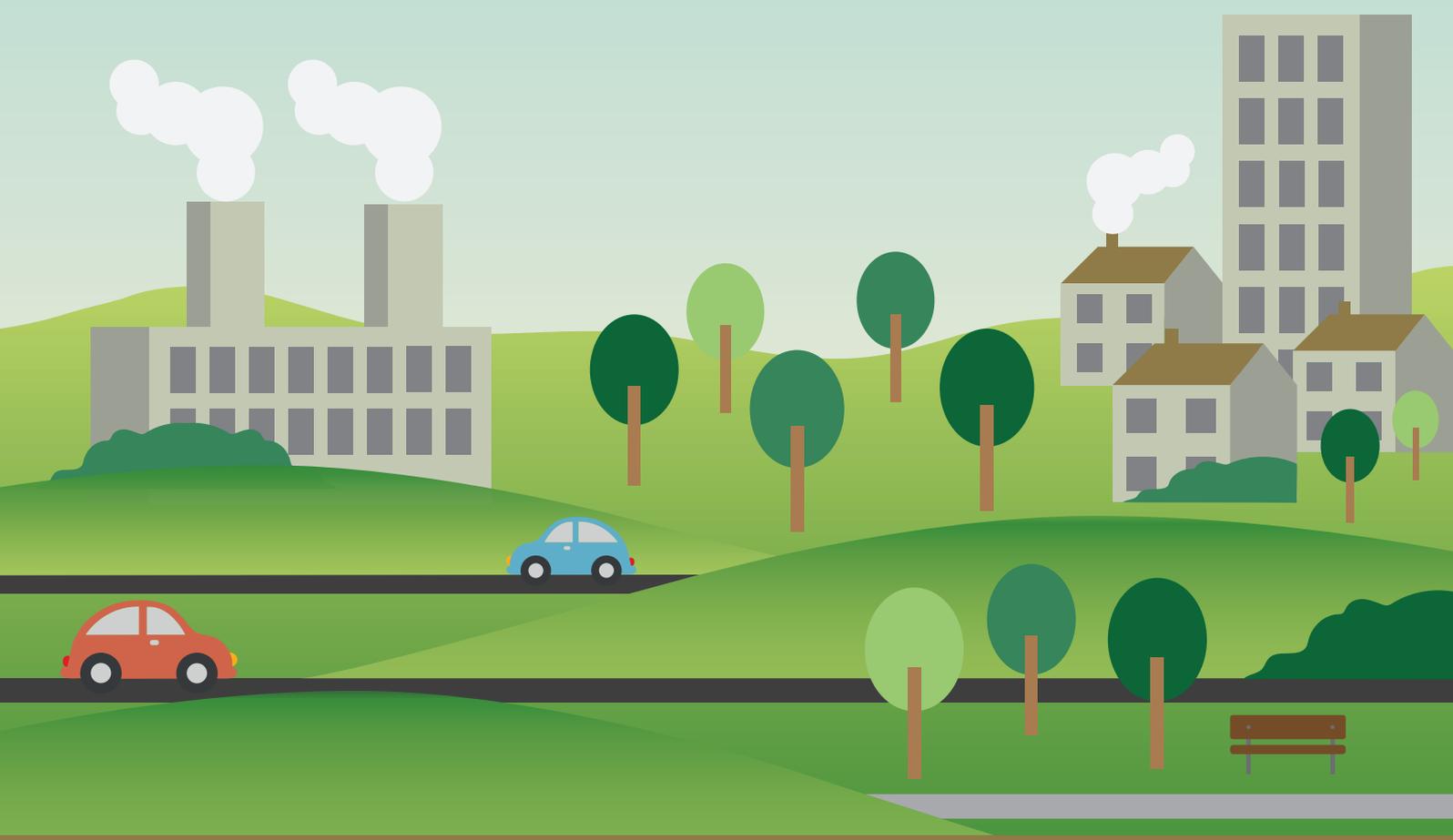


# Contaminated Land: An Inspection Strategy for Leeds

As required by Part 2A of the Environmental Protection Act 1990

Leeds City Council  
City Development Directorate



October 2018

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## **INTRODUCTION**

**i** Part 2A of the Environmental Protection Act 1990 (Part 2A) came into force on 1 April 2000. This established a new statutory regime for the identification and remediation of Contaminated Land.

**ii** Under Part 2A each local authority has a duty to inspect its area for Contaminated Land. Leeds City Council published its first Contaminated Land Inspection Strategy in June 2001, explaining how it was going to do this.

**iii** On 6 April 2012, new Statutory Guidance was published requesting that local authorities update or replace their Contaminated Land Inspection Strategies to reflect this new Guidance.

**iv** In accordance with the new Statutory Guidance, this document sets out Leeds City Council's strategic approach to inspection of its district. It serves to present the council's aims, objectives and priorities for inspection, as well as the detailed procedures it will follow to identify Contaminated Land in Leeds. This document replaces the June 2001 Contaminated Land Inspection Strategy and all subsequent Annual Reviews and the January 2013 Contaminated Land Inspection Strategy.

### **Inspection Strategy Preparation**

**v** Following a review of the January 2013 Contaminated Land Inspection Strategy, this Inspection Strategy has been prepared by the City Development Directorate, which is responsible for implementing Part 2A on behalf of the council. It is noted that no fundamental changes have been made to the technical and legal approach to inspecting Leeds for Contaminated Land.

