

Broadland District Council and South Norfolk District Council Contaminated Land Strategy 2019 - 2024

Executive Summary

This Contaminated Land Strategy sets out how Broadland District Council and South Norfolk District Council intend to fulfil their duties in relation to the Contaminated Land Regulations 2012. It revises and updates the original 2001 strategies produced separately by both authorities.

Part A of this document covers the regulatory history of the contaminated land regime along with the original strategy the council used up until the latest iteration of the contaminated land regulations 2012.

Part B covers the new strategy for dealing with contaminated land including both how the strategy has developed and changed, and what is the current focus.

Part C Covers the procedures to be used to address the identified sites and points to national guidance on the remediation of the sites.

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Contaminated Land Strategy

Introduction.

In the United Kingdom there is a substantial legacy of land that is affected by contamination arising from a diverse industrial history as well as mining and waste disposal activities. A number of government regimes now exist to prevent any ongoing contamination from such activities and to deal with the legacy of historical contamination through redevelopment opportunities.

However, there remains a need for intervention where historical land contamination poses unacceptable risks to human health and the environment where no alternative solution to address the risk exists.

Broadland District Council and South Norfolk District Council both published their first Contaminated Land Strategy in 2001 explaining how they were going to do this.

The new structure of the strategy is set out in the following way:

Part A The background	Chapter 1	Regulatory History: Explains the background to Part 2A, local authority duties and the definition of Contaminated Land.
	Chapter 2	Existing Council Policies and Statutory Functions: Outlines the existing council policies and statutory functions within which Part 2A, and in particular the Inspection Strategy will be implemented.
	Chapter 3	Characteristics of the Broadland and South Norfolk Areas: Details and characteristics of the local area and environment and how these influence this Inspection Strategy.
PART B The Strategy	Chapter 4	Aims, Objectives & Priorities: Explains what the council aims to achieve through the Inspection Strategy and what its key priorities are.
	Chapter 5	Strategy Outline and Work Programme: Presents an outline of the Inspection Strategy and the programme for its implementation
PART C Procedures	Chapter 6	Prioritising Sites for Inspection: Details the procedures for creating and manipulating key datasets to prioritise sites for inspection
	Chapter 7	Carrying out Detailed Inspection: Explains the procedures for collating and assessing information to determine the existence of contaminant linkages
	Chapter 8	Providing Information to Third Parties: Outlines the procedures for making information accessible to other parties
	Chapter 9	Responding to Information from Third Parties: Outlines the procedures for responding to information provided by other parties
	Chapter 10	Strategy Review: Explains why, when and how we will review the Inspection Strategy

Part A

1 Regulatory History

Section 57 of the Environment Act 1995 created Part 2A of the Environmental Protection Act 1990 (“Part 2A”) [1]; establishing a legal framework for dealing with contaminated land. It came into force on 1st April 2000.

The Department of the Environment, Transport and the Regions (DETR) introduced the new system in Circular 02/2000 [9]. This statutory guidance contained advice to regulators on how Part 2A of the Environmental Protection Act 1990 [1] and also the Contaminated Land (England) Regulations 2000 [2] were to be implemented.

Under Part 2A [1], each local authority has a duty to inspect its area for Contaminated Land and to produce an Inspection Strategy setting out how the Council will fulfil its duties.

On 6th April 2012 new Statutory Guidance [3] was published requesting that local authorities update or replace their Contaminated Land Inspection Strategies to reflect this new guidance. This guidance does not apply to radioactive contamination which is covered by separate statutory guidance.

Section 78B of Part 2A states that:

- (1) *Every local authority shall cause its area to be inspected from time to time for the purpose:*
 - (a) *of identifying contaminated land; and*
 - (b) *of enabling the authority to decide whether any such land is land which is required to be designated as a special site.* [1]
- (2) *In performing [these] functions... a local authority shall act by any guidance issued for the purpose by the Secretary of State.* [1]

- a) To identify and remove unacceptable risks to human health and the environment.
- b) To seek to ensure that contaminated land is made suitable for its current use
- 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.

The overarching objectives of the Governments policy on contaminated land and the Part 2A regime is that Part 2A is only intended to be used where no appropriate alternative solution exists.

1.1 Definition of Contaminated Land

Contaminated land is defined in Part 2A of the Environmental Protection Act 1990. [1]

The relevant sections of the Act are:

- Section 78A (2): "contaminated land" is any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land that:
 - a) Significant harm is being caused or there is a significant possibility of such harm being caused; or
 - b) significant pollution of controlled waters is being caused, or there is a significant possibility of such pollution being caused; [1]
 - c) For Radioactive Contaminated land that:
 - (i) harm is being caused: or
 - (ii) there is a significant possibility of harm being caused.

The definition reflects the 'suitable for use' approach and is underpinned by the principles of risk assessment, where risk is a combination of two elements –

- i) Probability (i.e. how likely is it that something will happen?)
- ii) Magnitude of consequences (i.e. if it does happen, how serious will it be?)

The above means that contamination must be having, or be very likely to have, a detrimental impact on humans or the environment before a site can be classed as Contaminated Land. It is important to realise that a site will not meet the definition of Contaminated Land just because contamination is present.

Part 2A:

- Considers current use
- Considers 'contaminated land'
- Only considers contamination that is causing unacceptable risk to human health or certain environmental receptors
- Applicable for sites where development is unlikely, or that have already been developed.

2 Existing Council Policies and Statutory Functions

Part 2A compliments both Council's corporate aims and objectives. In Broadland and South Norfolk, sustainable development means achieving the priorities in our vision to improve the quality of life in both authorities' areas, for current, and future generations, to make this area one of the best places to live and work in the country.

'Enhancing our quality of life and the environment we live in.'

The aim of both Council's when dealing with contaminated land will be to:

- protect human health
- protect controlled waters
- protect designated ecosystems
- prevent damage to property
- prevent further contamination of land
- ensure that contaminated land is returned to beneficial use
- encourage voluntary remediation
- support re-use of brownfield land ensuring that contaminated land is given due consideration in all land development and acquisition decisions
- only undertake actions which are securely authorised by law.
- only act for prescribed purpose and ensure all activities are proportionate.
- only take action which it deems to be necessary for the interests of public safety, the economic wellbeing of the districts, for the prevention of disorder or crime, for the protection of health or morals or the protection of the rights and freedom of others.

This commitment guides the Councils' implementation of Part 2A and serves to ensure that consideration is given to both the current and future impacts and implications of land contamination and its remediation.

Environmental Strategy - The Environmental Strategy sets out both council's priorities and how they will be achieved through the organisation and its services. This policy has been strongly influenced by recent critical challenges including funding cuts, a difficult economic climate, new legislation and government reforms to local government funding.

Although the implementation of Part 2A is a statutory duty, as opposed to a strategic priority or decision, the Inspection Strategy will help the councils fulfil their priorities.

Health and Wellbeing Policy – Broadland and South Norfolk Councils along with their partner agencies work together to improve people's health. The NHS reforms, introduced as a result of the Health and Social Care Act gave local authorities a new duty to promote the health of their population.

The Act created several new structures within a redesigned public health system including Public Health England, Clinical Commissioning Groups, and the NHS Commissioning Board, Health and Wellbeing Boards, Local Health Resilience Partnerships and Health Watch.

The Planning Regime:

- Considers future use
- Considers 'Land affected by contamination'
- Must ensure that, after remediation, as a minimum, land should not be capable of being determined as Contaminated Land under Part 2A

2.1 Managing Council Owned Land

South Norfolk Council holds several hundred title deeds covering both current and former Council owned land. It is recognised that some of the Council's property and land holdings may be contaminated as a result of previous use, and that provision for dealing with such contamination has serious capital implications. For cases where land is being remediated in readiness for development, the council will fulfil its legal obligations. Broadland District Council owns or is responsible for less land than South Norfolk Council. However, it is aware of the potential risks associated with contaminated land and will consider this during any land sales or acquisitions.

2.2 Development Management

Most land contamination is dealt with through the planning process. The approach has been set out in the National Planning Policy Framework (NPPF) ^[14]

Just because land is affected by contamination does not mean that it is 'contaminated land' as defined under the Part 2A regulations.

The developer is responsible for:

- Ensuring that a development is safe and that the land is suitable for the use intended or can be made so through remediation.
- Ensuring that competent persons carry out adequate investigation, risk assessments, remediation and verification.

Both Councils have guidance available for applicants, consultants, agents, developers, etc. about considering contaminated land as part of the planning process.

In Broadland and South Norfolk, the Part 2A inspection process will form a mechanism for checking that remediation previously carried out during redevelopment (i.e. before the introduction of the regime), was suitable for the proposed use of the land and that the site is suitable for its current use.

To keep track of where potential land contamination is located, a 'potentially contaminated land' database has been set up. The database logs site-specific information including potentially contaminative previous site uses, whether any investigation or remediation has been carried out etc. The database is currently supported by paper and electronic based filing systems which hold desk study, site investigation and validation reports as well as other pertinent information. The database is complemented by a Geographical Information System (GIS) dataset containing the site boundaries of locations recorded in the database.

The information collated for and obtained through the Part 2A inspection process will enable planning officers to make better-informed planning decisions. The GIS dataset is available to planning officers and can be used to help identify development sites where potential contamination issues may need to be considered.

2.3 Building Control

Under the Building Regulations 2010 ^[10], Building Control officers are required to ensure that reasonable precautions are taken to avoid danger to health and safety caused by contaminants on or in the ground covered or to be covered by the building and any land associated with the building curtilage (for example the garden). The above includes taking account of any substance which is, or may become harmful to persons or buildings, including elements which are corrosive, explosive, flammable, radioactive or toxic.

