A Presumption in Favour of Sustainable Development	When considering development proposals, Fenland District Council will take a positive approach that reflects the presumption in favour of sustainable development contained in the National Planning Policy Framework. The Council will work to secure development that improves the economic, social and environmental conditions.	Noted for context given the Project route alignment ends in the adjacent district to Fenland.
Policy LP6: Employment, Tourism, Community Facilities and Retail	Opportunities for jobs growth in the district will be maximised and the Council will facilitate the delivery of new employment land to provide for business, industrial and distribution uses.	

Policy Reference	Policy Context	Section Considered
	<p>The Tourism and visitor industry will be supported by welcoming new accommodation and attractions, and retaining hotels. Existing cultural, tourism and visitor facilities will be protected and where possible enhanced.</p> <p>Proposals that would lead to the loss of community facilities will only be permitted if it meets certain criteria that preserves the availability of the services.</p>	
Policy LP12: Rural Area Development Policy	For rural settlements, new development will be supported where it contributes to the sustainability of that settlement and does not harm the wide open character of the countryside.	

Technical Guidance

15.2.4 A summary of technical guidance relevant to the assessment of socio-economics, recreation and tourism is outlined in **Table 15-3**.

Table 15-3: Technical Guidance relevant to socio-economics, recreation and tourism

Technical Guidance Document	Context	Section Considered
National Planning Practice Guidance (NPPG), (2021) (Ref 15.13)		
Entire document	This accompanies the NPPF and sets out guidance on how NPPF policy should be interpreted and implemented.	Has influenced this Scoping chapter as a whole.
NPPG - Open Space, Sports and Recreation Facilities, Public Rights of Way (PRoW) and Local Green Space, (2014) (Ref 15.14)		
Entire document	This sets out guidance on how new planning proposals should consider potential impacts on open space, sports and recreation facilities and PRoW.	Has influenced this Scoping chapter as a whole for sections relating to recreation.
Design Manual for Roads and Bridges (DMRB) LA 112, (2020) (Ref 15.15)		
Volume 11, Section 3, Part 6: Land Use and Part 8: Pedestrians, Cyclists, Equestrians and Community Effects	Whilst it is acknowledged that the DMRB is the standard for assessment of road schemes in Great Britain and Northern Ireland, this guidance provides a useful reference point for assessing recreational, land use and community	Has influenced this Scoping chapter as a whole.

Technical Guidance Document	Context	Section Considered
	impacts of linear infrastructure, in the context of non-residential schemes.	
DMRB LA 104, (2020) (Ref 15.16)		
Section 3, Environmental assessment methodology	DMRB LA 104 provides context for assigning value to receptors in terms of magnitude of impact and significance. This provides a useful reference for the assessment methodology for recreation and tourism related effects.	Has influenced this Scoping chapter as a whole for sections relating to recreation and tourism.
Homes and Community Agency (HCA) (now known as Homes England): Employment Density Guide 3rd Edition, (2015) (Ref 15.17)		
Entire document	The document provides guidance on the assessment of employment generation and associated densities for socio-economic assessments.	Has influenced this Scoping chapter as a whole for sections relating to employment and the economy.
Homes and Community Agency (HCA): Additionality Guide 4th Edition, (2014) (Ref 15.18)		
Entire document	The document provides guidance on the assessment of indirect and induced effects associated with employment generation and relevant metrics which can be applied to the assessment of employment generation for socio-economic assessments.	Has influenced this Scoping chapter as a whole for sections relating to employment and the economy.

15.3 Consultation and Engagement

- 15.3.1 To date no engagement in relation to socio-economics, recreation and tourism has been undertaken. It is anticipated that feedback in relation to this topic and the scope of works will be gained following consultation on this Scoping Report, both for the socio-economics, recreation and tourism chapter, and those related chapters identified in **Paragraph 15.1.3**.

15.4 Baseline Conditions

Study Area

- 15.4.1 The study area for socio-economics, recreation and tourism is detailed below for each element of the assessment and varies according to the receptor. In the absence of statutory guidance for socio-economics, reference has been made to planning policy, best practice guidance, and professional judgement and experience.
- 15.4.2 As outlined in **Table 15-3**, National Highways DMRB LA 112 Guidance (Ref 15.15) provides the best methodology for assessing many of the tourism and recreation

receptors in the context of the English Onshore Scheme. For these receptors, the approximate centre point of the Graduated Swathe (indicating the likely Preferred Corridor route for the underground HVDC cables between landfalls and the Walpole Stations Area and the LCS Stations Area) has been used to define the study area boundary for the purposes of Scoping, incorporating a catchment around the centre point. The identified receptors will be revised as part of the PEIR and ES.

Socio-economics

- **Employment Generation:** The study area for employment generation follows guidance set out within the Employment Density Guide 3rd Edition (Ref 15.17) and Additionality Guide 4th Edition (Ref 15.18)¹⁷. A 'local' (Lincolnshire County Council and Norfolk County Council) and 'regional' (East Midlands and East of England) study area will be used for construction employment generation, as this represents the principal labour market catchment area. The Scoping Boundary is likely to be highly accessible from most areas of the East Midlands and East of England, and this labour market incorporates the population that may reasonably be expected to travel to and benefit from employment associated with construction of the English Onshore Scheme.
- **Businesses and Development Land:** Those businesses and any parcels of allocated land located within the 500 m study area (500 m from the centre point of the Scoping Boundary¹⁸) (**Figure 5-1 Socio-economic 500 m Study Area**), or those which have a direct means of access within the study area.
- **Private Property and Housing:** Private properties and dwellings that lie within the 500 m study area (**Figure 5-1 Socio-economic 500 m Study Area**), or those which have a direct means of access within the study area.

Recreation

- **Public access for walkers, cyclists, and horse riders (WCH):** A 500 m study area (**Figure 5-1 Socio-economic 500 m Study Area**) will be used for the assessment of change in accessibility and amenity value of recreational routes used by WCH.
- **Community land and recreational facilities:** Community land and recreational facilities located within the 500 m study area (**Figure 5-1 Socio-economic 500 m Study Area**), or those which have a direct means of access within the study area.

Tourism

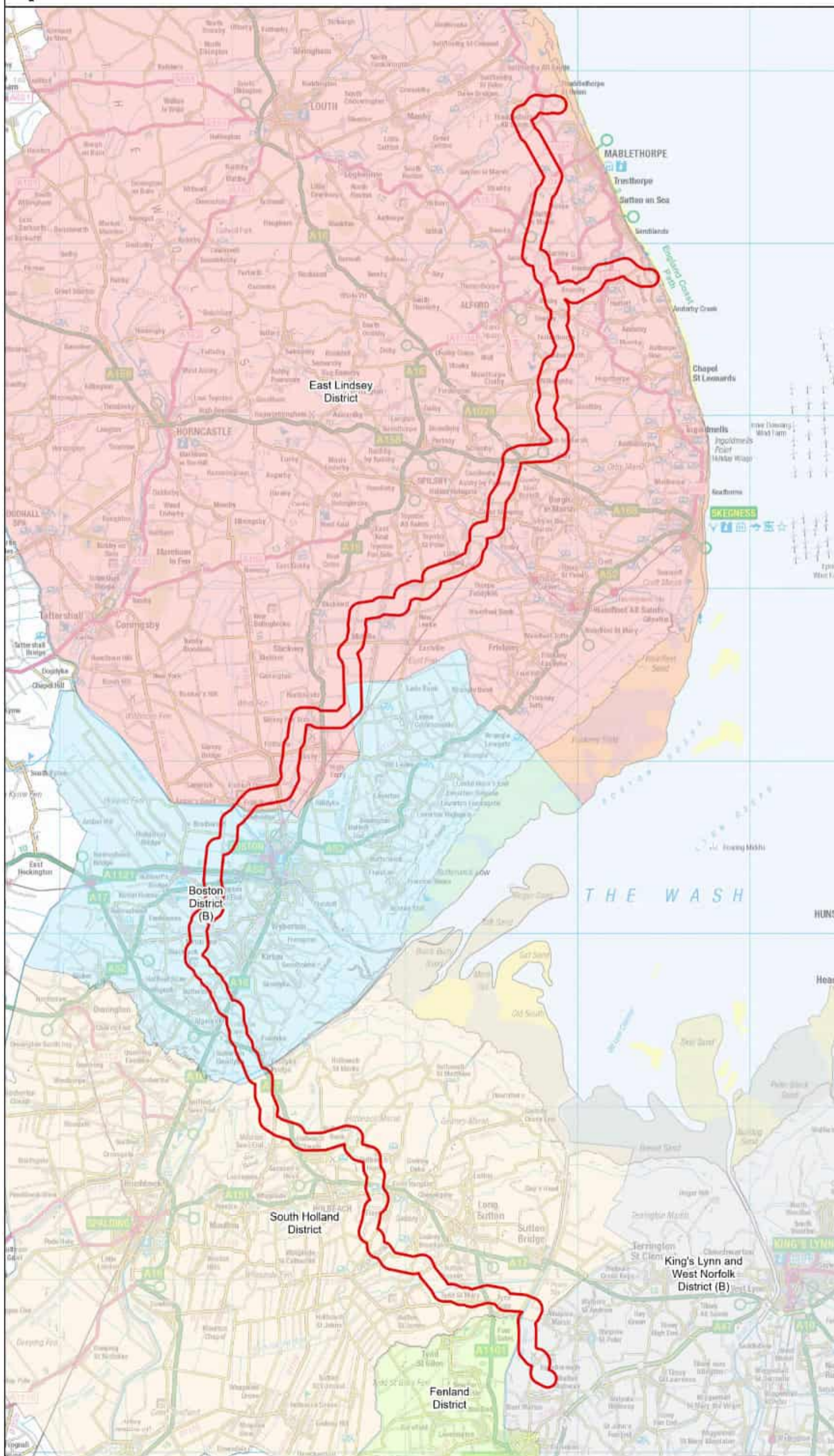
- **Tourist attractions and tourist accommodation:** A 5 km study area (**Figure 15-2 5 km Study Area Boundary – Tourism**) will be used in order to capture those attractions or accommodation providers most likely to be affected by the English Onshore Scheme.

¹⁷ Whilst both of the guidance documents were withdrawn in 2022 due to the Homes and Communities Agency being replaced by Homes England, no statement on replacement guides published by the United Kingdom Government has been made, where both guidance documents are still available for reference. It is considered that in the absence of any further guidance on employment density and additionality, these documents remain relevant and appropriate guidance documents.

¹⁸ The 500 m study area follows the whole route from the approximate centre point of the Graduated Swathe. Relevant receptors that are located just beyond the study area boundary will also be considered.

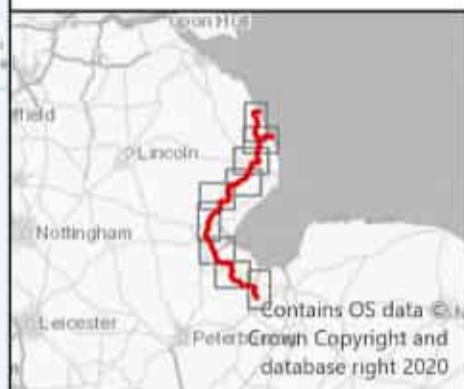


Figure 15-1
500m Study Area Boundary



Legend

-  500m Buffer Boundary
- District Borough Unitary Region
 -  Boston District (B)
 -  East Lindsey District
 -  Fenland District
 -  King's Lynn and West Norfolk District (B)
 -  South Holland District



Notes
This drawing is scaled at paper size A3, therefore any prints taken at smaller sizes will affect accuracy of the measurement units and should not be scaled against.

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Kilometers

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Title
**Figure 15-1
500m Study Area Boundary**

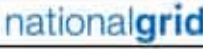





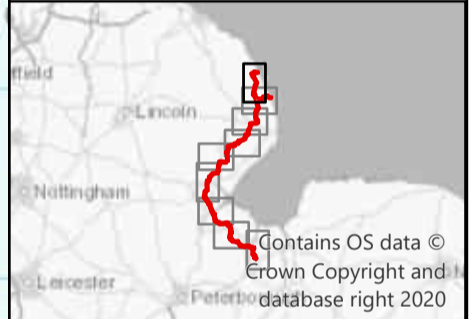
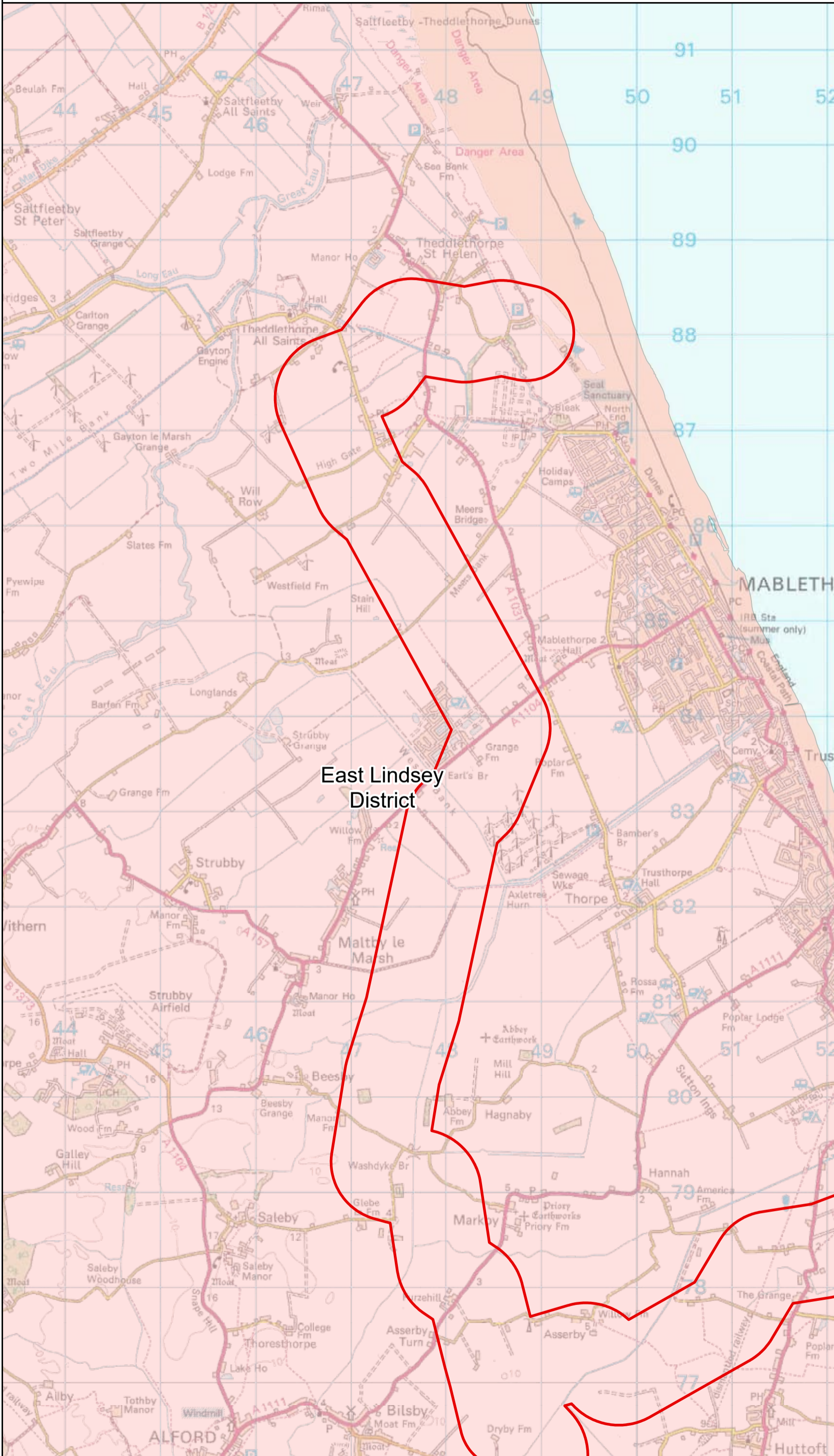
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Figure 15-1
500m Study Area Boundary

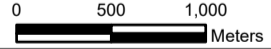
Legend

-  500m Buffer Boundary
-  District Borough Unitary Region
-  East Lindsey District



Notes
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**Figure 15-1
500m Study Area Boundary**



Figure Number
Figure 15-1

Drawing Reference
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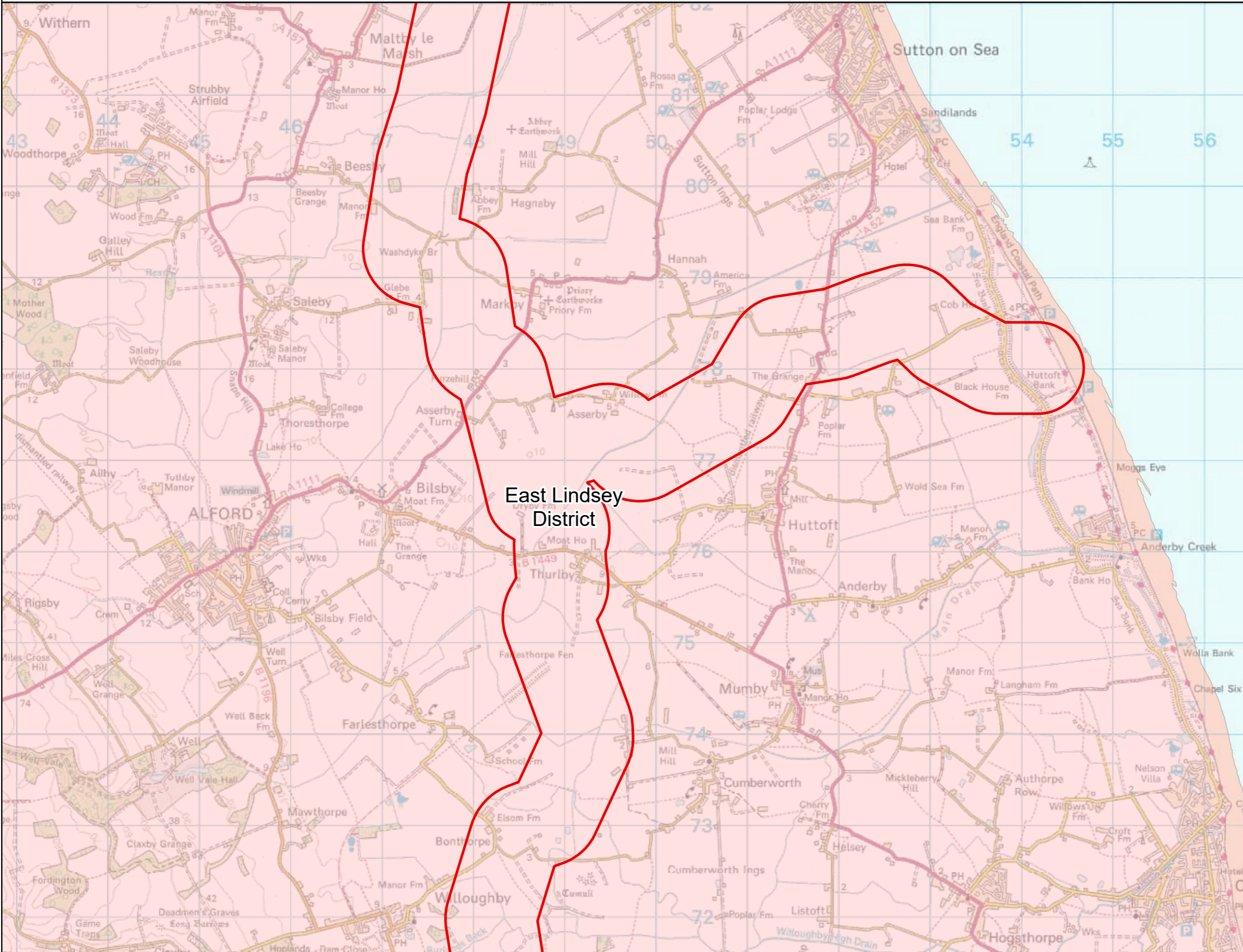
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Figure 15-1
500m Study Area Boundary

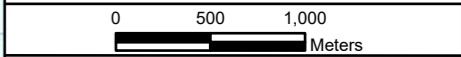
Legend

- 500m Buffer Boundary
- District Borough Unitary Region
- East Lindsey District



Notes
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**Figure 15-1
500m Study Area Boundary**



Figure Number
Figure 15-1

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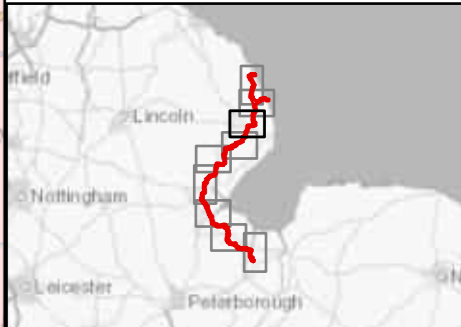
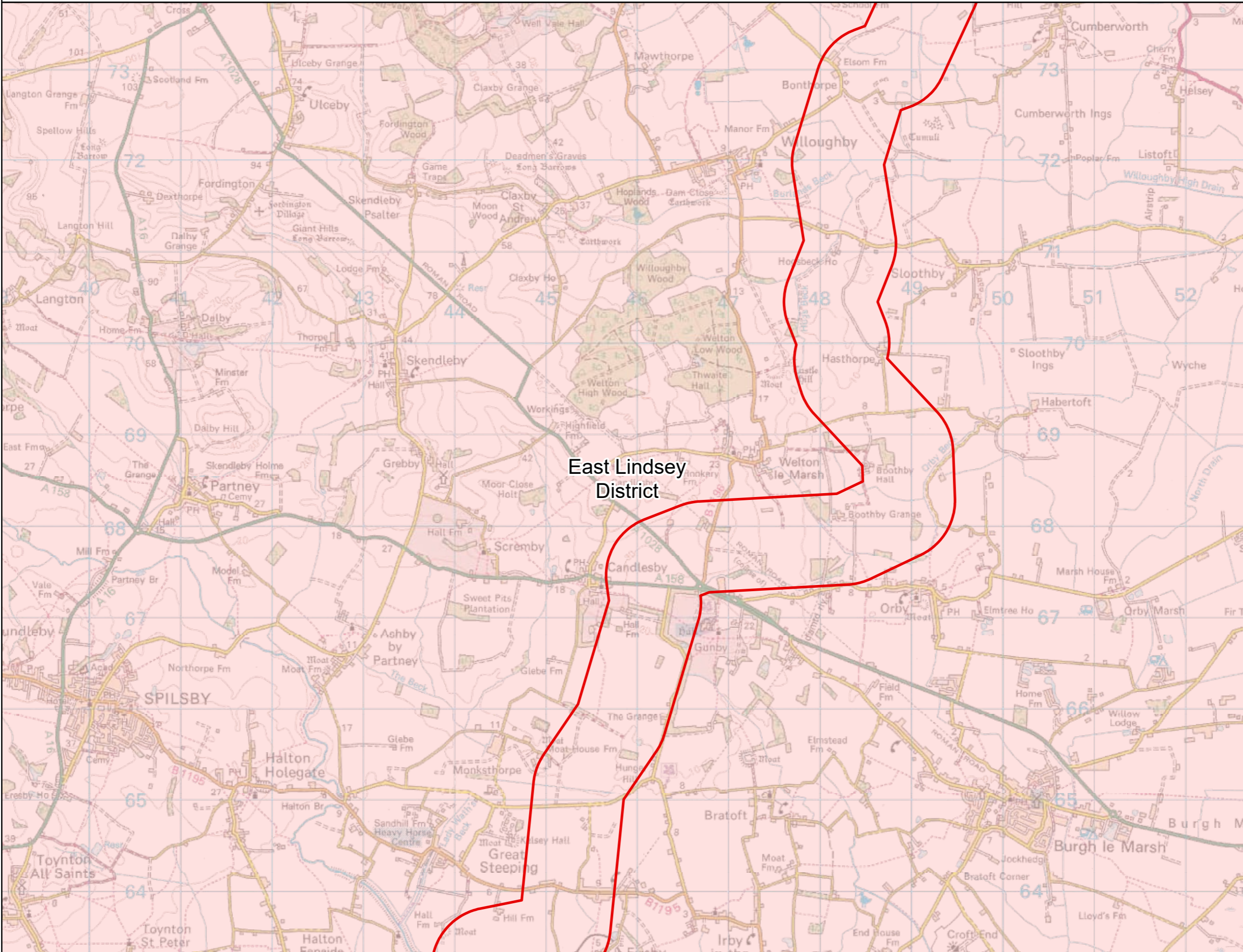
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Figure 15-1
500m Study Area Boundary

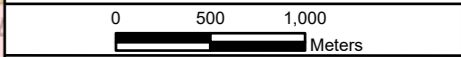
Legend

- 500m Buffer Boundary
- District Borough Unitary Region
- East Lindsey District



Notes
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**Figure 15-1
500m Study Area Boundary**