**vi** Following approval by Delegated Decision under the Chief Planning Officer on 24 October 2018, this document was published and the Inspection Strategy formally adopted.

### **Consultation Process**

**vii** As the Inspection Strategy is fundamentally remaining the same technically, a consultation process is not considered necessary. The Environment Agency has been provided with this updated Inspection Strategy.

### **Outline of Inspection Strategy Document**

**viii** The Inspection Strategy document comprises three parts as outlined below:

Part A provides background information which has been considered during the development of the Inspection Strategy.

Part B presents the Inspection Strategy itself and what Leeds City Council aims to achieve through its continued implementation.

Part C outlines the procedures for implementing the Inspection Strategy.

ix In summary, the layout and content of the Inspection Strategy document are as follows:

<b>PART A Background</b>	<b>Chapter 1</b>	<b>Background and Regulatory Context</b> Explains the background to Part 2A, local authority duties and the definition of Contaminated Land.
	<b>Chapter 2</b>	<b>Existing Council Policies and Statutory Functions</b> Outlines the existing council policies and statutory functions within which Part 2A, and in particular the Inspection Strategy, will be implemented.
	<b>Chapter 3</b>	<b>Characteristics of the Leeds Area</b> Details characteristics of the Leeds area and environment and how these will influence the Inspection Strategy.
<b>PART B The Strategy</b>	<b>Chapter 4</b>	<b>Aims, Objectives and Priorities</b> Explains what the council aims to achieve through the implementation of the Inspection Strategy and what its key priorities are.
	<b>Chapter 5</b>	<b>Strategy Outline and Work Programme</b> Presents an outline of the Inspection Strategy and the programme for its implementation.
<b>PART C Procedures</b>	<b>Chapter 6</b>	<b>Prioritising Sites for Inspection</b> Details the procedures for creating and manipulating key datasets to prioritise sites for inspection.
	<b>Chapter 7</b>	<b>Carrying Out Detailed Inspection</b> Explains the procedures for collating and assessing information to determine the existence of contaminant linkages.
	<b>Chapter 8</b>	<b>Leeds City Council Land</b> Presents the council's procedures for addressing contamination of its own land.
	<b>Chapter 9</b>	<b>Providing Information to Third Parties</b> Outlines the procedures for making information accessible to other parties.
	<b>Chapter 10</b>	<b>Responding to Information from Third Parties</b> Outlines the procedures for responding to information provided by other parties.
	<b>Chapter 11</b>	<b>Inspection Strategy Review</b> Explains why, when and how we will review the Inspection Strategy and its procedures.

## Definitions

x Throughout this document, various terms are used which have a specific meaning within the context of the contaminated land regime and Part 2A. The first time such terms are used they will appear in **BOLD SMALL CAPITALS**. The Glossary presents full definitions of such terms.

## Enquiries

xi Enquiries about this Inspection Strategy should be made to the:

Team Leader (Contaminated Land) City Development Leeds City Council Merrion House 110 Merrion Centre Leeds LS2 8BB  Tel: 0113 378 7608/09 e-mail: <a href="mailto:contaminated.land@leeds.gov.uk">contaminated.land@leeds.gov.uk</a>
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# 1 BACKGROUND AND REGULATORY CONTEXT

## Introduction

**1.1** This Chapter provides an overview of the contaminated land regime – the Government objectives behind it, how it will be regulated and what the principal local authority duties are.

**1.2** Details of what **CONTAMINATED LAND** is and how it should be determined are presented, since these form the basis of the Inspection Strategy. However, other issues such as apportioning liability, determining remediation requirements and carrying out enforcement are not detailed since they are not pertinent to the development of the Inspection Strategy.

## The Contaminated Land Regime

**1.3** Part 2A of the Environmental Protection Act (EPA) 1990 came into force on 1 April 2000. This established a new regulatory system for the identification and remediation of land contamination.

**1.4** The new regime was introduced in DETR Circular 02/2000. This Statutory Guidance contained advice to regulators on how Part 2A should be implemented, in line with the Contaminated Land (England) Regulations 2000.

**1.5** At that time, all local authorities had a statutory duty to prepare a Contaminated Land Inspection Strategy. Leeds City Council therefore published 'Contaminated Land – An Inspection Strategy for Leeds' in June 2001. This Inspection Strategy was implemented over 11 and a half years, resulting in the detailed inspection of 114 sites, and the determination as Contaminated Land of 4 of those sites (equating to 48 residential properties) and their subsequent clean up. The subsequent Inspection Strategy that was reviewed, updated and published in January 2013 resulted in the detailed inspection of 64 sites.

**1.6** Since the DETR Circular 02/2000 was published, various changes have been made to the Statutory Guidance and Regulations. For non-radioactive contamination, the advice to regulators is contained within DEFRA's 'Contaminated Land Statutory Guidance' dated April 2012 and the Contaminated Land (England) Regulations 2006 (as amended by subsequent Statutory Instruments). This new Statutory Guidance and the updated Regulations came into force on 6 April 2012.

