



CITY OF
Lincoln
COUNCIL

City of Lincoln Council

Contaminated Land Inspection Strategy

LOCAL AUTHORITY INFORMATION AND CONTROL SHEET

Directorate of Development and
Environmental Sustainability
City of Lincoln Council
City Hall
Beaumont Fee
Lincoln
LN1 1DH

Project
Manager

Simon Colburn
Environmental Protection
Manager

Tel:

01522 873241

Fax:

01522 546702

Email:

environmental.health@lincoln.gov.uk

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Executive Summary

The industrial history of the United Kingdom has resulted in land around the country requiring investigation to ascertain whether contamination of the land and groundwaters has occurred. Part 2A of the Environmental Protection Act 1990 seeks to identify and remedy those areas of land which have unacceptable levels of contamination present and which are or have the potential to cause significant harm to human health or harm to controlled waters. The legislation works on a number of principles, e.g. the polluter pays principle, and sets out the roles the local authorities and Environment Agency play under Part 2A. Statutory Guidance has been issued by Defra, which clearly establishes the principles and method of the regime.

Local authorities are the lead authority for Part 2A and, as such, must publish an inspection strategy detailing how Part 2A will be implemented in their area. This document is intended to replace the original strategy produced by the City of Lincoln Council in 2001. The priorities in relation to contaminated land will differ between authorities due to their individual characteristics, geology, hydrogeology, type of industry, density of population etc.

The City of Lincoln has an ancient past and was an important military town during Roman times. The City developed later with the cloth and wool trade, progressing on through the Agricultural Revolution with the development of maltings and breweries. The railways developed in the mid 19th Century with heavy engineering and industry growing alongside, e.g. foundries, steelworks, tanneries, timber treatment yards and gas works.

Lincoln lies on Jurassic rocks predominately of mudstones and limestones with the north east of the City classified as a major aquifer. Two important watercourses run through the City. The River Witham runs from the south and the Fosdyke Canal from the west. They join in the centre of the City to flow out to the east. The differences in geology and hydrogeology have a significant impact upon how contaminants can migrate and how likely groundwater and subsequently surface waters can be affected.

The objectives of the City of Lincoln Council for contaminated land follow those set out by Government to ultimately protect human health and the environment. The Council's policy on contaminated land is also aligned with the Council's Strategic Plan in the areas of sustainable development and improving the quality of life. In addition, the Council aims to ensure all investigation and any subsequent regulatory action is in accordance with current legislation and guidance and that any investigation of Council owned land will follow the same procedure for that under private ownership.

The Part 2A regime dictates that all local authorities must inspect their areas from time to time to identify contaminated land. The Council has identified potential sites of contamination, which have been recorded on a geographical information system and prioritised into an order for inspection. A scoring system has been developed giving higher values to those more contaminating

industries and most vulnerable receptors, i.e. humans. The sites are then prioritised in descending numerical order of their overall scores.

This document sets out the procedure by which the Council will undertake a detailed inspection. This begins with a desk top study collating all that is currently known about the historical uses of the site, the geology, hydrogeology, development etc. This stage identifies all the possible sources of contamination and the contaminants, which could be present at the site and whether there is the potential for such contamination to harm humans and/or the environment. Where such a risk is identified an intrusive investigation is undertaken involving the sampling of soil and groundwater and other possible monitoring, e.g. for ground gas. A risk assessment is then used to assess the significance of the presence of contaminants. The Council must then assess all the information collated and decide whether the land should be determined as contaminated land and a remediation notice issued.

During the inspection of land a number of other bodies will be consulted, including the Environment Agency and any other relevant agencies, e.g. Health Protection Agency. The Council will also set up communication with owners and occupiers of the site. Any other interested parties will be kept informed of the investigation as required and appropriate.

Contaminated land investigations can be very resource intensive. Where possible all desk studies will be undertaken in house. However specialist environmental consultants will be required to carry out intrusive investigations and risk assessments. Where such investigations are required a bid for funding will be made to Defra under their annual Capital Projects Programme. This has implications on the time it will take for the Council to progress through the inspection of the sites of potential concern.

All information collated through initial research, prioritisation and the inspection process is held and only readily available by Environmental Protection, part of the Environmental Sustainability Service. The Council has a responsibility to maintain a public register detailing those sites, which have been determined as contaminated land. The register is available to view at City Hall on request.

Contaminated land is also considered within the Development and Building Control regimes to ensure land being developed or re-developed is suitable for its intended use. Further information on how these regimes interact with contaminated land legislation can be found on the Council's website. Where a site is permitted under the Environmental Permitting Regulations as a Part A1 or A2 installation, any potential contamination, from one of these permitted processes will be dealt with under the EP Regulations rather than through the Part 2A regime.

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City of Lincoln Council Contaminated Land Part 2A Inspection Strategy

1.0 Introduction

1.1 Background

The historic nature of our industrial past has led to land all over the country being left with potential contaminative remnants. In years gone by there were few, if any, environmental regulations as to what could be put in, on or under the ground and into the waterways. Now a lot of this land has been or is in the process of being redeveloped and we must ensure that such land is fit for its purpose.

The exact legislation is discussed below and this document is part of a statutory requirement for local authorities, as the lead regulatory authority, to produce a written strategy detailing how it will approach its duties under the legislation to inspect and identify contaminated land within its area.

The City of Lincoln Council first published its Contaminated Land Inspection Strategy^[1] in 2001 in line with the requirements of the DETR Circular 02/2000, Environmental Protection Act 1990, Part IIA^[2].

This circular has since been replaced with the extended statutory regime Defra Circular 01/2006^[3] (“the Statutory Guidance”) which now includes contamination from radioactivity within Part 2A, (the nomenclature has also been changed from IIA to 2A). The fundamental duties of local authorities have not changed with the revised guidance.

As a part of a local authority’s duties within Part 2A, it is required to undertake a periodic review of its inspection strategy. This document is intended as a review of the Council’s original inspection strategy as well as an updated version taking into account the information obtained since the introduction of the legislation.

This strategy includes:

- a historical background of Lincoln City, which provides an indication of the potential for contamination to be present due to previous land uses.
- the method by which the Council will identify areas of concern
- how the actual inspections will be conducted
- information on the management and dissemination of information
- the timescales the Council anticipates to undertake inspections and the review frequency of its strategy
- the method by which information is held and maintained
- details of the information we can provide on request.

- the integration of Part 2A with other regimes such as Development and Building Control however more detailed information is available separately from the Council.

1.2 The Legislation and Guidance

The contaminated land regime is detailed in Part 2A of the Environmental Protection Act 1990^[4], (“EPA 1990”) which was inserted by Section 57 of the Environment Act 1995^[5] (“EA 1995”) and introduced in England in April 2000, and the Contaminated Land (England) Regulations 2006^[6] (“the Regs”). Original statutory guidance was issued by Defra in 2000, Circular 02/2000, and has now been superseded by 01/2006 (“the Statutory Guidance”), which was issued following an extension to the regime in August 2006 to cover radioactivity. This guidance sets out the procedures for identifying, as well as giving the statutory definition of, contaminated land. In addition, it also sets out the duties of the regulating and enforcing authorities within the Part 2A regime. Both local authorities and the Environment Agency are involved in the regulation of contaminated land although local authorities are the primary regulator. The role of the Environment Agency and other relevant bodies is discussed below.

In addition to the Statutory Guidance on the Part 2A regime there is a wealth of other guidance documents available. Defra and the Environment Agency have recently issued some new guidance and revisions to existing documents as well as the withdrawal of some reports. This has been as a result of an exercise known as the “Way Forward” which started with Defra’s publication of ‘Assessing Risks from Land Contamination – a Proportionate Approach, Soil Guideline Values: the Way Forward’^[7]. This document raised a number of issues and culminated in the release of ‘Improvements to Contaminated Land Guidance, Outcome of the “Way Forward” Exercise on Soil Guideline Values’^[8] which sets forth a number of improvement packages.

The Environment Agency originally produced a series of ‘Contaminated Land Reports’^[9] (“CLR reports”) which covered the more technical aspects of risk assessment, priority contaminants and a risk assessment model, CLEA UK, with a modified version, RCLEA, for use where radioactive substances are involved. CLR reports 7-10 have now been withdrawn as part of the “Way Forward” exercise and replaced with Science Report – SC050021/SR2^[10], ‘Human Health Toxicological Assessment of Contaminants in Soil’ and Science Report – SC050021/SR3 ‘Updated Technical Background to the CLEA Model’^[11]. The CLEA version 1.03 beta software and handbook^[12] has been revised and launched with a three month comment period. There has been no change as yet to RCLEA.

The Environment Agency also produced Toxicological Reports^[13] (“tox reports”) on a variety of contaminants. These are currently still in use but are to be updated before March 2009. The Agency also published Soil

Guideline Values^[14] (“SGVs”), which are intervention values for the amount of contaminant in the soil, which if exceeded, may indicate potentially unacceptable risks to users of that site. The current SGVs, of which there are 10 were also withdrawn in August 2008 but are to be revised using the updated CLEA model and published along with some further values in 2008/2009. All of these reports are available on the Environment Agency’s website, www.environment-agency.co.uk.

Defra has also produced further guidance on the legal definition of contaminated land to aid local authorities in determinations, ‘Guidance on the Legal Definition of Contaminated Land’^[15].

The former Department of the Environment published a set of Industry Profiles^[16], which gives a brief history and likely contaminants associated with various industries. These can be very useful in identifying the types of substances to be analysed for, when taking soil and water samples.

Other guidance is also available from various bodies such as the Health Protection Agency, Food Standards Agency and CIRIA.

1.3 What is Contaminated Land?

The Environmental Protection Act 1990, section 78A(2) defines contaminated land as:

“any land which appears to the local authority on 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) pollution of controlled waters is being, or is likely to be caused;...”

Regulation 5(1) of The Radioactive Contaminated land (Modification of Enactments) (England) Regulations 2006^[17] (“the Modification Regulations”) modifies the definition in relation to harm attributable to radioactivity to be:

“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) harm is being caused, or

“(b) there is the significant possibility of such harm being caused;...”

These are the statutory definitions for contaminated land and radioactive contaminated land respectively and the only definitions to be used to enable

a site to be identified as a contaminated land site under the legislation. Further details of what is defined as 'significant harm' and 'harm' can be found in Annex 3 of the Statutory Guidance which is available on Defra's website, www.defra.gov.uk

The legislation also defines what is meant by significant harm. In terms of harm to human beings this can include, death, disease, serious injury, genetic mutation, birth defects or the impairment of reproductive functions.