Figure Number
Figure 15-1




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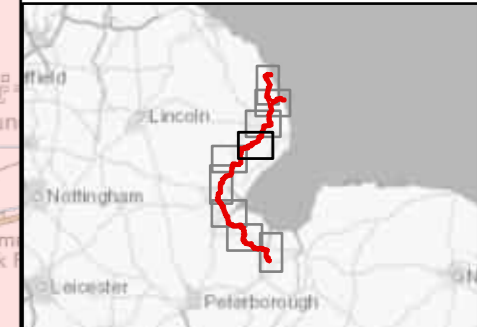
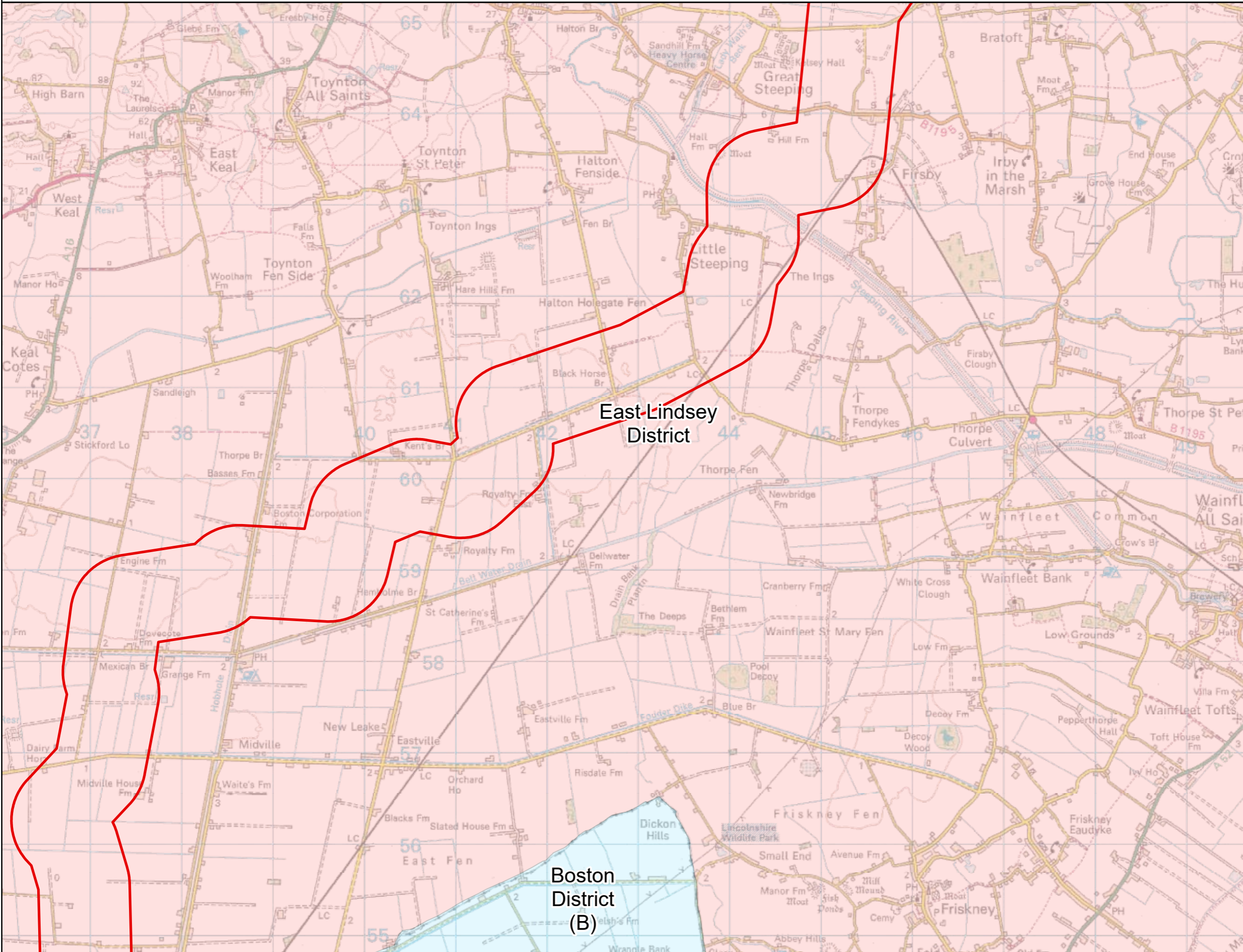
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Figure 15-1
500m Study Area Boundary

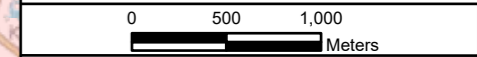
Legend

-  500m Buffer Boundary
- District Borough Unitary Region
-  Boston District (B)
-  East Lindsey District



Notes
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Figure 15-1
500m Study Area Boundary



Figure Number
Figure 15-1

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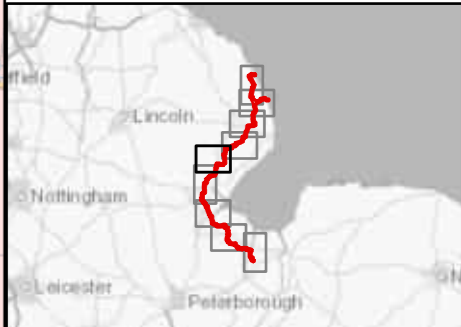
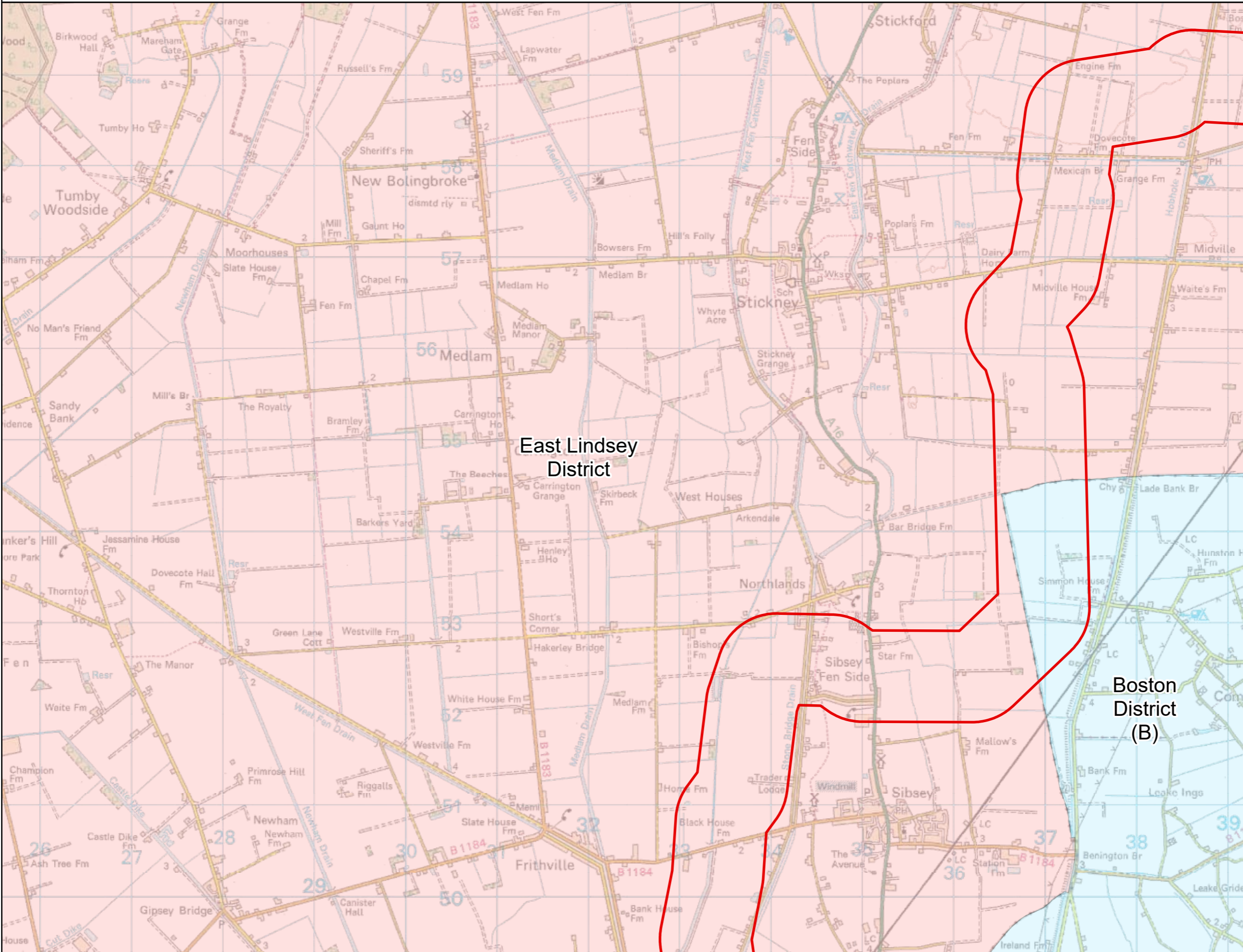
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Figure 15-1
500m Study Area Boundary

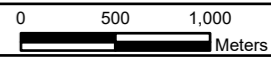
Legend

- 500m Buffer Boundary
- District Borough Unitary Region
- Boston District (B)
- East Lindsey District



Notes
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**Figure 15-1
500m Study Area Boundary**



Figure Number
Figure 15-1





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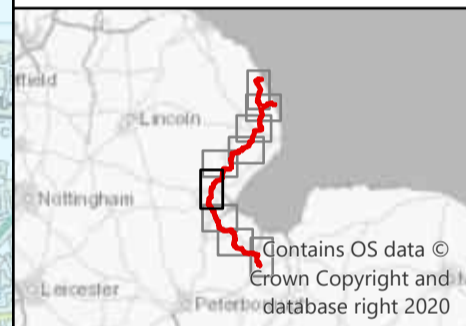
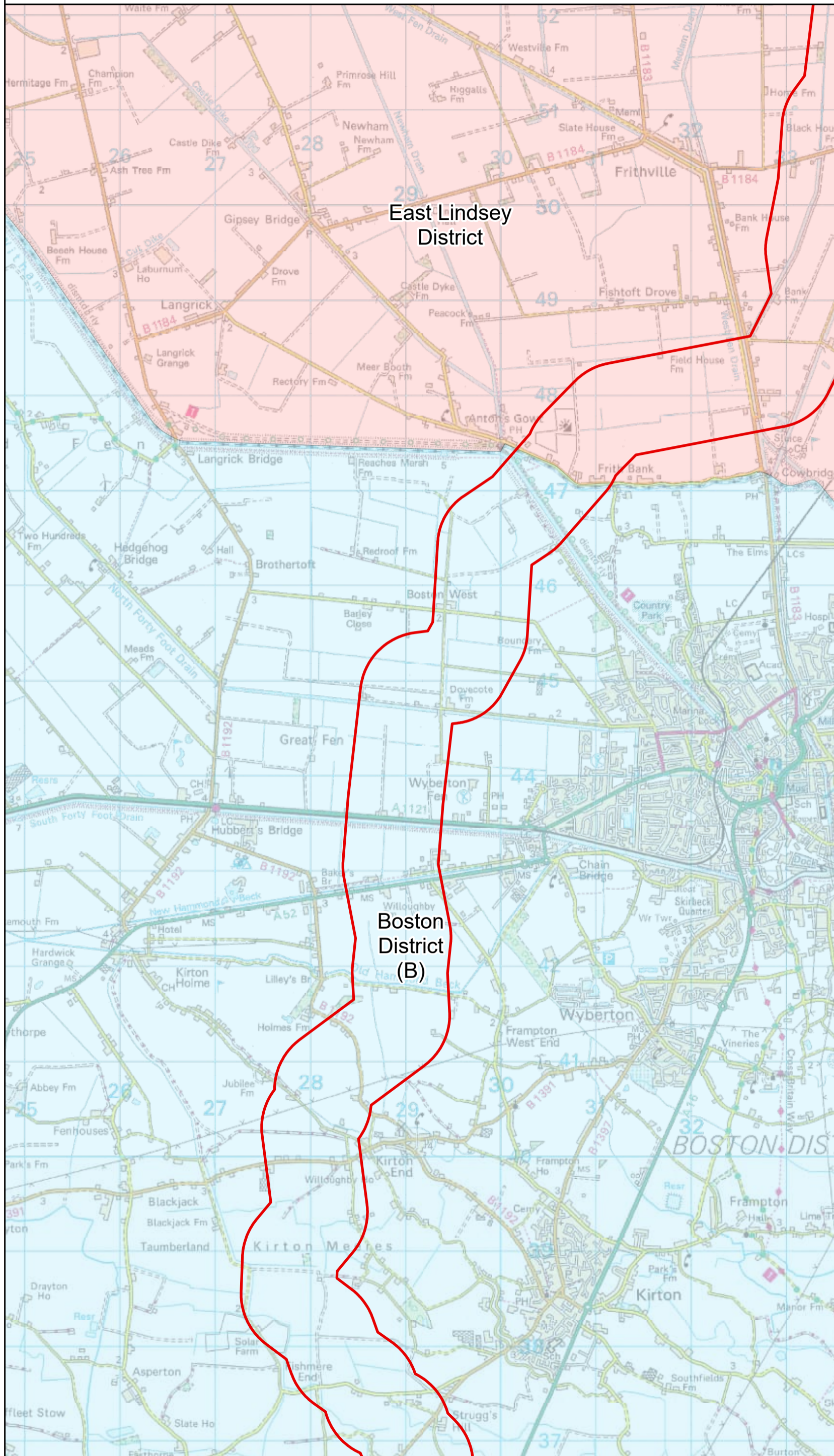
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Figure 15-1
500m Study Area Boundary

Legend

-  500m Buffer Boundary
-  District Borough Unitary Region
-  Boston District (B)
-  East Lindsey District



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Meters

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Figure 15-1
500m Study Area Boundary


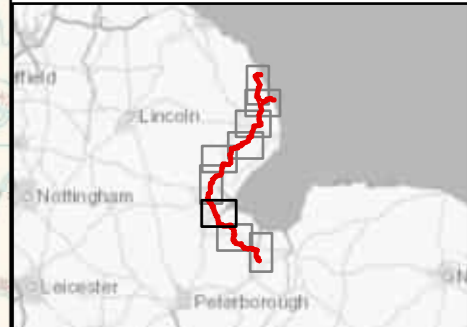
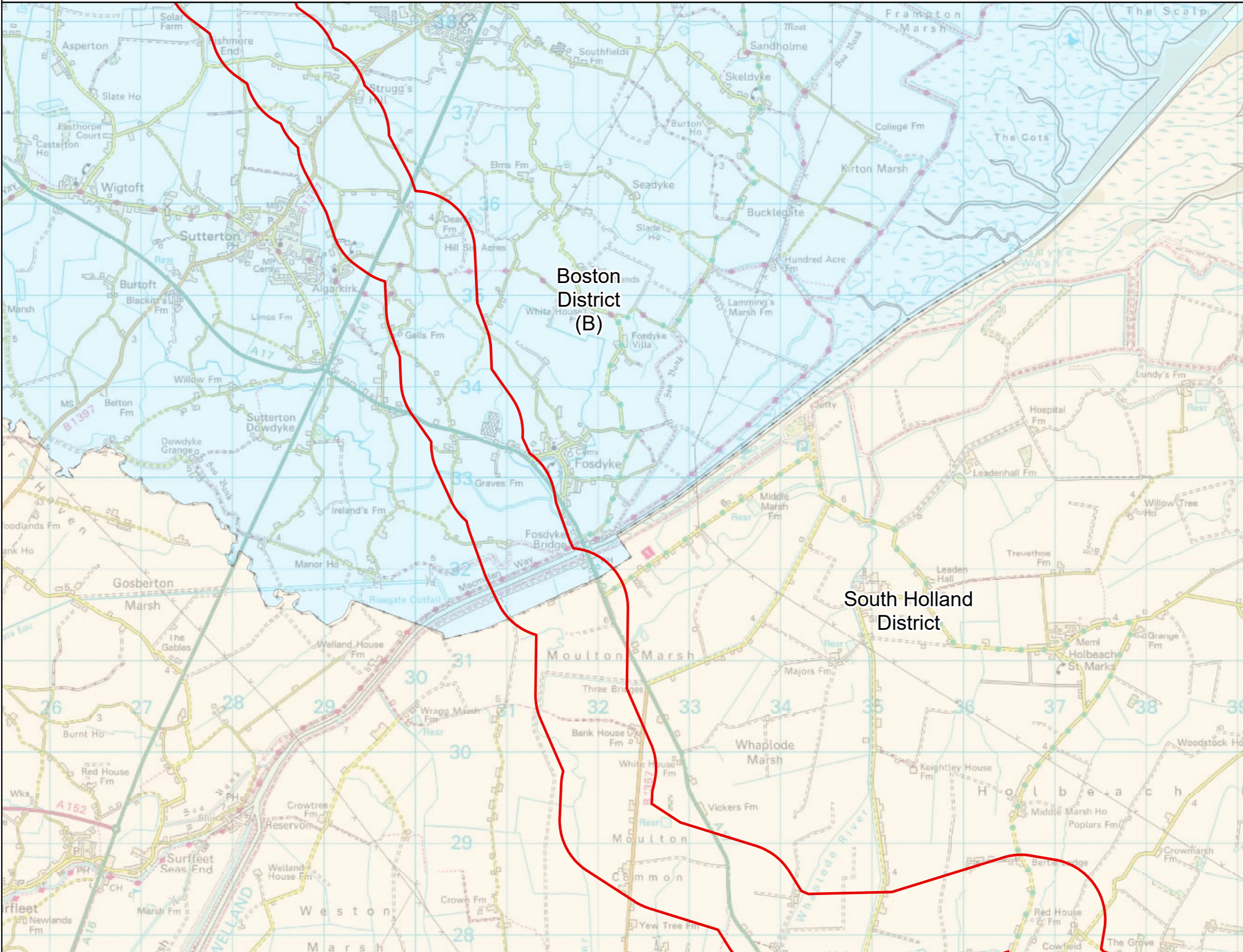
			
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Figure 15-1
500m Study Area Boundary

Legend

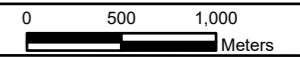
- 500m Buffer Boundary
- District Borough Unitary Region
- Boston District (B)
- South Holland District



Notes

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Title

Figure 15-1
500m Study Area Boundary



Figure Number
Figure 15-1




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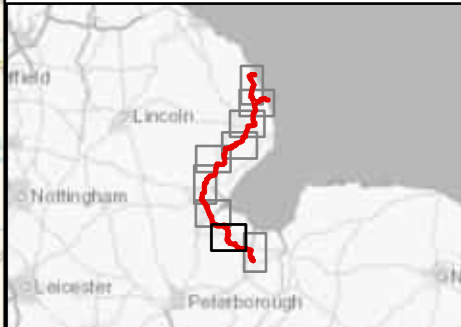
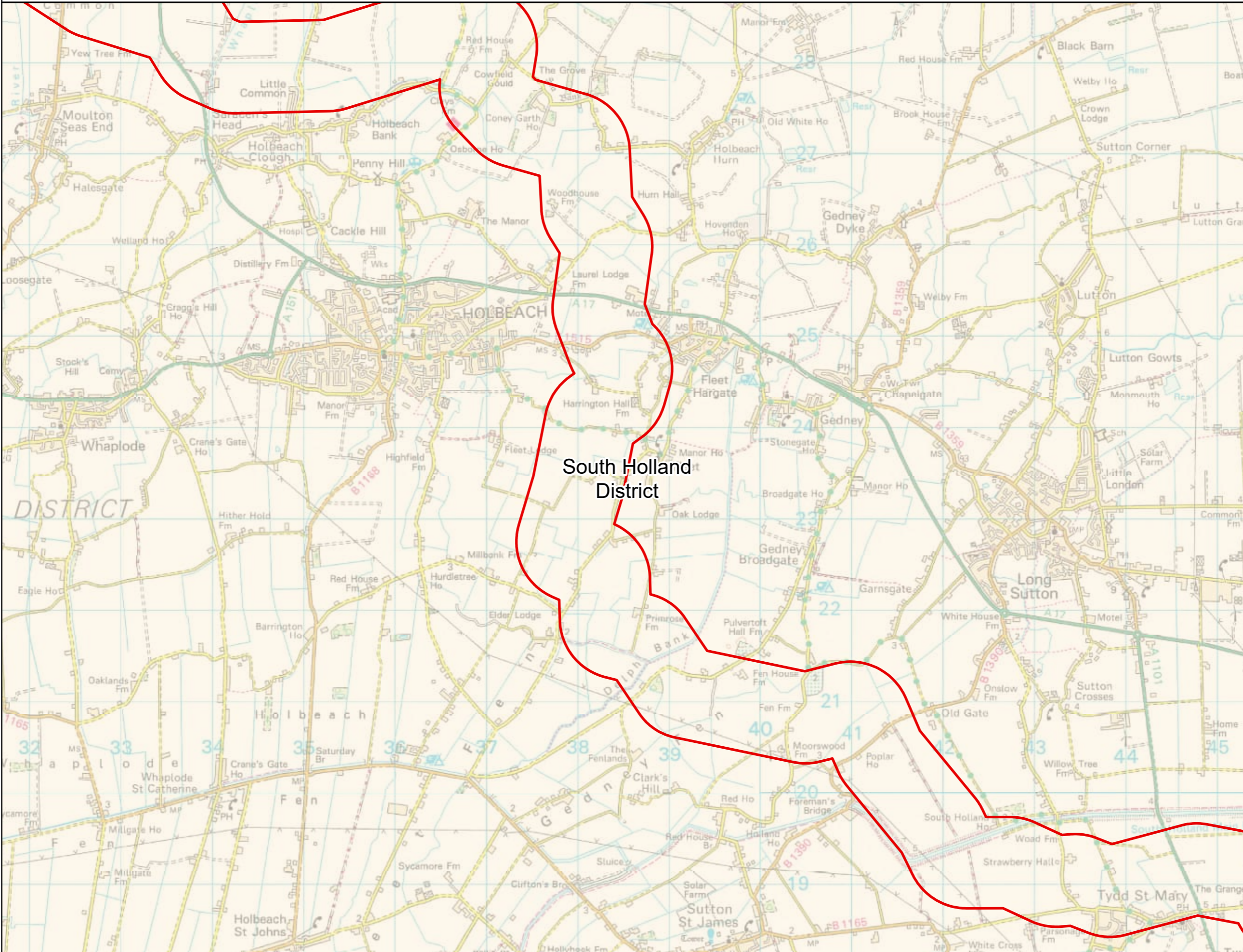
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Figure 15-1
500m Study Area Boundary

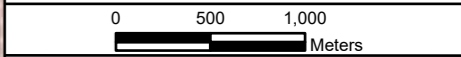
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-  500m Buffer Boundary
-  District Borough Unitary Region
-  South Holland District



Notes
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**Figure 15-1
500m Study Area Boundary**



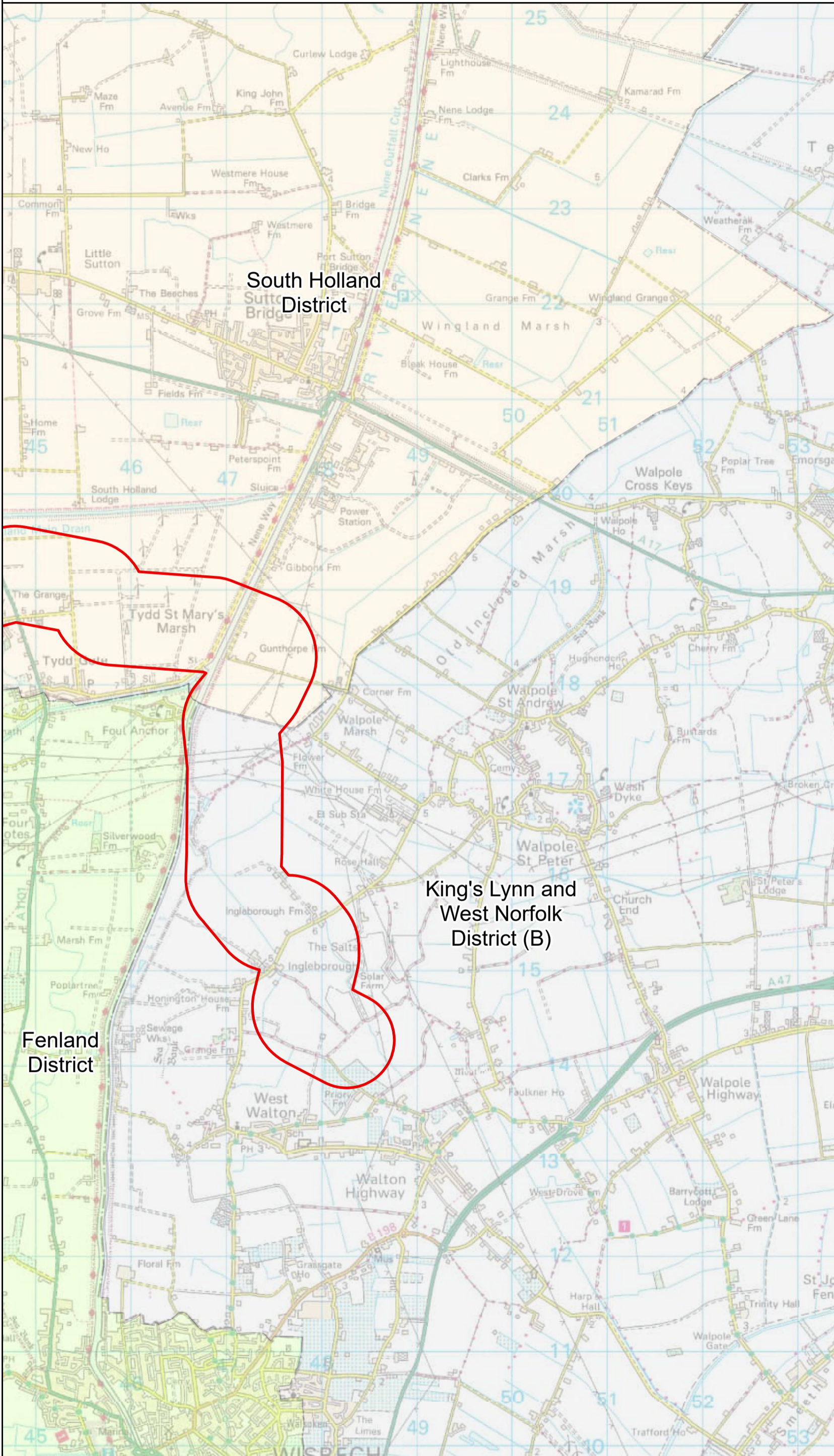
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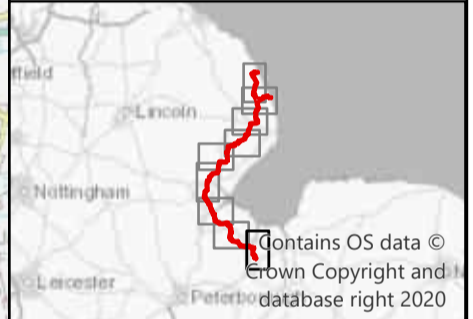
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Figure 15-1
500m Study Area Boundary

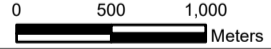


- Legend**
- 500m Buffer Boundary
 - Fenland District
 - King's Lynn and West Norfolk District (B)
 - South Holland District



Notes
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Title
**Figure 15-1
500m Study Area Boundary**



Figure Number
Figure 15-1

Drawing Reference
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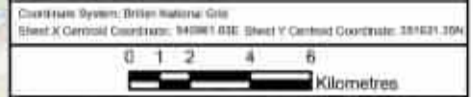
Figure 15-2
5km Study Area Boundary - Tourism