**1.7** A legal framework for dealing with radioactive Contaminated Land in England was established through the Radioactive Contaminated Land (Enabling Powers) (England) Regulations 2006 and the Radioactive Contaminated Land (Modification of Enactments) (England) Regulations 2006 (as amended by subsequent Statutory Instruments). The advice to regulators is contained within the Department of Energy and Climate Change's 'Radioactive Contaminated Land Statutory Guidance' dated June 2018. This new Statutory Guidance came into force on 22 June 2018.

## The Driving Force: Government Objectives

**1.8** The Government has stated that England has a considerable legacy of historical land contamination. Part 2A therefore provides a means of identifying and remediating land that poses a significant risk to health or the environment where there is no alternative solution.

**1.9** The Government's key objectives driving the contaminated land regime are:

- 'To identify and remove **UNACCEPTABLE RISKS** to human health and the environment.
- To seek to ensure that contaminated land is made suitable for its **CURRENT USE**.
- To ensure that the burdens faced by individuals, companies and society as a whole are proportionate, manageable and compatible with the principles of **SUSTAINABLE DEVELOPMENT**.'

**1.10** The Government considers the most effective way of delivering these objectives to be through the application of the 'suitable for use' approach. This recognises how **RISKS** presented by land contamination vary depending on what the land is used for, as well as its environmental setting.

**1.11** The main element of the 'suitable for use' approach is to ensure that where unacceptable risks to human health or the environment are identified, remediation requirements should be set on the basis of the current use or proposed use as well as the circumstances of the land. Risks will therefore always need to be assessed on a site-specific basis.

**1.12** The Government requires that a balance between precaution and over-precaution be struck to ensure that any necessary Part 2A intervention is likely to achieve a net benefit.

## Other Regimes

**1.13** In addition to Part 2A, there are a number of existing regulatory regimes which will continue to address and deal with land contamination issues.

**1.14** Land contamination is a material planning consideration and development or redevelopment during the planning or building control processes will continue to be the primary mechanism for ensuring remediation of contaminated sites.

**1.15** Through the provisions of the Environmental Damage (Prevention and Remediation) Regulations, Integrated Pollution Prevention and Control (IPPC) and Waste Management Licensing regimes there are powers to deal with land contamination resulting from breaches of permits, authorisations and licences.

**1.16** The Water Resources Act 1991 can also be applied to deal with certain cases of water pollution not covered by Part 2A.

**1.17** It is the Government's intention that Part 2A should be complementary to these existing regulatory regimes. Remediation of contaminated land should be enforced preferentially through these means, with enforcement through Part 2A only where no appropriate alternative solution exists.

## Regulation of Part 2A

**1.18** Local authorities are the primary regulators under Part 2A. Their main duties are:

- to prepare and publish a strategy for inspecting their area for Contaminated Land
- to implement the strategy
- to determine which sites meet the definition of Contaminated Land, and whether such sites should be designated as **SPECIAL SITES**
- to make sure appropriate remediation of Contaminated Land takes place
- to maintain a public register of Part 2A regulatory action

**1.19** Under Part 2A, the Environment Agency has a mainly supporting role, providing assistance and site-specific guidance to local authorities, particularly with respect to cases of water pollution. The Agency acts as the enforcing authority for Special Sites. The Agency also has a duty to prepare from time to time a report on the state of contaminated land in England.

## Special Sites

**1.20** Special Sites are defined in full in the Contaminated Land (England) Regulations 2006. These are sites which meet the definition of Contaminated Land and fall within one of the descriptions given in the Regulations, which include:

- certain water pollution cases
- industrial cases
  - waste acid tar lagoons
  - oil refining
  - explosives
  - certain IPPC sites
  - nuclear sites
- land owned by the Ministry of Defence
- all radioactive Contaminated Land

**1.21** Regulation 2(2) of the Contaminated Land (England) (Amendment) Regulations 2012 amends the circumstances set out in regulation 3 (**POLLUTION OF CONTROLLED WATERS**) of the 2006 Regulations in which contaminated land affecting **CONTROLLED WATERS** is required to be designated as a special site.

## What is Contaminated Land?

**1.22** Part 2A defines non-radioactive contaminated land 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) significant pollution of controlled waters is being caused or there is a significant possibility of such pollution being caused.'*

and radioactive contaminated land 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) harm is being caused; or*
- (b) there is a significant possibility of such harm being caused.*

**1.23** Any land meeting either of these definitions will hereon be referred to as Contaminated Land. The terms '**SIGNIFICANT HARM**', '**HARM**', '**SIGNIFICANT POSSIBILITY...**' AND '**SIGNIFICANT POLLUTION OF CONTROLLED WATERS**' are all defined in the Statutory Guidance.

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

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

**1.25** This means that contamination must be having, or be very likely to have, a detrimental impact on humans or the environment before a site can be classed as Contaminated Land.

It is important to realise that a site will not meet the definition of Contaminated Land just because contamination is present.

## Identifying Contaminated Land - Contaminant Linkages

**1.26** In line with established approaches to risk assessment, Part 2A requires that the first step in determining whether a site is Contaminated Land is to identify 'contaminant linkages' associated with that land.

**1.27** A **CONTAMINANT LINKAGE** is a connection between a contaminant and a receptor by means of a pathway.



**1.28** A **CONTAMINANT** is a substance which is in, on or under the land and which has the potential to cause harm to humans and the environment or pollution of controlled waters.