'Controlled waters' (see glossary) refers to all inland and near coastal waters including groundwater. Section 86 of the Water Act 2003^[18] will amend the definition of contaminated land with regard to the pollution of controlled waters. The Act will introduce 'significant harm' and the 'significant possibility of significant harm' in relation to the consideration of controlled waters. This will prevent sites being designated as contaminated land only due to very small amounts of contaminants entering controlled waters. Further guidance is expected on the definition of significance in terms of controlled waters once the Act has come into force. Until that time the current definition of contaminated land remains.

1.4 Pollutant Linkage

A site cannot be identified as contaminated land simply by the presence of a contaminative substance being present in, on or under the land. In order for a site to be defined as contaminated at least one significant pollutant linkage must be demonstrated to exist. A linkage is comprised of three components

Source

The contaminant, a solid, liquid or gas, which is in, on or under the land that has the potential to cause significant harm or pollution of controlled waters.

Receptor

A receptor is something which can be significantly impacted upon by the contaminant. The legislation identifies four main receptors:

- a) Human beings
- b) An ecological system within various designations and/or protection identified in Table A, Annex 3 of the Statutory Guidance
- c) Property in the form of buildings, crops and livestock
- d) Controlled waters

Pathway

The means by which a contaminant can reach the receptor, this can be through soil, groundwater, water etc. The CLEA model identifies the following possible pathways:

- a) Direct soil and dust ingestion
- b) Consumption of homegrown produce

- c) Consumption of soil attached to homegrown produce
- d) Dermal uptake from soil and dust (indoors and outdoors)
- e) Indoor and outdoor dust inhalation
- f) Indoor vapour inhalation
- g) Outdoor vapour inhalation

When all three components are present and significant harm is being caused or there is potential for significant harm to be caused, or pollution of controlled waters is or is likely to occur, this is then termed a significant pollutant linkage.

There are a variety of mathematical risk assessment tools available, e.g. CLEA, SNIFFER^[19], RBCA^[20] that can be used to create assessment criteria to compare with levels of contaminants found on a site, which can then be used to determine whether a risk is present.

1.5 Principles of the Part 2A Regime

The Part 2A legislation introduced a number of key principles. Those of particular note are discussed below.

1.5.1 *Historic Contamination*

The intention of the regime is to address historical contamination. Other legislative measures exist to prevent new contamination through the Environmental Permitting Regulations 2007^[21].

1.5.2 *Harm and Receptors*

The Act and Guidance provide the definition of the term 'harm' and 'receptor' for the Part 2A regime. In addition, what is to be determined as 'significant harm' and the 'significant possibility of significant harm' is also given. Only harm and receptor types included within the definition may be considered during a Part 2A contaminated land investigation. Any other type of harm or receptor must not be included when considering the land under Part 2A legislation.

1.5.3 *Suitable for Use*

Where remediation of land is required it is the Government's intention that the result should be that the land is 'suitable for use'. That is, with regard to the current use of the site the land is no longer contaminated land once remediation has been completed. Annex B, C.18 of the Statutory Guidance details what the standard of remediation should be,

"...that which would be achieved by the use of a remediation package which forms the best practicable techniques of remediation for:

- (a) *ensuring that the linkage is no longer a significant pollutant linkage, by doing any one or more of the following:*
 - (i) *removing or treating the pollutant;*
 - (ii) *breaking or removing the pathway; or*
 - (iii) *protecting or removing the receptor; and*

- (b) *remedying the effect of any significant harm or pollution of controlled waters or any harm so far as attributable, which is resulting, or has already resulted from, the significant pollutant linkage.”*

However, the “appropriate person/s” responsible for the remediation may if they wish, not only consider the current use of the site but a future use in preparation for development, for example, and undertake further remediation to make the site suitable for such future use. The consideration of a future use for the site is not required under Part 2A legislation and would be entirely down to the appropriate person/s decision. Consideration of potential contamination and risk to future site users would be considered within the planning application process for any proposed development. See section 10.1 for further details on contaminated land within the development control process.

1.5.4 *Polluter Pays Principle*

This is based on the polluter taking responsibility for his actions and being responsible for the pollution caused. Such a person is defined as a ‘Class A person’, one who has caused or knowingly permitted a pollutant to be in, on or under the land. Each pollutant linkage must be assessed to determine the appropriate person for that linkage and there may be more than one appropriate person for each linkage

Where no Class A person can be found, responsibility for remediation may fall to the ‘Class B person’. This is the owner or occupier of the land. There are also a number of exclusion tests, which can be applied to appropriate persons to exclude them from liability for remediation. Chapter D of the Statutory Guidance gives further details on these tests and apportionment of liability.

1.5.5 *Voluntary Action*

The Council will, where possible, seek to agree the remediation of a contaminated site through voluntary agreement with the appropriate person/s. The Part 2A regime provides clarity on the actions a regulating authority may undertake on a site where potential contamination may exist and the Government hopes this will also encourage more voluntary remediation being undertaken rather than having to take legal action through the serving of a remediation notice. The Council fully supports the principal of voluntary remediation.

1.5.6 Orphan Sites

Section D.103 of Chapter D of the Statutory Guidance demonstrates when an orphan linkage may arise,

- “(a) the significant pollutant linkage relates solely to the pollution of controlled waters (and not to significant harm or harm in so far as it is attributable to radioactivity) and no Class A person can be found;*
- (b) no Class A or Class B person can be found; or*
- (c) those who would otherwise be liable are exempted by one of the relevant statutory provisions (i.e. sections 78J(3), 78K, 78 K (as modified) or 78X(3)).”*

Where there is only one significant pollutant linkage on a site and it is an orphan linkage, the enforcing authority bears the cost of the remediation. Where other significant pollutant linkages exist on a site along with an orphan linkage, the enforcing authority needs to take the remediation actions in to consideration, to determine with whom the costs should be apportioned. Further details are provided in the Statutory Guidance.

When the site itself has no appropriate person the cost of remediation falls to the enforcing authority.

1.6 Role of the Local Authority

In terms of a local authorities duty, Section 78B(1) of Part 2A of the Environmental Protection Act 1990 (“the Act”) provides that:

“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”*

With respect to radioactivity, section 78B(1) (as modified) provides that;

“(1) Where a local authority considers that there are reasonable grounds for believing that any land may be contaminated, it shall cause the land to be inspected for the purpose of –

- “(a) identifying whether it is contaminated land; and*
- “(b) enabling the authority to decide whether the land is land which is required to be designated as a special site*

“(1A) The fact that substances have been present on the land shall not of itself be taken to be reasonable grounds for the purpose of subsection (1)”

In addition, Section 78B(2) of “the Act” states that a local authority shall act in accordance with any guidance issued by the Secretary of State for that purpose.

The local authorities function is also to ensure any identified contaminated land is remediated appropriately to the satisfaction of the authority. In some cases, where a site has been designated a special site (see section 1.7), the Environment Agency is the enforcing authority.

Under B.12 of Annex 3 of the Part 2A Statutory Guidance all local authorities are required to produce a written strategy detailing their approach to contaminated land, which is the purpose of this document.

Information is required to be gathered to provide sufficient details about a site from which an assessment can be made to determine whether Section 78(2) (as above) is being met. At this point the local authority must also make a decision as to whether the site meets the requirements to designate it a ‘special site’, further details are given below.

Where a site is not designated a special site, the local authority is responsible for ensuring remediation is carried out. This includes determining what remediation works are required and who is responsible for the remediation, ‘the appropriate person’, including apportionment of costs. The agreement from the appropriate person or persons will be sought to ensure remediation. If this is not possible a remediation notice will be served to force remediation to be carried out. There may be more than one appropriate person identified and, therefore, the local authority is responsible for determining the proportion of costs each party pays. In some circumstances, such as an emergency, the local authority can undertake the remediation and then seek to recoup its costs from the appropriate person.

The local authority is also required to maintain a public register of sites identified as statutory contaminated land, where details of the actions taken on each site are held. The City of Lincoln Council’s Contaminated Land Register can be viewed at City Hall, Beaumont Fee, Lincoln during Council office opening hours.

1.7 Role of the Environment Agency

Certain current or previous uses of a site dictate that, if identified as contaminated land, it should be designated a ‘special site’ and therefore come under the enforcement of the Environment Agency. These include sites where the contamination is caused by waste acid tars, land under the ownership or occupation by the Secretary of State for Defence, land which is contaminated by virtue of radioactive contamination, for example. Section 2 of The Contaminated Land (England) Regulations 2006 details the full list

of sites, which would be required to be designated as special sites if identified as contaminated land. In the case where land is to be investigated in relation to harm attributable to radioactivity, the Environment Agency would most likely undertake any intrusive investigations rather than the local authority.

The Environment Agency also provides advice and guidance to local authorities, particularly on issues regarding controlled waters and radioactivity.

The Environment Agency is responsible for preparing and publishing periodic reports on the state of contaminated land for which local authorities are required to submit information, when requested.

1.8 City of Lincoln's General Policy on Contaminated Land

The City of Lincoln Council expresses its commitment to people who live, work and visit Lincoln, to the business community and to other organisations through the Strategic Plan^[22]. One of these commitments is 'Improved Quality of Life' with two of the key outcomes being 'address the challenge of climate change and protect the natural and built environment in the City (including Clean and Greener neighbourhoods)' and 'protection of the environment, by minimising pollution on land, in water and in the air.

The City of Lincoln Council regulates development within the city in accordance with the Local Plan^[23]. This plan incorporates the Council's policies and aspirations in terms of the present and future provision of housing, commerce, industry, leisure and education etc. in Lincoln. One feature of Lincoln is its comparatively small size. This means there is little greenfield land available for new development which leads to previously used land being built on. Remediation and redevelopment of brownfield land, in preference to greenfield sites, is an important principle of the local plan and government policy.

2.0 The City of Lincoln

2.1 Introduction

Contamination of the land can result from a wide range of activities and industries currently in operation and those from the past. The industrial history of a local authority therefore provides a unique insight into the likely places that may contain areas of contaminated land. This section provides background information about the City of Lincoln and explains how its setting and characteristics influence the City of Lincoln Council's approach to Contaminated Land inspection.

2.2 Geographical Location

The City of Lincoln administrative area ("the City") lies in the west of the county of Lincolnshire, about 135 miles north of London and 40 miles north east of Nottingham. The City's area extends outwards as far as the A46 Trunk Road in the north, and the residential areas of Birchwood, Swallowbeck and Bracebridge in the south and south west. The area extends towards the community of Skellingthorpe in the west and to Greetwell in the east.

2.3 History

Although set within an area of fertile agricultural land, the City of Lincoln is urban in nature, occupied by the City and its immediate surroundings. Lincoln is an ancient city with a long and varied history, as shown by its well-preserved historic features.