- Legend**
- 5km Buffer Boundary
 - District Borough Unitary Region
 - Boston District (B)
 - East Lindsey District
 - Fenland District
 - King's Lynn and West Norfolk District (B)
 - South Holland District



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Title
**Figure 15-2
5km Study Area Boundary - Tourism**



Figure Number	Figure 15-2		
Drawing Reference	EGL-WSP-CONS-XX-DR-0-023 P10		
Scale	Sheet Size	Sheet	Issue
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Figure 15-2
5km Study Area Boundary - Tourism

Legend

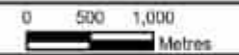
-  5km Buffer Boundary
- District Borough Unitary Region
 -  Boston District (B)
 -  East Lindsey District
 -  Fenland District
 -  King's Lynn and West Norfolk District (B)
 -  South Holland District



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Title

Figure 15-2
5km Study Area Boundary - Tourism



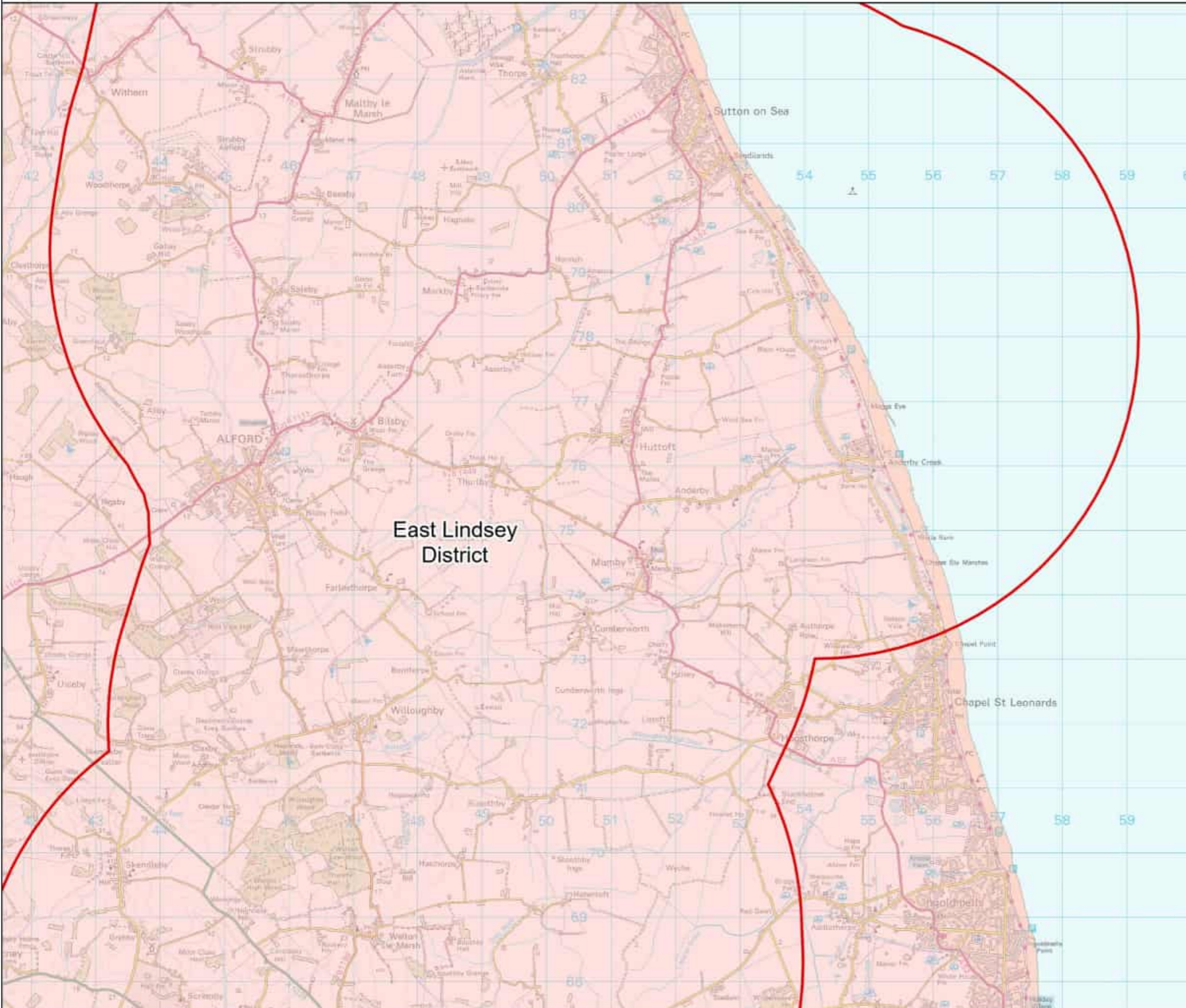
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Figure 15-2
5km Study Area Boundary - Tourism

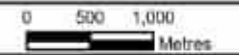


- Legend**
- 5km Buffer Boundary
 - District Borough Unitary Region
 - Boston District (B)
 - East Lindsey District
 - Fenland District
 - King's Lynn and West Norfolk District (B)
 - South Holland District



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Figure 15-2
5km Study Area Boundary - Tourism

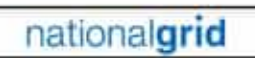


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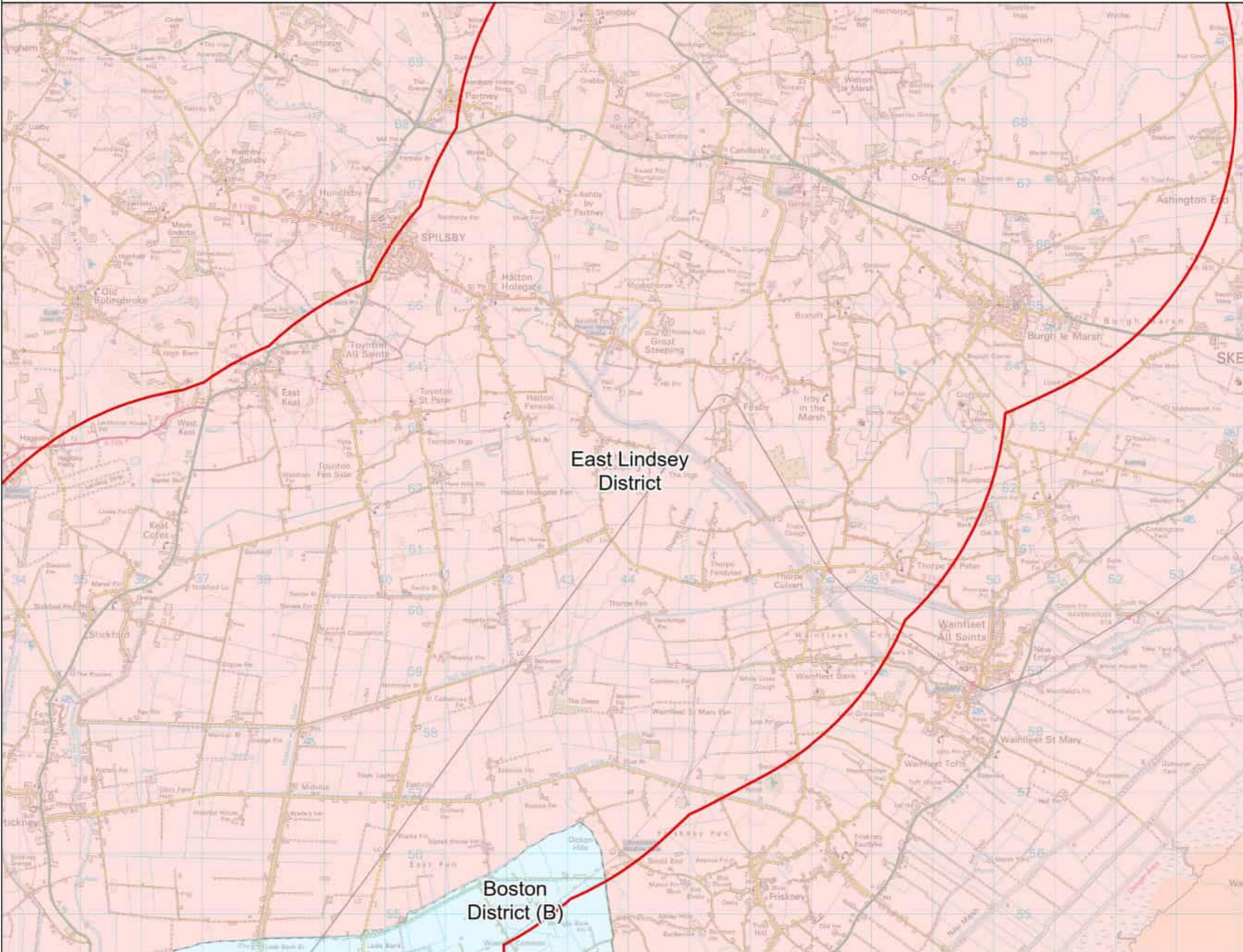
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Figure 15-2
5km Study Area Boundary - Tourism

Legend

-  5km Buffer Boundary
- District Borough Unitary Region
 -  Boston District (B)
 -  East Lindsey District
 -  Fenland District
 -  King's Lynn and West Norfolk District (B)
 -  South Holland District



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Figure 15-2
5km Study Area Boundary - Tourism

nationalgrid

Figure Number	Figure 15-2		
Drawing Reference	EDL_WSP-CONS-XX-DR-G-003 P01		
Scale	Sheet Size	Sheet	Issue
1:60,000	A3	SHEET 4 OF 8	1



Figure 15-2
5km Study Area Boundary - Tourism

- Legend**
- 5km Buffer Boundary
 - District Borough Unitary Region
 - Boston District (B)
 - East Lindsey District
 - Fenland District
 - King's Lynn and West Norfolk District (B)
 - South Holland District



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Title

Figure 15-2
5km Study Area Boundary - Tourism

nationalgrid

Figure Number: Figure 15-2

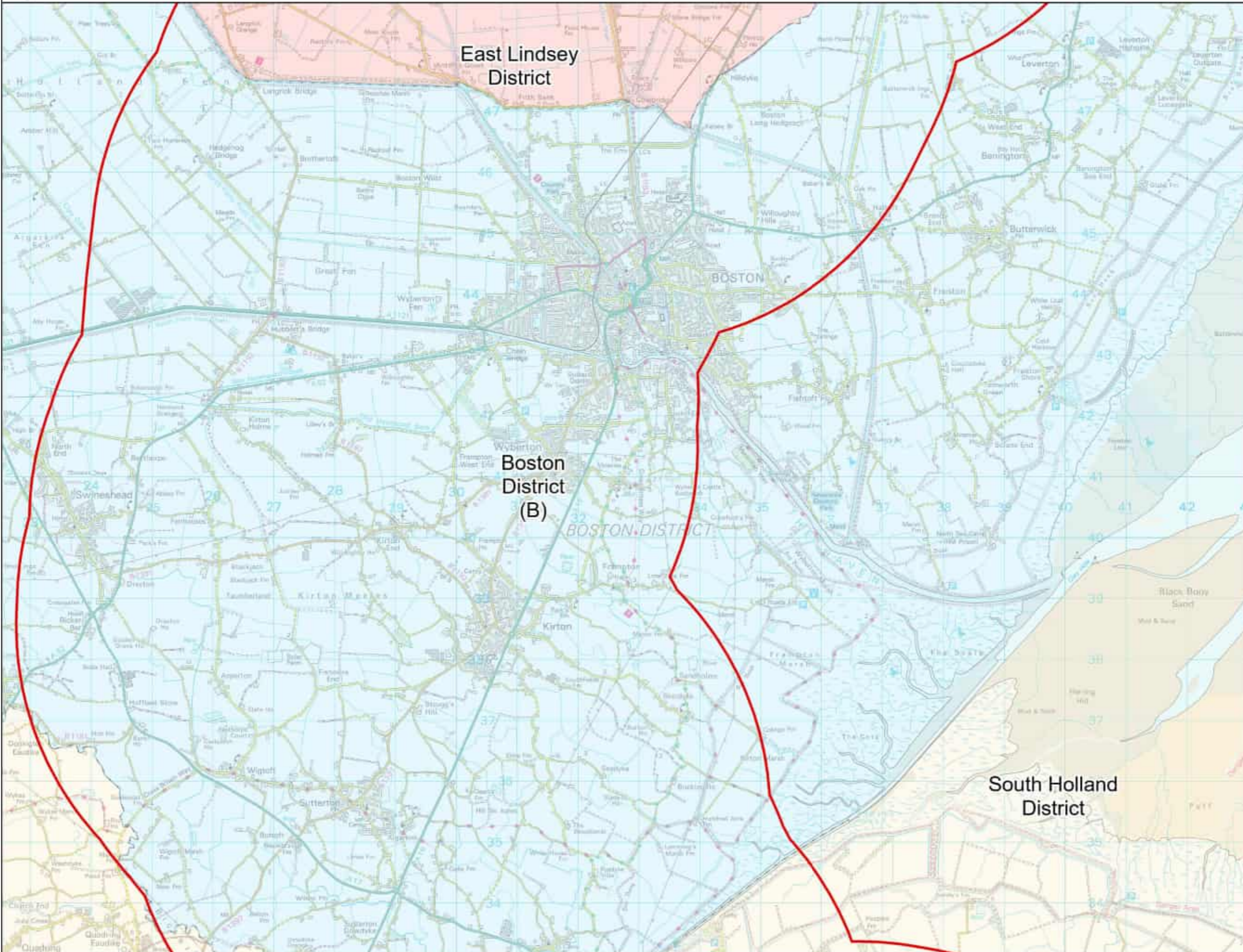
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Scale	Sheet Size	Sheet	Issue
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Figure 15-2
5km Study Area Boundary - Tourism

- Legend**
-  5km Buffer Boundary
 - District Borough Unitary Region
 -  Boston District (B)
 -  East Lindsey District
 -  Fenland District
 -  King's Lynn and West Norfolk District (B)
 -  South Holland District



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Title

Figure 15-2
5km Study Area Boundary - Tourism

nationalgrid

Figure number: Figure 15-2

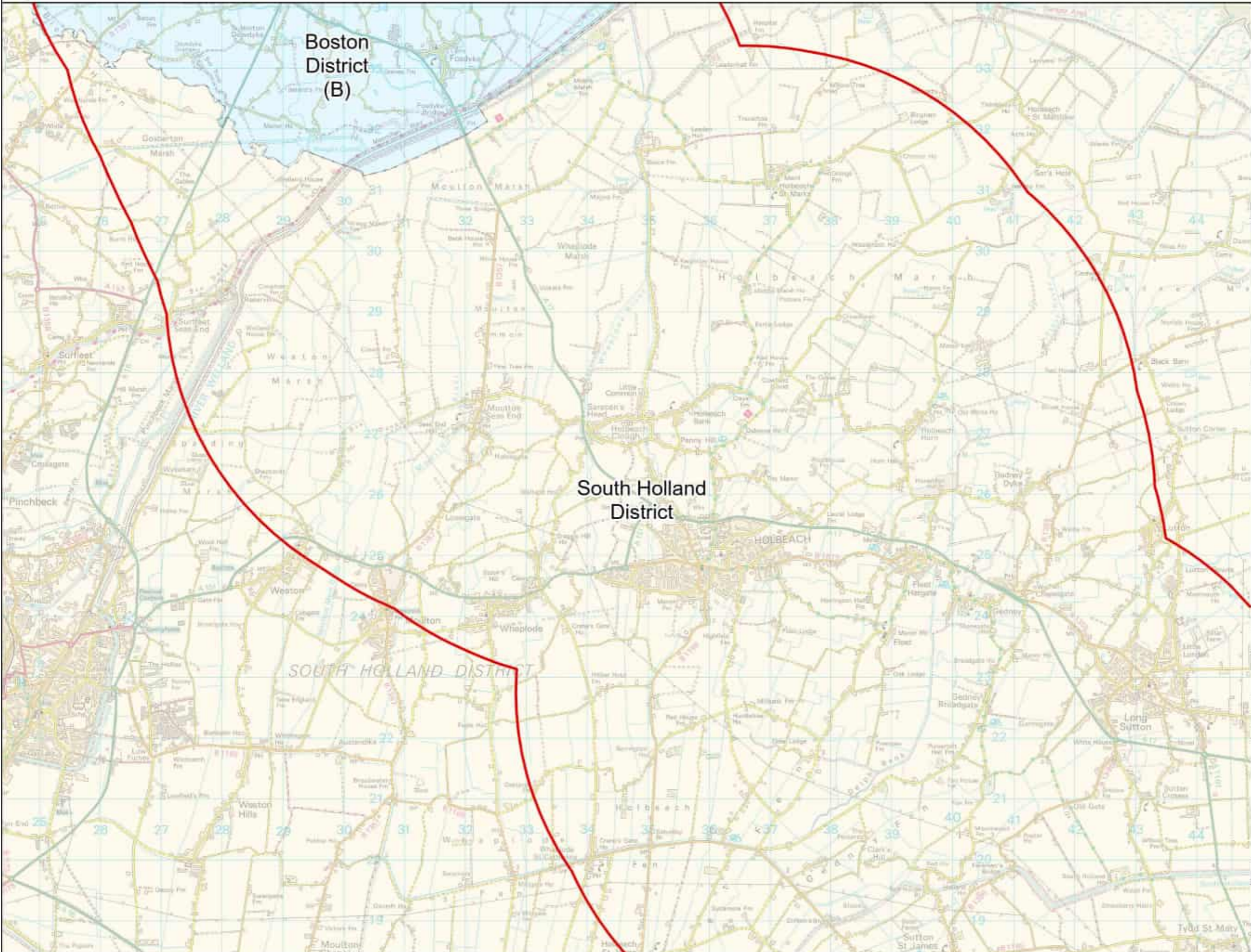
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Figure 15-2
5km Study Area Boundary - Tourism

- Legend**
-  5km Buffer Boundary
 - District Borough Unitary Region
 -  Boston District (B)
 -  East Lindsey District
 -  Fenland District
 -  King's Lynn and West Norfolk District (B)
 -  South Holland District



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Figure 15-2
5km Study Area Boundary - Tourism

nationalgrid

Figure Number: Figure 15-2

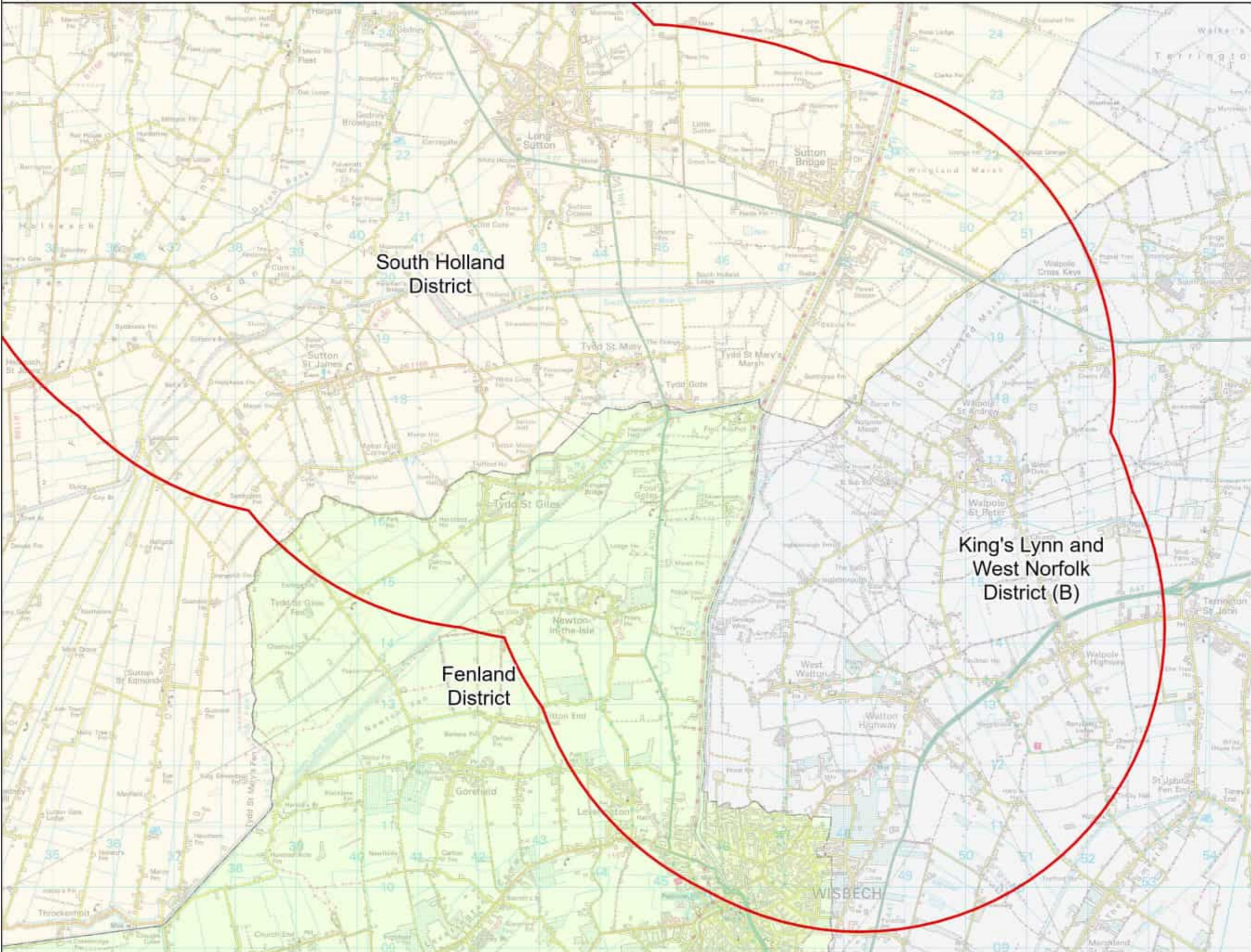
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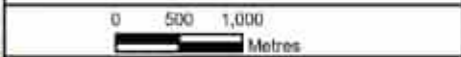
Figure 15-2
5km Study Area Boundary - Tourism

- Legend**
-  5km Buffer Boundary
 - District Borough Unitary Region
 -  Boston District (B)
 -  East Lindsey District
 -  Fenland District
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Figure 15-2
5km Study Area Boundary - Tourism

nationalgrid			
Figure number: Figure 15-2			
Drawing Reference: EDL-WSP-CONS-XX-DR-G-003 P01			
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Scoping Boundary Sections

15.4.3 A full description of the Scoping Boundary Sections is provided in **Part 2 Chapter 4: English Onshore Scheme**. Given the extent of the English Onshore Scheme, the eight Scoping Boundary Sections and two landfalls outlined in **Part 2 Chapter 4: English Onshore Scheme** are used to broadly group receptors for the baseline, as follows:

- Landfalls: Theddlethorpe
- Landfalls: Anderby Creek
- Section 1: Landfalls – Bilsby¹⁹
- Section 2: Bilsby – Welton le Marsh
- Section 3: Welton le Marsh – Little Steeping
- Section 4: Little Steeping – Sibsey Northlands
- Section 5: Sibsey Northlands – Hubberts Bridge
- Section 6: Hubberts Bridge – Moulton Seas End
- Section 7: Moulton Seas End – Foul Anchor
- Section 8: Foul Anchor – Walpole²⁰

15.4.4 Given that these sections do not conform to geographical area boundaries, where appropriate, datasets for jurisdiction boundaries will be presented for some elements of the baseline. At the PEIR and ES stage, lower level data (such as ward or Lower Super Output Area [LSOA] data) will be used for analysis, whereas this scoping chapter presents a broader overview of baseline data as a means of comparison between geographical areas. Datasets for larger jurisdiction boundaries have therefore been used for the purposes of this Scoping chapter, given that the English Onshore Scheme routes are linear (which means there are a considerable number of potential LSOAs and wards).

15.4.5 The various geographical areas referred to are as follows:

- **National:** England.
- **Regional:** East Midlands and East of England.
- **County:** Lincolnshire, Norfolk, and Cambridgeshire²¹.

¹⁹ For the purpose of outlining a baseline for this Scoping chapter, the LCS converter station area has been grouped with the Section 1 baseline. This will be presented separately, and in greater detail for the PEIR and ES, once the design and location of the LCS converter station has been refined further.

²⁰ For the purpose of outlining a baseline for this Scoping chapter, the Walpole stations area has been grouped with the Section 8 baseline. This will be presented separately, and in greater detail for the PEIR and ES, once the design and location of the Walpole station has been refined further.

²¹ Whilst Cambridgeshire County Council and Fenland District Council do not fall within the Scoping Boundary, Fenland District lies in Cambridgeshire; immediately south of the English Onshore Scheme routes, south of South Holland District Council, and west of the Borough Council of King's Lynn and West Norfolk. As such, these geographies have also been included in order to present a complete picture of the baseline in the locality.

- **District:** East Lindsey District Council, Boston Borough District Council, South Holland District Council, Borough Council of King’s Lynn and West Norfolk, and Fenland District Council.

Data Gathering Methodology

15.4.6 The following data sources have been used to inform the baseline for socio-economics, recreation and tourism:

- Official Census and Labour Market Statistics (NOMIS) (Ref 15.19);
- English Indices of Multiple Deprivation (Ref 15.20);
- Ordnance Survey Mapping (Ref 15.21); and
- Any relevant websites for recreational groups, facilities and activities.

15.4.7 A short summary of the baseline conditions relevant to this scoping chapter is outlined below.

Current Baseline

Socio-economics

Population

15.4.8 The 2021 population estimates for the local authority district, county and national levels are presented in **Table 15-4**.

Table 15-4: Resident Population 2021

Local Authority District	Total Population
England	56.5 million
East Midlands	4.8 million
East of England	6.3 million
Lincolnshire	918,500
Norfolk	680,700
Cambridgeshire	769,400
East Lindsey	142,900
Boston	70,800
South Holland	95,500
Borough Council of King’s Lynn and West Norfolk	154,900

Fenland	102,700
---------	---------

15.4.9 The estimated working age population (residents aged 16-64 years) as a percentage of the total resident population is shown for these geographies in **Table 15-5**.