**1.29** A **PATHWAY** is one or more routes or means by, or through, which a receptor is being or could be exposed to or affected by a contaminant.

**1.30** For non-radioactive contamination, a **RECEPTOR** is either

- a living organism, a group of living organisms, an ecological system or a piece of property which:
  - (a) is defined in the Statutory Guidance including Tables 1 and 2 (see Appendix A) as a type of receptor (includes human beings, crops, animals, buildings and nature reserves) and
  - (b) is being or could be harmed by a contaminant; or
- controlled waters which are being, or could be polluted by a contaminant.

**1.31** Under the radioactive contaminated land regime, a receptor is limited to human beings only.

**1.32** A contaminant linkage, and hence a risk to the receptor from the contaminant, can only exist if all three elements are present. A site cannot be considered as possible Contaminated Land unless at least one contaminant linkage is present.

**1.33** The next step therefore in deciding whether a site is Contaminated Land is to determine whether the contaminant linkage is 'significant'. This means demonstrating that it:

- is resulting in significant harm for non-radioactive contamination (or harm for radioactive contamination) being caused to the receptor in the contaminant linkage,
- presents a **SIGNIFICANT POSSIBILITY OF SIGNIFICANT HARM** for non radioactive contamination (or significant possibility of harm for radioactive contamination) being caused to that receptor, or
- is resulting in, or is likely to result in, the significant pollution of the controlled waters which constitute the receptor for non radioactive contamination only.

As indicated above, the terms 'significant harm', 'harm' 'significant possibility...' and 'pollution of controlled waters' are all defined in the Statutory Guidance.

A site needs at least one '**SIGNIFICANT CONTAMINANT LINKAGE**' to exist to be determined as Contaminated Land.

## **2 EXISTING COUNCIL POLICIES AND STATUTORY FUNCTIONS**

### **Introduction**

**2.1** The implementation of Part 2A does not stand in isolation from other council functions, policies and strategies. Moreover, it plays an important role in allowing the council to move closer to meeting its aims and objectives for environmental improvement, regeneration and, in particular, achieving sustainable development.

**2.2** This chapter outlines the principal council policies, statutory and everyday functions alongside, and within which, Part 2A is implemented.

### **Corporate Strategy & Direction**

#### **Mission & Core Values**

**2.3** In Leeds, sustainable development means achieving the priorities in the 'Leeds 2030 – Vision for Leeds 2011 to 2030' which is for Leeds to be the best city in the UK. Further to a city consultation exercise in 2010, 'a cleaner, greener city and 'safety' were two of the top priorities to emerge.

**2.4** In Leeds sustainability is expressed through the aims in the Vision for Leeds for the Leeds' economy to be sustainable. The Vision for Leeds emphasises the need for people, businesses and organisations to be involved in a collective effort to become the best council in the UK. (Leeds 2030 – Vision for Leeds 2011 to 2030).

**2.5** This commitment lies behind the council's implementation of Part 2A and serves to ensure that consideration is given to both the current and future impacts and implications of land contamination and its remediation.

#### **Leeds 2030 – Vision for Leeds 2011 to 2030**

**2.6** The Vision for Leeds was prepared by the former Leeds Initiative which was the city's local strategic partnership founded in 1990. This partnership was made up of key players in Leeds including representatives from Leeds City Council, NHS Leeds, the voluntary sector, the private sector and the local universities. In 1997 the Leeds Initiative embarked upon a process to develop a comprehensive framework for guiding the future development of the city - on a sustainable basis - for the first decade of the new Millennium. This was a vehicle for developing specific actions to improve quality of life for current and future residents of the district. Thousands of people and organisations were consulted, resulting in the publication in 1999 of the 'Vision for Leeds – a Strategy for Sustainable Development'.

**2.7** A consultation exercise with people who live and work in Leeds was carried out in 2010 by Leeds Initiative to develop further a new Vision for Leeds. The 'Vision for Leeds 2011 to 2030' has now been published.

**2.8** The 'Vision for Leeds 2011 to 2030' outlines priorities for action within five areas, which include 'Best city ... for children', 'Best city ... for communities', 'Best city ... for health and wellbeing' and 'Best city ...to live'. The implementation of Part 2A falls within these areas and goes some way to meeting the underlying objectives of these priorities, including 'children will be safe from harm', 'people are safe', 'the city is clean', 'people live longer and have healthier lives', 'inequalities in health are reduced' and 'having clean, green spaces'. Furthermore, both Part 2A and the Vision for Leeds have the same principal objective of achieving sustainability.

### **Best Council Plan 2018/19 – 2020/21**

**2.9** The 'Best Council Plan 2018/19 – 2020/21' sets out what the council will do to deliver better outcomes across Leeds. This plan is the council's contribution to the Vision for Leeds but has also been strongly influenced by recent key challenges including funding cuts, a difficult economic climate and legislation/government reforms requiring radical change. This plan sets out the council's priorities, outcomes, key performance indicators and values.