The character and history of Lincoln have also been influenced by the City's setting and local land features. For example, the City's topography is influenced by the geology. The higher ground in the north east of the City lies on rocks, which are more resistant to erosion than those in the south west. This, in conjunction with the erosion caused by the Fossdyke and the River Witham which cross the City from west to east, have produced the characteristic topography of the Lincoln Edge and Lincoln Gap. The Fossdyke and River Witham, have traditionally provided a source of water and means of transportation within the City. The Lincoln Edge and the plateau of high ground extending to the north also formed ideal ground characteristics for settlement fortifications and roads (Ermine Street). Such characteristics are likely to have contributed to early settlement and development within the City.

In Roman times the city was home to a military garrison and developed into an affluent and prominent walled settlement. As the settlement declined in

military terms it rose to prominence as the centre of an important agricultural region. In the 11th Century the Normans built the City's Castle and Cathedral. At this time the city's wealth was gained from the cloth and wool trade. During the 14th and 15th Centuries the city was again in decline, primarily due to changes in cloth manufacture. It was not until the 18th Century when the City's fortunes began to improve with the Agricultural Revolution and the beginnings of industrial development. With the gradual upgrading of the River Witham and the Fossdyke in the mid 18th Century, the Brayford and Waterside areas started to develop into the commercial centre of the city with housing wharves, grain and other warehouses, coal and timber yards, maltings and boatyards.

As barley became one of the country's major crops this encouraged the production of malt in Lincoln in the 18th and 19th Centuries. It is believed that in the 19th Century there were in the region of 40 maltkilns in Lincoln. The maltings were primarily situated along the city's major watercourses, and often formed part of breweries.

The 19th Century was the greatest period of the city's growth, with the population of Lincoln doubling between 1801 and 1851. This growth was due to the heavy engineering industry, which from the 1840's was rapidly growing in the city in conjunction with the introduction of the railway (1846 to 1848). The engineering industries developed in a broad east-west orientated belt across the city, flanking the river, canal and railways.

The main production of the local engineering companies was the manufacture of agricultural machinery. Clayton and Shuttleworth's Engineering Works was one of the first, making steam engines and threshing machines at Waterside and Stamp End, using the River Witham as a source of water and transport. Ruston and Proctors engineering company was also based here for these reasons.

William Foster was another pioneer of the engineering industry in Lincoln, with works at Waterside North, east of Thorn Bridge. Initially Foster operated a steam powered flour mill but began to supplement the work's activities by manufacturing corn mills, threshing machines and agricultural machinery. By 1856 Foster had abandoned milling entirely and converted the mill to an iron foundry and engineering workshop. Other foundries were also present within the city producing agricultural implements and machines together with such items as kitchen ranges, stoves and mantelpieces.

Engineering companies such as Ruston and Proctor had by the end of the 19th Century progressed beyond production of agricultural machinery to produce locomotives, steam rollers, excavators and other industrial engines and machinery.

The production of iron and steel generates large quantities of waste slag, slurries and dusts each containing contaminants such as arsenic and lead. Moreover, if the works produced their own coke, a common practice in

steelworks, waste tars and contaminated waste solids and waters would also have been generated.

Timber was an essential material in the manufacture of agricultural and other implements and as a consequence the City became home to several sawmills and timber yards. The timber treatment industry produced wastes such as sludges from treatment tanks and contaminated sawdust, produced as a result of mopping up spills. Timber treatment may lead to contamination of the land and water with a variety of contaminants such as copper, chromium, arsenic, pesticides and organic compounds.

During the 19th Century the railway tracks and sidings occupied large areas of land and as a result the rail companies became large-scale property owners in the city. In addition, many companies had private sidings to the main line.

Contamination of the land can arise from a variety of railway activities. If there was a lack of local raw materials for the construction of rail foundations and embankments it is possible that waste materials such as clinker, slag and ash generated by the local industries may have been used. Furthermore, railway depots and goods sheds may have been used to store miscellaneous objects including stocks of oils, greases, ores, coal, timber, steel for example, which have the potential to cause contamination.

During the growth of the city's engineering enterprises, large numbers of factory workers moved to the city. In the region of two hundred houses were built between 1851 and 1855 resulting in the rapid expansion of the residential areas. As a consequence, the city's sewerage facilities were upgraded in the mid 1850's. In 1828 the Lincoln Gas-Light and Coke Company was formed, with gas being used primarily for lighting streets and public buildings. The original site of the gasworks was in Newland, however in 1874 a second gasworks was built on land at Bracebridge.

Gas works produce hydrocarbon by-products and wastes such as coal tar. Other waste products include liquids rich in ammonia, coal dust and wastes contaminated with cyanide and metals.

As a city whose roots are in agriculture, Lincoln saw the growth of several companies involved with animal processing. Tanning appears to have been practised on a small scale in the area since the 16th or 17th Centuries. However, the first large scale tannery was not established until the early 19th Century, operating as Galsworthy's Tannery until at least 1928. It is possible that tannery activities may have contaminated the land as a result of spills and leaks of the chemicals used in the tanning process and as a result of disposing of the wastes that were generated. The wastes are typically liquids, which may have contained animal material, curing salts, grease and process chemicals.

Other associated industries that were also operational in the city in the 19th Century included leather and glue works and agricultural chemical manufacture (i.e. pesticides, fertilizers and sheep dip). All of which were likely to have used and produced potentially contaminating materials.

Another industry active at this time was brick making. Bricks were particularly in demand in the mid to late 19th Century as a result of the rapid growth of Lincoln's population. Brick making was notably carried out at the Albion and the West Cliff Brickworks, located to the north east of West Common and off Brant Road adjacent to the city boundary respectively. Brick production had ceased by approximately 1930.

In addition to several clay pits located round the city, gravel was excavated in the south west of the City. Limestone is still or has recently been quarried at the Greetwell hollow and Cathedral Quarries in the north east and north of the city respectively. Iron mining also took place at Greetwell from about 1873 by the Mid-Lincolnshire Ironstone Company and continued until 1939. The Council has information that indicates a number of the resulting pits and quarries have been used for the disposal of wastes, including household waste. Depending upon how and when disposal took place and the nature of the wastes deposited, this may have resulted in contamination of the land including the production of landfill gases.

By the early 20th Century, in addition to the above industries, Lincoln was home to other, more diverse industries such as a confectionary works and a tar works. Lincoln also had an Isolation and Infectious Diseases Hospital.

Engineering works such as Rustons were thriving and during the First World War they rapidly adapted to produce armaments, military vehicles and aircraft, including the first military tanks in 1916. However in the post war years Lincoln's engineering industry and many associated activities fell into decline.

Currently Lincoln's main activities are centred on the administration, service, retail and agricultural activities, with a much reduced, although still important contribution from engineering and manufacturing industries.

A significant proportion of Lincolnshire's population also resides in the City of Lincoln, which is the administrative centre for both the City and County of Lincolnshire.

2.4 Size

The City covers an area of 3,571 hectares. The relatively small area covered by the City influences the Council's approach to inspection in that contaminated land is likely to exist in close proximity to sensitive receptors. This in turn may also increase the risk of significant harm occurring. The

Council therefore has to account for these factors in determining the priority for inspection within the strategy.

2.5 Population Distribution

The 2001 Census reported the population of the City of Lincoln as 86,595. The majority of this population live in the south western area of the City and the margins of the city centre. As above, the population distribution of the City also influences the Council in deciding its priorities for inspection of potential contaminated land.

2.6 City of Lincoln's Land Ownership

The Council owns a significant amount of land within the City. This land is currently used for a wide variety of activities ranging from residential, allotment and recreational use, through to agricultural, retail, office and commercial to industrial uses. The Council also owns several cemeteries, some areas of open or vacant land and several development sites within its boundaries.

The Council will ensure that any investigation of its own land is undertaken in a transparent manner and consistent with that of land not in its ownership.

2.7 Current Land Use Characteristics

Currently the main use of land within the City is residential. However, the east-west axis of the City which follows the waterways and railways through its centre, is dominated by a broad band of industrial premises and businesses including currently operational works and some areas of derelict land. The north western and eastern areas of the City are dominated by open space including golf courses, farmland and allotments. The City also contains many areas of archaeological and historic importance, including the cathedral and castle. Lincoln was once the capital of the Roman province covering most of eastern England and various archaeological finds have since been discovered within the City. In addition, a significant proportion of the City is occupied by educational establishments, including the University of Lincoln, Lincoln College and Bishop Grosseteste College.

This is an intensively developed urban authority with a complex history of land use thereby increasing the possibility for potential contamination to exist. Previous land uses play a key role in determining the priority for inspection of land within the Council's strategy.

2.8 Protected Locations (Natural Habitats etc.)

The legislation on contaminated land empowers the Council to take action to prevent significant harm to important ecological and heritage sites. Action can only be taken to require remediation of contaminated land where a site with statutory protection is at risk. The Council is not allowed to take action to prevent damage to ecology and wildlife on any non-designated site.

Throughout its history, the City has retained a strong natural ecological heritage. From this, a number of sites have been identified by the City of Lincoln Council which have important ecological and landscape qualities. These are identified within the Local Plan, along with policies formulated by City of Lincoln Council to protect them via other regimes such as the planning system.

Two of these sites have the statutory designation of 'Site of Special Scientific Interest' (SSSI) with the remainder having non statutory designations. The SSSI's are located at Swanholme Lakes in the south west of the City and Greetwell Quarry in the north east. The significance of these protected areas as statutory receptors is taken into account in the Council's Contaminated Land Inspection Strategy.

2.9 Key Properties

Damage or harm to buildings and property is less strictly defined in Part 2A of the EPA 1990, than ecological and protected areas. The Council can take action if there is significant harm or the significant possibility of such harm being caused to a building.

As an ancient Cathedral City, Lincoln has a rich cultural heritage and contains many properties which are of national importance. Within the City, there are currently:

- 24 Scheduled Ancient Monuments, including the castle and a significant part of the area occupied by the walled Roman city;
- About 413 buildings, or groups of buildings currently listed as being of Special Architectural or Historic Interest, (making up approximately 1% of the City's building stock);
- 52 buildings which are Locally Important, i.e. they are valued for their contribution to the local scene, or for local historic associations,
- 3 historic parks, Boutham Park, Hartsholme Country Park and The Arboretum.