Table 15-5: Population aged 16-64 (% of the resident population)

Local Planning Authority	%
England	62.9
East Midlands	62.3
East of England	61.6
Lincolnshire	59.8
Norfolk	59.3
Cambridgeshire	63.7
East Lindsey	54.9
Boston	61.2
South Holland	59.2
Borough Council of King's Lynn and West Norfolk	57.7
Fenland	59.9

15.4.10 As shown above, the proportion of working age individuals aged 16-64 in East Lindsey is slightly lower than the other Lincolnshire districts of Boston and South Holland, and the county as a whole. Similarly, the working age population within Fenland is slightly lower than the Cambridgeshire average. The proportion of working age individuals aged 16-64 in Borough Council of King's Lynn and West Norfolk is broadly in line with the Norfolk average, however. At a county level, Lincolnshire and Norfolk are broadly in line, as are the East Midlands and East of England at a regional level.

15.4.11 Further baseline conditions relating to Population are outlined in **Part 2 Chapter 16: Health and Wellbeing**.

Economy and Employment

15.4.12 According to NOMIS²² data (Ref 15.19), the proportion of individuals aged 16-64 estimated to be economically active between October 2022 and September 2023 (the most recently published data at the time of writing) is outlined in **Table 15-6**. At a district level, both East Lindsey and Boston are broadly similar (76.2% and 78.2% respectively) however in South Holland, economic activity (89.2%) is higher than these two districts, and at the county level. The district of Borough Council of King's Lynn and West Norfolk also has a slightly higher economic activity rate (86%) than the Norfolk county level (80.6%), contrasting with Fenland district (73.2%) which has a lower economic activity rate than the Cambridgeshire county level (83.5%). Whilst there is therefore some variation at a district and county level, overall these figures are not statistically significant compared with the regional averages of 80.8% in the East of England, and 77.8% in the East Midlands.

Table 15-6: Proportion of individuals aged 16-64 estimated to be economically active between October 2022 and September 2023

Local Planning Authority	(%)
England	78.9
East Midlands	77.8
East of England	80.8
Lincolnshire	76.9
Norfolk	80.6
Cambridgeshire	83.5
East Lindsey	76.2
Boston	78.2
South Holland	89.2
Borough Council of King's Lynn and West Norfolk	86.0
Fenland	73.2

15.4.13 Earnings of weekly wages for full-time workers at the local authority district, county and England levels are presented in **Table 15-7**. Cambridgeshire has the highest rates at the county level, as well as a higher rate than England. South Holland has the highest rates than those in East Lindsey and Boston, and is line with the Lincolnshire level.

²² NOMIS is the Office for National Statistics web-based database of census and labour market statistics.

Borough Council of King’s Lynn and West Norfolk has slightly higher rates than Norfolk, however, Fenland has lower rates than those achieved at the Cambridgeshire and England levels.

Table 15-7: Earnings by place of residence (2023)

Local Authority	Gross weekly pay of full-time workers (£)
England	683.4
East Midlands	640.2
East of England	705.7
Lincolnshire	634.2
Norfolk	643.3
Cambridgeshire	738.7
East Lindsey	574.9
Boston	582.4
South Holland	635.9
Borough Council of King’s Lynn and West Norfolk	650.6
Fenland	679.0

15.4.14 The NOMIS Job Densities Report (Ref 15.19) is available on a local authority-wide and sub-regional level and indicates the availability of employment and labour demand. As of 2022 (the most recently available data at the time of writing), the job density levels (i.e. the ratio of total jobs to the population aged 16-64) in Boston (0.79) and South Holland (0.78) are broadly in line with Lincolnshire (0.77), and slightly lower in East Lindsey (0.72). The job density levels in Borough Council of King’s Lynn and West Norfolk (0.83) are in line with Norfolk (0.81), however those in Fenland (0.68) are lower than in Cambridgeshire (0.89). Job densities at these district and county geographies are mostly comparable with the regional levels in East Midlands (0.81) and the East of England (0.84). Whilst rates are below 1.0 in all geographies (indicating that there is fewer than one job available per member of the population aged 16-64) suggesting fewer employment opportunities within these areas; this aligns with current job density rates at the national level (0.88 in England as a whole).

15.4.15 **Table 15-8** shows the proportion of total employees working in each industry sector²³ in 2022 (the most recently published data at the time of writing). Across the five local authority districts, a significant proportion of employee jobs were in Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles sector (Sector G) at 18.2% in East Lindsey, 20.0% in Boston, 21.6% in South Holland, 17.5% in Borough Council of King's Lynn and West Norfolk and 16.7% in Fenland. This is similar in comparison to Lincolnshire (18.0%) and Norfolk (16.8%), however it shows a slightly higher proportion in comparison to the East Midlands (15.6%), East of England (15.5%) and England (14.4%).

15.4.16 All local authority districts have lower rates of employment in higher wage service sectors such as Information and communication (Sector J) and financial and insurance activities (Sector K) when compared with the regional and national rates. The largest employment sector within East Lindsey was in accommodation and food service activities (Sector I) at 20.5%; likely representing the district's coastal location with tourist services and accommodation highly represented in the local employment market. In Boston and in Borough Council of King's Lynn and West Norfolk, Human health and social work activities (Sector Q) were highly represented (20.0% and 17.5% respectively) aligning with the large hospitals located in Boston and King's Lynn.

²³ The results in the table show data from the NOMIS Job Densities Report which is sourced from the open access ONS Business Register and Employment Survey. The data presents a proportion of total employee jobs in each industry sector, excluding farm-based agriculture; this is to ensure anonymity of data due to small sample sizes.

Table 15-8: Overview of employee jobs by industry sector in 2022 (%)

Industry Sector	England	East Midlands	East of England	Lincolnshire	Norfolk	Cambridgeshire	East Lindsey	Boston	South Holland	Borough Council of King's Lynn and West Norfolk	Fenland
B: Mining and quarrying	0.1	0.2	0.0	0.2	0.1	0.0	0.2	0.0	0.0	0.1	0.0
C: Manufacturing	7.6	11.4	7.4	11.9	9.5	9.4	10.2	13.3	18.9	12.3	16.7
D: Electricity, gas, steam and air conditioning supply	0.4	0.6	0.2	0.2	0.2	0.1	0.0	0.1	0.1	0.2	0.2
E: Water supply; sewerage, waste management and remediation activities	0.7	0.7	0.8	1.2	0.7	1.0	0.9	0.6	0.7	0.8	1.0
F: Construction	4.9	5.5	6.7	5.8	6.0	4.7	5.7	4.2	6.1	7.0	6.2
G: Wholesale and retail trade; repair of motor vehicles and motorcycles	14.4	15.6	15.5	18.0	16.8	12.1	18.2	20.0	21.6	17.5	16.7
H: Transportation and storage	5.1	6.7	5.6	4.1	3.5	3.5	3.4	5.0	8.1	3.5	8.3

Industry Sector	England	East Midlands	East of England	Lincolnshire	Norfolk	Cambridgeshire	East Lindsey	Boston	South Holland	Borough Council of King's Lynn and West Norfolk	Fenland
I: Accommodation and food service activities	7.5	7.5	7.9	9.5	10.3	6.8	20.5	5.0	4.7	10.5	5.6
J: Information and communication	4.5	2.7	3.6	2.0	1.9	6.2	1.4	0.8	0.8	1.1	0.8
K: Financial and insurance activities	3.6	1.7	2.4	0.8	3.3	1.0	0.7	0.8	0.8	2.6	0.6
L: Real estate activities	1.8	1.3	1.9	1.4	1.9	1.5	1.4	1.3	0.8	1.6	1.2
M: Professional, scientific and technical activities	8.9	6.9	8.0	4.7	5.4	14.5	3.4	2.7	3.4	3.5	4.9
N: Administrative and support service activities	8.9	9.0	11.0	9.5	6.5	6.8	6.8	15	16.2	7.0	12.5
O: Public administration and defence; compulsory social security	4.6	4.0	3.5	3.7	4.6	3.2	2.3	2.0	1.1	3.5	2.8
P: Education	8.8	8.6	8.7	8.5	8.7	12.1	8.0	6.7	5.4	7.9	8.3

Industry Sector	England	East Midlands	East of England	Lincolnshire	Norfolk	Cambridgeshire	East Lindsey	Boston	South Holland	Borough Council of King's Lynn and West Norfolk	Fenland
Q: Human health and social work activities	13.7	13.8	12.4	14.9	16.3	12.4	11.4	20.0	8.1	17.5	11.1
R: Arts, Entertainment and Recreation	2.3	2.1	2.2	2.0	2.4	2.1	4.5	1.5	1.1	1.8	1.7
S: Other service activities	1.9	1.4	1.7	1.5	1.4	2.1	2.3	0.7	0.7	0.9	1.4

Index of Multiple Deprivation

- 15.4.17 The English Indices of Multiple Deprivation (IMD) (Ref 15.20) uses a combination of information relating to seven ‘domains’: income; employment; health deprivation and disability; education, skills and training; barriers to housing and services; crime; and living environment to create an overall score of deprivation. Deprivation is scored between 1 and 317 (representing the 317 local authority districts within England), with a score of 1 being most deprived and 317 being least deprived.
- 15.4.18 **Table 15-9** shows the IMD 2019 (the most recently published at the time of writing) ranking for the five local authority districts. The data suggests a moderate to high level of deprivation within the local study area as a whole, with all districts aside from South Holland falling within the 30% most deprived in England (with East Lindsey in the top 10%). This corresponds with East Lindsey being over-represented in lower wage sectors, as outlined in Paragraph 15.4.13.

Table 15-9: Local Authority District IMD 2019 Rankings

Local Planning Authority	East Lindsey Fenland	Borough Council of King’s Lynn and West Norfolk	Boston	South Holland	
IMD Ranking 2019	30 th	51 st	79 th	85 th	144 th

Businesses and Development Land

- 15.4.19 There are a range of businesses located within the study area, with an overview of the types of businesses provided below. The most prominent industries include agriculture, accommodation and manufacturing. These have been identified through OS Deskbase software, Google maps, and public records. There is no commercial development land which has been identified within the study area. Potential impacts on agricultural land holdings are outlined in **Part 2, Chapter 11: Agriculture and Soils**, and therefore have not been included in this chapter. This includes the likely significant effects associated with temporary acquisition and permanent loss of agricultural land holdings, including farm businesses. An overview of the types of businesses is outlined below, by Scoping Boundary section:
- Landfall: Theddlethorpe: no businesses identified.
 - Landfall: Anderby Creek: no businesses identified.
 - Section 1: Landfalls – Bilsby: Various small commercial premises including Marine Made Gifts craft shop; Venia’s Health Hub; and Farmer Brown’s ice cream shop.
 - Section 2: Bilsby – Welton le Marsh: James William Construction; Welton Garden Services.
 - Section 3: Welton le Marsh – Little Steeping: Various commercial and small manufacturing businesses, including several located along the B1195 Station Road.
 - Section 4: Little Steeping – Sibsey Northlands: Few businesses, including Spilsby Road Physical Therapy clinic.

- Section 5: Sibsey Northlands – Hubberts Bridge: Boston Airfield Flight School; Cropley F A & Son plant wholesaler; Cowbridge Business Park; several small commercial premises along Frith Bank and Tattershall Road.
- Section 6: Hubberts Bridge – Moulton Seas End: A number of commercial premises of varying sizes and types including manufacturers, warehouses, wholesalers, garden centres, and other independent small businesses.
- Section 7: Mouton Seas End – Foul Anchor: A number of commercial premises of varying sizes and types mostly located along the A17, including manufacturers, warehouses, wholesalers, cafes, and a music school.
- Section 8: Foul Anchor – Walpole: no businesses identified in this section.

Private Property and Housing

15.4.20

The Scoping Boundary passes a number of rural settlements within the five local authority districts, although the alignment has been identified to avoid routing in proximity to residential dwellings where practicable. Private properties and housing allocations located within the study area are outlined below, by route section:

- Landfall: Theddlethorpe: Sand Hills Farm.
- Landfall: Anderby Creek: approximately five residential properties on Roman Bank.
- Section 1: Landfalls – Bilsby: approximately 50 residential properties which lie within the study area in Theddlethorpe Saint Helen; approximately 15 residential properties in Theddlethorpe All Saints; and scattered properties in Asserby, Markby and to the east of Bilsby.
- Section 2: Bilsby – scattered properties which lie within the study area near Alford and Willoughby, few properties proximate to Welton le Marsh (predominantly associated with agricultural premises); and approximately five residential properties in Thurlby.
- Section 3: Welton le Marsh – Little Steeping: few residential properties in the study area near Candlesby; Gunby; Firsby; Little Steeping; and Thorpe Bank; all associated with agricultural premises.
- Section 4: Little Steeping – Sibsey Northlands: several properties in the study area along Thorpe Bank, Spilsby and Littlemoor Lane, Sibsey.
- Section 5: Sibsey Northlands – Hubbert’s Bridge: several residential properties in the study area along Littlemoor Lane, Sibsey; Frith Bank; and a residential land allocation south of North Forty Foot Drain - (Wes002) Sustainable Urban Extension.
- Section 6: Hubbert’s Bridge – Moulton Seas End: approximately 20 residential properties in the study area in Frampton Fen; Sutterton; and Fosdyke.
- Section 7: Mouton Seas End – Foul Anchor: approximately ten residential properties in the study area near Holbeach Clough; Holbeach Bank; Fleet Hargate; Tydd St Mary and Tydd Gote.
- Section 8: Foul Anchor – Walpole: few scattered residential properties in the study area, west of Ingleborough.

Recreation

Public access for Walkers, Cyclists, and Horse Riders

- 15.4.21 There are a number of designated recreational routes and PRoW in the study area, including National Trails (long distance footpaths and bridleways in England and Wales) and National Cycle Network (NCN) routes. The study area contains numerous PRoW and designated routes; many of which provide essential, daily connections for WCH navigating within their local area. An overview is provided below, with further detail outlined in **Part 2, Chapter 12: Traffic and Transport**.
- 15.4.22 There are several routes of national importance within the study area; the King Charles III England Coast Path National Trail will be the longest continuous national trail in Britain once completed, the Skegness to Mablethorpe section²⁴ passes within the landfall locations in Section 1. Also of national importance is NCN Route 1 which passes through the study area at various points; connecting to the wider NCN routes within England and to local cycle routes.
- 15.4.23 An overview of some of the public access routes located within the study area are outlined below, by route section:
- Landfall: Theddlethorpe: two PRoW, both of which are public footpaths.
 - Landfall: Anderby Creek: three PRoW, all of which are public footpaths.
 - Section 1: Landfalls – Bilsby: PRoW including the King Charles III England Coastal Path; South Wolds and Skegness Local Cycle Route C7.
 - Section 2: Bilsby – Welton le Marsh: PRoW including public footpaths and bridleways, and the South Wolds and Skegness Local Cycle Routes C3 and C7.
 - Section 3: Welton le Marsh – Little Steeping: PRoW including public footpaths and bridleways, and number of South Wolds and Skegness Local Cycle Routes.
 - Section 4: Little Steeping – Sibsey Northlands: PRoW including public footpaths and bridleways, and number of South Wolds and Skegness Local Cycle Routes.
 - Section 5: Sibsey Northlands – Hubberts Bridge: NCN Route 1 and several PRoW including public footpaths and bridleways.
 - Section 6: Hubberts Bridge – Moulton Seas End: NCN Route 1 and several PRoW including public footpaths and bridleways.
 - Section 7: Moulton Seas End – Foul Anchor: NCN Route 1 and several PRoW including public footpaths and bridleways.
 - Section 8: Foul Anchor – Walpole: several PRoW including public footpaths and bridleways.

²⁴ It is noted that whilst the entirety of the National Trail is still under construction in some sections (and due for completion in 2024/25) the section of the route which falls within Section 1 of the study area is open, with associated access rights enacted.

Community land, assets, and recreational facilities

15.4.24 Community land and assets typically comprise facilities to serve local residents, including education and healthcare, places of worship, and recreational facilities such as parks, sports facilities, and open spaces. There are a number of community facilities located within the study area, including (but not limited to):

- Landfall: Theddlethorpe: none identified.
- Landfall: Anderby Creek: none identified.
- Section 1: Landfalls – Bilsby: Theddlethorpe Village Hall; Theddlethorpe Academy Primary School.
- Section 2: Bilsby – Welton le Marsh: St Martin’s Church, Welton le Marsh Village Hall.
- Section 3: Welton le Marsh – Little Steeping: none identified.
- Section 4: Little Steeping – Sibsey Northlands: New Leake Village Hall.
- Section 5: Sibsey Northlands – Hubberts Bridge: Boston Golf Club; Princess Royal Sports Arena; Boston Rugby Club.
- Section 6: Hubberts Bridge – Moulton Seas End: Fosdyke Yacht Haven marina.
- Section 7: Moulton Seas End – Foul Anchor: Fleet Wood Land Primary School; Tydd St Mary C of E Primary School and playground; Tydd St Mary pre-school; St Mary’s Church.
- Section 8: Foul Anchor – Walpole: West Walton Fire Station.

Tourism

Tourist Attractions

15.4.25 Tourist attractions typically comprise facilities such as museums, zoos and farm parks, heritage assets, theme parks, and points of interest. For the purposes of this assessment, beaches and nature reserves (which offer areas for bird watching, education, and outdoor activities) have also been included within the scope for tourist attractions, given the high volume of tourist visits within the region, and the likelihood of these types of assets being frequented by tourist visitors from outside of the region, as well as local residents. A range of tourist attractions are located within a 5 km study area, which are outlined below, by route section:

- Landfall: Theddlethorpe: Theddlethorpe Beach; Crook Bank Nature Reserve.
- Landfall: Anderby Creek: Huttoft Beach; National Trust Sandilands.
- Section 1: Landfalls – Bilsby: Saltfleetby - Theddlethorpe Dunes; Sandilands Pit Nature Reserve.
- Section 2: Bilsby – Welton le Marsh: The Alford Windmill Trust Heritage Museum.
- Section 3: Welton le Marsh – Little Steeping: National Trust Gunby Estate Hall; Batoft Hall.
- Section 4: Little Steeping – Sibsey Northlands: ARK Wildlife & Dinosaur Park.

- Section 5: Sibsey Northlands – Hubberts Bridge: Sibsey Trader Windmill; The Bubblecar Museum; Boston Guildhall Museum.
- Section 6: Hubberts Bridge – Moulton Seas End: The Boston Woods Trust; Jenny’s Wood Nature Reserve; Moulton Marsh Nature Reserve.
- Section 7: Moulton Seas End – Foul Anchor: Moulton Windmill; The Shrubberies Nature Reserve.
- Section 8: Foul Anchor – Walpole: none identified.

Tourist Accommodation

15.4.26 Tourist accommodation typically comprises temporary, short term, accommodation. There are a number of hotels, guesthouses, campsites and holiday parks located within close proximity to the study area, most notably in the coastal settlements of Theddlethorpe and Mablethorpe, the town of Boston, and rural areas in South Holland. Examples of the accommodation providers located within a 5 km study area are outlined below, by route section:

- Landfall: Theddlethorpe: A number of holiday parks including Haven Golden Sands, and approximately ten camping, motorhome, and glamping sites.
- Landfall: Anderby Creek: The Shambles Motor Home Park, Huttoft Bank; Meadowview Caravan Park, Sea Lane; Sutton-on-Sea Caravan and Motorhome Club Campsite, Crabtree Lane.
- Section 1: Landfalls – Bilsby: Orchard Leeze Holiday Park, Huttoft Road.
- Section 2: Bilsby – Welton le Marsh: Misty Meadow Holiday Lodges, Hasthorpe.
- Section 3: Welton le Marsh – Little Steeping: Gunby Lake Holiday Park; Kelsey Wood Country Park Lodges; a number of B&Bs and guesthouses in Firsby and Little Steeping; the Lakeside Naturist Holiday Resort, Spilsby.
- Section 4: Little Steeping – Sibsey Northlands: Midville Caravan Park, Boston; Bridge Farm Caravan Park, Northlands.
- Section 5: Sibsey Northlands – Hubberts Bridge: Fourways Barn, Boston Road; Thorn House Lakes Lodges, Boston Road.
- Section 6: Hubberts Bridge – Moulton Seas End: Appletree Holiday Park, Hubbert’s Bridge; Westwood Lakes Camping and B&B, Wyberton; Whaplode Manor, Holbeach.
- Section 7: Moulton Seas End – Foul Anchor: Hedgerow Campsite, Spalding; Laurel Park Campsite, Spalding; Foreman’s Bridge Holiday Park, Spalding; Homefields Farm Park, Spalding; The Anchor Inn, Spalding.
- Section 8: Foul Anchor – Walpole: Parklands Holidays, Wisbech; Strattons Farm Campsite, Wisbech.

Future Baseline

15.4.27 The future baseline relates to known or anticipated changes to the current baseline in the future which should be assessed as part of the English Onshore Scheme in the PEIR and ES.

- 15.4.28 It is anticipated that there would be natural changes to the distribution and structure of the population over time. According to the ONS 2018-based sub-national populations projections (Ref 15.22) (the most recently available data at the time of writing) the population in Lincolnshire (769,400) is anticipated to grow by 11.7% between 2018 and 2043. Norfolk is projected to increase by 13.1% (2018-2043), and Cambridgeshire by 7.2% (2018-2043). This growth is likely to put strain on existing services and require additional housing, facilities, services and infrastructure.
- 15.4.29 Whilst it is anticipated that there would be changes to the baseline over time, this is unlikely to change significantly should the English Onshore Scheme not proceed. If there is a significant change in the future baseline whilst the PEIR and ES are being progressed, the assessment will be updated.
- 15.4.30 It is recognised that there are a number of other proposed and committed developments within the surrounding area that could alter the future baseline in the absence of the English Onshore Scheme. These committed developments, along with the potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined within **Part 4, Chapter 35: Cumulative Effects**.

15.5 Design and Control Measures

Design Phase

- 15.5.1 A range of mitigation measures for the English Onshore Scheme relevant to socio-economics, recreation and tourism are outlined in **Part 2, Chapter 8: Landscape and Visual Amenity, Chapter 12: Traffic and Transport, and Chapter 13: Noise and Vibration**.
- 15.5.2 There is a commitment to implementing these design and control measures and therefore they have been considered in the scoping assessment.
- 15.5.3 A high-level optioneering study (the CPRSS as described in **Part 2 Chapter 3: Consideration of Alternatives**) has been undertaken to identify the preferred routing and siting of the proposed infrastructure to ensure that environmental effects would be avoided. As part of the English Onshore Scheme design process, design and control measures will be proposed to reduce the potential for impacts on socio-economic, recreation and tourism receptors. These measures will evolve as part of design development and in response to consultation. These measures will be fed iteratively into the assessment process. These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements.

Construction Phase

- 15.5.4 A range of standard measures for the English Onshore Scheme are likely to be adopted throughout the duration of the construction phase. Design and Control measures relevant to socio-economics, recreation and tourism would be outlined in the Outline Code of Construction Practice (Outline CoCP), prepared to accompany the ES; these will include but are not limited to:
- Temporary Construction Compounds will be established before commencement of the main construction works. The fenced compounds will be accessed from the existing road network.

- Construction works for open cut trenching will be contained within a fenced construction corridor, termed the Working Width. This will be kept as narrow as practicable.
- Construction Contractor(s) will be committed to promoting the use of local workforce and suppliers, wherever practicable.
- Construction Contractor(s) will liaise with residents, businesses, and other recreational and tourist users or community groups, prior to the commencement of construction works to ensure they are aware of the programme and nature of the works, in particular, any works which are planned to take place at night. Any out of hours construction work to be agreed with the relevant local authority in advance.
- Good practice measures outlined within the Outline CoCP will be implemented in order to avoid conflict with WCHs, local residents, nearby businesses, and other community or tourist users.
- Access to residential properties, commercial premises, and community facilities and assets will be maintained throughout the construction period, in agreement with occupants and operators.
- Appropriate diversions implemented for any PRoW or footway obstructed during construction in order to minimise effects on accessibility and severance for WCHs. Where appropriate temporary diversions are not available, temporary closures may be required.
- Any PRoW, footway or carriageway diversions or closures undertaken during construction to be clearly advertised and signed prior to commencement of works. Signage will clearly display the temporary diversion routes in place.
- Design of any diverted routes for WCH will consider vulnerable user groups and ensure accessibility is maintained for users with limited mobility where practicable.

15.6 Scope of the Assessment

Potential Receptors

15.6.1 These socio-economic, recreation and tourism receptors have the potential to experience effects as a result of the direct interaction with English Onshore Scheme elements, such as land take from existing businesses or the disruption of recreational routes where they cross working areas during construction. Receptors located away from the English Onshore Scheme alignment and working area also have the potential to be affected by indirect effects such as visual or noise effects on properties, tourism resources, businesses, or recreational users.

Table 15-10: Receptors and impact pathways for each phase of the English Onshore Scheme

Development Phase	Impact	Receptor
Construction	Creation of new direct, indirect, and induced employee jobs during construction of the English Onshore Scheme.	Working age residents in the local and regional employment markets (the local and regional economy) that may access new

Development Phase	Impact	Receptor
		jobs as a result of the English Onshore Scheme.
	<p>Businesses (and development land) may experience temporary or permanent disruption to access and/or land take. This may affect customers' or employees' ability to access business premises, and for the business to remain open and trading during construction as a result.</p> <p>Amenity effects on business employees and customers which may arise as a result of construction works or construction traffic routes.</p>	Business operators, employees and customers within 500 m of the centre point of the Scoping Boundary that may be affected by the English Onshore Scheme.
	<p>Residents at their properties (and allocated housing land) may experience temporary or permanent disruption to access and/or land take. This may affect their ability to access or remain in their homes during construction.</p> <p>Amenity effects on residents which may arise as a result of construction works or construction traffic routes.</p>	Residents of private properties within 500 m of the centre point of the Scoping Boundary that may be affected by the English Onshore Scheme.
	<p>WCH using PRoW and designated routes may experience temporary or permanent disruption to access due to a diversion or stopping up of routes. This may affect WCH users from accessing PRoW for recreation and travel.</p> <p>Amenity effects on WCH which may arise as a result of construction works or construction traffic routes.</p>	WCH using PRoW and other designated routes within 500 m of the centre point of the Scoping Boundary that may be affected by the English Onshore Scheme.
	<p>Users of community land, community assets, and recreational facilities may experience temporary or permanent disruption to access and / or land take. This may affect users' ability to access</p>	Users of community land, assets and recreational facilities within 500 m of the centre point of the Scoping Boundary that may be affected by the English Onshore Scheme.