The information gathered through the Part 2A Inspection Strategy will increase the amount of information available to Building Control officers, and, enable them to ensure the most appropriate measures are taken to protect people, buildings and services.

2.4 Compliance and Regulation

The Council's recognise that there may be issues with community concern, property blight, etc. Both Councils will manage compliance in a proportionate, reasonable and sensible way.

The approach to carrying out regulatory measures under Part 2A will be consistent with that followed by the Councils for other regulatory functions in line with the enforcement policy. The above is consistent with the Better Regulation principles and the Regulators Code ^[11].

Of particular relevance is regulation in the planning process, where compliance with land contamination conditions must be achieved to remove the potential for the site to be within the Part 2A definition of Contaminated Land. Planning Enforcement will seek to secure compliance with land contamination conditions attached to planning approvals in the same way as they would treat any other matter.

2.5 Land Charges

Following the implementation of Part 2A and the requirement for each local authority to keep a public register of its regulatory activity (see Chapter 9), a question (3.12) referring to Contaminated Land has been included in the Form CON29 'Enquiries of Local Authorities'. The questions on this form are answered by the Land Charges team as part of the search carried out every time a property transaction takes place. The response is based on information provided by Environmental Services.

Question 3.12 has three parts:

- The first part addresses whether the search site has been formally identified as Contaminated Land.
- The second part relates to whether there are any entries in the Part 2A public register regarding the clean-up of the Contaminated Land, for example whether a remediation notice has been served and what, if any, restoration has taken place.
- The final part refers to whether consultation with owners and occupiers of Contaminated Land and adjoining land has happened before the service of a remediation notice. For example, adjoining owners and occupiers might be required to grant rights of access and to suffer work being done on their land even

if their land is not itself contaminated.

2.6 Public Access to Information

Broadland and South Norfolk Councils act under the requirements of the following statutes and regulations in making environmental information accessible to the public.

- Local Government (Access to Information) Act 1985
- Data Protection Act 1998
- Human Rights Act 1998
- Freedom of Information Act 2000
- The Environmental Information Regulations 2004
- The General Data Protection Regulations 2018

For the majority of these pieces of legislation, there are standard exemptions to the right to access information. These refer to issues relating to national security, legal proceedings, breaches of the statutory provision, confidentiality (commercial or otherwise), work in the course of completion, personal information or issues which could, following disclosure, increase the likelihood of damage to the environment.

In compliance with the above and also the requirements of the Contaminated Land (England) Regulations 2006 ^[12], information held by Broadland and South Norfolk District Councils in their Contaminated Land Register will be accessible by the public. These requirements will also be adhered to when carrying out Part 2A duties which require disclosure of site-specific information. The above is discussed further in detail in Chapter 9.

3 Characteristics of the Broadland and South Norfolk Districts

The purpose of this section is to provide the background to Broadland and South Norfolk District Council areas and how that influences the approach to inspections for contaminated land. It will also enable fair comparison with other authorities.

By knowing where in Broadland and South Norfolk we are most likely to find sources of contamination and understanding what parts of the districts are most susceptible to impact, we can determine where to start looking for Contaminated Land. Appendix 2 details the characteristics and history of the districts.

3.1 Natural Contamination

Radon – The British Geological Survey (BGS) information at 1:625,000 scales indicate that based on their classification of the underlying rocks, the Districts fall within the low Radon Potential Class. The ground is susceptible to low levels of radon emissions. Less than 1% of dwellings are estimated to be exceeding the 200 Bqm³ action level, the lowest classification.

3.2 Background Contamination

Many contaminants occur naturally and can be commonly found in soils. Other substances are also widespread in the environment due to low level diffuse pollution and common human activities, such as the historic use of leaded petrol and the spreading of ash in domestic gardens.

The Part 2A regime was introduced to help deal with land which poses an unacceptable level of risk. For the large majority of sites where there are naturally occurring contaminants, or levels of contamination which might be considered 'normal' in a particular area, there is usually no reason to consider this land as contaminated land. The statutory guidance makes

it clear, therefore, that where land is at or close to 'normal' levels of background contamination, it should not be considered further under Part 2A, unless there is a particular reason to do so. In such cases the councils would need to carefully explain the reason for making that decision based on robust scientific evidence.

Part B

4 Aims, Objectives and Priorities

The Statutory Guidance [3] requires the Council to set out its goals, objectives and priorities in the Inspection Strategy.

All of the factors outlined in the previous chapters play a vital role in determining the council's strategic approach to inspection.

One of the central tenants of the contaminated land strategy is the 'contaminant linkages' and this complete linkage needs to be present and complete for a site to be able to be considered under these regulations as set out in Figure 4.

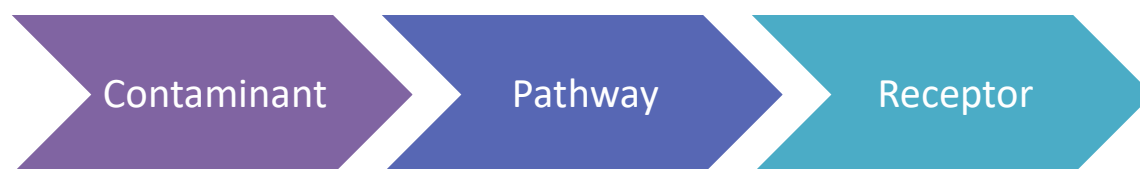


Figure 4, the contaminant linkage model

4.1 What do we want to achieve?

Set out below is a list of five key aims that the Councils wish to work towards through their management of land contamination issues. These are overall aims which interlink with and are supported by, existing council policies and strategies. They also reflect the councils' statutory duties.

Against each target is a set of objectives and priorities.

- Objectives are activities that can be a direct result of the implementation of the Inspection Strategy.
- Priorities are the key activities we wish to carry out in the course of fulfilling the objectives. They play an important part in shaping the Inspection Strategy itself and the procedures we follow to implement it.

These are current aims, objectives and priorities of the Councils. They may be reviewed and revised as the Inspection Strategy and targets are achieved, or in light of changes in council policy, or Government guidance and legislation.

Aim 1 – To encourage regeneration and redevelopment	Objective	<ul style="list-style-type: none">• Identify contaminated sites where regeneration and redevelopment could facilitate remediation.• Enable informed decisions (by council and third parties) regarding future land use.
	Priorities	<ul style="list-style-type: none">• Provide information to enable the council to act in accordance with Government planning policy guidance

Aim 2 – to raise awareness and promote understanding of land contamination issues.	Objectives	<ul style="list-style-type: none"> • Encourage a proactive approach amongst landowners and potential polluters towards investigation of contamination. • Encourage voluntary remediation
	Priorities	<ul style="list-style-type: none"> • Develop effective procedures for communication, liaison and information exchange within the council and with third parties.
Aim 3 – To achieve environmental improvement	Objective	<ul style="list-style-type: none"> • Identify those sites where land contamination is presenting unacceptable environmental risks and ensure remediation takes place • Undertake our work in a proportionate and reasonable way to minimise community concerns whilst safeguarding human health and the environment.
	Priorities	<ul style="list-style-type: none"> • Prioritise sites for inspection prioritising risks to human health above all other receptors. • Ensure efficiency by directing effort away from those areas where risks associated with land contamination are already being addressed (for example, through other remediation strategies, planning etc).
Aim 4 – To fulfil the council's responsibilities with respect to implementing environmental legislation.	Objective	<ul style="list-style-type: none"> • Ensure the Inspection Strategy and its implementation meet the requirements of Part 2A
	Priorities	<ul style="list-style-type: none"> • Adopt a rational, ordered and efficient approach to inspection. • Focus on identifying the potentially most pressing and serious problems first.
Aim 5 – To reduce the council's impact on the environment	Objective	<ul style="list-style-type: none"> • Recognise council-owned/occupied contaminated sites which should be managed as part of the councils asset management plans. • Manage or reduce the council's liabilities as a landowner or occupier.
	Priorities	<ul style="list-style-type: none"> • Act as a responsible landowner towards managing our own land and dealing with contamination. • Ensure public confidence in the council's objective assessment of its own land holdings.

5 Strategy Outline and Work Programme

Under Part 2A, the starting point is that land is not contaminated land, unless there is reason to believe otherwise. Only land where unacceptable risks are *clearly* identified will meet the Part 2A definition of contaminated land.

The Inspection Strategy already comprises the following principal features:

- A) **Development of Key Datasets** - Gathering information on potential sites of contaminated land.
- B) **Prioritisation of Sites for Detailed Inspection** - The sites which have been identified as having the *potential* to be contaminated will be ranked according to potential risk and given a prioritisation score to determine their priority for further investigation using a prioritisation model.

As the information we hold is from historical maps and local knowledge, from time to time other sites may come to our attention. These sites will be given a prioritisation score and added to the list of potential sites.

The Councils will occasionally re-evaluate the current data base of potentially contaminated locations across the districts; this will insure that the Councils have a clear understanding of the range and locations of potential sites for consideration under this regime.

- C) **Detailed Inspection** - The potentially contaminated sites identified by the councils may be subject to detailed investigation following the procedures outlined in chapter 7.
- D) **Contaminated Land GIS and Database** – Both councils operate GIS systems which have been used to plot the location of potentially contaminated land. Some information on these locations is held on the GIS system. However, further information may be held in paper format and on the councils record keeping data bases.
- E) **Dealing with Council Land** - Council property is not being treated separately or being given priority for inspection above any other land – prioritisation of all sites will be for management on risk alone. As responsible land owners, the councils are addressing land contamination through their asset management programme. Unless urgent, all sites will undergo detailed inspection in accordance with its prioritisation score.
- F) **Critical Sites** - Sites from any part of the district, which are considered to present and immediate risk of serious pollution or harm to human health once the council is aware.
- G) **Strategy Review** - The strategy will be to revise and where possible improve procedures at least once every five years in order to keep track with new policies, legislation, guidance, etc.