2.10 Known Information on Contamination

City of Lincoln Council already held some information concerning land contamination in its area prior to the introduction of Part 2A of the EPA 1990 coming into force in April 2000, including,

- Information for a number of sites in the ownership of the Council, or in which it has an interest. The information comprises reports commissioned by the Council to assess the suitability of several sites for development, or liabilities associated with their condition. These reports have usually included an assessment of any contamination identified and any recommended actions.
- Information provided to the Council by third parties as part of pre-planning, planning or other consultations, e.g. reports to assess the suitability of sites for development, including assessment of any contamination and recommended actions.
- Information arising from complaints. The Council holds records of nuisance complaints made by the public and the details of any action taken. Some of these relate to the presence of possible contamination, e.g. spills, leakages, unauthorised dumping etc.

Some of this information contains valuable historic records of activities on sites, actions already undertaken etc. However where site investigation information was compiled prior to 2000 and the introduction of Part 2A it may not be compliant with the new regime and guidance, e.g. BS:10175:2001 – Investigation of Potentially Contaminated Sites – Code of Practice^[24], despite this it can still provide useful background detail.

Other information sources include informal plans and records of previous waste disposal sites within the City. These provide valuable information on the areas of disposal and the nature of the substances landfilled.

During the past 8 years of the regime, further information has been collected by the Council, in particular, through the development control process. Indeed, many sites have undergone some site investigation and remediation as a requirement of the conditions of planning consent to ensure the site is suitable for its intended use. Contaminated land within the development control process is discussed in section 10.1 of this document.

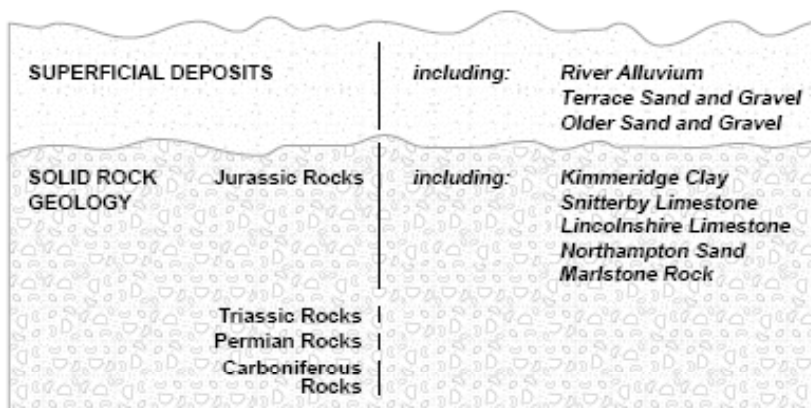
2.11 Geology

Knowledge of an area's geology is essential for understanding its nature and history. The underlying rocks determine the physical shape and appearance of the land. Geological materials (soils and rocks) can form important sources of materials such as gravel, clay, lime and iron which can influence the local industries and their development. The geology also controls the presence, quantity and movement of groundwater and can determine how easily contaminants including gases can move at depth.

The rocks that underlie Lincoln are sedimentary rocks of Jurassic age, meaning these were laid down somewhere between 65 and 225 million years ago. Above these rocks in many areas, lie superficial deposits. These were laid down within the last 2 million years up to the present day and have not yet become solid rock.

A simplified representation of the order in which layers were deposited is presented below, with the youngest at the top and the oldest at the bottom.

Figure1 Geological Strata



Not all the deposits in this sequence are present beneath the whole of the city. Where the above geological sequence is incomplete it is due to the erosion of the upper (younger) deposits, however the order of the remaining deposits remains the same.

The layers of rock are generally horizontal, or slope gently towards the east. As a consequence the oldest rocks are generally present in the south west of the City and the youngest rocks are present in the north east. This pattern is disrupted along the east-west orientated swathe of land located approximately across the centre of the City by the River Witham and Fosdyke which have eroded the younger deposits exposing the deeper, older deposits.

2.11.1 *Superficial Deposits*

The superficial deposits generally consist of clays, silts, sands and gravels. Alluvial deposits of River Alluvium and Terrace Sand and Gravel are present in association with the River Witham and the Fosdyke. Older Sand and Gravels are present over much of the western area of the city and have been extracted locally over the years, probably for use within the construction industry.

2.11.2 *Solid Geology*

Jurassic rocks underlie the whole of the City of Lincoln. These rocks predominately consist of mudstones and limestones but also contain sandstones, ironstone beds and shales. Notable Jurassic rocks include the Marlstone Rock and the Northampton Sand Formations, the Lincolnshire Limestone.

The Marlstone Rock and Northampton Sand Formations typically contain exploitable quantities of iron, as extracted in the past at Greetwell from underground workings by the Mid-Lincolnshire Ironstone Company. The Lincolnshire Limestone deposits form an important aquifer. The Lias has been extracted within the city for use in the brick and tile industry, from such locations as Bracebridge Old Clay Pit and Old Quarry on Burton Road near Ellis Mill.

Beneath the Jurassic rocks and completely concealed in the area of the city, lie the Triassic rocks (195 to 225 million years old), the Permian rocks (225 to 280 million years old), and below these lie the Carboniferous rocks which were deposited between 280 and 345 million years ago. The Carboniferous rocks are present beneath the city at considerable depth. Oil with variable amounts of gas has been extracted from the Carboniferous rocks beneath the Lincolnshire area, and an oil well is recorded just to the north east of the City boundary near Danby Hill Farm.

2.12 Water Resources

Most homes and businesses in Lincoln obtain their water from the public supply mains provided by Anglian Water. This water is derived from sources outside the city however significant quantities of water are abstracted from local sources such as rivers, streams and springs, for other purposes such as industrial and agricultural uses (e.g. cooling in manufacturing processes and irrigation on farms).

The Environment Agency is responsible for licensing all surface water and groundwater abstractions for public and commercial supplies. The water used within the City is primarily taken from surface water sources such as rivers, streams and drains located throughout the city.

Contaminated land may have the potential to release pollutants into the water environment, especially where contaminants are present directly above a water bearing deposit or adjacent to a surface watercourse. An inspection of potential contaminated land will always include an assessment of the impact on controlled waters, which includes surface waters and groundwater.

2.12.1 *Surface Waters*

The City is crossed by two main surface watercourses the River Witham and the Fosdyke. There are also numerous smaller watercourses and drains, which eventually join the River Witham and the Fosdyke as they flow across the city. Contamination can reach surface waters through rainwater run off from adjacent land which may have contaminating substances present and also through any contaminated groundwater which may contribute to the base flow of the surface watercourse.

Springs are also present across Lincoln and form important sources of water. Historical records indicate that water from springs in the city have been used extensively, however they also have the ability to form pathways by which any pollution that has already entered the groundwater could be transported to the surface watercourses. Within the city, surface waters are not used for the abstraction of major public drinking water supply. However, they do form important local sources of water mainly used for agriculture and irrigation purposes, and less frequently for industrial, commercial and local domestic supplies. In certain areas they can replenish the groundwater reserves, and they also form the habitats for many forms of wildlife and ecological systems. The quality of the surface waters within the city is therefore important.

The Environment Agency monitors rivers and streams and classifies them from “very good – Grade A” through to “Bad – Grade F”. The water courses tested in Lincoln have been classified as good to poor quality. The River Witham has been classified as very good quality, however, the waters of the Skellingthorpe Main Drain are described as good to fairly good quality.

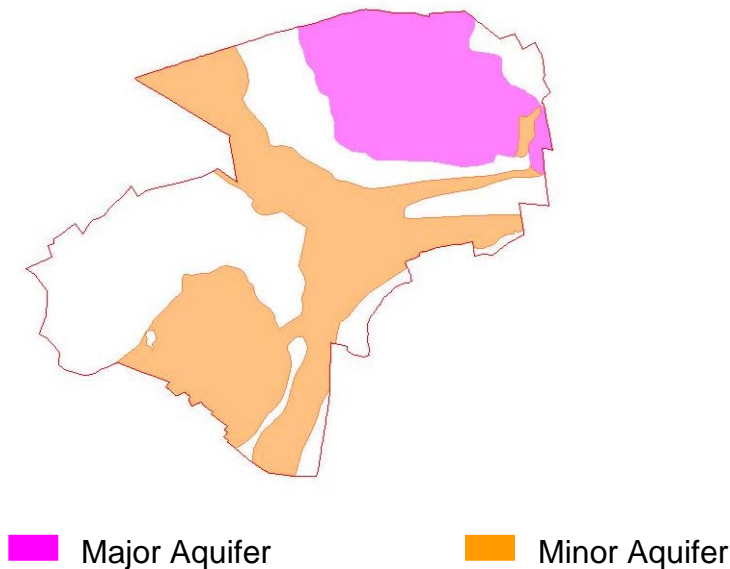
2.12.2 *Hydrogeology*

Hydrogeology is the relationship between geology and groundwater. Rocks which are able to transmit and store exploitable quantities of groundwater are termed aquifers. Aquifers are classed as either “major “ or “minor” depending on their ability to hold volumes of water. Major aquifers are formed from rocks with high permeability and porosity enabling them to hold significant quantities of water, which can then be abstracted for use as public supplies. Minor aquifers are formed from rocks with low permeability and porosity and do not have the capacity to become sources of public water supply due to the low volumes of water they hold. Groundwater is not abstracted for the public water supply within the city.

The north eastern area of the city, including a significant area of the city centre, is underlain by a major aquifer formed by the Lincolnshire Limestone. The majority of the remaining area of the city is underlain by minor aquifers with some smaller areas underlain by non aquifers. The minor aquifers are generally formed by sand and gravel deposits associated with the current river network and ancient surface watercourses.

The main flow of the groundwater beneath the city is generally towards the east. Groundwater will often be affected by the topography, and will locally flow broadly in the direction of the surface water flow.

Figure 2 Major and Minor Aquifers in Lincoln



2.12.3 *Groundwater Vulnerability*

The vulnerability of the groundwater to pollution is dependent on the soils and rocks that surround and cover the water bearing deposits. These materials may allow the movement of pollution towards the aquifer (if they are permeable, e.g. sands and gravels), or form a barrier between the aquifer and the potential pollutants (if they are of low permeability, e.g. clay) and hence provide some protection.

The areas where the groundwater is most vulnerable are the areas where no protective clay deposits exist above the water bearing aquifer. This is the case in the north and eastern areas of the city, where the underlying rock is the Lincolnshire Limestone and where minor sand and gravel aquifers are present beneath the remainder of the city. Where these unprotected areas coincide with contaminated land, the groundwater is to be most likely at risk.

2.12.4 *Groundwater Protection Zones*

To protect drinking water supplies from pollution, the Environment Agency has designated Groundwater Protection Zones around major abstraction points. The zones restrict the type of activities and development permitted within their boundaries to protect the groundwater reserves.

Although there are no boreholes from which groundwater for public water supply is abstracted within the city, the north and north eastern areas of the city are part of a Groundwater Protection Zone. This is because this area is underlain by the Lincolnshire Limestone aquifer, which is used in West Lyndsey and North Kesteven for water abstraction.