Development Phase	Impact	Receptor
	<p>community and recreational facilities, and for these facilities to remain open and accessible to users as a result.</p> <p>Amenity effects on the users of community and recreational facilities, which may arise as a result of construction works or construction traffic routes.</p>	
	<p>Tourist attractions may experience temporary or permanent disruption to access and/or land take. This may affect users' or employees' ability to access attractions, and for these to remain open and accessible to users as a result.</p> <p>Amenity effects on the users of tourist attractions, which may arise as a result of construction works or construction traffic routes.</p>	<p>Visitors and users of tourist attractions within 5 km of the centre point of the Scoping Boundary that may be affected by the English Onshore Scheme.</p>
	<p>Users of tourist accommodation may experience temporary or permanent disruption to access and/or land take. This may affect the ability of tourist accommodation providers to continue trading during construction. And / or amenity effects on users which may arise as a result of construction works or construction traffic routes.</p> <p>Increased demand for tourist accommodation from construction workers who require access to temporary / short term accommodation during the construction phase.</p>	<p>Users of tourist accommodation within 5 km of the centre point of the Scoping Boundary that may be affected by the English Onshore Scheme.</p>
<p>Operation / Maintenance</p>	<p>Creation of new direct, indirect, and induced employee jobs once the English Onshore Scheme is operational.</p>	<p>Working age residents in the local and regional employment markets (the local and regional economy) that may access new jobs as a result of the English Onshore Scheme.</p>

Likely Significant Effects

15.6.2 The nature and scale of likely effects on socio-economics, recreation and tourism have been identified for each of the proposed elements, and whether they are proposed to be scoped in or out of further assessment. Further detail including justification for the inclusion or exclusion of these receptors is provided in **Table 15-11** below.

Table 15-11: Socio-economics, Recreation and Tourism: Scoped In for Further Assessment

Development Phase	Impact	Receptor	Proposed to be Scoped In / Out	Potential for Significant Effects
Construction	Employment Generation (direct, indirect and induced)	Working age residents	Scoped in	There is the potential for direct and indirect beneficial impacts on the local and regional economy through the creation of jobs. Construction of the English Onshore Scheme are anticipated to generate direct, temporary employment opportunities from construction workers on site throughout the construction period; and indirectly through manufacturing services and suppliers of the construction process; and by construction workers spending part of their income in the area local to the Site.
Construction	Private Property and Housing - temporary or permanent disruption to access and / or land take and / or amenity effects	Residents of private properties	Scoped in	<p>During construction there is potential for private property and housing to be adversely affected by the English Onshore Scheme, through potential disruption to access, as well as amenity effects associated with construction (such as potential noise and dust).</p> <p>The Scoping Boundary has been determined based on an alignment which seeks to minimise impacts and disruption to residential receptors, where practicable. Where construction vehicle routes and construction compounds are located close to dwellings, access would be maintained throughout the construction period. As such, this would reduce the potential for disruption to residents and avoid significant disruption. There is the potential for amenity effects on private property and housing as a result of other environmental effects however (e.g. air quality, noise and vibration, landscape and visual) and this therefore has the potential to give rise to significant construction phase effects on private property and housing.</p>
Construction	WCH - temporary or permanent disruption to access and / or land take and / or amenity effects	WCH using PRoW and other designated routes	Scoped in	During construction there is potential for WCH using PRoW and other designated routes, to be adversely affected by the English Onshore Scheme. This could arise through potential temporary disruption or severance to access, as well as amenity effects associated with construction (such as potential noise and dust). Whilst there is the potential for amenity effects on users as a result of other environmental impacts (e.g. air quality, noise and vibration, landscape and visual) this is assessed by other topics chapters. The Scoping Boundary has been determined based on the alignment which will minimise impacts and disruption to PRoW and designated routes where practicable, however there are a number which fall within the study area and may be disrupted by the English Onshore Scheme. Specific routes which may experience disruption or severance will be identified as the Project design is progressed and

				refined. There is therefore the potential for significant construction phase effects on PRow and their users as a result of temporary (or permanent) disruption or severance. As such, there is the potential for significant construction phase effects on PRow and their users.
Construction	Tourist attractions - temporary or permanent disruption to access and / or land take and / or amenity effects	Visitors and users of tourist attractions	Scoped in	During construction there is potential for tourist attractions to be adversely affected by the English Onshore Scheme, through potential disruption to access, as well as amenity effects associated with construction. Whilst there is the potential for amenity effects on tourist attractions and their users as a result of other environmental impacts (e.g. air quality, noise and vibration, landscape and visual) this is assessed by other topics chapters. Specific attractions which may experience disruption to access or their ability to operate due to construction activities will be identified as the design of the English Onshore Scheme is progressed. There is therefore the potential for significant construction phase effects on tourist attractions and their users as a result of temporary (or permanent) disruption or severance.
Construction	Tourist accommodation - temporary or permanent disruption to access and / or land take and / or amenity effects and / or increased demand from temporary construction	Users of tourist accommodation	Scoped in	<p>During construction there is potential for tourist accommodation to be adversely affected by the English Onshore Scheme, through potential disruption to access, as well as amenity effects associated with construction (such as potential noise and dust).</p> <p>The Scoping Boundary has been determined based on an alignment which seeks to minimise impacts and disruption to receptors, where possible. Where construction vehicle routes and construction compounds are located close to tourist accommodation, access would be maintained throughout the construction period. As such, this would reduce the potential for disruption to guests and avoid significant disruption to the operation and viability of accommodation. Whilst there is the potential for amenity effects on accommodation as a result of other environmental impacts (e.g. air quality, or noise and vibration, landscape and visual) this is assessed by other topics chapters.</p> <p>The construction of the English Onshore Scheme also has the potential to affect the availability of tourist accommodation in the locality due to the influx of construction workers who are required to reside close to the English Onshore Scheme construction routes on a temporary basis, and may require access to short term accommodation. As the number of construction workers is not known at the time of writing, this has the potential to give rise to significant construction phase effects on the availability of tourist accommodation.</p>

Effects Scoped out from Further Assessment

Table 15-12: Socio-economics, Recreation and Tourism: Scoped Out for Further Assessment

Development Phase	Impact	Receptor	Proposed to be Scoped In / Out	Potential for Significant Effects
Operation	Employment Generation (direct, indirect and induced)	Working age residents	Scoped out	Operational phase employment associated with the English Onshore Scheme is limited; whilst the substations would be staffed full-time, it is anticipated that approximately six staff would be on site over a 24hr period (two staff per shift, across three shift patterns). As such, whilst employment would be generated by the English Onshore Scheme, this would not be significant. Any maintenance activities are assumed to be undertaken by NGET, by existing maintenance and facilities staff. As such, no significant operational employment effects are anticipated.
Construction	Businesses and Development Land - temporary or permanent disruption to access and / or land take and / or amenity effects	Business operators, employees and customers	Scoped out	<p>There is potential for temporary adverse effects on businesses located within the study area throughout the construction phase due to potential access restrictions via roads, and associated construction traffic, as well as amenity effects associated with construction (such as potential noise and dust).</p> <p>The Scoping Boundary has been determined based on the alignment which will minimise impacts and disruption to business receptors, where possible. Where construction vehicle routes and construction compounds are located close to businesses, access will be maintained throughout the construction period; this will be outlined in the Outline CoCP. As such, this will reduce the potential for disruption to business operations and ensure that access for employees and customers is maintained. Amenity effects which may be experienced by employees or customers as a result of other environmental impacts (e.g. air quality, noise and vibration, landscape and visual) are assessed by other topics chapters. As such, no significant construction phase effects on businesses are anticipated.</p>
Operation	Businesses and Development Land	Business operators, employees and customers	Scoped out	Once operational, the English Onshore Scheme would include permanent above ground structures at the substation, converter station and DCSS sites. The proposed locations of these are away from key settlements. Taking account of design and control measures (see Part 2 Chapter 8: Landscape and Visual Amenity) potential impacts are unlikely to give rise to any significant visual or other amenity effects on businesses.

				It is unlikely that any significant effects would be experienced by businesses, their employees and users, once the English Onshore Scheme are operational. As such, no significant operational phase effects on businesses are anticipated.
Operation	Private Property and Housing	Residents of private properties	Scoped out	<p>Once operational, the English Onshore Scheme would include permanent above ground structures at the substation, converter station and DCSS sites. The proposed locations of these are away from key settlements. Taking account of the design and control measures (see Part 2 Chapter 8: Landscape and Visual Amenity) the potential impacts of these structures are unlikely to give rise to any significant visual or other amenity effects on residents.</p> <p>As access to private property and housing would be maintained, and any construction compounds are temporary, the baseline environment is not anticipated to change materially once the Project is operational. As such, no significant operational phase effects on private property and housing are anticipated.</p>
Operation	WCH	WCH using PRoW and other designated routes	Scoped out	<p>Once operational, the English Onshore Scheme would include permanent above ground structures at the substation, converter station and DCSS sites. Taking account of design and control measures (see Part 2 Chapter 8: Landscape and Visual Amenity) the siting of these structures are unlikely to give rise to any significant visual or other amenity effects for WCH. Once operational it is anticipated that all affected PRoW would be reinstated and returned to their previous state, or permanently diverted. Therefore, no significant effects have been identified during the operational phase.</p>
Construction	Community land, assets and recreational facilities - temporary or permanent disruption to access and / or land take and / or amenity effects	Users of community land, assets and recreational facilities	Scoped out	<p>During construction there is potential for community land, assets, and recreational facilities to be adversely affected by the English Onshore Scheme, through potential disruption to access, as well as amenity effects associated with construction (such as potential noise and dust).</p> <p>The Scoping Boundary has been determined based on an alignment which seeks to minimise impacts and disruption to community and recreational receptors, where practicable. Where construction vehicle routes and construction compounds are located close to these types of assets, access would be maintained throughout the construction period. As such, this would reduce the potential for disruption. Whilst there is the potential for amenity effects on users of community land and recreational assets as a result of other environmental impacts (e.g. air quality, or noise and vibration, landscape and visual) this is assessed by other topics chapters. As such, no significant construction phase effects on community land, assets and recreational facilities are anticipated.</p>

Operation	Community land, assets and recreational facilities	Users of community land, assets and recreational facilities	Scoped out	Once operational, the English Onshore Scheme would include permanent above ground structures at the substation, converter station and DCSS sites. The proposed locations of these are away from key settlements, community assets and recreational facilities however, and taking account of design and control measures (see Part 2 Chapter 8: Landscape and Visual Amenity) the potential impacts of these structures are unlikely to give rise to any significant visual or other amenity effects. Once operational it is anticipated that any affected community land, assets, and recreational facilities and associated access routes would be reinstated and returned to their previous state. Therefore, no significant effects have been identified during the operational phase.
Operation	Tourist attractions	Visitors and users of tourist attractions	Scoped out	Once operational, the English Onshore Scheme would include permanent above ground structures at the substation, converter station and DCSS sites. The proposed locations of these are away from key settlements, attractions, and assets. Taking account of design and control measures (see Part 2 Chapter 8: Landscape and Visual Amenity) these structures are unlikely to give rise to any significant visual or other amenity effects. Once operational it is anticipated that any tourist attractions and facilities would be reinstated and returned to their previous state. Therefore, the baseline environment is not anticipated to change materially once the English Onshore Scheme is operational. As such, no significant operational phase effects on tourist attractions are anticipated.
Operation	Tourist accommodation	Users of tourist accommodation	Scoped out	There is limited operational phase employment associated with the English Onshore Scheme; whilst the substations would not be staffed full time, associated employment numbers are small and employees are likely to be sourced from the local or regional employment market; with no requirement for temporary accommodation. As such, no significant operational effects are anticipated on tourist accommodation.

15.7 Assessment Methodology

Further Data to be Gathered / Processed

15.7.1 In addition to the data sources listed in Section 16.4, assessment within the PEIR and ES would be supported by the following additional information:

- Extent and nature of construction phase activities potentially leading to dust emissions.
- Traffic data for the construction, operation and maintenance phases.
- Extent and nature of Non-Road Mobile Machinery (NRMM) during construction phase.

Construction Phase - Employment Generation

Approach to Assessment

15.7.2 The assessment of likely significant effects relating to employment generation during the construction phase will be undertaken using Excel based analysis. Employment will be based on the construction duration and cost, and will be estimated by applying an average gross output per construction industry employee to the estimated total construction cost. Leakage, displacement, and multiplier effects are then taken into account to determine the total net employment. Discussions with the Construction Contractor and Applicant will also inform the approach to assessment, drawing on previous experience of delivering similar developments.

Leakage

15.7.3 Leakage effects are the *“proportion of outputs that benefit those outside of the intervention’s target area or group”* (Ref 15.18). Leakage rates will be applied to construction employment calculations. On the basis of travel to work data, past experience and expert judgement, a medium leakage rate (as set out in the HCA Additionality Guidance (Ref 15.18) of 25% has been applied.

Displacement

15.7.4 Displacement measures the extent to which the benefits of a given development are offset by reduction of output or employment elsewhere. Additional demand for labour as a result of the construction phase of the English Onshore Scheme cannot simply be treated as a net benefit as it has the potential to remove workers from other positions, and the net benefit is therefore reduced by the extent that this occurs.

15.7.5 Overall, it is assumed that due to the flexibility of the labour market and the fact that construction workers delivering the English Onshore Scheme are likely to represent a small proportion of the regional construction labour force, displacement of the direct construction employment will be low. In the context of the East of England and East Midlands region, a low level of displacement of 25% is considered appropriate, where *“there are expected to be some displacement effects, although only to a limited extent”* (Ref 15.18).

Multiplier Effects

- 15.7.6 In addition to the direct construction employment generated by the English Onshore Scheme, there will be an increase in local employment arising from “*further economic activity (jobs, expenditure or income) associated with additional local income and local supplier purchases*”; the indirect and induced effects of the construction activity (Ref 15.18).
- 15.7.7 Employment growth will arise locally through manufacturing services and suppliers to the construction process (indirect or supply linkage multipliers). Additionally, part of the income of the construction workers and suppliers will be spent in the region, generating further employment (induced or income multipliers).
- 15.7.8 The applicable multiplier is dependent on the size of the geographical area that is being considered, the local supply linkages and income leakage from the area. The HCA Additionality Guidance (Ref 15.18) provides a guide to the composite multipliers (the combined effect of indirect and induced multiplier effects) which should be applied. A medium multiplier of 1.5 will be applied on the basis that there are likely to be average supply linkages associated with the English Onshore Scheme, based on their location within the East of England.

Significance of Effect Criteria

- 15.7.9 The methodology for assessing employment generation will consider the likely direct, indirect and induced impacts associated with the English Onshore Scheme during construction. For socio-economics there is no accepted definition of what constitutes a significant (or not significant) socio-economic effect. It is however recognised that classification of an effect reflects the relationship between the scale of an impact (magnitude) and the sensitivity (or value) of the affected resource or receptor. As such socio-economic effects will be assessed on the basis of:
- Consideration of sensitivity to effects: Specific values in terms of sensitivity are not attributed to socio-economic resources/receptors due to their diverse nature and scale. However, the assessment takes account of the qualitative (rather than quantitative) ‘sensitivity’ of the receptor (employment and the economy).
 - Magnitude of the impact: This entails consideration of the size of the effect on people (employees) in the context of the area in which effects will be experienced (the local and regional economy).
- 15.7.10 Effects are defined as follows:
- Beneficial classifications of significance indicate an advantageous or beneficial effect on an effect area, which may be minor, moderate, or major in effect.
 - Negligible classifications of significance indicate imperceptible effects on an effect area.
 - Adverse classifications of significance indicate a disadvantageous or adverse effect on an effect area, which may be minor, moderate or major in effect.
- 15.7.11 Based on consideration of the above, where an effect is assessed as being beneficial or adverse, significance has been assigned using the scale below based on professional judgement:

- **Negligible:** no receptors (or very few) are beneficially or adversely affected. The effect is unlikely to make a measurable difference on the receptors in the relevant areas of effect.
- **Minor:** a small number of receptors are beneficially or adversely affected. The effect is likely to make a small measurable positive or negative difference on receptors in the relevant area(s) of effect.
- **Moderate:** a moderate number of receptors are beneficially or adversely affected. The effect is likely to make a measurable positive or negative difference on receptors in the relevant area(s) of effect.
- **Major:** all or a large number of receptors are beneficially or adversely affected. The effect is likely to make a substantial positive or negative difference on receptors in the relevant area(s) of effect.

15.7.12 The duration of effect is also considered, with more weight given to permanent changes than to temporary ones. Temporary effects are considered to be those associated with the construction phase, and may be short, medium or long term.

15.7.13 Effects that are deemed to be significant for the purpose of this assessment are those that are described as being moderate or major beneficial or adverse.

Construction Phase - Public access for Walkers, Cyclists and Horse Riders

Approach to Assessment

15.7.14 The assessment of PRoW and designated routes, and potential disruption to WCH during construction will be qualitative and informed by desk based study.

15.7.15 The following methodology for the assessment of likely significant is proposed in accordance with DMRB LA 104 (Ref 15.16) and DMRB LA 112 (Ref 15.15). Despite the DMRB being the standard for the assessment of road schemes, this guidance provides an appropriate methodology for assessing the effects on WCH in the context of the English Onshore Scheme.

15.7.16 Public Rights of Way, NCN and other designated routes which are subject to disruption or diversion (on a temporary or permanent basis) will be identified. An assessment of sensitivity and magnitude will be undertaken, applying professional judgement and past experience on similar developments.

Significance of Effect Criteria

15.7.17 The sensitivity criteria and magnitude of impact will be assigned in line with DMRB LA 112 (Ref 15.15) as shown in **Table 15-13** and **Table 15-14** below.

Table 15-13: Walkers, Cyclists and Horse Riders: Sensitivity Criteria

Sensitivity	Description
Very high	National trails and routes likely to be used for both commuting and recreation that record frequent (daily) use. Such routes connect communities with employment land uses and other services with a direct and convenient WCH route. Little / no potential for substitution.

Sensitivity	Description
High	PRoW frequently used by WCH for commuting, recreational and leisure purposes (e.g. National Trails). Also, for use by vulnerable travellers (e.g. elderly, school children and people with disabilities).
Medium	PRoW moderately used by WCH for commuting, recreational and leisure purposes (e.g. regional trails).
Low	Locally designated PRoW and other routes close to communities which are used by WCH mainly for recreational purposes (for example dog walking), but for which alternative routes can be taken.
Negligible	PRoW not/infrequently used by WCH for recreational purposes.

Table 15-14: Walkers, Cyclists and Horse Riders: Magnitude of Impact

Sensitivity	Description
Major	Major effect: where the English Onshore Scheme could be expected to have a considerable effect (either beneficial or adverse) on receptors. Permanent loss/severance of an existing recreational or commuting route/resource used by WCH.
Moderate	Moderate effect: where the English Onshore Scheme could be expected to have a perceptible effect (either beneficial or adverse) on receptors. Disruption of a recreational or commuting route/resource used by WCH with significant increase/decrease in journey length/time.
Minor	Minor effect: where the English Onshore Scheme could be expected to result in a small, barely perceptible effect (either beneficial or adverse) on receptors. Alteration of a recreational or commuting route/resource used by WCH but with no significant increase in journey length/time.
Negligible	Negligible: Where no discernible effect is expected as a result of the English Onshore Scheme on receptors. No change to recreational or commuting route/resource used by WCH.
No change	No loss or alteration of characteristics, features, elements or accessibility; no observable impact.

15.7.18 The level of significance will be assigned in line with Table 3.8.1 in DMRB LA 104 (Ref 15.16). Significant effects for the assessment of PRoW and designated routes comprise those which are assigned as moderate, large or very large. The remaining effects will be categorised as non-significant, as outlined below:

- Very High: Very high importance and rarity, international scale and very limited potential for substitution.
- High: High importance and rarity, national scale, and limited potential for substitution.
- Medium: High importance and rarity, national scale, and limited potential for substitution.
- Low: Low or medium importance and rarity, local scale.

- Negligible: Very low importance and rarity, local scale.

Table 15-15: Walkers, Cyclists and Horse Riders: Magnitude of Impact

		Magnitude				
		No Change	Negligible	Minor	Moderate	Major
Sensitivity	Very High	Neutral	Slight	Moderate or large	Large or very large	Very Large
	High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
	Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or large
	Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or moderate
	Negligible	Neutral	Neutral or Slight	Neutral or Slight	Neutral or Slight	Slight

Construction Phase – Private Property and Housing

Approach to Assessment

- 15.7.19 The assessment of private property and housing during construction will be qualitative and informed by desk based study.
- 15.7.20 The following methodology for the assessment of likely significant is proposed in accordance with DMRB LA 104 (Ref 15.16) and DMRB LA 112 (Ref 15.15). Despite the DMRB being the standard for the assessment of road schemes, this guidance provides an appropriate methodology for assessing the effects on residents in the context of the English Onshore Scheme.
- 15.7.21 Properties (or housing development land) which are subject to disruption through land, take, where access would be affected, or amenity effects may arise (on a temporary or permanent basis) will be identified. An assessment of sensitivity and magnitude will be undertaken, applying professional judgement and past experience on similar developments.

Significance of Effect Criteria

- 15.7.22 The sensitivity criteria and magnitude of impact will be assigned in line with DMRB LA 112 (Ref 15.15) as shown in **Table 15-16** and **Table 15-17** below.

Table 15-16: Private Property and Housing: Sensitivity Criteria

Sensitivity	Description
Very high	Existing private property or land allocated for housing located in a local authority area where the number of households are expected to increase by approximately 25% by 2041 (ONS data); and/or

	Existing housing and land allocated for housing (e.g., strategic housing sites) covering approximately 5ha and / or approximately 150 houses.
High	Private property or land allocated for housing located in a local planning authority area where the number of households are expected to increase by 16-25% by 2041 (ONS data); and/or Existing housing and land allocated for housing (e.g. strategic housing sites) covering approximately 1-5ha and / or approximately 30-150 houses.
Medium	Houses or land allocated for housing located in a local authority area where the number of households are expected to increase by approximately 6-15% by 2041 (ONS data); and/or Existing housing and land allocated for housing (e.g. strategic housing sites) covering approximately 1ha and / or approximately 30 houses.
Low	Proposed development on unallocated sites providing housing with planning permission/ in the planning process.
Negligible	Not Applicable.

Table 15-17: Private Property and Housing: Magnitude of Impact

Sensitivity	Description
Major	Major effect: where the English Onshore Scheme could be expected to have a considerable effect (either beneficial or adverse) on receptors. Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements, e.g., direct acquisition and demolition of buildings and direct development of land; and/or Introduction (adverse) or removal (beneficial) of complete severance with no/full accessibility provision.
Moderate	Moderate effect: where the English Onshore Scheme could be expected to have a perceptible effect (either beneficial or adverse) on receptors. Partial loss of/damage to key characteristics, features or elements, e.g., partial removal or substantial amendment to access or acquisition of land compromising viability of property; and/or Introduction (adverse) or removal (beneficial) of severe severance with limited / moderate accessibility provision.
Minor	Minor effect: where the English Onshore Scheme could be expected to result in a small, barely perceptible effect (either beneficial or adverse) on receptors. A discernible change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements, e.g., amendment to access or acquisition of land resulting in changes that do not compromise overall viability of property; and/or Introduction (adverse) or removal (beneficial) of severance with adequate accessibility provision.
Negligible	Negligible effect: Where no discernible effect is expected as a result of the English Onshore Scheme on receptors. Very minor loss or detrimental alteration to one or more characteristics, features or elements, e.g., acquisition of non-operational land or buildings not directly affecting the viability of property; and/or very minor introduction (adverse) or removal (beneficial) of severance with ample accessibility provision.

No change No loss or alteration of characteristics, features, elements or accessibility; no observable impact in either direction.

15.7.23 The level of significance will be assigned in line with Table 3.8.1 in DMRB LA 104 (Ref 15.16). Significant effects for the assessment of private property and housing comprise those which are assigned as moderate, large or very large. The remaining effects will be categorised as non-significant, as outlined below:

- Very High: Very high importance and rarity, national scale and very limited potential for substitution.
- High: High importance and rarity, national scale, and limited potential for substitution.
- Medium: High importance and rarity, national scale, and limited potential for substitution.
- Low: Low or medium importance and rarity, local scale.
- Negligible: Very low importance and rarity, local scale.

Table 15-18: Private Property and Housing: Magnitude of Impact

		Magnitude				
		No Change	Negligible	Minor	Moderate	Major
Sensitivity	Very High	Neutral	Slight	Moderate or large	Large or very large	Very Large
	High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
	Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or large
	Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or moderate
	Negligible	Neutral	Neutral or Slight	Neutral or Slight	Neutral or Slight	Slight

Construction Phase – Tourist Attractions

15.7.24 No quantitative impact assessment on tourism will be undertaken, with the assessment utilising available tourism data and published studies and applying professional judgement to reach conclusions. The assessment will provide a qualitative assessment of the effects on tourism, focussing on tourist assets and attractions that could be affected by the English Onshore Scheme during construction.

Construction Phase – Tourist Accommodation

15.7.25 An evaluation of the likely number of construction employees who may reside in the locality on a temporary basis will be undertaken; based on the total number of construction employees combined with assumptions made by the Applicant associated with travel planning, construction methodologies, and the construction programme. A percentage of the overall construction employment workforce will be determined based

on these factors. Consideration will be given to the types of tourist accommodation in the locality, including number of bedrooms, to determine whether additional pressure may arise on local accommodation facilities, in the context of existing availability and demand from tourists visiting the local area.

15.8 Assessment Limitations and Assumptions

15.8.1 The following limitations and assumptions have been identified that will form the basis of the PEIR and EIA:

- This assessment has relied, in part, on data provided by third parties (e.g. Ordnance Survey Mapping, Office for National Statistics (ONS)) which are the most up-to-date data available at the time of writing. No significant changes or limitations in these datasets have been identified that would affect the robustness of the assessment. Baseline data will be kept under review throughout the production of the PEIR and EIA in order to ensure that (where practicable) the most recently published data is utilised.
- No site survey has been undertaken for the purpose of this chapter. However, this is not considered to affect the robustness of the assessment for EIA purposes due to baseline information being publicly available.