5.1 Funding

Local authorities are required to investigate potentially contaminated sites in accordance with the Regulations and associated Statutory Guidance. This will be at the councils' own expense. Where sufficient evidence is obtained to conclude that sites are 'Contaminated Land' within the definition given in the Regulations the 'polluter pays' principle will apply should additional investigations, preventative works or clean up (remediation) be necessary. Where the polluter cannot be found or is otherwise not liable, the current owner/occupier

may become liable. Where no responsible person(s) can be found, the local authority may be required to undertake this work at their own expense.

Prior to April 2014, local authorities were able to apply for funding from the Contaminated Land Capital Grants Scheme. Funding had been significantly reduced from £17.5m in 2009/10 to £2m for 2013/14. DEFRA have now ceased supporting these costs altogether).

The Council still has a duty to investigate and where necessary remediate Contaminated Land. Consequently, should any relevant sites come to the Council's attention, and should investigation and/or remediation by the local authority be required this will need to be funded entirely from the Council's existing budgets.

The councils may be able to recover some or all of the costs of remediation from the polluter or current owner/occupier of the land in accordance with the Statutory Guidance, on a case-by case basis and avoiding undue hardship.

We will seek to minimise unnecessary burdens on the taxpayer, businesses and individuals by encouraging voluntary action to deal with land contamination issues as far as reasonable and practicable.

Part C

6 Priotising Sites for Inspection

There are two types of inspection:

- Strategic Inspection – collection of information to make a broad assessment of land within the district and then identifying sites for more detailed consideration; and
- Detailed inspection – to obtain information on ground conditions on a site by site basis and carry out risk assessments which support decisions under the Part 2A regime.

Remembering that the Part 2A definition of contaminated land is based on a risk assessment of the potential to cause harm to human health and specified environmental receptors.

To do this we will adopt the following approach to strategic inspection.

- 1.) Identify the location and nature of potential contaminant sources
- 2.) Identify the location and nature of receptors
- 3.) Identify sites where both contaminants and receptors are present
- 4.) Score sites according to potential risks
- 5.) Prioritise sites for detailed inspection
- 6.) Review prioritisation where necessary

6.1 Historical Land Use Maps

A review of historical maps has been carried out for both of the districts focusing primarily on identifying sites where the historic use may have given rise to contamination of the land.

6.2 Where are the receptors?

The Councils already hold information regarding the location of receptors, for example, residential areas, schools and playing fields As well as the location of protected areas (SSSIs, Local Nature Reserves, etc.). Local hydrogeology maps have also been used to consider the risk to groundwater.

The initial strategic assessment is a working document which is under continual review.

7 Carrying out Detailed Inspection

This chapter explains the Detailed Inspection stage of the Strategy implementation. It outlines the procedures we follow to collate and assess information of the locations to determine the existence of contaminant linkages so we can decide whether a site is or is not contaminated land.

The purpose of this section is to provide only the methodology for inspection and the procedure for determining whether a site meets the definition of Contaminated Land.

7.1 What are we trying to find out?

- About the three elements (i.e. contaminant, pathway, receptor) of suspected contaminant linkages to determine whether the site appears to be Contaminated Land, and
- To decide whether the site falls within the definition of Special Site

The preliminary screening exercise as summarised in Chapter 5 will result in the identification of sites where potential significant contaminant linkages exist. The next stage, and thus the purpose of carrying out detailed inspection is to obtain sufficient information:

- A desk based exercise ('desk study') to gather and assess further site specific documentary evidence.
- An intrusive site investigation involving the sampling and analysis of site soils and/or groundwater, and/or gas/vapour monitoring.

The starting point is to acquire evidence that a contaminant is present on a given site, and then to carry out a site-specific risk assessment to determine the existence of a contaminant linkage and its significance. Information about the former/current use of the site and the nature of the contaminant will enable us to determine whether the location is likely to fall within the definition of a Special Site.

7.2 What Will Detailed Inspection Involve?

Detailed Inspection can include one or all of the following:

A desk study is required for all locations undergoing detailed inspection. If the findings of this study suggest that contaminant linkages exist, but the information is not sufficient to determine the site as Contaminated Land, then more detailed work in the form of an intrusive investigation may be necessary.

Each stage of detailed inspection may result in the need to acquire further information. The comprehensive review may mean going back to carry out further desk-based research or the second stage of site investigation. Detailed Inspection only ends when we have sufficient information to determine the site as Contaminated Land or where there is no longer a reasonable possibility that a significant contaminant linkage exists.

We follow well-established procedures and industry adopted best practice techniques. Since such methods are in various authoritative publications, it is not considered necessary to reproduce such material here.

The timing of these inspections will be subject to the prioritisation. The rate at which these sites are inspected will be determined by the budgetary and resource constraints the Council faces at that time. For this reason, no timetable of inspections has been produced.

7.3 Reprioritisation/Inspection on hold

At any stage of the process the site can be reprioritised, or the inspection process placed on hold for a given period. Work on a site may be stopped for several reasons. A site visit may show the absence of a particular receptor or contaminant or the site may already be undergoing remediation under a different regulatory regime, i.e. the planning process.

7.4 Special Sites

If at any stage of carrying out a Detailed Inspection, the council suspects that the site is a Special Site, the Environment Agency will be informed. If they agree on the designation, the Agency will carry out any intrusive inspection of the land on behalf of the Council. All site-specific data held by the Council will be shared with the Agency. The Agency's procedures for carrying out such an inspection are covered by their own internal documentation.

The decision as to whether land is contaminated land remains the responsibility of the Local Authority. The Environment Agency should advise us of its findings so that we can determine if the land is contaminated as defined within the regulations. .

7.5 The Desk Study

The purpose of the desk study is to gain more information about the potential contaminant linkages identified by the preliminary screening exercise. The desk study involves finding out accurate information about contaminants, pathways and receptors to enable a greater understanding of site conditions. This should include details of site boundaries and of the site visit (see below). Carrying out desk-based research also serves to identify further potential contaminant linkages that may be present. Obtaining all this information ultimately allows us to develop a 'conceptual site model' – i.e. a picture of all possible contaminant linkages at the site.

The first step of the desk study is to review data already held by the council. The desk study may be in an electronic format (for example, databases), held on GIS or in paper form. Where we identify clear gaps in existing information which prevent a decision making, further documentary evidence may be sought and obtained from appropriate sources such as other council departments, the Environment Agency, other statutory bodies or stakeholders.

7.6 Storage of Site-Specific Information

The GIS system enables all digitised map-based data about a site to be viewed simultaneously. The digitised data is held in the Contaminated Land Module within the Uniform database at South Norfolk District Council and within the Civica database at Broadland District Council which are used to log, reference and store site-specific information.

7.7 Site Visit

The purpose of the site visit is to gather further information about contaminant linkages and relevant pathways. In some cases, the site visit allows us to clarify and verify desk study information and to consider in more detail the site boundaries. Also, the site visit may be used to assist in planning an intrusive site investigation if one is required.

In the majority of cases the site visit only needs to be a visual inspection of the location. During the survey, notes and photographs are taken. Where relevant, inspection will also be carried out on the land directly adjacent to the site boundary.

On some site visits it may be appropriate or necessary to be accompanied by the location owner, occupier or another representative. Such persons may be interviewed to find out additional information and, if necessary, to discuss access issues and practicalities for the potential future intrusive site investigation work.

7.8 Intrusive Investigation

The purpose of the intrusive site investigation is to collect sufficient information to characterise the actual or potential contaminant linkages at the site, where there is a reasonable possibility that a significant contaminant linkage exists.

On completion of the intrusive site investigation we should be in a position to decide whether any of the contaminant linkages do exist and if they are 'significant'.

The intrusive site investigation may involve the excavation of trial pits, drilling boreholes, installing monitoring wells, soil auguring, etc. to allow the sampling and subsequent chemical analysis of soils, waters and gases/vapours. Samples should be sealed in suitable containers and submitted to an appropriately accredited chemical laboratory for analysis.

The level of investigation required will be decided on a site by site basis and will consider among other things the amount of information required, the number and nature of potential contaminant linkages at the site, local environmental sensitivities, the level of confidence required, the practicalities of investigation (e.g. access restrictions, etc.) and cost implications.

The work will be carried out in such a way to ensure that no further harm or pollution, or damage to the environment or property, is caused by the intrusive investigation itself.

We will ask for advice from the Environment Agency for sites where there is significant potential pollution of controlled waters. Similarly, other statutory bodies will be consulted ahead of carrying out investigations on sites in which they have an interest.

7.9 Data Evaluation – Risk Assessment

After each stage of a Detailed Inspection, all new information is logged on the site record in the Civica or Uniform systems. The detailed investigation is then reviewed alongside existing information and used to refine the conceptual site model and the risk assessment.

The findings of the risk assessment allows the revision of the priority status of a site by establishing whether its contaminant linkages require further action or if we are confident they are insignificant. It is this which allows us to determine whether there is a need to progress to the next stage of inspection to find out further information. For example, it may be that no further investigation is required because the site was previously remediated to an acceptable standard (i.e. all contaminant linkages have been 'broken'). Alternatively, existing site investigation data may indicate the presence of contaminants at unacceptable levels and the existence of a direct pathway to a receptor. In this latter case, we may have sufficient information about particular contaminant linkages to determine the site as Contaminated Land without any further inspection.

If at any stage we consider on the basis of information obtained from inspection activities, that there is not a reasonable possibility that a significant contaminant linkage exists on the land, no further inspection in relation to that linkage will be carried out and we will redirect our efforts inspecting other land in line with this strategy.