2.13 Specific Local Features

2.13.1 *Radon*

Radon is a naturally occurring radioactive gas. It is emitted by some rock types and its occurrence is thus determined by geology. In open spaces, when radon mixes with air, it is quickly diluted into the atmosphere. However, if allowed to accumulate inside buildings, exposure to radon can increase the risk of cancer.

Certain areas within the city have been identified as possibly having higher levels of radon which may require some protection measures to be included in new dwellings.

Radon is not included as a contaminant within Part 2A legislation and therefore is not considered within any Part 2A inspection of potentially contaminated land. Radon is managed under different legislation and further advice can be obtained from the Council's Environmental Protection Unit on 01522 873249 and the Health Protection Agency, www.hpa.org.uk.

2.13.2 *Naturally Enriched Soils and Rocks*

Potentially harmful substances occur naturally within the environment, e.g. within naturally enriched sources such as soils and rocks, including mineral deposits. In some cases the levels of which these substances are present can be sufficiently high enough to be harmful to receptors, e.g. human health, water. The likelihood of a harmful effect occurring to a receptor is however dependent upon a number of environmental factors relating to the nature of the substance and the exposure pathway. Therefore the presence of a naturally enriched source does not necessarily mean that a harmful effect will occur.

A study has been carried out by the British Geological Survey^[25] that provides a general indication of areas with concentrations of five substances considered to be the most potentially harmful to human health and the aquatic environment (arsenic, cadmium, copper, lead and zinc). This information indicates areas in the west, north west and north east of the city where levels of one or more of these substances may be higher than national background concentrations for natural sources such as soils and rocks.

In many circumstances, the natural occurrence of a substance does not present a problem. However, where disturbance of natural soil and rock sources has been caused, e.g. by mining and quarrying activity, substances may have been released to the environment and have the potential to cause contamination.

2.14 Re-development

Throughout its long history, development and expansion of the city has taken place and has included some historical redevelopment. However, the greatest period of the city's growth followed the industrial revolution and was dominated by heavy engineering industry as described in section 2.3. In more recent times, rationalisation and decline of the traditional engineering industries has occurred along with economic recession. This resulted in a concentration of derelict land and obsolete buildings in the centre of the city, mainly within the east to west orientated band of older development.

There are however many incentives for redevelopment, through government led funding, pressures for developable land and sustainable development policies for recycling and re-use of redundant, derelict land and buildings. Lincoln City has benefited from a wide range of re-development and regeneration in recent times. This has included extensive building by The University of Lincoln and redevelopment of the St Marks area for retail purposes. In addition there has been development on the eastern and western boundaries of the city for residential use. With the increasing demands for residential housing at a national scale, the re-use of brownfield land is becoming more prevalent. Such sites are likely to have potential contamination problems and require investigation.

3.0 Aims and Objectives

3.1 Government Policy

The Government has issued a statement on its policy on contaminated land which can be found in Annex 1 of the Statutory Guidance. The Government acknowledges the threat contamination can present to sustainable development by:

- Impeding social progress, depriving local people of a clean and healthy environment;
- Threatening wider damage to the environment and wildlife;
- Inhibiting the prudent use of our land and so our resources, particularly by obstructing the recycling of previously developed land and increasing development pressures on greenfield areas;
- Placing a high burden on individual companies, home and other landowners, and the economy as a whole.

The Government's objectives for contaminated land are:

- To identify and remove unacceptable risks to human health and the environment;
- To seek to bring damaged land back into beneficial use; and
- To seek to ensure that the cost burdens faced by individuals, companies and society as a whole are proportionate, manageable and economically sustainable.

3.2 Corporate Main Aims

The Council has 4 main aims, two of which are relevant to contaminated land:

- Sustainable Growth
- Improved Quality of Life

Within each of these aims are key priorities to assist in achieving the long term aims. The specific priorities which relate to contaminated land are:

Sustainable Growth – help existing businesses thrive, diversify the economy, regenerate key sites, help people into work and reduce income deprivation.

Improved Quality of Life – address the challenge of climate change and protect the natural and built environment in the City (including Clean and Greener neighbourhoods)

3.3 City of Lincoln Policy

The City of Lincoln Council wishes to identify contaminated land in the most practical and efficient way and ensure that the most pressing and serious problems are addressed first. The Council has identified the following aims.

- To protect human health and the environment.
- To ensure that investigation, consultation and regulatory action are in compliance with current legislation and guidance.
- To maintain an up to date database of 'Sites of Potential Concern'.
- To have a transparent decision making process wherever possible.
- Encourage voluntary action to be undertaken by landowners.
- Undertake an internal review of the inspection strategy and progress of inspections every three years.

The specific details on how 'sites of potential concern' are prioritised are given in section 4.

3.4 City of Lincoln Council Land

Land currently or previously owned by the Council is considered in exactly the same manner as that owned privately. As outlined above, one of the Council's aims is to provide a transparent decision making process wherever possible and this applies when considering land currently or formerly under Council ownership. The duties of the Council as regulator are kept clearly separate from the responsibilities which may arise as a landowner and/or appropriate person.

4.0 **Prioritisation**

4.1 **Background**

Under the legislation, local authorities have a duty to inspect their area from time to time for the purpose of identifying contaminated land. B.9, Part 3 of Annex 3 of the Statutory Guidance states that authorities should take a strategic approach to the identification of land, which requires detailed inspection. That approach should:

- (a) “be rational, ordered and efficient;
- (b) be proportionate to the seriousness of any actual or potential risk;
- (c) seek to ensure that the most pressing and serious problems are located first;
- (d) ensure that resources are concentrated on investigating in areas where the authority is most likely to identify contaminated land; and
- (e) ensure that the local authority efficiently identifies requirements for the detailed inspection of particular areas of land.”

City of Lincoln Council has put in place mechanisms for the identification of land, which may require further inspection. The methodology for how such sites are identified and subsequently prioritised into an order for inspection is detailed below.

From an early stage, it was widely recognised that computer mapping techniques, in particular geographical information systems (GIS), would be a valuable tool in identifying land that has the potential to be contaminated. The Council has purchased such a GIS package from CadCorp, Cadcorp Spatial Information System, to be used as the corporate GIS. Data and digital historical maps have also been purchased from Landmark Information Group.

Data consists of GIS layers with polygons identifying areas where there have historically been activities that could have caused contamination of the land and/or water. These areas are identified from the historical maps. This data is supplemented with further information held in Council records and from local knowledge. Historical records of landfill sites, petrol stations etc are included in the database and the site areas digitised on the GIS layer.

Further GIS layers have also been obtained with details of geology and hydrogeology to enable a more detailed risk assessment for sites.

Due to some sites being identified more than once, the data is ‘cleaned’ to give an accurate picture of the number of ‘Sites of Potential Concern’. Further housekeeping is also carried out to ensure all sites have been included and digitised accordingly on the GIS layer.

The Council's list of sites of potential concern is prioritised into an order for inspection under Part 2A of the Environmental Protection Act 1990. As part of the overall review of the Council's Inspection Strategy this list is reviewed and revised where necessary. The process by which this is carried out is detailed below.

The first stage of the review ensures all possible contaminating processes are identified on the relevant maps held digitally and to create a numerical system to identify each individual site.

The range of historical maps which are held digitally and used within the prioritisation system are shown below. Present day Ordnance Survey maps are also held digitally at a variety of scales.

Table 1 Historical Maps

Map	Year	Scale
Townplan	1887-1888	1:500
County Series	1886-1889	1:2500
County Series	1905-1907	1:2500
County Series	1921-1933	1:10560
County Series	1932-1938	1:2500
County Series	1946 – 1950	1:10560
County Series	1956	1:10560
County Series	1967	1:10560
County Series	1967-1972	1:2500
County Series	1967-1982	1:1250
County Series	1970-1992	1:1250
County Series	1973	1:10560
National Grid	1975-1976	1:10000
National Grid	1985-1990	1:10000

4.2 Digitising

Beginning with the townplan and working towards the present day maps, all sites of potential concern are digitised, modified etc and recorded within the attributes table of the Cadcorp system. Each site, rather than each process, is given an individual site number, a unique identifier of the site. This assists with the identification of sites for investigation and the prioritisation dependent on the former uses. Each map is reviewed in sequence and where the use of a site changes to another potentially contaminative process, the site identification number remains the same.

On completion of the digitising, the attributes table for the sites lists all the previous uses for the sites identified and years they were present.

4.3 Prioritisation

Each site number is taken in turn and a score calculated which determines the site's place in the overall risk table and prioritisation. There are several aspects to the scoring system used, which is carried out manually.

4.3.1 *Scoring System*

There are two main components of the risk scoring system:

- a. the total score of all the historical uses on site.
- b. the total score of all the identified receptors on, adjacent or within the vicinity of the site.

Multiplying the two figures of a and b gives the final risk score.

4.3.1.1 *Historical Uses*

The previous uses of the site are divided into risk categories following a similar categorisation found in Table 2 'Risk Based Classification of Land Uses' from 'Desk Reference Guide to Potentially Contaminative Uses' by Syms, P IVSA, ISBN 0 9029 1303 4^[26]. This derives three risk categories of high, medium and low. A fourth category is added for use in the Lincoln system of high/medium, those higher rating medium risk sites in the Syms classification. This is to enable a greater distinction to be made when scoring the sites. A full list of all the industry types used in the identification of sites is given in Appendix A.

A numerical value is assigned to each risk category based on an increment factor of 5 as demonstrated in the table below.

Table 2 Site risk scoring

Risk	Score
High	625
High/Medium	125
Medium	25
Low	5

e.g. a site with a former use of chemical works then a garage would score as follows:

Chemical works = high = 625

Garage = medium = 25

The total score for the site is the sum of the numbers giving an overall score of 650.

4.3.1.2 *Receptor scores*

Each site is assessed to identify the receptors which may be on, directly adjacent (shared boundary up to 5 metres away) or within 50 metres of the site (50 metres is used as an industry standard given the mobility of some contaminants). Part 2A of the Environmental Protection Act 1990 clearly identifies what are classed as statutory receptors.

The highest score is given where the receptor is present on the site with the scores decreasing the further away they are away from the site, i.e. lower score for within 50 metres than adjacent.

Table 3 Receptor scores

Receptor	Distance from source		
	On site	Adjacent	Within 50m
Humans	243	81	27
Controlled Waters*	81	27	9
Ecology	27	9	3
Property	9	3	1

*Controlled waters includes any surface waters e.g. rivers, drains etc and also major and minor aquifers.

As the local authority's primary role for contaminated land is the protection of public health, this is weighted the most heavily to ensure those sites where humans are present on site are given a greater priority.