**2.10** The priorities in the Plan include:

#### Health and wellbeing

- reduce health inequalities and improve the health of the poorest the fastest
- enjoy healthy lives
- Leeds will be a healthy and caring city for all ages

#### Child-friendly city

- support families to give children the best start in life
- improve the homes and places in which children live and play and better their overall health and wellbeing

#### Safe, strong communities

- keep people safe from harm, protecting the most vulnerable
- enjoy greater access to green spaces
- build thriving, resilient communities

#### Housing

- provide housing of the right quality
- improve health through housing
- live in clean spaces
- create sustainable communities

Although the implementation of Part 2A is a statutory duty, as opposed to a strategic priority or decision, the carrying out of the Inspection Strategy will help to enable the council to fulfil these priorities.

## Health Policy

**2.11** Leeds City Council and partner agencies currently work together to improve people's health. The NHS reforms, introduced as a result of the Health and Social Care Act 2012, give local authorities a duty to promote the health of their population. Councils have also taken on key functions relating to health protection including a duty to ensure that robust plans are in place to protect the local population.

**2.12** The Health and Social Care Act 2012 has created several new structures within a redesigned public health system including Public Health England, Clinical Commissioning Groups, the NHS Commissioning Board, Health and Wellbeing Boards, Local Health Resilience Partnerships and Healthwatch. NHS Primary Care Trusts have been abolished.

**2.13** From April 2013, the council took on responsibility from the NHS for public health in Leeds, along with the public health staff and budgets being transferred from the NHS. This supports Leeds City Council's role in dealing with health protection incidents, outbreaks and emergencies as well as local initiatives that reduce public health impacts of environmental risks including the implementation of Part 2A and addressing the impact of contaminated land on people's health.

## Environment Policy

**2.14** The Leeds City Council's Environment Policy (2012 to 2015) identifies land contamination as an issue requiring attention. This is addressed through its overall aims:

- to improve the environmental quality of our land;
- to prevent pollution to air, water and land by regulating and monitoring; and,
- to comply with all relevant environmental legislation.

These aims outline the commitment to provide an environment free from dereliction and degradation and also to reduce the levels of land pollution in the city. The environmental performance of Leeds City Council will be made publicly available and updated on an annual basis in the council's Environmental Statement.

**2.15** The implementation of Part 2A, and in particular the responsibility to enforce remediation of Contaminated Land, reinforces and facilitates the council's commitment to environmental improvement.

## Managing Council-owned Land

**2.16** The Corporate 'Asset Management Plan 2014-2017' detailed the council's overall approach to managing its own landholdings, raising capital financing and resourcing implications, as well as delivering the objectives of the Corporate Plan. The Asset Management Plan is currently being reviewed and updated.

**2.17** It is recognised that many of the council's property and landholdings may be contaminated as a result of previous use, and that provision for dealing with such

contamination has serious capital implications. The council will seek financial support for dealing with contamination of its own land. For cases where land is being remediated in readiness for development, the council will fulfil its legal obligations.

**2.18** The Part 2A Inspection Strategy will provide the council with more detailed information about its own potentially contaminated landholdings, including which sites present the greatest risk to the environment. This information can be used to facilitate prioritisation of sites for remediation, determine liabilities and financial implications, and then to identify the most appropriate sources of funding for remediation.

**2.19** It is considered that a way of identifying which landholdings are potentially contaminated would be to address land contamination issues as part of land and property inspections when the need to do so arises and to provide this information to the Contaminated Land team. Site-specific information obtained through asset management's routine site inspections will be considered when carrying out the Part 2A inspection strategy work.

## **Existing Duties Addressing Land Contamination**

**2.20** Land contamination in Leeds is already addressed both directly and indirectly by a number of existing council duties. The following sections outline how land contamination has been dealt with to date through these means and how they will be impacted by the implementation of Part 2A.

### **Planning Services**

**2.21** It is widely recognised that the principal mechanism for dealing with land contamination continues to be through Development Management and the planning regime, and not Part 2A. However, the two regimes are closely related and interconnected.

**2.22** The National Planning Policy Framework (NPPF) dated July 2018 requires the local planning authority to take account of land contamination when making planning decisions. This includes making sure that appropriate remedial works are carried out so that the site will be 'suitable for its new use'.

**2.23** Since the introduction of Part 2A in April 2000, Leeds City Council has been strictly applying the former planning guidance (Planning Policy Guidance 23 (PPG23) followed by Planning Policy Statement 23 (PPS23)) and now the current guidance (NPPF). The council's approach is to make sure that a site-specific risk assessment is used as the basis for determining appropriate standards for remediation. Comparison with generic clean-up criteria alone as a basis for justifying remediation is not favoured. In line with Part 2A, the council is ensuring that remediation must reduce all risks to acceptable levels and such that the site would not be classified as Contaminated Land. More sustainable alternatives to the traditional civil engineering remediation solutions of 'dig and dump' and 'capping' are encouraged. Examples include bioremediation and physical/chemical treatment techniques such as air-sparging and soil washing.

**2.24** The council has guidance available for applicants, consultants, agents, developers etc. about the contaminated land regime and the planning process. Guidance includes detailed specifications for reports which should be submitted in support of planning applications for potentially contaminated sites.

**2.25** In Leeds, the Part 2A inspection process will form a mechanism for checking that remediation previously carried out during redevelopment (i.e. prior to the introduction of Part 2A and the council's strict application of the former PPG23, PPS23 and now the NPPF), has been to a sufficient standard and that a site is 'suitable for its new use'.