7.10 Assessment of Chemical Data

Chemical data on contaminant concentrations in soil may be obtained through desk-based research or from sampling carried out during subsequent intrusive site investigations. Such data is, in the first instance, compared to current Government generic guideline values. Where suitable Government guideline values do not exist advice will be sought from appropriate authoritative publications or organisations on the best way to assess contaminant data. This comparison is used as the first step in decision making to determine whether a contaminant is present in concentrations which would be likely to cause significant harm or significant pollution of controlled waters for non-radioactive contaminants (or harm in the case of radioactive contaminants).

Where necessary, the advice of the Environment Agency will be sought to evaluate chemical data for surface or ground waters.

The statutory guidance advises us that new technical tools and advice may be developed and used to help us apply the Category 1-4 approach in relation to specific substances or situations with respect to human health

- Categories 1 and 2 encompass land which is capable of being determined as contaminated land on grounds of significant possibility of significant harm to human health.
- Categories 3 and 4 encompass land which is not capable of being determined on such grounds

7.11 Statutory Bodies

As it carries out a Detailed Inspection, the council consults as necessary with the Environment Agency, Natural England, English Heritage, the Department of Environment, Food and Rural Affairs (DEFRA), Food Standards Agency, Norfolk Historic Environment Service and other statutory bodies. There is a wide range of organisations which have some responsibility for these sites (either as a regulator, owner or occupier) or involvement (for instance, because they have designated the site as a protected area). The consultation will ensure the avoidance of unnecessary duplication of investigation or overlaps in regulatory activity.

They will be asked to provide any relevant site-specific information they may hold and in particular, any which may assist in the characterisation of potential or identified contaminant linkages. It is likely that, in particular, all bodies will be able to provide accurate information about receptors, their sensitivity and hence potential impact from exposure to contaminants or potential damage which may result from intrusive site investigations. In recognition of their knowledge and areas of expertise, these statutory bodies will also be asked to provide advice or assistance for the site visit and intrusive site investigation aspects of a Detailed Inspection.

For any particular site the council will keep the relevant statutory body informed of its activities.

Part 2A of the 1990 Act requires the Environment Agency to provide information and advice, including site-specific guidance, to local authorities. As indicated in previous sections, the Environment Agency will accordingly be consulted specifically about sites where significant pollution of controlled water is a concern or a Special Site. For the former the Agency will also be asked to assist in the assessment of any laboratory data and the determination of the existence and significance of contaminant linkages.

The Council will ensure that all reports of new areas of contaminated land are reported to the Environment Agency in a timely manner.

The Council will liaise with neighbouring local authorities at the earliest opportunity about priority sites which cross the district boundary. Such sites will be dealt with individually and consultation will be carried out to determine whether it is appropriate for one or both authorities to conduct a Detailed Inspection. The review may depend on the extent of the site falling within each jurisdiction area, where the potential contaminant(s) and receptor(s) is located, etc. The two authorities will share information and the Council will ensure that both authorities are involved in the decision-making process.

7.12 Stakeholders

If information obtained and evaluated as part of a desk study strongly indicates the possible existence of contaminant linkages, then the Council will take steps to identify owners/occupiers to enable the inspection to take place. This includes potentially affected adjacent occupiers.

The Council is aware of the need to avoid alarm and potential blight due to the creation of unnecessarily high perceptions of risks when communicating with the public about land contamination issues. The Council's statutory duties and the reasons for requiring further information will be explained and all communication will be in line with current and accepted good practise and guidance

7.13 Arranging Site Access

At all times, the Council will take measures to ensure that its procedures for gaining site access are reasonable in all ways and fully compliant with the requirements of the Environment Act 1995 and the Human Rights Act 1998.

Section 108 powers cannot be exercised for intrusive site investigation when the council already has the information it needs to decide whether or not the site appears to be contaminated land or if a person provides the necessary information within a reasonable and specified timescale.

If the occupier fails to grant consent for inspection, the Council will seek to obtain a Magistrate's warrant to gain access.

Prior to entering a site, the Council will attempt to get prior consent from the current site occupier and/or owner, who will be provided with information that includes:

- The period of inspection
- What the review will involve
- Who will carry out the inspection
- Who is required to be present for interview during the inspection

The inspection regime will also enable health and safety precautions, consents or regulatory permission necessary for access to, or work on, the site to be identified and obtained. However, in line with Section 108 provisions, the council may enter a site at any reasonable time without prior notice and, in emergency situations; powers of entry can be exercised forthwith.

Powers of Entry

Section 108 and schedule 18 of the Environment Act 1995 give the Council authority to enter land so that it may fulfil its duties in respect of contaminated land. Unless it is considered the land may present and imminent risk of serious harm to human health or pollution of the environment, or such that it may be a danger to life, at least seven days written notice of the proposed entry will be given to the person seemingly in occupation of the land in question.

Where land is determined to be a special site detailed investigation of that land will be carried out by the Environment Agency on behalf of the Council. As such, the council will authorise a person nominated by the Environment Agency to exercise the above powers on its behalf.

7.14 Who will carry out Detailed Inspection?

The Environmental Services departments have the responsibility for implementing Part 2A in their respective areas.

The desk study and site visit aspects of a Detailed Inspection will be undertaken by an appropriate member of staff or a approved contractor if required. Assistance and advice may, where necessary, be sought from other statutory bodies for these tasks.

Although it will depend on the nature and extent of any required intrusive site investigation, it is considered likely that initially limited site investigation work will be carried out in-house, and more detailed or specialist site investigation work is more likely to be contracted out to a suitably experienced third-party consultant which will report directly to the relevant Local Authority. The Council will not use the consultants to make decisions regarding the existence of contaminant linkages or determination of a site as Contaminated Land.

Where decisions are not straightforward or where there is unavoidable uncertainty underlying some of the facts of a case, we will use our judgement to strike a reasonable balance. We will take a precautionary approach to the risks raised by contamination, whilst avoiding being disproportionate, and will take into account the circumstances of each case. The aim will be to consider the various benefits and costs of taking action (and local circumstances); with a view to ensuring that the regime produces net benefits. All matters will be considered with reference to the legislation and statutory guidance.

7.15 Decision Making

Conditions for determining that land is contaminated land on the basis that significant harm is being caused would exist where:

- We have carried out an appropriate, scientific and technical assessment of all the relevant and available evidence; and

- On the basis of that assessment, we are satisfied on the balance of probabilities that significant harm is being caused (i.e. that it is more likely than not that such harm is being caused) by a significant contaminant(s).

The following health effects should always be considered to constitute significant harm to human health: death, life threatening diseases (e.g. cancers), other diseases likely to have serious impacts on health, serious injury*, birth defects and impairment of reproductive functions.

7.16 Possibility of Significant Harm to Human Health

In assessing the possibility of significant harm to human health from the land and associated issues, we will act in accordance with the Statutory Guidance.

This must include:

- The estimated likelihood that significant harm might occur, taking account of the current use of the land.
- The estimated impact if the significant harm did occur, i.e. the nature, seriousness and extent of the harm (how many people might suffer it).

When deciding whether or not a significant possibility of significant harm (SPOSH) to human health exists we will:

- **First understand the possibility of significant harm**
- **Then decide whether or not the possibility of significant harm is significant**

Having completed our estimation of the possibility of significant harm, we will produce a risk summary.

7.17 Is the possibility of significant harm significant?

In deciding whether the possibility of significant harm being caused is significant, we must decide whether the possibility of significant harm posed by contamination in, on or under the land is sufficiently high that regulatory action should be taken to reduce it, with all that that would entail.

In deciding whether or not land is contaminated land on grounds of significant possibility of significant harm to human health, we will use the categorisations described in the Statutory Guidance. Categories 1 and 2 encompass land which is capable of being determined as contaminated land on grounds of significant possibility of significant harm to human health. Categories 3 and 4 encompass land which is not capable of being determined on such grounds.

7.18 Category 1: Human Health

We will assume that a significant possibility of significant harm exists in any case where we consider there is an unacceptably high probability, supported by robust science-based evidence that significant harm would occur if no action is taken to stop it. Land will be deemed to be a Category 1: Human Health case where:

- We are aware that similar land or situations are known, or are strongly suspected to have caused such harm before; or
- We are aware that similar degrees of exposure to the contaminant(s) are known or strongly suspected to have caused such harm before;
- We consider that significant harm may already have been caused by contaminants in, on or under the land, and that there is an unacceptable risk that might continue or occur again if no action is taken.

7.19 Category 4: Human Health

We will not assume that land poses a significant possibility of significant harm if we consider that there is no risk or that the level of risk posed is low.

Areas that can be included in Category 4 include:

- Land where no relevant contaminant linkage has been established
- Land where there are only normal levels of contaminants in soil.
- Land that has been excluded from the need for further inspection and assessment because contaminant levels do not exceed relevant generic assessment criteria, or relevant technical tools or advice.
- Land where estimated levels of exposure to contaminants in soil are likely to form only a small proportion of what a receptor might be exposed to over the normal course of their lives
- Land (other than the types described above) which after a detailed quantitative risk assessment, we are satisfied poses a sufficiently low level of risk.

7.20 Categories 2 & 3: Human Health

For land that cannot be placed into categories 1 or 4 we will decide whether the land should be placed into either: (a) Category 2: Human Health, in which case the land would be capable of being determined as contaminated land on grounds of significant possibility of significant harm or (b) Category 3: Human Health in which case the land would not be capable of being determined.

7.21 Category 2: Human Health

If there is a strong case for considering that the risks from the land are of sufficient concern that the land poses a significant possibility of significant harm. This may include land where there is little or no direct evidence that similar land, situations or levels of exposure have caused harm before, but nonetheless we consider on the basis of the available evidence, including expert opinion, that there is a strong case for taking action under Part 2A on a precautionary basis.