4.3.1.3 *Prioritisation Score*

The historical use and receptor scores are then multiplied together to give the overall prioritisation score. Once all sites are scored they are ranked into priority order for inspection. The highest scoring site is placed at the

head of the list and, therefore the first to be inspected followed by the rest of the sites in descending order of prioritisation score.

4.4 Review

There will however be some sites on the prioritised list that have already been, or will be, addressed through the planning process. The list is periodically reviewed and updated with information from planning applications. Sites are removed from the prioritisation list where successful remediation has been carried out. However these sites may still be flagged on the GIS system as the risks on the site may have only been controlled by the use of barriers etc to ensure the site is suitable for its intended use, and as such the possible risk of contamination may still be present should the site's use change or is redeveloped. This potential contamination would need to be re-assessed should a planning application be received for a different use or some other change that may introduce a pollutant linkage.

This procedure for prioritisation is designed to ensure the most significant cases are identified and dealt with at an early stage. As described above, the sites are also placed in an order to ensure those with the greater risk to human health are addressed before those of risk to the environment.

The list is also continually reviewed and amended where required as the Council continues to obtain historical data on land use within the City. New information may be obtained about the actual processes undertaken at a site or details of a pollution incident for example which will require the site to be added to the list, or if already on the list, it's prioritisation score to be adjusted.

Inspections are a detailed process and have the potential to be extremely resource intensive, this is discussed further in Section 7. Resource issues have to be taken into account when compiling the Council's inspection strategy and planning when inspections are likely to take place.

5.0 Detailed Site Inspection

The overall responsibility for the management of the contaminated land regime in Lincoln City rests with the Environmental Protection Service.

Contaminated land inspections follow a phased approach with the risk from the site evaluated at the end of each phase. It is important to appreciate that the expectations of some interested parties will possibly not be met by the powers local authorities may exercise under the contaminated land regime. The regime works on ensuring there is no unacceptable risk from any contamination, which may be present. This in some cases may result in contamination remaining in the ground but at a level where there is no unacceptable risk. This may be achieved through risk assessment, remediation works, creating a barrier between the source and receptors or removing the pathway.

As stated in B.20 of Annex 3 of the Statutory Guidance, detailed inspection may include any or all of the following:

- a) *“the collation and assessment of documentary information, or other information from other bodies. In relation to harm so far as attributable to radioactivity, the local authority should have regard to any advice provided by the Environment Agency on the manner in which to carry out such an inspection;*
- b) *a visit to the particular area for the purposes of visual inspection and, in some cases, limited sampling (for example of surface deposits) or survey (for example using hand-held radiation meters). In relation to harm so far as attributable to radioactivity, the local authority should have regard to any advice provided by the Environment Agency on the manner in which to carry out such an inspection; or*
- c) *intrusive investigation of the land (for example by exploratory excavations). In relation to harm so far as attributable to radioactivity, the local authority should always seek to make arrangements with the Environment Agency for the Agency to carry out such an inspection.”*

Inspections undertaken by the Council are carried out in accordance with the current legislation and statutory guidance at the time.

5.1 Phase I Investigations

A phase I investigation, (point a) above), comprises mainly of a desk-top study, researching the history of the site and the industries and processes that were carried out there. Details of the geology and hydrogeology are also included along with any regulatory consents and a conceptual model of

the possible sources, pathways and receptors present on site. A site walkover is also undertaken as part of the Phase I investigation and observations detailed in the report.

The conclusions of the report re-consider the potential risk at the site and determine whether the potential risks require further investigation, re-prioritise the site further down the list in order for inspection or that no further works are required

Where resources permit, all Phase I investigations are carried out in-house.

5.2 Phase II Investigations

Where a Phase I report identifies further work is required a Phase II investigation is undertaken. A phase II involves intrusive investigation where samples of soil are taken for laboratory analysis to ascertain the level of any contaminants present. Water or leachate samples may also be taken within the investigation to determine whether there has been any impact upon ground and surface waters. Where there is the possible risk from ground gases, e.g. from a landfill site, monitoring wells may also be installed to measure the concentration of gases in the ground over a period of time.

There are three stages within a Phase II investigation, 'exploratory', 'main' and 'supplementary', although not all stages may be necessary. Dependent on the circumstances, it may be appropriate to carry out an exploratory investigation initially to aid the design of the main investigation. It is unlikely that an exploratory investigation alone will provide sufficient information to adequately assess the presence of pollutant linkages. A main investigation is required with possibly a supplementary investigation being carried out if further information or clarification is required. The conceptual model created in the Phase I report is then updated.

Once sufficient investigation works are undertaken to satisfactorily assess the pollutant linkages, the linkages are assessed individually to determine their significance and whether the site meets the definition of Part 2A Contaminated Land.

5.3 Risk Assessment

Once the results of an investigation are known a risk assessment is undertaken. This can involve the use of generic screening criteria to compare with the site results to find any exceedences of contaminant levels above which, may pose a risk to human health or other receptors. Alternatively a site specific risk assessment can be carried out where more site relevant data is inputted to derive screening criteria to compare with the analytical results. Screening criteria are calculated by looking at a variety of parameters, for example, toxicological data, exposure pathways, physico-chemical properties, soil characteristics etc.

Qualitative and quantitative risk assessments are used in assessing the significance of each pollutant linkage. The most appropriate and robust risk assessment method is utilised ensuring, where not UK derived, it is configured to UK policy and guidance.

At present the UK risk assessment model, CLEA, produced by Defra and the Environment Agency, remains as the beta model. Various changes to this model have been made as part of the “Way Forward” exercise by Defra, which raised a number of issues around risk assessments.

Where controlled waters are considered, the advice of the Environment Agency is sought. Appropriate criteria, such as the Environmental Quality Standards^[27] and the Drinking Water Standards^[28] are applied to the consideration of controlled waters. Risk assessment models, such as the Environment Agency’s Remedial Targets Methodology^[29] are used where required.

The Water Act 2003 altered the definition of pollution of controlled waters by introducing ‘significant pollution’. This has yet to be incorporated into Part 2A legislation and therefore the significance of the pollution of controlled waters is not considered. This section will be revised once the revised definition has been adopted within the legislation.

5.4 Powers of Entry

Where the Council wishes to undertake a Part 2A inspection, the owner and occupier of the land are consulted to obtain their consent to enter the site for inspection. However, where this is not granted, Section 108 of the Environment Act 1995 and Section 108 of the Environment Act, as modified by the Modification Regulations, gives the Council the power to authorise a person to exercise specific powers of entry. Further details of how local authorities should conduct such inspections when using powers of entry are given in chapter B of Annex 3 of the Statutory Guidance.

5.5 Specialist Environmental Consultants

Where specialist services are required to assist with the inspection and investigation of a potentially contaminated land site, these are selected following a procurement process complying with the Council’s Financial Regulations. Where tenders are invited they will be evaluated on the basis of best value, taking account of the technical requirements of the tender invitation as well as the cost.

Companies providing such specialist services are required to comply with the Council’s conditions of contract. Public Liability Insurance and Professional Indemnity Insurance are also necessary. Specific requirements, e.g. value and duration, for these insurances are detailed in tender documents.

5.6 Health and Safety

Health and Safety procedures to include workers and the general public are established for each site under inspection. The Council's Health and Safety Officer is also consulted. Risk assessments are compiled for each individual site and site specific activities.

Where specialist service providers are contracted, they need to demonstrate their ability to comply with health and safety legislation and ensure that the highest standards of health and safety are maintained throughout the investigation and remediation works. Health and safety plans are required by the Council in advance of works being undertaken and the Council, periodically, visit sites where specialist external services are contracted to ensure health and safety provisions are suitable.

Further information on the stages of site investigations is available in additional information leaflets produced by the City of Lincoln Council. These are available online at www.lincoln.gov.uk/contaminatedland

Once all the necessary investigation and risk assessments have been completed, the local authority decides whether the site must be determined as contaminated land using the statutory definition. Details relating to the site are then placed on the public register. The Council regulates the contaminated land site and ensures that remediation is carried out, which can be done by the serving of a remediation notice. The Council must also carry out the correct investigations to identify the appropriate person or persons for the site who should be responsible for the remediation. This can be a lengthy and detailed process and various exclusion tests may also have to be taken into account.

The full details regarding remediation notices, identification of the appropriate person/s including the exclusion tests can be found in Annex 3 of the Statutory Guidance.

6.0 Communication

The inspection of land under Part 2A of the Environmental Protection Act 1990 may lead to the involvement of a number of interested parties. It is the Council's intention to clarify within this strategy how such communication will be managed and who will be included within that communication.

6.1 City of Lincoln Council

Principal responsibility for this Inspection Strategy lies with the Environmental Protection Service of the City of Lincoln Council. However, other departments within the City Council are consulted on the strategy document. A full list of consultees is provided in Appendix B of this document. Liaison with other Council departments, e.g. Development Control, Building Control etc, is also undertaken on a site by site need during Part 2A inspections. In particular, the Legal Service is fully consulted before a determination is made and a remediation notice served. The Legal Service is also involved in the determination of the appropriate person/s and the apportionment of costs.

Where the site to be inspected is owned by the City of Lincoln Council, the Property Services section is contacted. Where the Council is potentially an appropriate person, the relevant service, whose activities have created that potential is also informed and communication procedures established.

Other services may also be involved dependent on the site and where required, liaison and communication procedures are created at the earliest opportunity.

In addition, liaison takes place with the relevant members of the Council whose ward the site under inspection falls.

6.2 Lincolnshire County Council

Where a two-tier local authority exists the Statutory Guidance states that the county council must be consulted on the contents of a local authority's Inspection Strategy. Such consultation is undertaken with Lincolnshire County Council and comments incorporated into the final document.

Liaison and communication are also established with the appropriate departments of the County Council where the land being inspected is under their ownership.

6.3 Environment Agency

The Environment Agency is formally consulted on the Inspection Strategy as per the Statutory Guidance and their comments incorporated.

Information is requested from the Environment Agency when undertaking Part 2A inspections regarding the site in question which is incorporated into the Phase I report. The Agency is also consulted on the site investigation reports with respect to controlled waters and radioactivity (if suspected).

Any potential determination of land as statutory contaminated land owing to pollution of controlled waters and/or where pollution of controlled waters is likely to be caused is first discussed with the Environment Agency and their advice taken into account.

The Environment Agency is also consulted where the presence of radioactivity is considered possible.

Consultation with the Environment Agency will be undertaken through the Agency's Part 2A co-ordinator following agreed procedures.