**2.26** In order to keep track of where land contamination in Leeds had been investigated or remediated prior to, or during redevelopment, a 'Potentially Contaminated Land' ('PCL') database was set up. The PCL database was first set up in July 2000 and holds information on sites redeveloped since 1999 where the Contaminated Land team has been consulted as part of the planning process.

**2.27** The PCL database logged site-specific information including potentially contaminative previous site use(s), proposed site use, level of investigation or remediation carried out etc. Since December 2016, the council has used the Planning 'Enterprise Live' database to record PCL site planning consultations. The databases are currently supported by an electronic-based filing system which holds *inter alia* pertinent correspondence relating to the determination of appropriate planning conditions, standards of remediation etc. These databases are complemented by a Geographical Information System (GIS) dataset containing the site boundaries of all sites recorded in the databases.

**2.28** The information collated for, and obtained through Part 2A inspection will enable planning officers to make better-informed planning decisions. In addition, a generic 'Potentially Contaminated Areas' dataset has been made available to planning teams via Corporate GIS and can be used to help identify proposed developments where contamination issues may need to be considered.

**2.29** Conversely, the PCL information comprises an essential source of information for use during the Part 2A inspection process, particularly when prioritising sites for inspection and carrying out detailed inspection (see Chapters 6 and 7).

## **Planning Policy**

**2.30** National planning advice is contained within the National Planning Policy Framework (NPPF). This aims to 'promote an effective use of land in meeting the need for homes and other uses, while safeguarding and improving the environment and ensuring safe and healthy living conditions'. Central to this approach is the desire to make 'as much use as possible of previously developed or 'brownfield land'. There is no national brownfield use target but local planning authorities are allowed to set their own targets. These 'brownfield' sites are to be assessed against a number of constraints (including land contamination) to determine their suitability for residential development. Land contamination has to be remediated to a suitable standard so that the risk of the land being identified under Part 2A has been removed. Within the NPPF land contamination is referred to in various sections including sections 118, 170, 178 and 179.

**2.31** The Leeds Core Strategy adopted in November 2014 sets a target that 65% (for the first five years) of all development should be on previously developed land. This Strategy is part of the Local Plan (Local Development Framework) that along with other Development Plan Documents will supersede the existing Unitary Development Plan.

**2.32** Within the Natural Resources and Waste Development Plan Document dated January 2013, land contamination is identified as a material planning consideration. Within the overall context of national planning guidance, Policy LAND 1 emphasises that the council can assist applicants in the development process to identify an appropriate remediation solution. This document was adopted by the council on 16 January 2013.

**2.33** Consequently, developers are expected to provide information in support of their planning applications regarding the status of the site in terms of contamination. In addition, land contamination information may also be required to address conditions placed on planning permissions.

## **Building Control**

**2.34** In accordance with the Building Regulations 2010, the Building Control service is required to ensure that reasonable precautions are taken to avoid danger to health and safety caused by contaminants on or in the ground covered, or to be covered by the building, and any land associated with the building. This includes taking account of any substance which is or may become harmful to persons or buildings, including substances which are corrosive, explosive, flammable, radioactive or toxic.

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

## **Communities and Environment Directorate**

**2.36** Prior to Part 2A coming into force, the regulation of land contamination was dealt with initially under the Public Health Acts and, from the early 1990s, through the Statutory Nuisance provisions of Part III of the Environmental Protection Act 1990. Part III required local authorities to inspect their district from time to time and to deal with land considered to be prejudicial to health or a nuisance. These provisions were enforced in Leeds by Environmental Health Officers (EHOs) within Environmental Health Services.

**2.37** The development and implementation of the Part 2A Inspection Strategy is being led by the City Development Directorate in Leeds. Whilst Part 2A amended the Statutory Nuisance provisions of the Environmental Protection Act 1990 to exclude consideration of 'land in a contaminated state', EHOs in Leeds continue to investigate and deal with other issues relating to the condition of land. For example, EHOs still retain responsibility for ensuring remediation of contamination which is identified at

sites they regulate under the Integrated Pollution Prevention & Control (IPPC Part A2) regime.

**2.38** EHOs also deal with incidences of harm to health in conjunction with Public Health England. A team within Waste Management Services in the council's Communities and Environment Directorate collects data during regular monitoring of fugitive gases and leachate from closed landfill sites.

**2.39** The Part 2A Inspection Strategy will therefore be carried out taking into account information that the Communities and Environment Directorate may hold including in particular consideration of monitoring data from closed landfill sites.

## **Enforcement**

**2.40** The approach to carrying out enforcement measures under Part 2A will be consistent with that followed by the council for other regulatory functions. This will be in line with the better regulation principles which promote consistency. All enforcement action will also take account of the Human Rights Act 1998.

**2.41** Of particular relevance is enforcement in the planning process, where compliance with land contamination conditions must be achieved to remove the potential for a site to have to be dealt with under Part 2A. Planning Services will seek to secure compliance with land contamination conditions attached to grants of planning permission in the same way they would deal with any other matter for compliance.

**2.42** Aspects of enforcement carried out include encouraging voluntary remedies, seeking a negotiated solution prior to employing statutory powers, dealing with complainants and informants, and issuing statutory notices. In all cases, enforcement is necessary to safeguard human health.