7.22 Category 3: Human Health

The strong case does not exist, and therefore the legal test for significant possibility of significant harm is not met. This may include land where the risks are not low, but nonetheless we consider that regulatory intervention under Part 2A is not warranted. Placing land in Category 3 would not stop others, such as the owner or occupier of the land, from taking action to reduce risks outside of the Part 2A regime if they choose. We will consider making available the results of our inspection and risk assessment to the owners/occupiers of Category 3 land.

7.23 Deciding that land is not contaminated land – written statements

Where we inspect land that we then consider is not contaminated land (i.e. little or no evidence), we will issue a written statement to that effect (rather than coming to no formal conclusion) to minimise unwarranted blight. The statement will make clear that on the basis of our assessment, we have concluded that the land does not meet the definition of contaminated land under Part 2A. We may choose to qualify our statement (e.g. given that our Part 2A risk assessment may only be relevant to the current use of the land).

7.24 Determining that land is Contaminated Land

We will decide the physical extent of the land to be determined and may sub-divide land depending on the nature of the contamination and the risk posed.

We may postpone determination of contaminated land if the land owner or some other person undertakes to deal with the problem without determination, and we are satisfied that the remediation will happen to an appropriate standard and timescale. If we choose to do this, any agreement we enter into will not affect our ability to determine the land in future (e.g. if the person fails to carry out the remediation as agreed).

We may postpone determination of contaminated land if a significant contaminant linkage would only exist if the circumstances of the land were to change in the future within the bounds of the current use of the land e.g. if a more sensitive receptor were to move onto the land or a temporarily interrupted pathway were to be reactivated). If we choose to do this, we will keep the status of the land under review and take reasonable measures to ensure that the postponement does not create conditions under which significant risks could go unaddressed in future. Alternatively we may decide to determine the land but postpone remediation.

7.25 Informing interested parties

Before making a determination we will inform the owners and occupiers of the land and any other person who appears to the local authority to be liable to pay for remediation, unless we consider there is an overriding reason for not doing so.

If we determine land as Contaminated Land we will give notice of that fact to:

- The Environment Agency
- The owner of the land
- Any person who appears to be in occupation of any part of the land
- Each person who appears to be an appropriate person for the purpose of any remediation at the time the determination is made.

7.26 Written record of the determination of contaminated land

We will prepare a written record of any determination that land is Contaminated Land. The record will identify the location, boundaries and area of the land in question and will be made publicly available.

The record will explain why the determination is being made, including:

- The risk summary
- A summary of why we consider that the requirements of relevant section of the Statutory Guidance have been satisfied.

We will seek to ensure (as far as is reasonable) that all aspects of the record of determination are understandable to non-specialists, including affected members of the public.

7.27 Remediation of contaminated land

Once land has been determined as contaminated land, we will consider remediation and, where appropriate, we will issue a remediation notice to require such remediation.

Remediation may involve a variety of treatment, assessment and monitoring actions, sometimes with different remediation processes being used in combination or sequentially to secure the overall remediation of the land.

We will only require (or undertake) actions in a remediation notice which are reasonable with regard to the cost and the seriousness of the pollution or harm. This reaffirms the broader responsibility on us as a public regulator to act in a reasonable manner.

In cases where the aim of remediation is to remove or to permanently disrupt significant contaminant linkages, we will aim to ensure that remediation achieves a standard sufficient to ensure the land no longer poses sufficient risk to qualify it as contaminated land. In using powers under Part 2A, we will not require a higher standard of remediation. The appropriate person or some other person might choose to carry out remediation to a higher standard (e.g. to increase the value or utility of the land, or to prepare it for redevelopment) but it will not be required under these regulations..

We may only require remediation action in a remediation notice if we are satisfied that those actions are reasonable. In deciding this, we will consider various factors having particular regard to:

- Practicability, effectiveness and durability
- Health and environmental impacts of the chosen remedial options
- Financial cost
- The benefits of remediation with regard to the seriousness of the harm of pollution of controlled waters in question.

8 Providing Information to Third Parties

The implementation of the Inspection Strategy will result in the collation of a large quantity of information which may be useful to other parties.

The Environmental Information Regulations 2004 gives the council's discretion, to withhold information if it is confidential, personal or related to national security. We will of course, at all times comply with the legal requirements governing access to information, copyright, etc. and, in particular, the Freedom of Information Act 2000, the Environmental Information Regulations 2004, and the General Data Protection Regulations 2018

8.1 Provision of information to the public

General factual site-specific data will be made available on request to members of the public, those carrying out conveyancing work or other interested parties.

Critical site-specific information will arise from, or develop during a Detailed Inspection. Examples might include a conceptual site model, identification of contaminant linkages, risk assessment findings, etc. Because such information may be potentially subjective in nature, unverified and used in decision making, it may be considered confidential at that stage. Until a Detailed Inspection is complete and a site has been determined to be, or not

Contaminated Land, this information may not be made publicly available.

8.2 The Part 2A Public Register

Under the regulations, the Council is required to maintain a public contaminated land register. Broadland will hold the register in its office in Thorpe St. Andrew. South Norfolk will hold the record at the Long Stratton office. It will be paper-based (rather than electronic) and be accessible on request during office hours, Monday through Friday.

This register will include:

- Remediation notices
- Details of the site report obtained by the authority relating to remediation notices.
- Remediation declarations, remediation statements and notification of claimed remediation.
- Designation of sites as "special sites" if applicable.
- Any appeals lodged against remediation and charging notices
- Convictions for offences under section 78M of the Act.

The public register will not include details of historical land use and other records used in the assessment and investigation of potentially contaminated land. These are research documents and as such will not be made available to the public.

8.3 Provision of Information to Stakeholders

All general site-specific information will be available to site owners, occupiers or other relevant interested parties in the same way as for the public.

However, site owners, occupiers or other relevant interested parties will be informed of our findings following a Detailed Inspection, since it is in their interest to know whether the site may or may not be Contaminated Land.

8.4 Provision of information to the Environment Agency

Information on specific sites will be passed to the Environment Agency under the following circumstances:

- When the Council designates the site as a Special Site.
- When the Council considers there to be issues concerning pollution of controlled waters or due to radioactive contamination.
- If the council considers land contamination at the site should be dealt with by the Environment Agency under another regulatory regime.
- When requested by the Environment Agency

The local authority must also provide information to the Environment Agency whenever a site is classified to be contaminated land, and whenever a remediation notice, statement or declaration is issued or agreed. The Environment Agency has provided standard forms allowing this information to be sent to them in a consistent format. The Council's will adopt these forms to fulfil the reporting requirements.

Part 2A of the 1990 Act requires the Environment Agency to prepare a report on the state of Contaminated Land in England from time to time. The Council will make information available to the Agency so that it may compile this report.

8.5 Provision of Information to Other Council Departments

Information held within the contaminated land database will be made available to other departments throughout the Council's on request. The information will then be released

subject to the reason for the request and the intended use of the information.

8.6 Development Management

As previously stated, the majority of land contamination issues will be dealt with through the planning regime. In recognition of this, procedures are in place to ensure that site specific information from carrying out the Inspection Strategy is made available to planning officers considering applications.

The spatial dataset showing 'Potentially Contaminated Areas' collated as part of the Part 2A inspection process has been made available to Development Control Department at both councils to help them identify proposed developments where contamination may be issue.

9 Responding to Information from Third Parties

While implementing the Inspection Strategy the Council may receive complaints or information relating to land pollution. This information may be forthcoming from the public, other stakeholders or statutory bodies.

Depending on its nature, such information may cause a site to be re-prioritised for inspection. It may also be essential in helping the council to decide whether a site appears to be Contaminated Land. Alternatively, it may indicate that land contamination issues at a site should be considered under another regulatory regime.

9.1 Voluntary Information Provision and Complaints

Information may be provided to the Council by the general public, businesses or other organisations or individuals either as a complaint regarding contaminated land or voluntarily relating to land contamination that is not directly affecting them. Procedures to address these complaints or acts of information provision are given below.

The way we respond to the information provided will depend on its nature.

If a site has been prioritised, the prioritisation may be revised (increased or decreased) following consideration of new information.

If the site is currently undergoing a Detailed Inspection, the new information will be considered as part of this process. If the site has already undergone a Detailed Inspection, the new information will be evaluated to determine whether it alters our findings.

If the site has not yet undergone any aspect of investigation (i.e. Site Prioritisation or Detailed Inspection), the new information will be considered and evaluated to determine its seriousness and significance.

The council will advise the informant of our actions. The details related will depend on what interest they have in the site. Other than when they are statutory bodies, the identity of persons providing us with information will remain confidential and will be not passed to stakeholders or members of the public.

Anonymous and anecdotal information will be acted upon or investigated at the discretion of the appropriate officer.

10 Strategy Review

The council has a duty to keep its Inspection Strategy under periodic review. The main reasons why we will carry out a review are:

- To see how we are progressing against our priorities and objectives
- To revise and improve procedures
- To take account of changes in legislation
- To take account of the establishment of significant case law or precedent
- To take account of changes in guidance for dealing with land contamination
- To reflect changes in council policies and strategies.

The council considers it appropriate to carry out on a five yearly basis or less where necessary, until detailed inspection of the district is complete.

Those implementing the Inspection Strategy will also consult with other services across the council, as appropriate. Consultation with external organisations including neighbouring authorities may also be necessary. Discussions with the Environment Agency, which, as part of its statutory duty under Part 2A has to assess each local authority's Inspection Strategy and its effectiveness in its report on the state of Contaminated Land. Any suggested changes to the Inspection Strategy will then be reported, for approval, to the Council.