The Environment Agency is fully consulted at the earliest opportunity where a site inspection indicates the site is likely to be designated a 'special site' under Part 2A. Where there is a reasonable possibility of a pollutant linkage being present, which would lead to the site becoming a 'special site', the Environment Agency is contacted to arrange for it to carry out the investigation on behalf of the Council.

6.4 Natural England

Natural England is consulted when a site inspection identifies an 'ecological system effect' as defined in the Statutory Guidance. The approach used is consistent with that of Natural England and the Council takes their advice into account accordingly.

6.5 Other External Agencies

This Inspection Strategy is sent out for consultation to other external bodies who have an interest in contaminated land. This includes, as detailed in B.11, Annex 3 of the Statutory Guidance, statutory regeneration bodies, which for the City of Lincoln Council is the East Midlands Development Agency (EMDA), English Heritage, Health Protection Agency, Primary Care Trust and the Food Standards Agency. Their responses are included within the final strategy.

The necessary bodies are consulted with as required, depending on the pollutant linkages suspected and/or present when undertaking Part 2A inspections. This may include the Health and Safety Executive, NHS, Health Protection Agency, neighbouring local authorities. Communication procedures with these agencies are established at the earliest opportunity.

6.6 Owners, Occupiers and Other Interested Parties

All reasonable efforts are made to identify owners, occupiers and/or other interested parties prior to undertaking any Part 2A site investigation. This may however not be possible in the case where emergency action is required. In such an event, owners, occupiers and other interested parties are contacted as soon as possible. Liaison with such parties is maintained thereafter.

Initial communication is generally in writing to advise that the site in question is being considered under Part 2A of the Environmental Protection Act 1990. A request is also made for any information which may help with the inspection of the site. An overview of the process is included along with contact details of the officer who is the project manager for the inspection. All owners, occupiers and interested parties are kept informed of progress at each stage of the inspection, within the boundaries of confidentiality and data protection. Depending on the site, as all situations are different, communication may take the form of meetings with interested parties, public meetings, information leaflets etc. The most appropriate methods of communication are decided on a site by site basis and after discussion with all interested parties.

Where access to land is required, the rights of the owner/occupier are respected and permission sought prior to site visits and works being arranged. It should be acknowledged however, that in the case of urgent sites, where emergency action is required, there may not be sufficient time to consult owners/occupiers. Under Section 108 of the Environmental Protection Act 1990, authorised officers of the Council may use powers of entry to gain access. These powers may also be used where access to a site is required but the owner/occupier cannot be traced or denies access.

6.7 Media

In some circumstances the inspection of land under Part 2A may attract the interest of the media. In such circumstances, members of the press are advised to contact the City of Lincoln Council's Communications Team. Where possible, the media are kept informed of the progress of a site inspection within the boundaries of confidentiality, public interest and the Data Protection Act.

7.0 Resources

The inspection of potentially contaminated land can be very resource intensive in both time and money. When an intrusive investigation is required, a tendering and contracting exercise may be required to appoint environmental specialists which can be very time consuming. After intrusive investigation, supplementary work may also be required to confirm results, which incurs extra expenditure. In addition, until an intrusive investigation and risk assessment is carried out it is very difficult to predict the costs of remediation, if required.

7.1 Defra Capital Grants

Defra provides a grant system, Capital Grants, for the investigation and remediation of contaminated land for which local authorities can submit bids. Local authorities must submit information regarding the site/s for which they require financial assistance. There are now two applications windows per year, from 2008, and the money is allocated on a site specific basis.

Where the City of Lincoln Council requires to undertake Part 2A inspections, bids are submitted to Defra under the Capital Grants scheme. Bids have to be submitted for specific pieces of work and therefore separate bids are required for intrusive investigation, supplementary works and remediation etc. A limited financial resource is available and therefore there is no guarantee all bids will be successful.

8.0 Timescales

The assessment of potentially contaminated land sites follows a phased approach, which can be a lengthy process. It is therefore difficult to give any definite timescales by which land will be investigated within the City.

The site investigation of a site may take more than a year depending on whether any supplementary work is required. This will be largely governed by the need to submit funding application bids to Defra to finance the investigations at each stage. The Council then needs to make its decision regarding formal determination, possible issue of a remediation notice and undertake remediation works which again would require funding. In addition there could be a considerable amount of time spent on identifying the appropriate person/s and dealing with any appeals of a remediation notice.

As each site is different the timescale involved will rarely be the same for two sites. In addition, as the prioritisation process identifies the most potentially hazardous sites, which are generally the more complex, for early inspection, as the process progresses, the time it takes to investigate a site is likely to decrease allowing a faster progression through the prioritised list.

It is the Council's intention to continually have a site undergoing the inspection process in addition to those progressing through the planning process or voluntary remediation. However, realistically it will take several years to address all sites where the presence of contamination may be a possibility. There may also be further sites found where contamination was not expected but has been discovered, e.g. through development work.

The inspection of sites of potential concern will, however, be expedited by the investigation and remediation of land either voluntarily or in support of planning applications. The prioritised list of sites will be reviewed and updated on a regular basis to reflect this.

9.0 Information Management

9.1 Digital Data Management

The Council uses a Geographical Information System (GIS) to hold digital historic and present day maps. Various layers of information including the sites of potential concern are also held within the GIS. Other maps have been procured in digital format, such as, geology and hydrogeology maps, which assist with identifying potential pathways and provide further site information when undertaking Phase I investigations.

Prioritisation data is held within Excel spreadsheets using unique site reference numbers to link with the digital data on the GIS. The Council also uses a database system, APP, where individual sites are detailed when undergoing inspection. All actions taken, including correspondence etc are held within this database.

9.2 Paper Format Management

Information on paper is held in a filing system particular to contaminated land and cross-referenced to the digital data management systems by means of the unique site reference number.

9.3 Access to Information

Digital and paper records are only readily available to the Environmental Protection Service. However, the Council does receive requests for information from interested parties. The Council is happy to respond to such requests and provide relevant information. There is a charge for the provision of information which covers the resources in compiling the details. Further information, including fees, can be obtained from the Contaminated Land Officer.

9.4 Contaminated Land Public Register

As required by Part 2A legislation, each local authority is required to hold a public register on land which has been determined statutory contaminated land. Details of land under investigation or on the Council's list of sites of potential concern are not held in this public register. Details are only placed on the public register once a site has been officially determined.

The Contaminated Land Register is held at the Council's offices at City Hall, Lincoln. It is available for viewing on request during normal office opening hours.

9.5 Confidentiality of Information

Under certain circumstances the City of Lincoln Council may not or cannot place information on the public register (or release it in response to other requests). Circumstances where information is withheld are:

- Where this is in the interests of national security
- Where this is commercially confidential

Where information is excluded from the public register for reasons of commercial confidentiality, the Council places a statement on the register to indicate this.

Supply of any other environmental information held by the City of Lincoln Council is also subject to certain exceptions. These are:

- Where this is in the interests of national security
- Where the information is an issue in any legal proceedings or enquiry
- Where the information is still being completed, or is an internal communication of a relevant person
- Where this would affect the confidentiality of the deliberations of a relevant person
- Where this is commercially confidential

The confidentiality of any information supplied to the City Council by third parties is determined when this is received. Where a third party states that information it supplies to City of Lincoln Council is commercially confidential, or cannot be released for any of the other reasons given above, then the City Council requires justification to be provided giving the reasons for this. Information which is confirmed as confidential on the basis of a justification cannot be released to other parties. Where the Council is unable to supply information it gives the reason for this.

Requests for information under the Freedom of Information Act and Environmental Information Regulations should be made to The Legal Services Manager at City Hall.

10.0 Other Regimes

Contaminated land is considered within the Development Control and Building Control regimes to ensure sites are suitable for their current and intended use. Each system has its own guidance.

10.1 Development Control

The Government has issued a series of Planning Policy Statements (PPS's) which set out the core policies and principles on the most important aspects of land use planning. PPS 23 Planning Pollution and Control, Annex 2^[30] addresses development on land affected by contamination and affords it the status of a material planning consideration.

The aim of PPS 23 as set out in the document is to:

“ensure planners, developers and their advisers address land contamination issues at the appropriate stage and consistently with the arrangements under Part IIA”

PPS 23 places the responsibility on the developer to ensure the site is safe and suitable for its intended use. The local authority needs to be satisfied that any risk from contamination is appropriately and satisfactorily addressed through remediation. Any actions or omissions which fail to achieve this could leave the developer liable under Part 2A of the EPA 1990.

The City of Lincoln Council is a member of the Lincolnshire Environmental Pollution Liaison Group (LEPLG), who has compiled a developer's guide to developing contaminated land in Lincolnshire. This document can be found on the Council's website. In addition, advice leaflets are available on the Council's website, which give a brief explanation of each stage of a contaminated land investigation

10.2 Building Control

Regulation 6 of the Building Regulations 2000^[31] identifies resistance to contaminants as being a requirement relating to material change of use.

Schedule 1, C1.(2) states that:

“Reasonable precautions shall be 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”

Approved Document C, 'Site preparation and resistance to contaminants and moisture'^[32] provides guidance for addressing potential contamination within the building control regime.

10.3 Environmental Permitting Regime

The Environmental Permitting (England and Wales) Regulations 2007 provides a regime for the regulation of prescribed industrial and waste management activities. There are three systems primarily based on the level of pollution potentially caused by the activity, Integrated Pollution Prevention Control (IPPC), Local Authority Integrated Pollution Prevention and Control (LA-IPPC) and Local Authority Pollution Prevention and Control (LAPPC).

Where significant harm or pollution of controlled waters comes from a process regulated under the above regimes a remediation notice under Part 2A of the EPA 1990 cannot be served if the powers are available under the relevant Environmental Permitting (EP) regime to address the harm or pollution of controlled waters.

However, it may be that remediation is required on one of these sites under Part 2A, if certain aspects cannot be dealt with under the other EP regime. Details are included on the public register where sites have been dealt with under the EP regime rather than Part 2A.

11.0 Glossary

The definitions below are predominantly taken from the statutory guidance, Defra Circular 01/2006, September 2006. Those underlined, however are terms defined in statute, namely the Environmental Protection Act 1990, Section 78.

Abstraction

The pumping or collection of water for drinking or other use from a well, spring, river or other water source.

Alluvium

Deposits formed from the sediments laid down by rivers and streams (ancient and existing), composed of clay to coarse gravel sized material, but usually consisting of sand and gravel.

Appropriate Person defined in section 78A(9) as:

“any person who is an appropriate person, determined in accordance with section 78F..., to bear responsibility for any thing which is to be done by way of remediation in any particular case”.

Aquifer

A body of rock or sediment that is sufficiently permeable to store and transmit water under the ground, in quantities that permit use of the water.