15.8.2 The assessment of Human Health has been included within **Part 2 Chapter 16: Health and Wellbeing**. The assessment of agricultural businesses has been assessed in **Part 2, Chapter 11: Agriculture and Soils**.

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16. Health and Wellbeing

16. Health and Wellbeing

16.1 Introduction

16.1.1 The Health and Wellbeing assessment will consider the potentially significant effects on health and wellbeing that may arise from the construction and operation of the English Onshore Scheme.

16.1.2 This chapter of the Scoping Report sets out the relevant legislation, planning policy context and technical guidance used to inform the scope of the assessment and summarises any consultation and engagement in relation to health and wellbeing undertaken to date. It provides an overview of the baseline conditions relevant to health and wellbeing around the Scoping Boundary and local authority area, the measures which will be incorporated into the English Onshore Scheme to mitigate health and wellbeing effects, the likely significant effects to be considered within the assessment, and how these likely significant effects will be assessed for the purpose of an EIA.

16.1.3 This chapter should be read in conjunction and considered alongside the following chapters found in Volume 1:

- **Part 2 Chapter 4: English Onshore Scheme**
- **Part 2, Chapter 5: EIA Methodology**
- **Part 2, Chapter 8: Landscape and Visual Amenity**
- **Part 2, Chapter 9: Water Environment**
- **Part 2, Chapter 10: Geology and Hydrogeology**
- **Part 2, Chapter 12: Traffic and Transport**
- **Part 2, Chapter 13: Noise and Vibration**
- **Part 2, Chapter 14: Air Quality**
- **Part 2, Chapter 15: Socio-economics, Recreation and Tourism**
- **Part 4, Chapter 35: Cumulative Effects**

16.1.4 This chapter is supported by the following figures:

- **Figure 16.1: Health and Wellbeing Study Area**

16.1.5 The scope of this health and wellbeing chapter considers potential for the English Onshore Scheme to give rise to changes in health status by influencing health determinants to the health of receptors, identified as the ‘general population’ and ‘vulnerable groups’. This scope differs from the assessment of socio-economics, recreation and tourism which considers those receptors which have the potential to experience changes to accessibility, severance, provision of facilities and restriction of use.

16.1.6 There may be some receptors e.g. pedestrian routes, that may be discussed in both chapters but applying different metrics and assessment methodologies.

16.2 Relevant Legislation, Planning Policy and Technical Guidance

16.2.1 This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the health and wellbeing assessment.

Legislation

16.2.2 A summary of the key legislation considered, but not limited to, in the scope of health and wellbeing effects is outlined in **Table 16-1**.

Table 16-1: Legislation relevant to health and wellbeing

Legislation	Legislative Context	Section Considered
The Environment Act (2021) (Ref 16.1)	The Environment Act 2021 sets out a series of long-term targets which relate to the natural environment and people's enjoyment of the natural environment, under Part 1 Regulation 1. Targets for improving air quality, water quality, biodiversity and resource efficiency are required to be met.	Section 16.5 Design and Control Measures
Equality Act (2010) (Ref 16.2)	The Equality Act 2010 protects people from discrimination in the workplace and in wider society. Protected characteristics comprise: <ul style="list-style-type: none"> • Age • Disability • Gender reassignment • Marriage and civil partnership • Race, including colour, nationality, ethnic or national origin • Religion or belief • Sex • Sexual Orientation • Pregnancy and maternity 	Section 16.4 Baseline Conditions
Infrastructure Planning (Environmental Impact Assessment) Regulations (2017) (Ref 16.3)	Under the Infrastructure Planning (EIA) Regulations, a number of topics are required to be assessed. This includes human health, with a description of the factors likely to be significantly affected by the	Throughout this Chapter

Legislation	Legislative Context	Section Considered
	development and a description of the likely significant effects.	

16.2.3 In addition to the legislation noted in the **Table 16-1**, legislation relevant to specific environmental factors are discussed within the relevant topic chapters of this Scoping Report.

Planning Policy

16.2.4 A summary of the planning policies at both a national and local level relevant to the scope of health and wellbeing effects is given in **Table 16-2** and **Table 16-3**.

Table 16-2: Planning Policy relevant to health and wellbeing

Policy Reference	Policy Context	Section Considered
National Policy		
<i>Overarching National Policy Statement for Energy (EN-1) (2024) (Ref 16.4)</i>		
Paragraph 4.3.1 – 4.3.5	The National Policy Statement details that an ES should assess effects for each element of the project, identifying measures to avoid, reduce or compensate for health impacts. The policy highlights that effects resulting from other environmental topics should be assessed, but that regulation of these topics is considered effective mitigation.	Section 16.6 Scope of Assessment
Section 4.4	The National Policy Statement details that an ES should assess effects on health and wellbeing, including from related topics and indirect impacts. The NPS particularly highlights potential impacts on vulnerable groups within society and those with protected characteristics under the Equality Act 2010.	Section 16.6 Scope of the Assessment
<i>National Policy Statement for Electricity Networks Infrastructure (EN-5) (2024) (Ref 16.5)</i>		
Paragraph 2.9.44 – 2.8.58	The Policy Statement states that the applicant must consider a series of factors in relation to Electric and magnetic Fields (EMFs), requiring compliance with International Commission on Non-Ionizing Radiation Protection (ICNIRP) limits, and mitigation such as re-routing, undergrounding or increased clearances to ensure this. It is noted that it is not the government’s policy for power lines to be	Section 16.4 Baseline Conditions Section 16.5 Design and Control Measures Section 16.6 Scope of the Assessment

undergrounded solely for the purpose of EMF mitigation.

National Planning Policy Framework (NPPF) (2023) (Ref 16.6)

Paragraph 96 – 101.	The NPPF sets out a series of objectives and priorities for planning in England and how they should be applied. The overarching aim includes a social objective to support strong and healthy communities, with accessible services and open spaces. Section 8 specifies the objectives for promoting healthy and safe communities.	Section 16.4 Baseline Conditions Section 16.5 Design and Control Measures
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Table 16-3: Local planning policy relevant to health and wellbeing

Local Authority Plan/Strategy	Summary of Relevant Policies Relating to Health and Wellbeing	Section Considered
East Lindsey District Council: East Lindsey Local Plan Core Strategy, (2018) (Adopted 2018) (Ref 16.7)	Chapter 4, Strategic Policy 10 (SP10) Strategic Policy 22 (SP22) Transport and Accessibility Developers are encouraged to carry out a Health Impact Assessment (HIA) commensurate with the size and nature of the development to show how they have factored this into their proposal. The Plan sets out how landscape, green infrastructure, open space and access to facilities can create an attractive and healthy working and living environment.	Section 16.4 Baseline Conditions Section 18.6 Scope of the Assessment
East Lindsey District Council: East Lindsey District Council Health and Wellbeing Strategy (2023) (Ref 16.8)	The East Lindsey District Council Health and Wellbeing Strategy sets out five key aims for the successful delivery of the plan, including themes of improving the supply of homes, to address inactivity, to deliver on environment and health improvements together, to reduce economic inequality	Section 16.4 Baseline Conditions Section 18.6 Scope of the Assessment

Local Authority Plan/Strategy	Summary of Relevant Policies Relating to Health and Wellbeing	Section Considered
Boston Borough Council and South Holland District: South East Lincolnshire Local Plan 2011-2036 (Adopted 2019) (Ref 16.9)	<p>and alleviate poverty, and support local communities.</p> <p>The South East Lincolnshire Local Plan is a shared partnership between Boston Borough Council, South Holland District and Lincolnshire Council Councils. The Local Plan sets out several policies for the benefit of community health and wellbeing, including Policy 32: Community, Health and Wellbeing, which states that development shall contribute to the creation of inclusive communities and facilitating walking and public rights of way. The policy also supports the development of community facilities and protects against the redevelopment of such sites.</p>	<p>Section 16.4 Baseline Conditions</p> <p>Section 16.6 Scope of the Assessment</p>
Borough Council of King's Lynn and West Norfolk: Local Development Framework Core Strategy (2011) (Ref 16.10)	<p>Policy CS01 and Policy CS13</p> <p>Policy CS01 seeks to improve accessibility for all to education, health, and housing. Policy CS13 under the Local Plan seeks to improve quality of life for residents through inclusive design, high quality development and community involvement.</p>	<p>Section 16.4 Baseline Conditions</p> <p>Section 16.6 Scope of the Assessment</p>
Fenland District Council: Fenland Local Plan (2014) (Ref 16.11)	<p>Policy LP2: Facilitating Health and Wellbeing of Fenland Residents</p> <p>The Plan sets out a number of policies and states that the aims are underpinned by health targets. A number of policies are in place to ensure development would contribute to the goal of highest attainable</p>	<p>Section 16.4 Baseline Conditions</p> <p>Noted for context, Fenland district is adjacent to the Scoping boundary.</p>

Local Authority Plan/Strategy	Summary of Relevant Policies Relating to Health and Wellbeing	Section Considered
Fenland District Council: Fenland Emerging Local Plan 2021 – 2040 (Ref 16.12)	<p>standard of health and improve wellbeing.</p> <p>Policy LP5</p> <p>The policy states that development proposals should contribute to promoting health and wellbeing of the community and reducing health inequalities. Developments should enable healthy and active lifestyles.</p>	<p>Section 16.4 Baseline Conditions</p> <p>Noted for context, Fenland district is adjacent to the Scoping boundary.</p>
Fenland District Council: Fenland District Council Health and Wellbeing Strategy 2018-2021 (Ref 16.13)	<p>The Strategy explains the strategic policies for Fenland, including the priorities for supporting the community, improving lifestyle factors and improving mental health and wellbeing.</p>	<p>Section 16.4 Baseline Conditions</p> <p>Noted for context, Fenland district is adjacent to the Scoping boundary.</p>
Lincolnshire District Council Health and Wellbeing Strategy (Ref 16.14)	<p>04 Strategic Framework Activity Outputs 4.2</p> <p>06 Key data, indicators and 'levelling up' 6.1</p> <p>The LDC Strategy covers East Lindsey District Council, South Holland District Council and Boston Borough Council, aiming to alleviate poverty as a driver for improving mental and physical health. The plan further sets out goals to work with communities to support engagement and collaboration, develop programmes for improving quality of accommodation and improve access to safe places and spaces, in which to take part in regular physical activity. The Health and Wellbeing Strategy additionally sets out a number of key indicators for measuring success.</p>	<p>Section 16.4 Baseline Conditions</p> <p>Section 18.6 Scope of the Assessment</p>

Local Authority Plan/Strategy	Summary of Relevant Policies Relating to Health and Wellbeing	Section Considered
Norfolk County Council: Norfolk County Council Environmental Policy (2020) (Ref 16.15)	The Environmental Policy “ <i>connecting people with the environment to improve health and wellbeing</i> ” sets out the Council’s approach to providing access to green spaces to facilitate improvements to health and wellbeing.	Section 16.4 Baseline Conditions Section 16.6 Scope of the Assessment
Cambridge County Council (2022) Health & Wellbeing Integrated Care Strategy Priority Chapters 1-4 (Ref 16.16)	To support the Cambridgeshire & Peterborough Health & Wellbeing and Integrated Care Strategy, a series of priority chapters were produced which present the evidence bases and themes for improving health and wellbeing in Cambridgeshire and Peterborough.	Section 16.4 Baseline Conditions Section 16.6 Scope of the Assessment Noted for context, Cambridgeshire is adjacent to the Scoping boundary.

Technical Guidance

^{16.2.5} The following relevant guidance, specific to health and wellbeing, given in **Table 16-4** has informed this Scoping Report and will inform the assessment within the PEIR and ES.

Table 16-4: Technical guidance relevant to health and wellbeing

Technical Guidance Document	Context
Healthy Lives, Healthy People: Our Strategy for Public Health in England, HM Government, (2011) (Ref 16.17).	This white paper sets out the approach to reduce inequalities in health and address the root causes of poor health and wellbeing.
A Green Future: Our 25 Year Plan to Improve the Environment, Department for Environment, Food and Rural Affairs, (2018) (Ref 16.18).	The Plan sets out the proposals to open up the mental and physical health benefits of the natural world through the 25-year plan for improving the environment.
Planning Practice Guidance (PPG) – Healthy and Safe Communities, Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government, (2014) (2022 update) (Ref 16.19).	The guidance sets out the importance of considering planning and health together by creating healthy environments that support and encourage healthy lifestyles and by identifying and securing facilities for primary, secondary and tertiary care.
Putting Health into Place, Public Health England, (2018) (Ref 16.20).	The guidance explains the relationship between health and development, including key actions

Technical Guidance Document	Context
Health Impact Assessment in spatial planning A guide for local authority public health and planning teams, Public Health England (PHE), (2020) (Ref 16.21)	for developers to align approaches to address the root causes of preventable health conditions and poor wellbeing.
Advice on the content of Environmental Statements accompanying an application under the NSIP Regime, PHE, (2021) (Ref 16.22)	PHE explains the required methodology for assessing impacts within this advice note, alongside defining potential significant effects and vulnerable groups.
Health in Environmental Impact Assessment A Primer for a Proportionate Approach, Institute of Environmental Management and Assessment (IEMA), (2017) (Ref 16.23)	The IEMA guidance aims to guide EIA coverage of population and human health, focusing on proportionality and the opportunities and challenges presented.
Effective Scoping of Human Health in Environmental Impact Assessment, IEMA, (2022) (Ref 16.24)	<p>This scoping guidance explains when an EIA Chapter should be prepared and when a standalone Health Impact Assessment would be required. The expectation is that the EIA Report will include a chapter on human health where:</p> <ul style="list-style-type: none"> • wider determinants of health not covered by other EIA technical topics have been scoped in; or • other EIA technical topics have been scoped in to assess likely and potentially significant effects to human receptors, community amenities or services; and there are likely and potentially significant population health implications from such assessments. <p><i>“If the implications of other EIA technical topics for population health are not clear at the scoping stage, then an EIA Report health chapter should be included, and once the further assessment detail for those topics is available, explain whether or not there are likely and significant population health effects”.</i></p> <p>Additionally, the guidance outlines the relationship of HIA and EIA where there is a policy or validation requirement to undertake HIA. The guidance explains that “EIA projects should normally meet this through the EIA Report health chapter where significant health effects are likely to occur. Where the EIA follows IEMA guidance the health chapter will</p>

Technical Guidance Document	Context
Determining Significance for Human Health in Environmental Impact Assessment, IEMA, (2022) (Ref 16.25)	align to HIA principles, including considering wider determinants of health and health inequalities”.
Mental Wellbeing Impact Assessment (MWIA) – a toolkit for wellbeing, National MWIA Collaborative (England), (2011) (Ref 16.26)	This guidance promotes greater consistency in the assessment process, including how EIA health conclusions are reached, interpreted and used by all parties. This guidance explains how the magnitude of effect and sensitivity of receptors is applied to human health. Methodologies are set out and significance criteria established.
Guidelines For Limiting Exposure to Time-Varying Electric, Magnetic And Electromagnetic Fields (Up To 300 GHz), International Commission on Non-Ionizing Radiation Protection (ICNIRP), (1998) (Ref 16.27)	This MWIA toolkit for well-being provides an evidence based framework for improving well-being. The MWIA screening toolkit has been designed to assist policies, services, programmes or projects, to begin to find out how they might make a difference through using MWIA.
Fair Society, Healthy Lives The Marmot Review, Institute of Health Equity (2010) (Ref 16.28)	The ICNIRP establishes guidelines for limiting EMF exposure that will provide protection against known adverse health effects. The guidance presents basic restrictions on exposure and reference levels for compliance.
Health Equity In England: The Marmot Review 10 Years On, Institute of Health Equity, (2020) (Ref 16.29)	The Marmot Review was commissioned to undertake a review into inequality and its relation to health. The Review concludes with policy recommendations to address the findings, including creating healthy and sustainable communities, giving children the best start in life and ensuring a healthy standard of living for all. These each include a number of policy objectives.
Health Equity In England: The Marmot Review 10 Years On, Institute of Health Equity, (2020) (Ref 16.29)	Building on the work of the 2010 Marmot review, the 2020 examines why life expectancy has stalled in England and how health inequalities have grown in the previous decade. The policy objectives from the 2010 report are developed further to clarify objectives.

16.3 Consultation and Engagement

16.3.1 There has been no specific consultation carried out in relation to health and wellbeing at the time of writing. It is anticipated that feedback in relation to this topic and the scope of assessment will be gained following consultation on this Scoping Report, both for the Health and Wellbeing Chapter, and related chapters.

16.3.2 In advance of the PEIR and ES engagement would be undertaken with the following stakeholders relevant to health and wellbeing to discuss the proposed assessment methodology and mitigation:

- East Lindsey District Council;
- Boston Borough Council;
- South Holland District Council;
- Borough Council of King's Lynn & West Norfolk; and
- Office for Health Improvement and Disparities.

16.4 Baseline Conditions

Study Area

16.4.1 In the absence of standard methodology and guidance, the study area for the health and wellbeing assessment has been defined using professional judgement and experience of similar linear projects and is defined by local authority boundaries. The Scoping Boundary includes the following local authorities and is shown on **Figure 16.1: Health and Wellbeing Study Area**:

- East Lindsey District Council;
- Boston Borough Council;
- South Holland District Council; and
- Borough Council of King's Lynn & West Norfolk.

16.4.2 Baseline data has additionally been collected for Fenland District Council area, due to the proximity of the Scoping Boundary.

16.4.3 Where the assessment of health-related environmental change relies on data from other topic chapters, the study area for that chapter will be referred to in the assessment.

16.4.4 Previous studies and calculations (Ref 16.30) have shown that equipment operating at the proposed voltage and rating do not produce electric and magnetic fields (EMF) greater than typical background levels at distances of more than 200 m. Therefore, a 200 m study area has been assumed around the Scoping Boundary for consideration of EMF.



Figure 16-1 Health and Wellbeing Study Area (Overview)

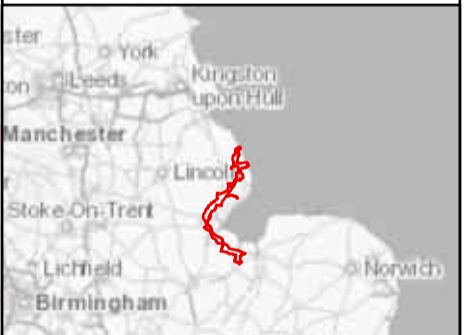


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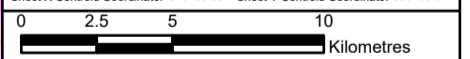
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- Local Authority Boundary
 - Boston Borough Council
 - East Lindsey District Council
 - Borough Council of King's Lynn and West Norfolk
 - South Holland District Council

Notes

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Figure 16-1
Health and Wellbeing Study Area



Figure Number

FIGURE 16-1

Drawing Reference

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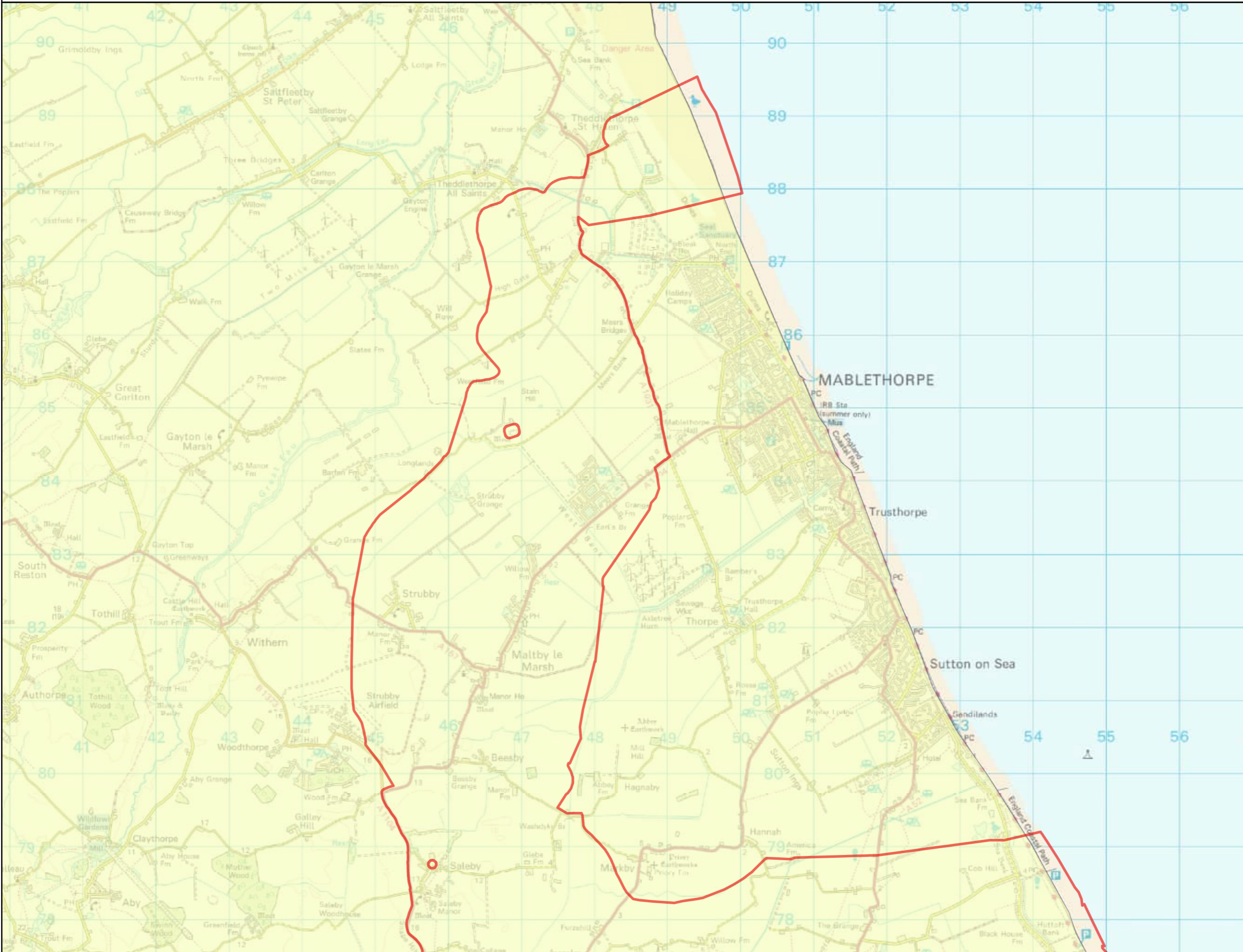
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Figure 16-1 Health and Wellbeing Study Area

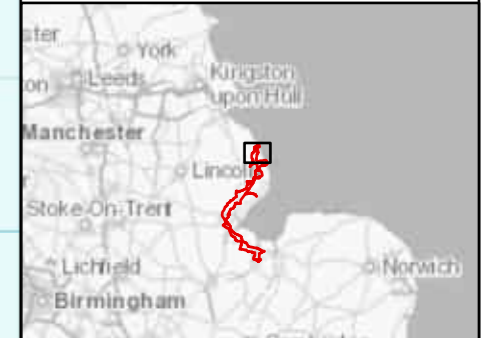
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- Scoping Boundary
- Local Authority Boundary
- East Lindsey District Council

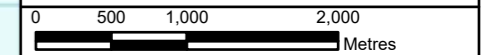


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Title

**Figure 16-1
Health and Wellbeing Study Area**

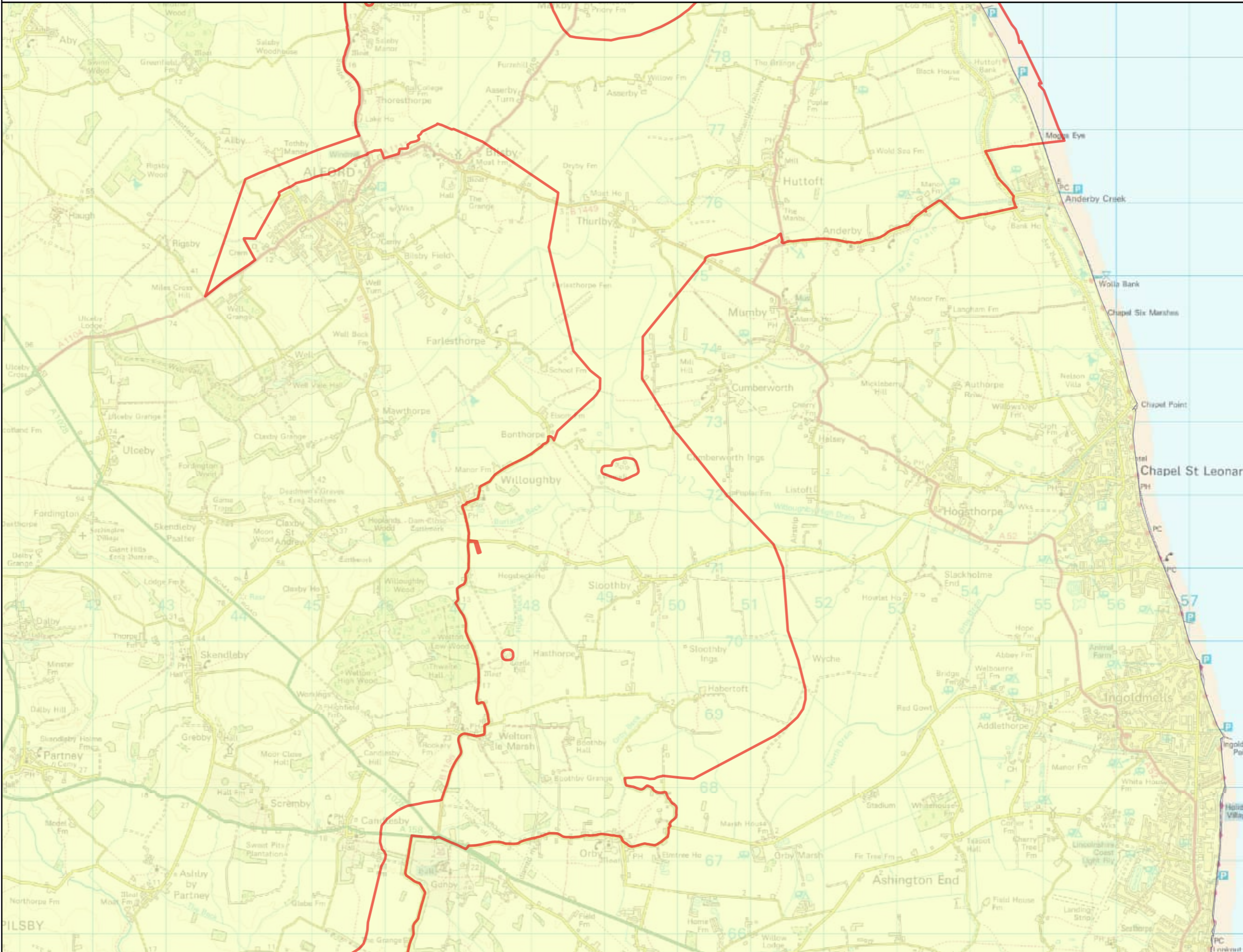
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Figure Number		FIGURE 16-1	
Drawing Reference			
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Figure 16-1 Health and Wellbeing Study Area