## **Elections and Regulatory Services – Land & Property Searches**

**2.43** Following the implementation of Part 2A and the requirement for each Local Authority to keep a Public Register of its regulatory activity (see Chapter 9), a question (3.12) referring to Contaminated Land has been added to the Form CON29 Enquiries of Local Authorities. The questions on this form are answered by the Land & Property Search team in Elections and Regulatory Services in Leeds as part of the search carried out every time a property transaction takes place. The Land & Property Search team bases their response to Question 3.13 on information provided by the Contaminated Land team.

**2.44** Question 3.13 has three parts. The first part addresses whether the search site has been formally identified as Contaminated Land. The second part relates to whether there are any entries on the Part 2A public register regarding the clean up of the Contaminated Land, for example, whether a remediation notice has been served and what, if any, remediation has taken place. The remaining part of 3.13 refers to whether consultation with owners and occupiers of Contaminated Land, and land adjoining Contaminated Land, have taken place prior to the service of a remediation

notice, for example, adjoining owners and occupiers might be required to grant rights of access and to suffer work being done on their land even if their own land is not itself contaminated.

## **Public Access to Information**

**2.45** Leeds City Council acts in accordance with the requirements of the following statutes and regulations in making environmental information accessible to the public.

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

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

**2.47** In compliance with the above and also the requirements of the Contaminated Land (England) Regulations 2006, information held on the Leeds City Council Part 2A Public Register, will be accessible by the public. These requirements will also be adhered to when carrying out Part 2A duties which require disclosure of site-specific information. This is discussed in further detail in Chapter 9.

# 3 CHARACTERISTICS OF THE LEEDS AREA

## Introduction

**3.1** The causes and impacts of land contamination in the UK vary greatly from region to region, depending largely on the different local industries, land use and environmental sensitivities.

**3.2** By knowing where in Leeds we are most likely to find sources of contamination and understanding what parts of the environment are most susceptible to impact, we can determine where to start looking for Contaminated Land. In other words, the characteristics of the Leeds environment, both natural and anthropogenic, play a principal role in shaping the strategic approach we take to inspection.

**3.3** This Chapter presents an overview of the principal characteristics of Leeds - its geography, history, geology, hydrology, land use etc. At the end of the Chapter a summary outlines the key factors which influence the Inspection Strategy.

## Geography

### Location

**3.4** As the second largest metropolitan district in England (by population), Leeds forms the capital of the Yorkshire and Humberside Region. The city sits astride the River Aire, some 100 km from both the west and east coasts. To the west the land rises towards the foothills of the Pennines and the Yorkshire Dales National Park. To the east the landscape flattens out towards the Vale of York and onwards to Hull and the Humber Estuary. In the south, past and present mineral extraction has marred an otherwise rural landscape, whilst land to the north remains largely unspoilt, culminating in the attractive scenery of the Wharfe Valley.

**3.5** Topographically, the district ranges from 286m above ordnance datum (AOD) at Reva Hill (Hawthorn Moor) in the north-west to less than 10m AOD at Fairburn Ings in the south-east.

### Size

**3.6** The Leeds district extends 25km from east to west and 20km north to south, covering an area of 562km<sup>2</sup>. The main urban area is relatively compact, reaching a radius of some 7.5km from the city centre. The remainder of the district comprises mainly small market towns, villages and countryside, the majority of which (some two thirds) is designated green belt.

## Population

3.7 The population at the last census (2011) was approximately 751,500.

## History

### Early Days

**3.8** There are few records of the early days of Leeds, but the original settlement of 'Leodis' is believed to date back to around 400AD. In 1086 the Domesday Book recorded Leeds as having a population of just 300 people. At the time, the town was centred around the parish church, with a number of houses, shops and workshops in nearby streets. By 1152 Kirkstall Abbey had been founded and the monks' ironworking began nearby, with Briggate arriving in 1208.

### The Middle Ages

**3.9** 1322 saw Leeds become a town and by 1377 the population had grown to about 1,000. From about this time Leeds became a commercial centre, largely due to its favourable location. Wool and skins were brought to market from the Pennines to the west and small workshops began to process these goods. Over the next 250 years the textile industry saw great expansion and in 1626 the town's cloth merchants obtained the first Royal Charter from Charles I. By now, cloth-making, leather tanning and milling had become established Leeds industries.

### The Start of the Industrial Revolution

**3.10** In the 18th Century the local economy continued to grow rapidly, stimulated by a host of local inventions, transport and the pioneering use of steam power. New industries found a home in Leeds, including chemical works, glassworks, potteries and brickworks along with the vital engineering needed to make all the machinery. In 1758 the first railways brought coal from Middleton Colliery to the town centre. Parts of the Leeds-Liverpool canal were opened between 1770 and 1816, with the Leeds to Thackley canal stretch completed by 1777, to serve the local industries, particularly cloth and leather making. In 1779 Kirkstall Forge was founded on the site where the Abbey monks had previously worked iron. Leeds soon became the clothing centre for Britain and by 1790 the first 'modern' factory building for cotton was erected at Richmond Hill. In the course of this century alone, the population grew eightfold to 17,000 and the city expanded to cover an area of 80 acres.