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APPENDIX 1

Geology & Hydrogeology of the Broadland and South Norfolk areas is outlined below

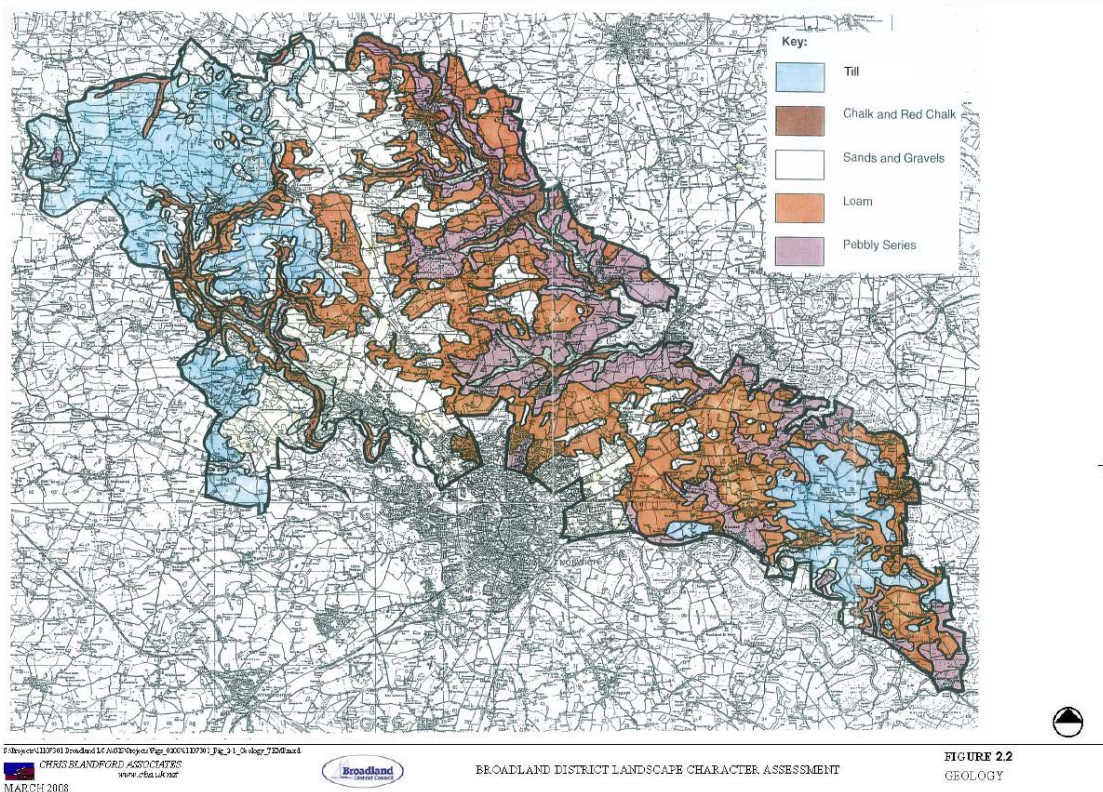
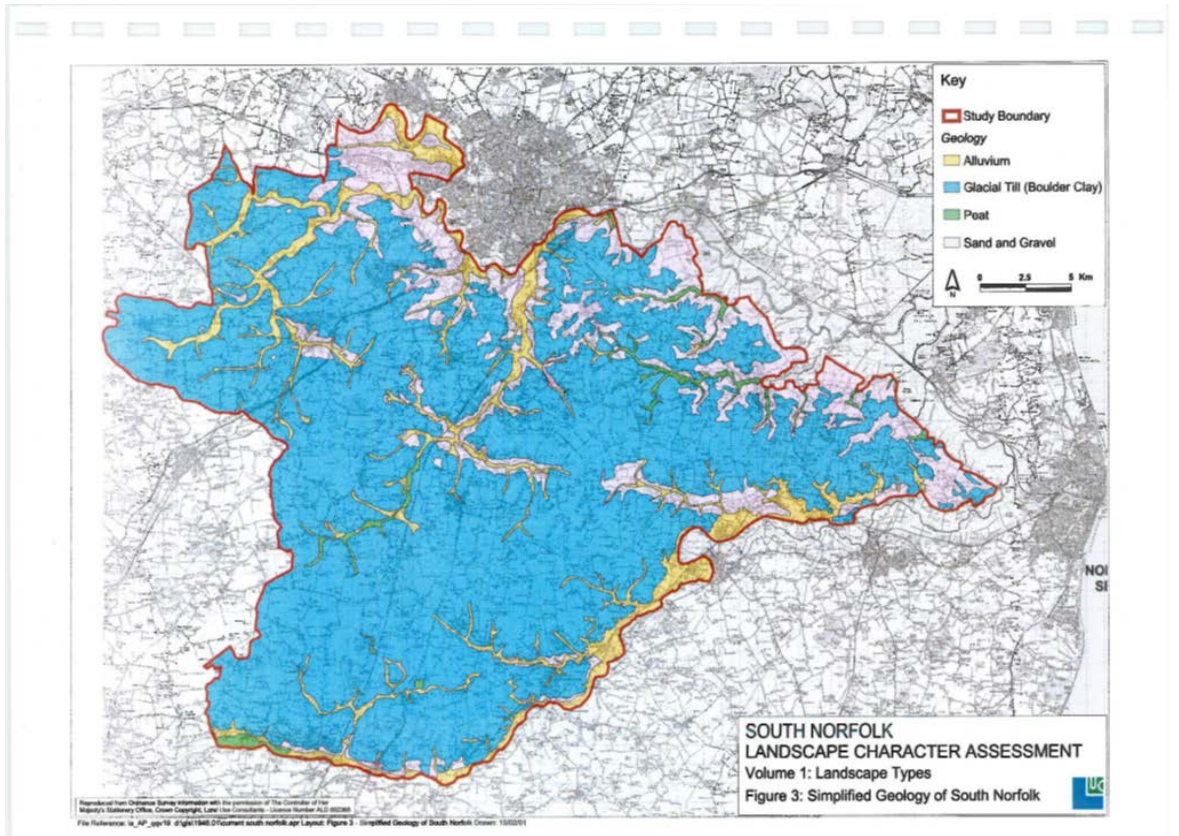
Geology

The primary structural unit providing the foundation of eastern England is the Anglo-Brabant massif.

A summary of the geological sequence is shown in Table 2 below; with the youngest Age (Holocene) at the top

Period	Age	Geological Unit	Characteristics
Quaternary	Holocene	Alluvium	Soft clays, sand, silt and peat.
	Pleistocene	River Terrace Deposits	Sand and gravel, locally clayey.
		Glacial Sand and Gravel	Sand and gravel, locally clayey
		Glacial Till	Stiff, chalky, pebbly sandy clay.
		Kesgrave Sands and Gravels	Sand and gravel.
		Crag formations	Sands and gravels, shelly sands.
		Boulder Clay	Interbedded clay and silty clay possibly interbedded with sand and gravel-rich lenses.
Tertiary	Eocene	London Clay (Thames Group)	Stiff, blue-grey clays, sandy at base.
		Reading beds (Lambeth group)	Stiff, mottled clay.
Mesozoic	Cretaceous	Upper Chalk	Fine grained fissured white limestone with bands of flint nodules.

Because of its great thickness (attaining a maximum thickness of approximately 400m in Norfolk), the Chalk is the dominant formation in the area.



The Chalk has been shown to form mats and the majority of the hills in Norfolk are formed by the different orientation of these mats but the general dip of the strata is south Eastward at less than 1 degree and thickens in the same direction. And likewise the rocks are older towards the North West.

It is covered by thick Pleistocene and, in the east of the District, Eocene deposits, these are predominantly Boulder Clay and Sands and Gravels. As such, the Chalk only outcrops occasionally in the districts.

After a long period of steady subsidence during which the Chalk was deposited the whole area was raised as a landmass and acted upon by the agents of erosion; it was also subject to gentle tilting at this time. Eventually, the south-eastern part of England was invaded by a sea that laid down some of the earliest deposits of the Tertiary period. Within the District the Eocene deposits are present overlying the Chalk broadly east of a line from Claxton in the north, to Mundham and Ellingham on the Waveney valley in the south. These strata are overlain by later deposits and are not exposed at the surface within the District.

Following partial submergence of the eastern part of the District beneath a precursor of the present North Sea, the next series of marine deposits were laid down in the early Pleistocene.

The chief deposits are river gravels consisting of sands, pebbly, gravels and sands, extending over the eastern parts of the District, and the term 'Crag', a word used locally for any shelly sand, is currently employed to denote them. Norwich Crag is present beneath the District east of the Norwich-Diss railway line but is only exposed at the surface on the eastern side of the Tas Valley at Stoke Holy Cross and along the Yare Valley to the west and south east of Norwich.

The Kesgrave Formation is part of the Thames river terrace gravels and was deposited by the old tributary rivers represent terrestrial sedimentation in the Middle Pleistocene.

The region experienced glaciation on at least two occasions, during the Anglian and Late Devensian. During the Anglian, the Lowestoft Formation (chalky, pebbly, sandy clay (till) and sands and gravels) was deposited by British-based glaciers and the North Sea Drift Formation by a Scandinavian ice-sheet that impinged upon parts of northeast Norfolk, in land as far as Diss.

Evidence of fluvial activity is significant with major re-organisation of the drainage system as a result of glaciation during the Anglian.

Glacio-fluvial gravels overlie the till in many places, as for example, along the Yare valley, the Wensum and some of its tributaries.

The later Middle Pleistocene is known from numerous localities where temperate-phase organic sequences have been identified as for example, at Dunston Common or Barford, where a deep channel cut into the Chalk to 35m below sea level has been infilled with chalky till, on which rests extensive organic clays up to 9m thick.