Class A Person

A person who is an appropriate person by virtue of section 78F(2) (that is, because he has caused or knowingly permitted a pollutant to be in, on or under the land).

Class B Person

A person who is an appropriate person by virtue of section 78F(4) or (5) (that is, because he is the owner or occupier of the land in circumstances where no Class A person can be found with respect to a particular remediation action).

Contaminant

A substance which is in, on or under the land and which has the potential to cause harm or to cause pollution of controlled waters.

Contaminated Land: defined in Section 78A(2) of the EPA 1990 as:

“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) pollution of controlled waters is being, or is likely to be caused”

OR with respect to radioactive contamination defined in section 78A(2)(as modified) as

“any land which appears to the local authority in whose area it is situated to be in such a condition, by reasons of substances in, on or under the ground, that:

- (a) harm is being caused, or
- (b) there is a significant possibility of such harm being caused”

Controlled Waters

Defined in section 78A(9) by reference to Part 3 (section 104) of the Water Resources Act 1991; this embraces territorial and coastal waters, inland fresh waters, and groundwaters. Section 78A(9) was amended by Section 86 of the Water Act 2003 so that for Part 2A purposes “groundwaters” does not include waters contained in the underground strata but above the saturation zone as described in paragraph 2.9 of Annex 2 of the Statutory Guidance, Defra Circular 1/2006.

Geographical Information System (GIS)

A computer program that enables map-related data to be stored, viewed and processed.

Groundwater

Water which flows through a soil or rock, beneath the water table.

Harm defined in section 78A(4) as:

“harm to the health of living organisms or other interference with the ecological systems of which they form part and, in the case of man, includes harm to his property”

OR with respect to radioactive contamination defined in section 78A(4)(as modified) as:

“lasting exposure to any person being resulting from the after effects of a radiological emergency, past practice or past work activity”

Intrusive Investigation

An investigation of land (for example by exploratory excavations) which involves actions going beyond simple visual inspection of the land, limited sampling or assessment of documentary information.

Lias Deposits

Name given to a sequence of Jurassic deposits after an old quarry term meaning thin layers of muddy and shelly limestone.

Major aquifer

An aquifer that provides a significant drinking water resource in the UK.

Owner defined in section 78A(9) as:

“ a person (other than a mortgagee not in possession) who, whether in his own right or as trustee for any other person, is entitled to receive the rack rent of the land, or where the land is not let at a rack rent, would be so entitled if it were so let”.

Pathway

One or more routes or means by, or through, which a receptor:

- (a) is being exposed to, or affected by, a contaminant, or
- (b) could be so exposed or affected.

Pollutant Linkage

The relationship between a contaminant, a pathway and a receptor.

Pollution of controlled waters as defined in section 78A(9) as:

“the entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter”

Possibility of harm

Refers to radioactive contamination only and is a measure of the probability, or frequency, of the occurrence of circumstances which would lead to lasting exposure being caused.

Possibility of significant harm

A measure of the probability, or frequency, of the occurrence of circumstances which would lead to significant harm being caused.

Potentially Contaminative Use

A development that exists, or has previously existed, on a site where the nature of the development is such that it is possible that contamination of the ground may have occurred.

Receptor

Either:

- (a) a living organism, a group of living organisms, an ecological system or a piece of property which:
 - (i) is in a category listed in Table A in Chapter A of the statutory guidance, as a type of receptor, and
 - (ii) is being, or could be, harmed, by a contaminant; or
 - (b) controlled waters which are being, or could be, polluted by a contaminant
- or
- (c) a person subjected to lasting exposure resulting from the after-effects of a radiological emergency, past practice or past work activity.

Remediation defined in section 78A(7) as:

- “(a) the doing of anything for the purpose of assessing the condition of –
 - “(i) the contaminated land in question;

- “(ii) any controlled waters affected by that land; or
 - “(iii) any land adjoining or adjacent to that land;
- “(b) the doing of any works, the carrying out of any operations or the taking of any steps in relation to any such land or waters for the purpose –
- “(i) of preventing or minimising, or remedying or mitigating the effects of any significant harm, or any pollution of controlled waters, by reason of which the contaminated land is such land; or
 - “(ii) of restoring the land or waters to their former state; or
- “(c) the making of subsequent inspections from time to time for the purpose of keeping under review the condition of the land or waters”

OR with respect to radioactive contamination defined in section 78A(7)(as modified) as:

- “(a) the doing of anything for the purpose of assessing the condition of –
- “(i) the contaminated land in question; or
 - “(ii) any land adjoining or adjacent to that land;
- “(b) the doing of any works, the carrying out of any operations or the taking of any steps in relation to any such land for the purpose –
- “(i) of preventing or minimising, or remedying or mitigating the effects of any harm by reason of which the contaminated land is such land; or
 - “(ii) of restoring the land to its former state; or
- “(c) the making of subsequent inspections from time to time for the purpose of keeping under review the condition of the land”

Remediation notice defined in section 78E(1) as:

A notice specifying what an appropriate person is to do by way of remediation and the periods within which he is required to do each of the things so specified.

Remediation Package

The full set or sequence of remediation actions, within a remediation scheme, which are referable to a particular significant pollutant linkage.

Remediation Statement defined in section 78H(7) as:

It is a statement prepared and published by the responsible person detailing the remediation actions which are being, have been, or are expected to be, done as well as the periods within which these things are being done.

Significant harm defined in section 78A(5).

It means any harm which is determined to be significant in accordance with the Statutory Guidance in Chapter A (that is, it meets one of the descriptions of types of harm in the second column of Table A of that Chapter).

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Appendix A

Hazard Rank	Land Use Classification	Perceived Risk Category	Scoring
1	Asbestos manufacture and use	High	625
2	Organic and inorganic chemicals production	High	625
3	Radioactive materials processing and disposal	High	625
4	Gasworks, coke works, coal carbonisation and similar sites	High	625
5	Waste disposal sites, including hazardous wastes, landfills, incinerators, sanitary depots, drum and tank cleaning, solvent recovery	High	625
6	Oil refining, petrochemicals production and storage	High	625
7	Manufacture of pesticides	High	625
8	Pharmaceutical industries, including cosmetics and toiletries	High	625
9	Fine chemicals, dyestuffs and pigments manufacturing	High	625
10	Paint, varnishes and ink manufacture	High/Med	125
11	Animal slaughtering and by-products, including soap, candle and bone works; detergent manufacture	High/Med	125
12	Tanning and leatherworks	High/Med	125
13	Metal smelting and refining, including furnaces and forges, electro-plating, galvanising and anodising	High/Med	125
14	Explosives industry, including fireworks manufacture	High/Med	125
15	Iron and steelworks	High/Med	125
16	Scrap yards	High/Med	125
17	Engineering (Heavy and general)	High/Med	125
18	Rubber products and processing	High/Med	125
19	Tar, bitumen, linoleum, vinyl and asphalt works	High/Med	125
20	Concrete, ceramics, cement and plaster works	High/Med	125
21	Mining and extractive industries	High/Med	125
22	Electricity generating (excluding nuclear power stations)	High/Med	125
23	Film and photographic processing	High/Med	125
24	Manufacture of disinfectants	High/Med	125
25	Paper and printing works, including newsprint (usually excludes high street printers)	High/Med	125
26	Glass manufacture	Medium	25

27	Fertiliser manufacture	Medium	25
28	Timber treatment works	Medium	25
29	Sewage treatment works	Medium	25
30	Garages, inc sale of automotive fuel, repair of cars and bikes	Medium	25
31	Transport depots, road haulage, commercial vehicle fuelling, local authority yards and depots	Medium	25
32	Railway land, including yards and tracks	Medium	25
33	Electrical and electronics manufacture, inc. semi-conductor manufacturing plants	Medium	25
34	Textiles manufacturing and dyeing	Medium	25
35	Laundries and dry-cleaning (large scale, not usually high street)	Medium	25
36	Plastic products manufacture, moulding and extrusion; building materials; fibre glass, fibre glass resins and products	Medium	25
37	Dockyards and wharves	Medium	25
38	Miscellaneous - e.g. builders yards	Medium	25
39	Military land including barracks	Medium	25
40	Food processing	Low	5
41	Airports and similar	Low	5
42	Graveyards inc cemeteries	Low	5
43	Hospitals	Low	5
44	Miscellaneous - e.g. warehouses	Low	5
45	Agriculture	Low	5

Appendix B

Inspection Strategy Consultees

Internal Consultees (City of Lincoln Council)

1. Director of Development & Environmental Services, DDES
2. Head of Environmental Sustainability, DDES
3. Head of Planning Services, DDES
4. Head of Economic Sustainability & Tourism, DDES
5. Economic Sustainability & Tourism Programme Manager, DDES
6. Development Control Service Manager, DDES
7. Building Control Service Manager, DDES
8. Development Policy Manager, DDES
9. Director of Housing and Community Services, DHCS
10. Head of Community & Leisure Services, DHCS
11. Head of Housing, DHCS
12. Head of Corporate Support Services, DOR
13. Corporate Property & Standards Manager, DOR
14. Risk Manager, DOR
15. Head of Corporate Review and Development, CX
16. Environmental Portfolio Holder

Public Consultees

1. Environment Agency
Groundwater and Contaminated
Land Team
Environment Agency
Waterside House
Waterside North
Lincoln
LN2 5HA
2. Lincolnshire County Council
Head of Planning & Conservation
Highways & Planning Directorate
Lincolnshire County Council
City Hall
Lincoln
LN1 1DN
3. Regional Development Agency
East Midlands Development Agency
Apex Court
City Link
Nottingham
NG2 4LA
4. Natural England
Natural England
Ceres House
2 Searby Road
Lincoln
LN2 4DT
5. English Heritage
East Midlands Region
English Heritage
44 Derogate
Northampton
NN1 1UH
6. Federation of Small Businesses
Regional Office
1 Henley Way
Doddington Road
Lincoln
LN6 3QR
7. Health & Safety Executive
Health & Safety Executive
City Gate West
Level 6 (First Floor)
Toll House Hill
Nottingham
NG1 5AT
8. Health Protection Agency
Health Protection Agency
East Midlands Office
Nottingham City Hospital
Chuckwalla Road
Nottingham
NG5 1PB
9. Food Standards Agency
Food Standards Agency
Aviation House
125 Kingsway
London
WC2B 6NH
10. GroundWork Lincolnshire
Voluntary Sector Hub
Beaumont Fee
Lincoln
LN1 1UW
11. Chamber of Commerce
Lincolnshire Chamber of
Commerce
Commerce House
Outer Circle Road
Lincoln
LN2 4HY
12. Primary Care Trust
Lincolnshire PCT
Cross O'Cliffe
Bracebridge Health
Lincoln
LN4 2HN