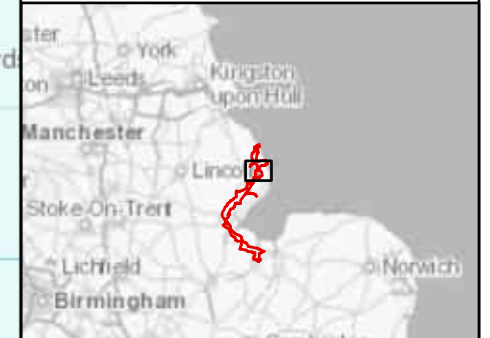
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- Local Authority Boundary
- East Lindsey District Council

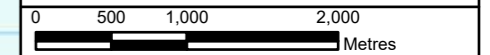


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Title

Figure 16-1
Health and Wellbeing Study Area



Figure Number
FIGURE 16-1

Drawing Reference
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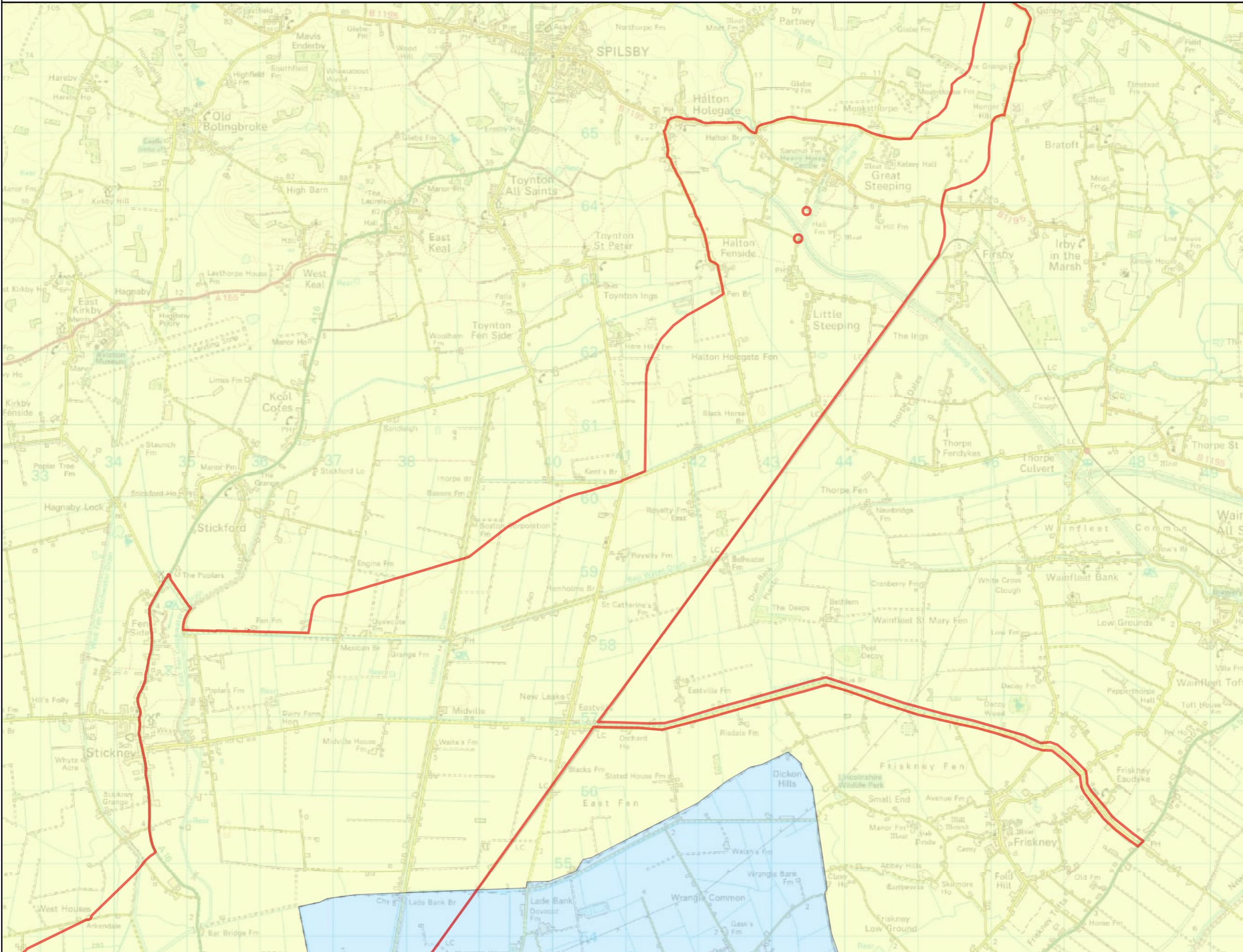
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Figure 16-1 Health and Wellbeing Study Area

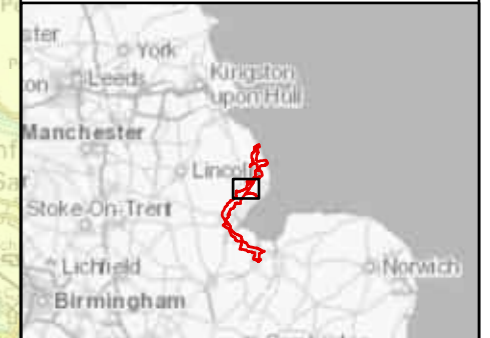
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- Scoping Boundary
- Local Authority Boundary
- Boston Borough Council
- East Lindsey District Council

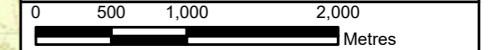


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Figure 16-1
Health and Wellbeing Study Area



Figure Number
FIGURE 16-1

Drawing Reference
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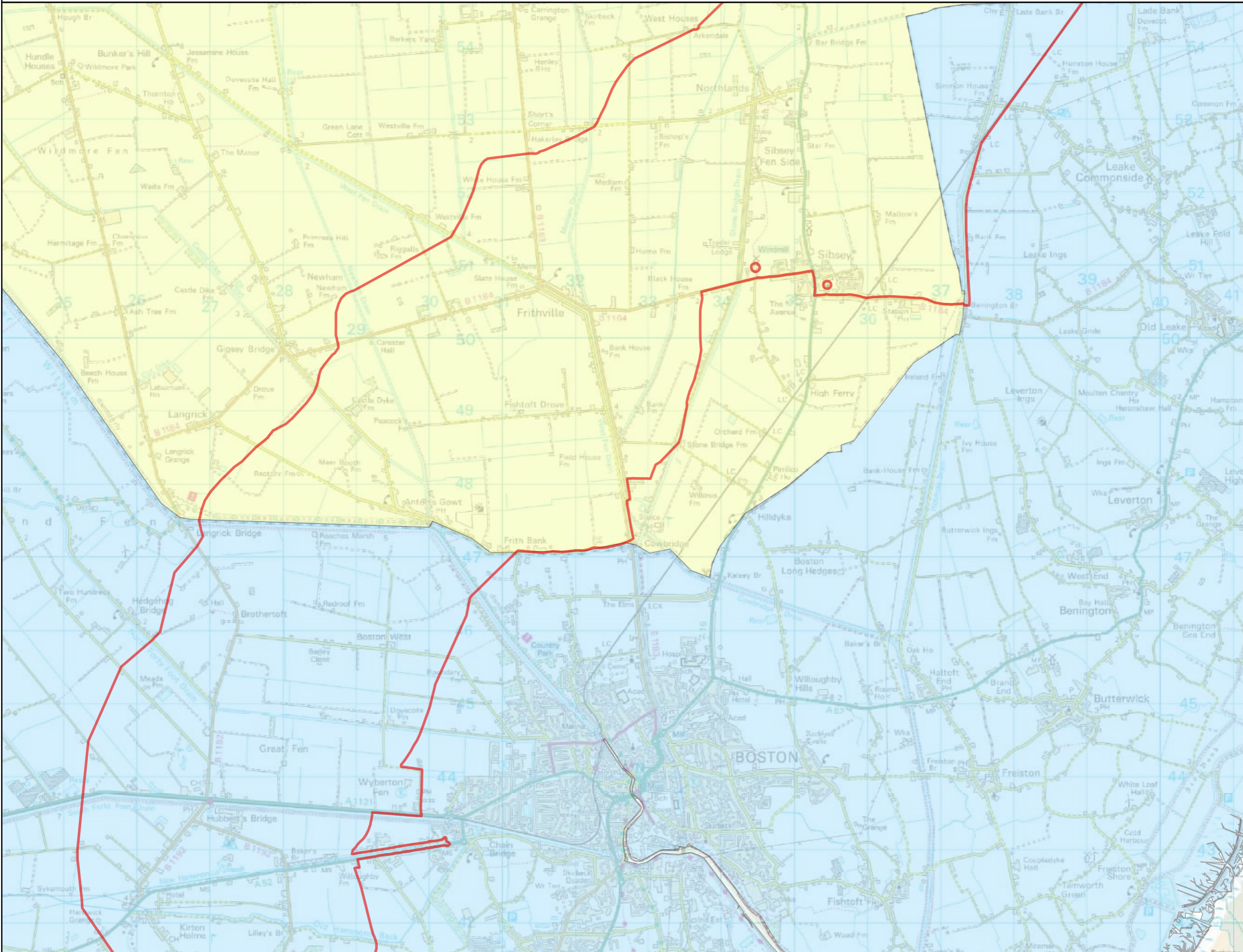
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Figure 16-1 Health and Wellbeing Study Area

Legend

- Scoping Boundary
- Local Authority Boundary
- Boston Borough Council
- East Lindsey District Council

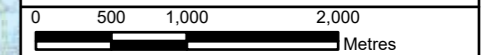


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Title

Figure 16-1
Health and Wellbeing Study Area

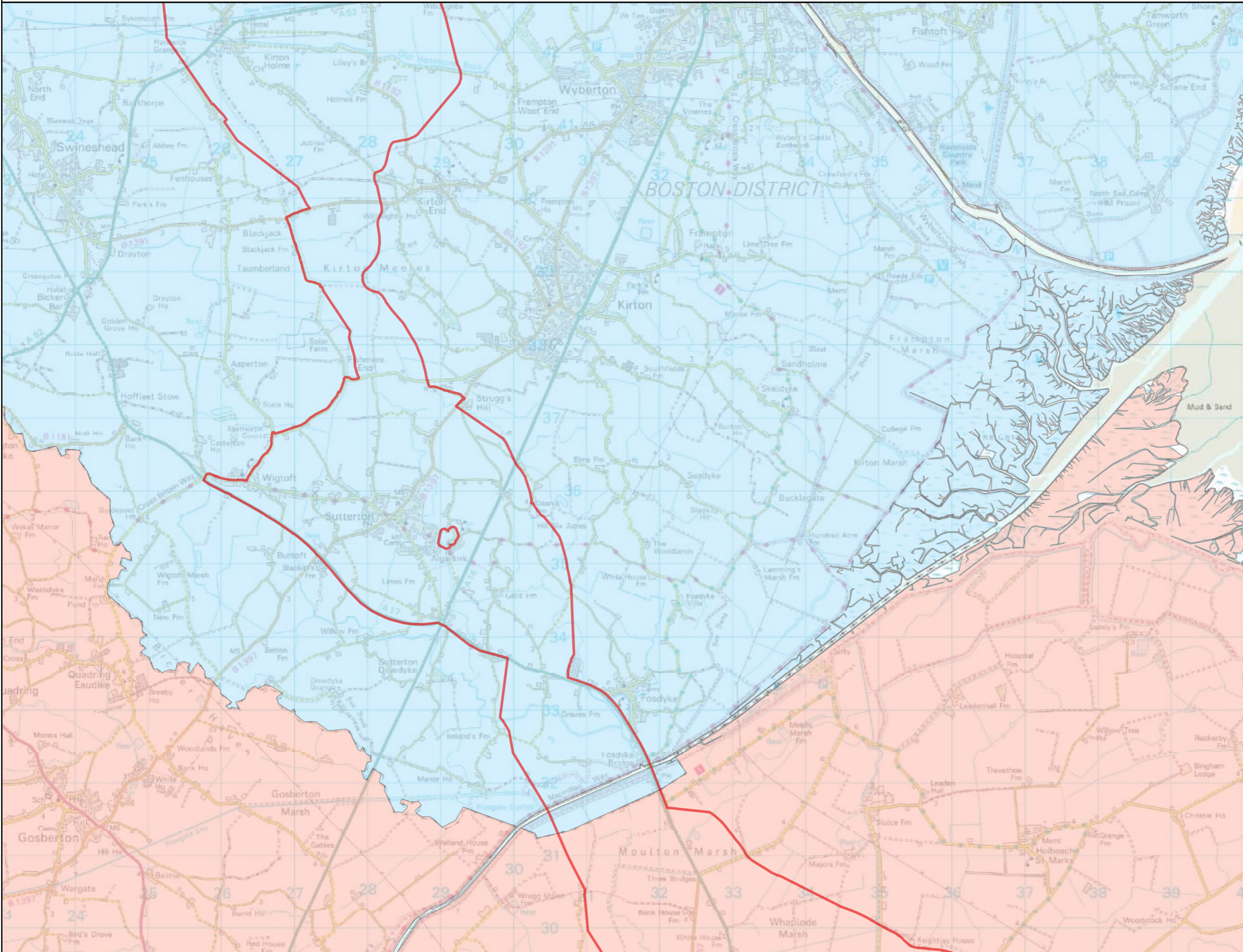
nationalgrid			
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FIGURE 16-1			
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Figure 16-1 Health and Wellbeing Study Area

Legend

- Scoping Boundary
- Local Authority Boundary
- Boston Borough Council
- South Holland District Council

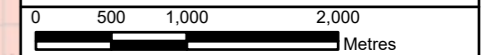


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Figure 16-1
Health and Wellbeing Study Area



Figure Number
FIGURE 16-1

Drawing Reference
EGL-ARC-CONS-XX-DR-G-017

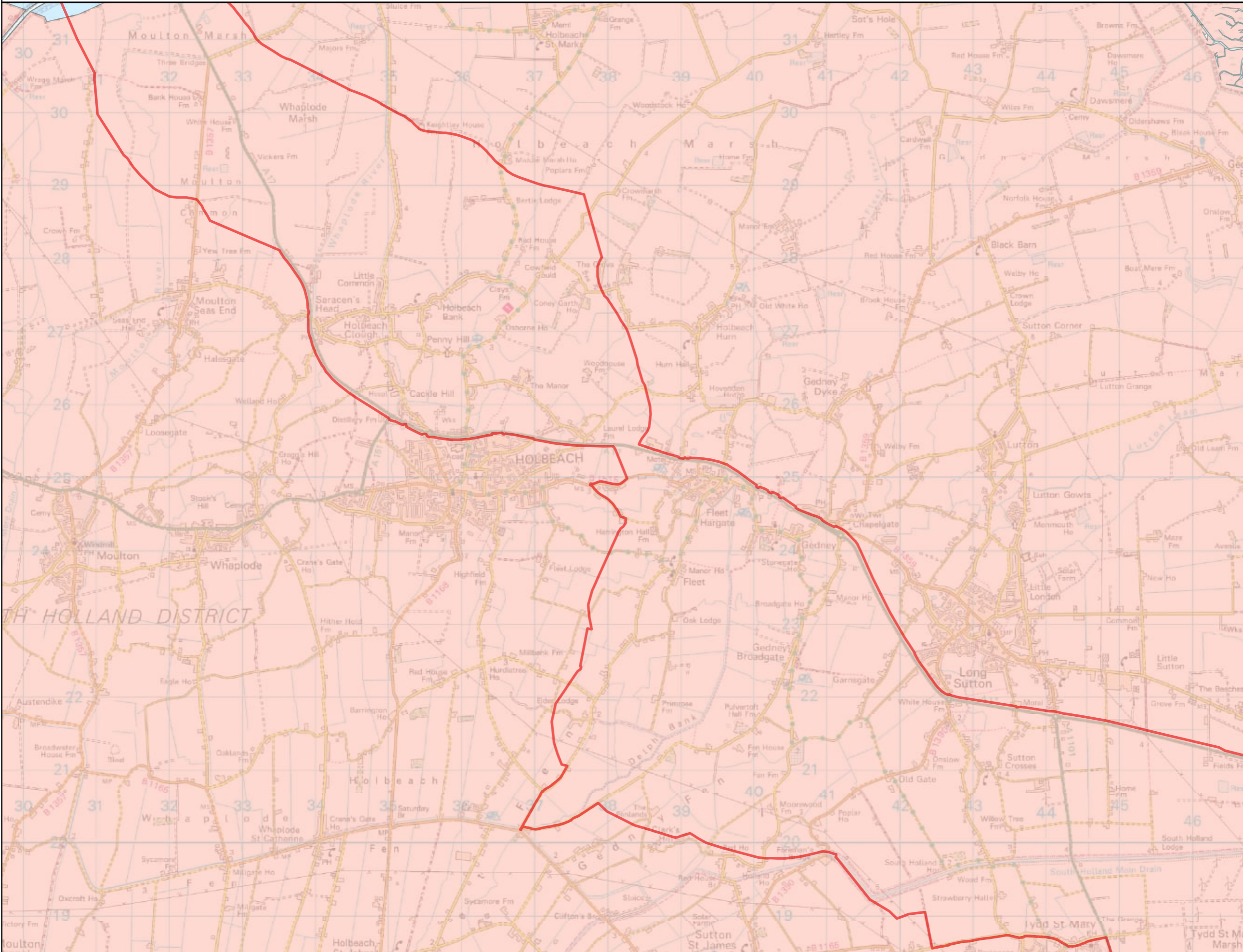
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Figure 16-1 Health and Wellbeing Study Area

Legend

- Scoping Boundary
- Local Authority Boundary
- Boston Borough Council
- South Holland District Council

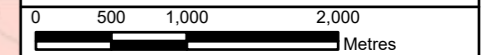


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Figure 16-1
Health and Wellbeing Study Area



Figure Number
FIGURE 16-1

Drawing Reference
EGL-ARC-CONS-XX-DR-G-017

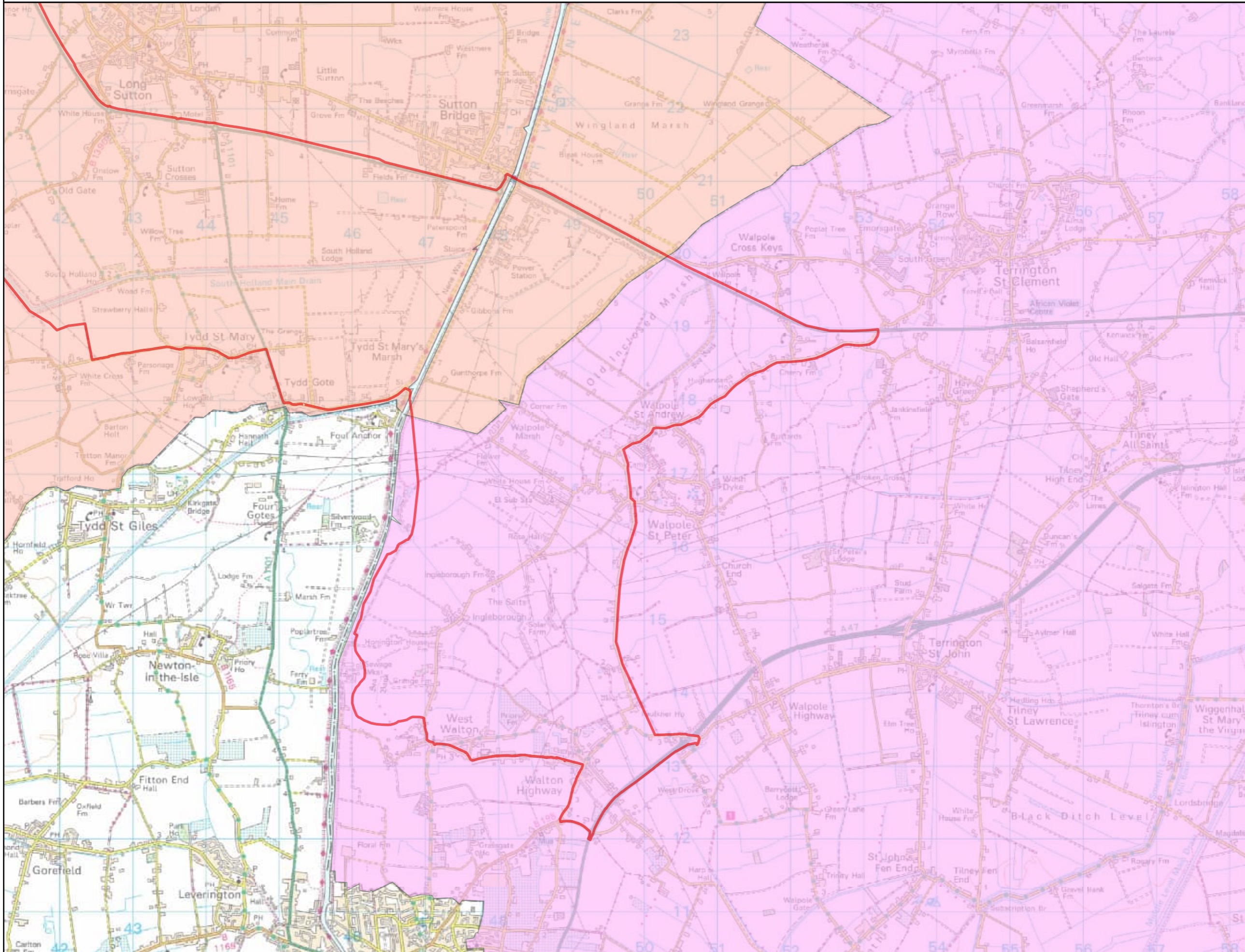
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Figure 16-1 Health and Wellbeing Study Area

Legend

- Scoping Boundary
- Local Authority Boundary
 - Borough Council of King's Lynn and West Norfolk
 - South Holland District Council



Notes

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Figure 16-1
Health and Wellbeing Study Area



Figure Number
FIGURE 16-1

Drawing Reference
EGL-ARC-CONS-XX-DR-G-017

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Data Gathering Methodology

- 16.4.5 The baseline has been informed by a desk study which has drawn on the following information sources:
- Office for National Statistics: Census 2021: Population profiles for local authorities in England (Ref 16.31)
 - Office for Health Improvement and Disparities data (Ref 16.32)
 - Baseline information from related topic chapters

Current Baseline

Health-related environmental change

- 16.4.6 Population, recreation and deprivation data are described in **Chapter 15: Socio-economics, Recreation and Tourism**. Baseline information relating to health-related environmental change is set out in the following chapters:
- **Chapter 8: Landscape and Visual Amenity**
 - **Chapter 9: Water Environment**
 - **Chapter 10: Geology and Hydrogeology**
 - **Chapter 12: Traffic and Transport**
 - **Chapter 13: Noise and Vibration**
 - **Chapter 14: Air Quality**

Local Health

- 16.4.7 The health baseline of the study area has been gathered and shows varying characteristics and challenges (Ref 16.31 and Ref 16.32). The baseline sets out the wider health context required to inform the assessment, covering both physical and mental health. This information has been used as a basis for determining the sensitivity of receptors to changes in health determinants arising from the English Onshore Scheme.

Age

- 16.4.8 King's Lynn and West Norfolk, and East Lindsey have an aging population, with 25% and 29% of residents aged 65 and over respectively, which may be indicative of a lower birth rate, that people move to the area to retire, or conversely, families and younger people are moving out of the area. Statistics for Fenland, Boston and South Holland suggest that there is an opposite trend, with a greater proportion of younger and working age people when compared to King's Lynn and West Norfolk and East Lindsey. However, all of the local authority areas have a higher proportion of those aged over 65 than England (19%) as a whole. Fenland and Boston additionally have the highest population densities of the study area (186.8 and 195.9 respectively), although all of the authorities studied have a lower population density than that of England as a whole (434.1).

General Health

- 16.4.9 Life expectancy rates within the study area are generally in line with or slightly lower when compared to England. The life expectancy for males in Boston is the most deviated from the national average, at nearly two years less than the average for England (77.7 years, compared to 79.5 years for England). The male life expectancy in South Holland and King's Lynn and West Norfolk slightly exceeds the average for England. For female life expectancy, only South Holland is equal to the England average (83.2 years), with the other local authority areas performing worse in this metric when compared to the England national average. The lowest female life expectancy in the study area is in East Lindsey, with 81.8 years.
- 16.4.10 The number of people across the study area living with a limiting illness or disability is higher than the England average (17.6%), with East Lindsey having the highest proportion of its population living with a limiting illness or disability (26%). Conversely, Boston has the lowest proportion (20.2%).
- 16.4.11 Across child weight indicators, at both Reception-age and Year 6, the study area performed worse than England as a whole (22.6% for Reception-age in England and 35.8% for Year 6). This is particularly evident in Boston (25.8% and 43.8% respectively). This indicates that opportunities for exercise, active travel and outdoor recreation, as well as accessing healthy foods is a challenge for this area.

Ethnic Diversity

- 16.4.12 In terms of ethnic diversity, the whole of the study area has a less diverse population than England as a whole. Boston is the most diverse district within the study area, with 95% of the population identifying as white; the England average in contrast has 81% of the population identifying as white.

Deprivation

- 16.4.13 The study area has a varied level of deprivation. East Lindsey has the highest rate of income deprivation (16.2%), with Fenland (14%) also having a higher rate than the England average (12.9%). However, all of the local authorities within the study area have a higher rate of fuel poverty when compared to the average for England, indicating that the cost of living has adversely affected this region. East Lindsey and Boston each have over 30% of all children in these areas living in low income families. The only authority to perform better than the national average on this metric is King's Lynn and West Norfolk (17.7% compared to 20.1% for England as a whole).