Fluvial deposition during the later Middle and Late Pleistocene produced extensive sand and gravel river terrace deposits along the major valleys under a cold climate.

Within the last 10,000 years and primarily in response to rising sea levels since the last glaciation, alluvial deposits of sand, silt, clay and peat have accumulated in the lower reaches of the Yare and Waveney valleys, creating extensive areas of poorly drained marshland. During medieval times, 'broads' were excavated for their peat and later flooded. Two such areas are located within the district on the right bank of the River Yare - Surlingham Broad and Rockland Broad.

The two principal factors in the Quaternary history of the district were climatic oscillations and associated changes in sea level. Deposits from the period are seen now as a mantle of clays, sands and gravels and, locally, peat and it is to these that the aspect and agricultural characters of the land are mostly due.

As can be seen from Figure 3 the current surface drainage system that prevails across the district's most easterly point, the entrance to Breydon Water.

The River Wensum, west of Norwich, and the River Yare, south and east of Norwich, mark

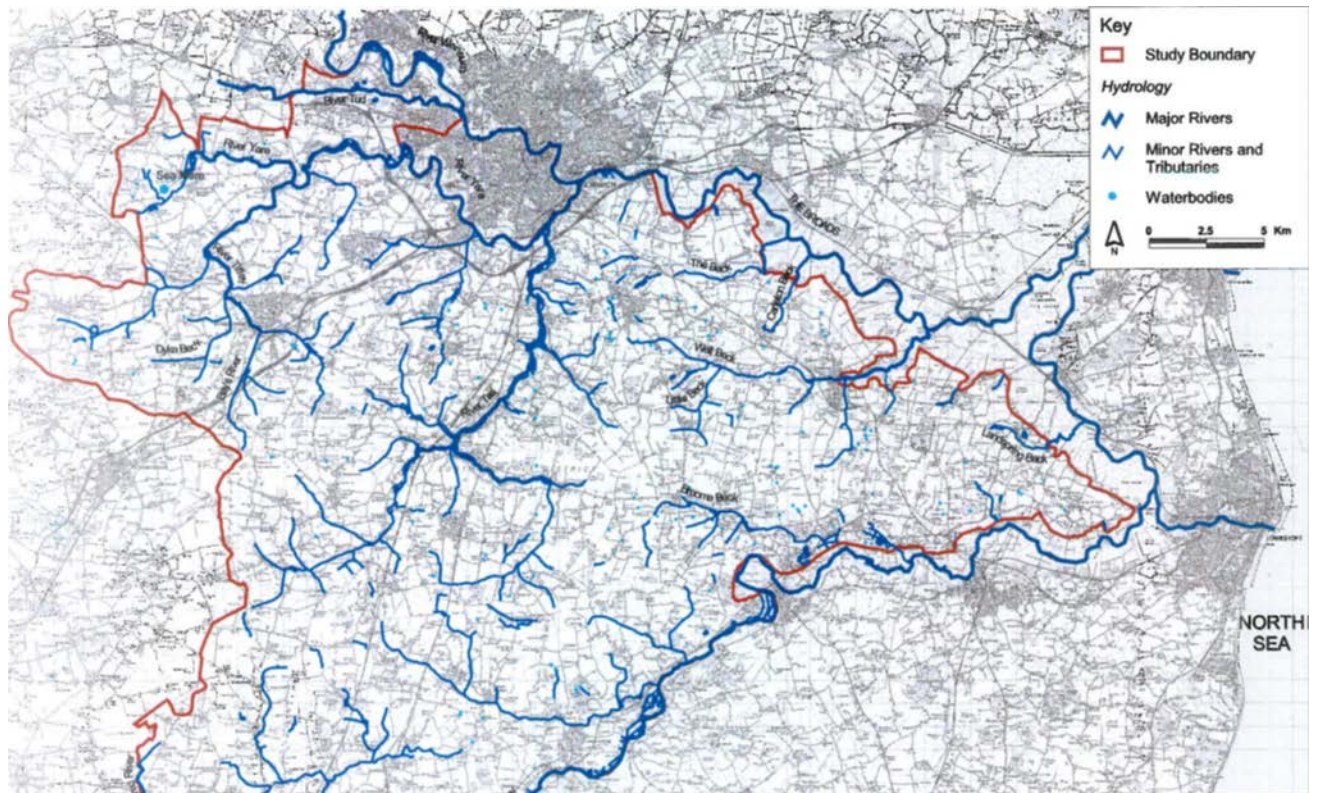
the District's northern boundary. The River Tud runs parallel with, and to the north of, the A47 in the northern tip of the District before joining the Wensum to the east of New Costessey.

Three named right banks tributaries join the River Yare as it passes along the northern boundary of the District – the north-north-easterly flowing River Tiffey which passes through Wymondham before joining the Yare at Barford; the north-north-easterly flowing River Tas which drains the central area of the District around Long Stratton and joins the Yare at Trowse Newton; and the eastward flowing River Chet which joins the Yare east of Loddon.

Along the southern boundary of the District the River Waveney, flowing east-northeast, has created a steep-sided, flat floored and somewhat sinuous valley through glacial deposits between Diss and Bungay. Westward of Diss the valley merges with that of the Little Ouse River. Both rivers now rise in the peat of Redgrave Fen at about 25m above sea level, but flow in opposite directions.

Only one named left bank tributary joins the River Waveney as it passes along the Districts southern and eastern boundaries – Broome Beck, which joins the Waveney between Broome and Ellingham.

Hydrogeology Characteristics



The hydrogeological conditions of the District have been assessed from the British Geological Survey 1:125,000 scale hydrogeological maps of Northern and Southern East Anglia together with relevant Environment Agency Groundwater Vulnerability Maps (sheets 26 and 33, 1:100,000 scale), and the Environment Agency Policy and Practice for the Protection of Groundwater – N.S.E. Area.

A summary of the hydrogeological features of strata within the District is shown below in Table 3.

Table 1. Hydrogeological Features of the District

Strata type	Hydrogeological Characteristics	Flow Mechanism	Geological Classification
Alluvium	Floors the main valleys, variable thickness; peat has suffered saline intrusion in the tidal reaches of the Bure, Yare and Waveney.	Intergranular	Minor Aquifer
River Terrace Gravels	Occurs sporadically in the river valleys, notably the Wensum and Waveney. Water saline in the lower reaches of the Bure, Yare and Waveney and in the adjoining marshlands.	Intergranular	Minor Aquifer
Glacial Sands and Gravels	Occurs as masses within and beneath the Glacial Till and in places above it. Small yields have been obtained from Glacial Sands overlying Crag.	Intergranular	Minor Aquifer
Glacial Till	'Chalky boulder clay' is the predominant type of till, commonly 30 to 50m thick and covering large areas of the District; limits infiltration into the Crag and chalk aquifers. Does not yield much water but small supplies may be obtained from interbedded sands.	Varied	Minor Aquifer
Crag	Interbedded sands and gravels and shelly sands, present in the District east of the A140; dips and thickens generally eastward reaching a thickness of 70m at the coast but only exposed in main valleys. West of Eocene base Crag and Chalk in continuity.	Predominantly intergranular	Minor Aquifer
London Clay (Thames Group)	Blue-grey clays sandy at base, present in the District east of line joining Claxton, Mundham and Ellingham dipping and thickening eastwards reaching a thickness of 95m at Great Yarmouth. Not exposed at surface and essentially non-water bearing.	Predominantly intergranular	Non Aquifer
Reading Beds (Lambeth Group)	Mottled clays, present. Not exposed at surface and essentially non-water bearing.	Intergranular	Non Aquifer
Upper Chalk	Fine grained fissured white limestone with bands of flint nodules, the principal aquifer of Norfolk. Covered by thick Pleistocene deposits and in the east of the District, Eocene deposits. Chalk surface dissected by 'buried channels' cut by sub-glacial streams and infilled with Pleistocene deposits. Exposed only major valleys in the District. Most water boreholes exploit the top 30 to 60m of the Chalk.	Fissure	Major Aquifer

The Upper Chalk and Crag deposit are the aquifers of local and regional importance. The Chalk water table reflects surface topography in a modified form and is at greatest depth below high ground. Beneath thick deposits of glacial till the Chalk groundwater is confined under pressure. Artesian flow, often seasonal, has been recorded in a number of localities

in the Wensum valley, the TAS valley and in the northern part of the Broadland area around Foulsham.

From the low-lying land of the broads in the far east of the Broadland district, the land rises gently to the west, rising to a height of 60m AOD in the far north west corner of the district around Guestwick. From here, the land continues to rise towards the Cromer Ridge. The river valleys of the Bure and Wensum introduce the most important changes in relief forming shallow convex valleys. Many more subtle variations in topography occur across the district, most reflecting differences in the underlying geology.

In the western part of the South Norfolk district beneath the higher ground between Wymondham and Diss (at some 65m to 75m above sea level), the ground water level in the Chalk is at approximately 40m above sea level. From here the water level reduces in elevation in a generally easterly direction until it is at sea level (Om Ordnance Datum) along the marshes adjoining the lower reaches of the Yare and Waveney. Almost the whole District is classified as a major aquifer overlain by soils of high, intermediate and low leaching potential. However as indicated above and in Section 2.13, much of the Chalk aquifer is also overlain by low permeability non-water bearing drift deposits occurring at the surface.

Appendix 2

Geographical Location

The districts of Broadland and South Norfolk are located in the east of England. They occupy the central and south-eastern parts of Norfolk as shown in Fig 1. Bordered by the Norfolk local authority areas of Breckland to the West, Norwich City to the centre and North Norfolk and Great Yarmouth to the north and east. The authority to the south is Mid Suffolk. The Broads Authority area lies partly within the Broadland and South Norfolk Areas

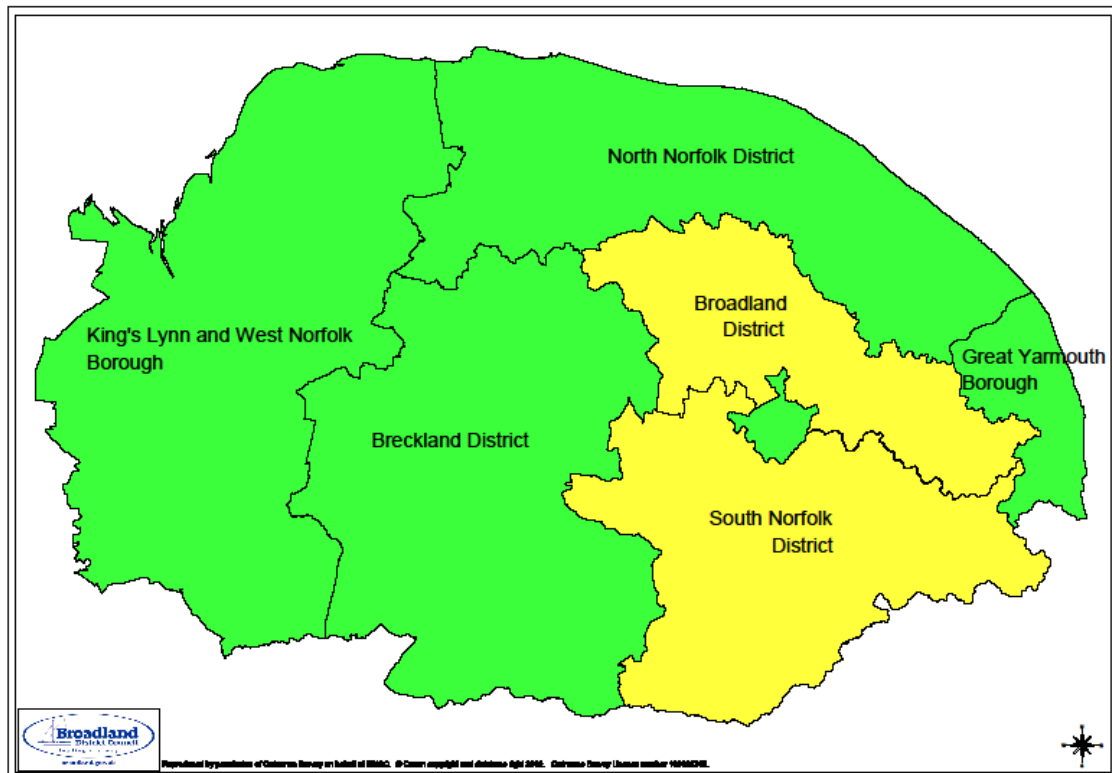


Fig. 1 Shows the geographical location of the Broadland and South Norfolk Districts

Population Distribution

Based on the 2015 figures, The populations of the Broadland and South Norfolk Districts are 126,628 and 131,010 respectively. In both districts the majority of the population lives in the market towns and suburban fringe of Norwich with the remainder in the surrounding more rural parishes.

History

There is history of both Broadland and South Norfolk is very much influenced by the rivers. Approximately 2300 years ago sea levels increased causing the sea level to rise and cover the marshland. Where the primary rivers (Bure, Waveney and Wensum) an estuary was formed. The volume of water in the rivers was also increased. These events allowed sea going vessels to sail further inland. During this time the area was occupied by the Romans who established defensive fortifications at the mouth of the estuary and also trading and business points at locations such as Castor St. Edmunds (Venta Icenorum) and Brampton (Bramtuna). It also enabled the export of products from the area to the rest of the Roman Empire and examples of pottery from Brampton have been found at various former Roman settlements within the Roman world.

The sea levels began to recede approximately 1500 years ago and the area of the estuary silted up with only the Breydon Water area remaining. As a consequence the movement of sea vessels was reduced.

Wymondham Abbey is the most significant legacy left by the Normans – this is the most important ecclesiastical building in South Norfolk. Hales church is another fine example of Norman architecture. There are a number of smaller Norman churches throughout both districts that are good examples of Norman architecture and art. These include St. Helen's church in Ranworth with its Rood screen and Cantor and St. Michael and All Saints in Hales with its near intact Norman Nave.

The medieval period saw the building of some of our great manor houses. There are several examples in the District the finest of which is Rainthorpe Hall in Tasburgh.

The period from the 15th to the 17th century was one of development, particularly of agriculture. The ancient market towns of Aylsham, Reepham, Diss and Wymondham were all important trading centres during this period.

The 18th and 19th centuries were a period of agricultural reform and of unprecedented population growth. New building materials were introduced into the region and some fine brick and stone buildings of the period remain. A lot of the brick was manufactured locally using the 'brickearth' geological formation as the raw material that is present in several locations in both districts.

The period since World War Two, has seen great changes in South Norfolk. There was an explosion of social housing reform during the great post-war building period.

In more recent times, the economy of South Norfolk has become much more broad based, and no longer relies entirely upon agriculture.

Current land use characteristics

Broadland and South Norfolk have a wide range of industries and commercial concerns in its rural areas, market towns and villages. The main use of the land, other than for residential use is for agriculture. *Agriculture is no longer significant in terms of employment, employing no more than 8% of the district's workforce.*

The District Council's have a statutory duty to prepare a Local Plan for the whole of the area and when adopted this plan will form part of a wider Development Plan. The Town and County Planning Act 1990 as amended by the Planning and Corporation Act 1991 impose this duty. The Local Plan and County Structure Plan are the relevant parts of the Development Plan for the majority of planning decisions.

Protected locations

It is important to have protected locations identified in this document to ensure they are not at risk from a contamination source. Broadland has 18 SSSI's along with 7 RAMSAR sites, 19 SAC's, NNR's and 12 SPA's South Norfolk has 38 Sites of Special Scientific Interest (SSSI's). These sites range from deciduous woodland and commons to river valley meadows. Both authorities include part of the Norfolk Broad's National Park, which while it is a National Park was not established as one under the 1949 Act.

South Norfolk has 3464 Listed Buildings, 35 Scheduled Monuments and 53 designated Conservation Areas. Broadland has 45 Ancient Monuments and over 1100 Listed Buildings in addition there are 253 designated and local Conservation areas.

Current and Past Industrial History

The principal industries other than agriculture which have been conducted in the districts are listed below.

- Town gas works were developed in Aylsham, Diss, Harleston, Ditchingham, Loddon, Wymondham, Langley and Hingham.
- Airfields located in the District over the period 1941 to 1962.
- There are also numerous areas where sand and gravel extraction has taken place.

There are several employers within both districts, with a large percentage employing five or less staff. The larger operations include sports car manufacturing east of Wymondham and engineering and electronics companies in Aylsham, Rackheath and Hellesdon as well as Diss and Harleston. Smaller scale engineering activities are present in other areas of both districts. Boat building and servicing facilities as well as boat hire companies are located in both districts along the Broads rivers.

Given the wealth of agricultural activities in the area, food and drink production also features strongly. There are many firms involved in all aspects of food and drink production, including some based in Cawston, Great Witchingham, Woodbastwick, Costessey, Little Melton and Harleston.

Military Development

In 1945, Norfolk had the second highest proportionate area of land under airfields (2.1%); Suffolk having the highest at 2.4%. Some of the airfields are still in use today for other purposes. The list below is an example of some of the former RAF sites within both authority areas

RAF Pulham	Maintenance Unit
RAF Stoke Holy Cross	Radar Station
Shotesham, Surlingham, Bramerton, Burgh St. Peter, Little Plumstead and Buckenham	Decoy Bases
Coltishall	Airfield
Foulsham	Airfield
Oulton	Airfield
Old Catton	Living Quarters and office
Swannington	Airfield

The USAAF operated a number of bases in both Districts from which many bomber sorties were mounted. Examples of the airfield include:

Airfield	Operational Life	Present features
Attlebridge (NGR TG101151)	1941-1950	Agriculture and poultry raising
Deopham Green (NGR TM035995)	1942-1945, Abandoned 1948.	Extensive remains of all 3 runways, part is a public road.
Fersfield (NGR TM085855)	1943-1945, Subsequently sold.	Significant lengths of all three runways remain.
Hardwick	1941-1962,	Parts of the runways and perimeter

(NGR TM25905)	RAF control 1945 onwards, sold 1962.	track. Museum and memorial on the site.
Hethel (NGR TM155005)	1942-1948, RAF control 1945 to 1948, sold 1964.	Sold to Lotus Car Company 1964, factory and test track on parts of the runways.
Horsham St Faiths (NGR TG218143)	1939 -1963	Closed to military use and re- opened as Norwich Airport.
Rackheath (NGR TG286140)	1944-1945	Partly returned to agriculture and partly industrial estate.
Seething (NGR TM318958)	1943-1959, RAF control 1945 onwards, Sold 1959.	The Waveney Flying Group operates light aircraft using part of the former main runway.
Thorpe Abbotts (NGR TM185805)	1943-1945, Closed 1956.	Only small parts of runway remain. Control tower restored and contains museum.
Tibenham (NGR TM145890)	1942-1959, RAF control 1945 onwards, Part sold in 1952, Runway extension 1955, Sold 1964.	The Norfolk Gliding Club use parts of the remaining runways.

The Ministry of Defence sold the Royal Observer Corp posts at: Aldeby, Diss, Framingham Earl, Harleston, Hellesdon, Hingham, Loddon, Long Stratton, and Wymondham. Cringleford, Old Catton

Land currently owned by the Ministry Defence within South Norfolk District comprises Stoke Holy Cross RAF Radio Site and a Fuel Storage Depot in Ketteringham.

A former WW1 aircraft factory is located on the