Employment

- 16.4.14 Across the study area, the unemployment rate is higher than the average rate for England (3.8%), except King's Lynn and West Norfolk, which is in line with the England average, and therefore the lowest in the study area. In the study area, Boston has the highest unemployment rate (5.7%). However, long-term unemployment across the study area is roughly equal to or better than that of the national average, at a crude rate of 1.9 per 1,000 people.
- 16.4.15 Health and wellbeing statistics show a wide range of socioeconomic and health factors affecting different authorities across the study area. The study area presents local authority areas with varying proportions of ages, which represent different challenges in terms of healthcare, education and recreational provision. With the whole of the study area experiencing some level of fuel poverty and varying levels of income deprivation,

opportunities for improving income parity are explored within the Local Plan documents and Health and Wellbeing Strategies which are described in Table 18.3. Similarly, these local policy documents explore the potential expansion of community services to support the population in more deprived areas.

Electric and magnetic Fields

- 16.4.16 There is existing electricity transmission and distribution equipment in the study area including 400 kV and 275 kV overhead lines, as well as existing substations at Walpole. The existing electricity infrastructure produces EMFs as it distributes or uses electricity.
- 16.4.17 Typical EMFs from a 400 kV overhead line are in the range of 5 to 10 μ T (magnetic field) and around 5 kV/m (electric field) directly under the overhead line, decreasing to a background level within 150 m of the overhead line. Typical EMFs for a 132 kV overhead line would be 0.5 to 2 μ T (magnetic field) and 1 to 2 kV/m (electric field).

Future Baseline

- 16.4.18 The future baseline relates to known or anticipated changes to the current baseline in the future which should be assessed as part of the English Onshore Scheme in the PEIR and ES.
- 16.4.19 The future baseline is not expected to materially change within the lifecycle of the English Onshore Scheme.
- 16.4.20 Following the 2008 financial crisis, public spending cuts have reduced the access to healthcare across England. The Covid-19 pandemic and subsequent cost of living crisis has further impacted people's lives by reducing the access to recreational spaces and opportunities for adequate income. The pandemic has additionally increased the number of people living with limiting illnesses or disabilities, and while these impacts have been witnessed nationwide, the study area is no exception.
- 16.4.21 A number of policies and strategies are in place across the study area, aiming to address health and wellbeing inequalities and ensure the provision of health services, access to outdoor recreational facilities and improve the mental health and resilience of the population. Opportunities for improving skills and qualifications feature as aims across each of the Local Plans, highlighting the focus on creating resilient and economically active populations, reducing unemployment levels. In King's Lynn and West Norfolk, for example, the Local Development Framework Core Strategy (Ref 16.10) policies highlight the aging population and the demand this places on healthcare, while the Lincolnshire District Councils' Health and Wellbeing Strategy (Ref 16.14) places emphasis on economic inclusion to support local populations.
- 16.4.22 It is recognised that there are a number of other proposed and committed developments within the surrounding area that could alter the future baseline in the absence of the English Onshore Scheme. The potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined within **Part 4, Chapter 35: Cumulative Effects**.

16.5 Design and Control Measures

- 16.5.1 A high-level optioneering study (The CPRSS, as described in **Part 2, Chapter 3: Consideration of Alternatives**) has been undertaken to identify the preferred routing and siting of the proposed infrastructure to ensure that environmental effects would be avoided. For example, the Scoping boundary has been located to avoid as far as

practicable large residential and urban areas and sensitive receptors including residential receptors, schools, medical facilities and residential care homes.

- 16.5.2 As part of the project design process, a number of design and control measures will be proposed to reduce the potential for impacts on health and wellbeing receptors. These measures will evolve over the development process as the EIA progresses and in response to consultation, and will be fed iteratively into the assessment process. These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements.
- 16.5.3 As there is a commitment to implementing these design and control measures these have, been considered in the scoping assessment.

Design Phase

- 16.5.4 The English Onshore Scheme design will be developed to be compliant with existing legal requirements and standards for EMFs, including:
- Technical Specification 1 – Ratings and General requirements for plant, equipment and apparatus for the National Grid system (Ref 16.33).
 - National Grid SHES Standard- Non-ionising radiational standard – UK/T1/8.7.4/S (Ref 16.34).
 - Policy Statement (Transmission) 103 – EMF Policy applied to overhead line designs (Ref 16.35).
- 16.5.5 These technical specifications and policies ensure that the proposed design would be compliant with the requirements of NPS EN-5 (Ref 16.5).

Construction Stage

- 16.5.6 A range of standard measures for the English Onshore Scheme are likely to be adopted throughout the duration of the Construction Stage. Those relevant to health and wellbeing are included in **Chapter 8: Landscape and Visual, Chapter 9: Water Environment, Chapter 10: Geology and Hydrogeology, Chapter 12: Traffic and Transport, Chapter 13: Noise and Vibration and Chapter 14: Air Quality.**
- 16.5.7 Additional mitigation measures for health and wellbeing include the ongoing engagement and consultation that is an integral part of the English Onshore Scheme. Public consultation, and ongoing consultation with local authorities, will identify key concerns and address any occurring challenges.

16.6 Scope of the Assessment

Potential Sensitive Receptors

- 16.6.1 The potential sensitive receptors relevant to health and wellbeing are set out in **Table 16-5.**

Table 16-5: Receptors and Impact pathways for each phase of the English Onshore Scheme

Development Phase	Impact	Receptor
Construction	Health impacts resulting from environmental change relating to the Construction Stage, such as: <ul style="list-style-type: none"> • Increased noise • Emissions of dust • Visual changes • Ground contamination • Pollution of water resources • Increased journey times • Change to flood risk • Changes to employment 	Quality of life and associated physical and mental health of residents, workers and visitors, leading to worsened health outcomes. Similarly, the mental and physical health of the general population may be worsened through the perceived loss of control over their environment and loss of opportunity for recreation and access to community facilities.
	Potential temporary severance of Public Rights of Way (PRoW) and recreational routes from construction activities.	Vulnerable populations who may experience disproportionate adverse effects when compared to the population as a whole.
	Possibility of temporary severance of access to community facilities and recreational attractions	Quality of life and associated physical and mental health of residents, workers and visitors, leading to worsened health outcomes.
		Vulnerable populations who may experience disproportionate adverse effects when compared to the population as a whole.
	New or continued employment and associated income for the construction workforce	Quality of life and associated physical and mental health of residents, workers and visitors, leading to worsened health outcomes.
	Vulnerable populations who may experience disproportionate adverse effects when compared to the population as a whole.	
	Mental and physical health, alongside quality of life, for the local residents and workers.	
	Vulnerable populations who may experience disproportionate	

Development Phase	Impact	Receptor
		adverse effects when compared to the population as a whole.
Operation/Maintenance	Potential permanent severance of Public Rights of Way (PRoW) and recreational routes due to Project features.	Quality of life and associated physical and mental health of residents, workers and visitors, leading to worsened health outcomes.
		Vulnerable populations who may experience disproportionate adverse effects when compared to the population as a whole.
	Impacts resulting from environmental change, such as: <ul style="list-style-type: none"> <li>● Increased noise <li>● Visual changes 	Quality of life and associated physical and mental health of residents, workers and visitors, leading to worsened health outcomes.
		Vulnerable populations who may experience disproportionate adverse effects when compared to the population as a whole.
	Potential generation of EMFs	Quality of life and associated physical and mental health of residents, workers and visitors, leading to worsened health outcomes.
		Vulnerable populations who may experience disproportionate adverse effects when compared to the population as a whole.

Likely Significant Effects

16.6.2 Potential significant effects on the health and wellbeing of sensitive receptors are likely to be limited to the Construction Stage only. **Table 16-6** below outlines the potential significant effects associated with the above impact pathways and sensitive receptors which have been scoped into the health and wellbeing assessment.

Table 16-6: Receptors and impact pathways for each phase of the English Onshore Scheme

Development phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
Construction	Impacts resulting from environmental change relating to the Construction Stage (see Table 18.4).	Quality of life and associated physical and mental health of residents, workers and visitors, leading to worsened health outcomes, as well as the physical and mental health of vulnerable populations.	Yes – increases in pollution or contamination have the potential to significantly worsen health outcomes. The assessment will draw on the conclusions from the relevant discipline chapters.	Scoped in
Construction	Potential temporary severance of Public Rights of Way (PRoW) and recreational routes from construction activities.	Quality of life and associated physical and mental health of residents, workers and visitors, leading to worsened health outcomes, as well as the physical and mental health of vulnerable populations.	Yes – Potential impact on local residents’ and visitors’ access to PRoW and recreational routes, potentially leading to worsened physical and mental health outcomes.	Scoped in
Construction	Possibility of temporary severance of access to community facilities and recreational attractions.	Quality of life and associated physical and mental health of residents, workers and visitors, leading to worsened health outcomes, as well as the physical and mental health of vulnerable populations.	Yes – Potential impact affecting physical and mental health outcomes.	Scoped in
Operation	Potential permanent severance of PRoW and recreational routes due to Project features.	Quality of life and associated physical and mental health of residents, leading to worsened health outcomes, as well as the physical and mental health of vulnerable populations.	Yes - Potential impact affecting physical and mental health outcomes. Disruption to PRoW and other recreational routes during operation and maintenance would be avoided as far as	Scoped in

Development phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
			possible. Where necessary, suitable diversions would be agreed with relevant local authority access officer.	
	Impacts resulting from environmental change.	Quality of life and associated physical and mental health of residents, workers and visitors, leading to worsened health outcomes.	Yes - Potential impact affecting physical and mental health outcomes as a result from noise and visual impacts	Scoped in

Effects Scoped out from Further Assessment

16.6.3 **Table 16-7** below summarises the effects scoped out of the health and wellbeing assessment together with justification for that outcome.

Table 16-7: Effects scoped out of the health and wellbeing assessment.

Development Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped out
Operation/ Maintenance	Potential generation of EMFs.	Quality of life and associated physical and mental health of residents, workers and visitors, leading to worsened health outcomes, as well as the physical and mental health of vulnerable populations.	No – The English Onshore Scheme will ensure that policies and procedures are in place at the design phase to ensure that all equipment will comply with public EMF exposure limits.	Scoped out

16.7 Assessment Methodology

Further Data to be Gathered / Processed

16.7.1 The health and wellbeing assessment will determine if effects arising because of the English Onshore Scheme, following the implementation of mitigation, are likely to be positive, adverse, or neutral together with predicting if effects are likely to be significant.

- 16.7.2 The World Health Organisation defines health as a *'state of complete physical, mental and social well-being and not merely the absence of disease or infirmity'*. The range of personal, social, economic, and environmental factors that influence health status are known as health determinants and include the physical environment, income levels, employment, education, social support, and housing.
- 16.7.3 The English Onshore Scheme has the potential to give rise to changes in health status by influencing health determinants. Changes can affect the health of receptors, identified as the 'general population' and 'vulnerable groups'. The latter relates to groups who may have a higher sensitivity to these changes in health status, by virtue of factors such as age (for example older people or children), ethnicity, economic factors, disability, sex, or gender.
- 16.7.4 The assessment will be based on published IEMA guidance on Determining Significance for Human Health in EIA (Ref 16.25) and Effective Scoping of Human Health in EIA (Ref 16.24). The assessment will identify and assess the change on environmental conditions, along with physical and mental health, because of the English Onshore Scheme with the significance of the effect on a receptor presented during construction and operation (and maintenance) (where relevant), when considered in relation to the sensitivity or value of the receptor and the magnitude of the potential impact.
- 16.7.5 Where the EIA follows IEMA guidance the health chapter will align to HIA principles, including considering wider determinants of health and health inequalities.
- 16.7.6 The baseline sets out the wider health context required to inform the assessment, covering both physical and mental health. This information will be used as a basis for determining the sensitivity of receptors to changes in health determinants arising from the English Onshore Scheme.
- 16.7.7 The health determinants likely to be influenced by the English Onshore Scheme comprise health related environmental change (for example, air quality, noise, visual amenity, and contaminated land health related effects) and mental health (control, resilience and community assets, and participation and inclusion). The potential for likely significant effects on health and wellbeing resulting from related environmental change, as set out in **Part 2, Chapter 8: Landscape and Visual Amenity, Chapter 9: Water Environment, Chapter 10: Geology and Hydrogeology, Chapter 12: Traffic and Transport, Chapter 13: Noise and Vibration, Chapter 14: Air Quality and Chapter 15: Socioeconomics, Recreation and Tourism**, will be summarised in the Health and Wellbeing Chapter, for both general population and vulnerable group receptors.
- 16.7.8 The PEIR and ES will include a qualitative assessment determining the magnitude of potential change and sensitivity of receptors to change (both general population and vulnerable groups). The assessment will include:
- How the health determinant might change because of the English Onshore Scheme and whether this would be beneficial or adverse;
 - duration of change – temporary or permanent;
 - exposure to change (including identification of vulnerable groups); and
 - intensity (magnitude or severity of the change in the health determinant).

- 16.7.9 A conclusion on significance and associated reasoning will be provided where possible in relation to identified receptors (general population and vulnerable groups) and effects on physical and mental health arising from environmental change.
- 16.7.10 An EMF compliance report will be produced to support the application for development consent and sits outside the EIA process. However, a summary of this report will be included in the PEIR and ES.

16.8 Assessment Limitations and Assumptions

16.8.1 The following assumptions and limitations have been identified:

- This assessment has been undertaken as a desk-based study, using publicly available information. No site survey has been undertaken for the purpose of this chapter. However, this is not considered to affect the robustness of the assessment supporting the EIA due to baseline information being publicly available online.
- This assessment has relied, in part, on data provided by third parties (e.g. Ordnance Survey Mapping, Office for National Statistics (ONS) which are the most up-to-date data available at the time of writing. No significant changes or limitations in these datasets have been identified that would affect the robustness of the assessment. Baseline data will be kept under review throughout the production of the EIA in order to ensure that (where practicable) the most recently published data is utilised.
- Any assumptions and limitations related to the assessment and data collection for other topic chapters and utilised in this chapter are also applicable.

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17. Scoped Out Aspects

17. Scoped Out Aspects

17.1 Introduction

17.1.1 This chapter will discuss the scoped out environment aspects for the English Onshore Scheme. It will discuss justification and proposed mitigation for the construction and operation of the English Onshore Scheme. Environmental aspects scoped out of the EIA which are related to the Projects are outlined in **Part 4, Chapter 34: Scoped Out Aspects**.

17.2 Materials and Waste

Materials

17.2.1 The English Onshore Scheme would require the use of new materials during the construction stage. The main material products used by the English Onshore Scheme will be identified in the PEIR and the ES.

17.2.2 The material sources are unlikely to be identified until the detailed design stage of the English Onshore Scheme, which would happen post-consent. Due to the nature of the English Onshore Scheme, this means it will be difficult to use secondary sources during the construction stage as it can impact the operation and design life of the English Onshore Scheme. NGET has existing processes in place to source materials from sustainable sources and to use recycled materials where these do not compromise the required design standards and operational life of the English Onshore Scheme.

17.2.3 Temporary materials such as those used for haul routes and site compounds, works cabins and security fencing would be required during construction. As is standard on large scale construction projects, it is assumed these would be reused at other construction projects after completion of the English Onshore Scheme.

17.2.4 Due to existing processes that NGET has in place to source and manage materials, this element is therefore scoped out of the EIA as a separate environmental aspect chapter.

Waste

17.2.5 Waste materials would be produced by the English Onshore Scheme. NGET will adopt good construction and management practices to ensure waste is minimised as far as possible and that the storage, transport and eventual disposal of waste have no significant environmental effects. The management and collection of waste arisings will be carried out under the requirements of the UK waste regulatory regime.

17.2.6 Furthermore, the contractor would be required to produce a Site Waste Management Plan (SWMP) prior to construction which would be informed by the Outline SWMP prepared to accompany the ES. This would set out the measures to reduce the generation of waste in the first place and appropriate measures to reuse and recycle materials where practicable. It would also identify appropriate waste facilities to dispose of materials.

- 17.2.7 Any surplus soil gained from excavation of the cable trenches or foundations would be reused within the site. The exception would be where the soil was contaminated, in which case the soils would be managed in an appropriate manner, as will be set out in the good practice measures within the Outline CoCP and the future SWMP.
- 17.2.8 As waste and waste management will be addressed in the above documents and appropriate mitigation would be in place, it is therefore proposed that waste will not be the subject of a separate environmental aspect chapter and it will be scoped out of the EIA. Furthermore, the effects of any waste related development will be addressed as part of the relevant environmental aspects and associated strategies, for example the transport effects from the management of waste arisings will be considered in **Chapter 12: Traffic and Transport** where appropriate.

17.3 Electric and Magnetic Fields (EMFs)

- 17.3.1 All equipment that generates, distributes or uses electricity produces EMFs. The UK power frequency is 50 Hz which is therefore the principal frequency of the EMFs produced, which are also known as Extremely Low Frequency (ELF) EMFs.
- 17.3.2 Electric fields depend on the operating voltage of the equipment producing them and are measured in V/m (volts per metre). The voltage applied to equipment is a relatively constant value. Magnetic fields depend on the electrical currents flowing, which vary according to the electrical power requirements at any given time and are measured in μT (microteslas). Both fields diminish rapidly with distance from the source and are present in all areas where electricity is in use (e.g. office and homes), arising from electric cabling and equipment in the area.
- 17.3.3 Whilst there are no statutory regulations in the UK that limit the exposure of people to power-frequency electric or magnetic fields, responsibility for implementing appropriate measures for the protection of the public from EMFs lies with the UK Government. In 2004, the Government adopted guidelines published in 1998 (Ref 17.1) by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) in the terms of the 1999 EU recommendation (Ref 17.2) on public exposure to EMFs. This policy of compliance with guidelines was reaffirmed in 2009, when one additional precautionary policy relating to high-voltage power lines, optimum phasing, was introduced. NPS EN-5 also repeats these two policies, and the Department of Energy and Climate Change (DECC) has published two Codes of Practice (Ref 17.3 and Ref 17.4) which have been agreed between the Energy Network Association and the Government, which specify how compliance with these exposure guidelines and with the policy on optimum phasing will be determined. It is National Grid's policy to comply, as a minimum, with the relevant EMF guidelines in all of its operations.
- 17.3.4 When, as is the case for all NGET assets and operations, and in particular as is the case for the Projects, the EMFs comply with the relevant exposure guidelines as specified by Government and with the additional precautionary policies, there are no likely significant effects from EMFs. Therefore, EMFs are scoped out of the ES for the English Onshore Scheme, which deals with issues where there are likely to be significant effects on the environment.
- 17.3.5 However, NGET recognises the extent of public concern regarding EMFs, and therefore wishes to provide all the relevant information on EMFs as part of the application. Further, NPS EN-5 requires the provision of specified information to demonstrate

compliance with the exposure guidelines and other policies. Therefore, comprehensive information on EMFs as they relate to this application will be provided in a separate document which will be submitted alongside the ES as part of this application. The information provided will include evaluations of the EMFs that will be produced, performed according to the provisions of the DECC Code of Practice, and satisfying the requirements of NPS EN-5, as well as background information on EMFs and the scientific evidence relating to them.

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18. Summary

18. Summary

18.1.1 The scope of assessment described within the environmental aspect chapters (Chapters 6 to 16) is summarised in **Table 18-1**.

Table 18-1: Summary Scope of the Assessment

Environmental Aspect	Scope of Assessment
Chapter 6: Biodiversity	<p>Construction</p> <ul style="list-style-type: none"> ● Potential for habitat loss resulting in reduction in habitat or degradation of habitats, for example through hydrological changes or indirect effects. ● Potential for terrestrial habitat fragmentation creating barriers to species dispersal. ● Potential for fragmentation of aquatic habitat and species they support. ● Direct killing, damage or destruction of species through vegetation clearance during construction. ● Disturbance, direct killing or reduced chance of survival of individual species and habitat which support them resulting from site clearance works. ● Degradation or damage of designated sites and ancient woodland habitats resulting from increased nitrogen deposition and/or ammonia concentrations from vehicular traffic. <p>Operation</p> <ul style="list-style-type: none"> ● Light pollution as a result of artificial lighting associated with permanent infrastructure (converter stations, substation).
Chapter 7: Cultural Heritage	<p>Construction</p> <ul style="list-style-type: none"> ● Potential effects on the historic landscape character resulting from land preparation works. ● Potential effect on designated and non-designated assets resulting from permanent loss of archaeological remains.

Environmental Aspect	Scope of Assessment
Chapter 8: Landscape and Visual Amenity	<p>Operation</p> <ul style="list-style-type: none"> • Potential effects associated with changes to the setting of designated and non-designated heritage assets. • Potential for effects on the historic landscape character through perceptual change to the historic landscape.
	<p>Construction</p> <ul style="list-style-type: none"> • Potential effects on the landscape character areas falling wholly or partly within the study area and on the visual receptors as a result of the appearance of construction plant and activities. • Potential effects on the landscape character areas falling wholly or partly within the study area and on the visual receptors as a result of the night-time lighting associated with the construction activities. <p>Operation</p> <ul style="list-style-type: none"> • Potential night-time lighting effects on the landscape character areas and visual receptors located wholly or partly within the 3 km of the permanent above-ground structures at Bilsby and Walpole. • Changes to the landscape character and introduction of potential views resulting from the removal of vegetation along the cable route corridor and appearance of above ground structures.
Chapter 9: Water Environment	<p>Construction</p> <ul style="list-style-type: none"> • Potential for temporary physical disturbance and impacts on flow regimes and hydromorphology of numerous watercourses and floodplains. • Potential for pollution risks of numerous watercourses through watercourse crossing and using trenchless techniques. • Potential flood risk and land drainage effects on people, property and infrastructure associated with the large swathes of floodplain

Environmental Aspect	Scope of Assessment
	<p>within the scoping boundary and temporary in proximity to flood defences.</p> <p>Operation</p> <ul style="list-style-type: none"> • Potential flood risk and land drainage effects on people, property and infrastructure associated with the large swathes of floodplain within the scoping boundary.
<p>Chapter 10: Geology and Hydrogeology</p>	<p>Construction</p> <ul style="list-style-type: none"> • Potential for deterioration of regional and local geological resources. • Exposure to and physical effects of contaminated soils on human health, groundwater dependent terrestrial ecosystems, and controlled waters. • Physical effects on groundwater and groundwater dependent terrestrial ecosystems resulting from reduction in groundwater quality. • Creation of contaminant pathways to groundwater through installation of foundations and piling. • Disruption to groundwater flows due to shallow dewatering or groundwater control. <p>Operation</p> <ul style="list-style-type: none"> • Changes/disruption of shallow groundwater flow within aquifer units as a result of the presence of new below ground infrastructure.
<p>Chapter 11: Agriculture and Soils</p>	<p>Construction</p> <ul style="list-style-type: none"> • Loss of agricultural land, including best and most versatile land through placement of infrastructure. • Potential disturbance to soil function and quality as a result of construction activities such as soil stripping and stockpiling. • Potential disruption and severance to agricultural land holdings through temporary acquisition and the permanent loss of some land resulting in reduction in the operational capacity and loss of income to farm businesses. <p>Operation</p>

Environmental Aspect	Scope of Assessment
Chapter 12: Traffic and Transport	<ul style="list-style-type: none"> • There are not expected to be any significant operational effects to be taken forward for assessment. <p>Construction</p> <ul style="list-style-type: none"> • Potential for effects at sensitive highway receptors and on public right of way users resulting from construction traffic. <p>Operation</p> <ul style="list-style-type: none"> • There are not expected to be any significant operational effects to be taken forward for assessment.
Chapter 13: Noise and Vibration	<p>Construction</p> <ul style="list-style-type: none"> • Potential for construction noise effects for receptors located within 300 m of proposed construction activity resulting from installation of below ground infrastructure and construction of plant facilities. • Potential for construction traffic noise effects for receptors within fifty metres of roads identified as construction traffic routes. • Potential for vibration on receptors located within 100 m of locations where piling activities are expected. <p>Operation</p> <ul style="list-style-type: none"> • Potential for noise effects on receptors located in proximity to the proposed route of the 400 kV overhead line subject to reconducting.
Chapter 14: Air Quality	<p>Construction</p> <ul style="list-style-type: none"> • Potential for dust deposition and health impacts from elevated Particulate Matter concentrations on sensitive ecological and human receptors within 250 m of the construction boundary or within 50 metres of roads up to 250 m from the site entrance (s). • Potential for increased air pollutant concentrations from vehicle emissions at human receptors within 200 m of affected roads. • Potential for increased air pollutant concentrations and nitrogen deposition from

Environmental Aspect	Scope of Assessment
Chapter 15: Socio-economics, Recreation and Tourism	<p>vehicle emissions at ecological receptors within 200 m of affected roads.</p> <p>Operation</p> <p>There are not expected to be any significant operational effects to be taken forward for assessment.</p> <p>Construction</p> <ul style="list-style-type: none"> <li>● Potential for employment opportunities within the construction sector and supply chain opportunities with specialist services and/or construction materials. <li>● Potential for amenity effects on private property and housing resulting from effects associated with the construction activities. <li>● Potential for closure and/or disruption to recreational resource such as a PRoW and other designated routes during the construction activities. <li>● Potential for amenity effects, closure and/or to tourist attractions during the construction activities. <li>● Potential for increase in demand and reduced availability of tourist accommodation in the locality due to the influx of construction workers. <p>Operation</p> <p>There are not expected to be any significant operational effects to be taken forward for assessment.</p>
Chapter 16: Health and Wellbeing	<p>Construction</p> <ul style="list-style-type: none"> <li>● Potential effects on health outcomes resulting from environmental change relating to the construction phase. <li>● Potential effects on local residents' and visitors' access to public right of way and recreational routes, potentially leading to worsened physical and mental health outcomes. <li>● Potential impact on physical and mental health outcomes as a result of temporary disruptions

Environmental Aspect	Scope of Assessment
	<p>to access to community facilities and recreational attractions.</p> <p>Operation</p> <ul style="list-style-type: none"> <li>● Potential effects on local residents’ and visitors’ access to public right of way and recreational routes, potentially leading to worsened physical and mental health outcomes. <li>● Potential effects on health outcomes resulting from environmental change, specifically changes to noise and visual amenity.

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