## **The Revolution Continues**

**3.11** The 19th Century saw no let-up in the industrial development of Leeds. In 1818 the Leeds Gaslight Company began to distribute manufactured gas for street lighting and by 1823 Joshua Tetley had begun brewing in Hunslet. In the first half of the century the city's transport infrastructure began to unfold, with new roads to Hunslet and Holbeck and bridges over the River Aire. 1834 saw extensive development of the railways with the construction of the Selby line and a number of stations in the city centre. City Station (on its current site) opened in 1869.

**3.12** With mechanisation becoming large-scale, major factories such as the Monk Bridge Iron Works and Wellington Foundry were in demand to provide the much-needed iron. The number of factories mushroomed due to major production in hats, boots, candles, matches etc. and an influx of Jewish refugees helped Leeds to become the leader in ready-made clothing. In 1870 the Leeds printing industry was born with the opening of the first colour printing works in Holbeck. The end of the 19th Century saw the first electric tramways playing a major part in shaping the growth of the urban area.

**3.13** Supported by development of large scale industry and trade, over the second half of this century the city expanded to cover an area of 1,120 acres. 40,000 houses were built and there was an unprecedented quarter of a million increase in the population.

## **20th Century Leeds**

**3.14** During the early part of the 20th Century the main industrial belt of mills and factories continued to grow along the Aire valley to the south of the city centre. Commerce also began to expand at a similar rate and by the end of the First World War the city's population had grown to 460,000. Due to its industrial strengths, Leeds played an important part in supporting the war effort during both World Wars. Of note were the explosives filling facility at the Gascoigne Estate, Barnbow (WWI) and the munitions factory and storage depot at Thorp Arch (WWII). The fast economic expansion seen at the turn of the century was replaced by stability and consolidation; from the 1920s Leeds' population growth slowed. Some 30 years later, after the Second World War, the population was at half a million.

**3.15** In the second half of the 20th Century the population increased gradually. However, with the expansion of the Leeds Metropolitan District in the early 1970s to include previously out-lying towns and villages, the population appeared to rise rapidly and peaked at around 750,000. During the 1980s, many manufacturing enterprises collapsed and there were major mill, engineering and foundry closures particularly in the Hunslet and Holbeck areas and further south-east along the Aire Valley. Many sites were left empty or derelict, especially those along the riverside. This collapse was paralleled in the Leeds former coalfield area (the Lower Aire Valley) where six colliery closures signalled the end of deep mining in Leeds.

**3.16** In the 1990s, many of the old industrial areas of Leeds underwent a gradual transformation: spacious modern industrial and warehouse buildings set in landscaped estates, many in suburban locations, replaced many of the old cramped mills, workshops and factories. Engineering, clothing, metal manufacturing and printing were still a cornerstone of the City's economy, but Leeds began to expand fast as a regional distribution centre, largely due to its location at the intersection of the London to Edinburgh road and rail links with the east-west transpennine corridor. Warehousing developments became more prominent and concentrated alongside the former and existing heavy industry in the Aire valley and adjacent to the Low Beck (a tributary), between Beeston and Wortley.

## **Looking Forward**

**3.17** Leeds continues to play a very significant role in the economy of Yorkshire and Humberside. It is widely recognised as one of the UK's fastest growing cities. In terms of number of employees, Leeds is the largest centre for information and communications, sport and recreation and business services, and the second or third largest centre for various other sectors including manufacturing, retail and legal and financial services.

**3.18** In the last 10 years Leeds has had £3.6billion worth of major development schemes completed with a further £714million in construction at the end of 2016. As the city continues to grow and expand its economic output will increase and with £6.5billion of schemes in the pipeline the benefits will be felt by the whole of the Leeds City Region.

**3.19** Despite a decline in recent years, Leeds maintains a traditional manufacturing industry background, accounting for 5.9% of the manufacturing jobs in the country which is the second largest outside of London. The wholesale and retail distribution sector in the district continues to thrive and expand, principally due to Leeds' strategic location with respect to the main transport networks. The private sector has taken on such projects as the Corn Exchange and Victoria Quarter, raising the physical and retail profile which fostered the delivery of Leeds Trinity Quarter in 2013. The continuation of the retail offering in Leeds has most recently been extended through the delivery of Victoria Gate, a vibrant new shopping centre in the heart of the city which opened its doors in 2016.

**3.20** Leeds train station is the busiest transport hub in the north of England and one of the most important pieces of transport infrastructure in the UK. With the promised advent of high speed rail through HS2 connecting Leeds with London and other core cities, improving and expanding Leeds train station is essential. This improvement and expansion will ensure HS2 is integrated seamlessly with other rail services to create new rail capacity to support growth in Leeds and to provide a high quality gateway to the city and a catalyst for regeneration in the city. The creation of a new southern entrance to the station and the development of the South Bank will provide major opportunities for investment and regeneration.

## Natural Environment

### Geology

**3.21** The **solid geology** in Leeds can be split into three broad categories:

- the *Millstone Grit Series* is present across the northernmost part of the district;
- the *Middle and Lower Coal Measures* are present across central and southern areas;
- the *Magnesian Limestone* forms a broad band down the eastern part of the district.

**3.22** The Millstone Grit Series locally includes the Rough Rocks and Rough Rock Flags in northernmost parts, overlain by the Woodhouse, Guiseley, Bramhope and Carlton Grits further south. These Grits comprise alternating sequences of sandstone, siltstones and mudstones of varying thickness. The Millstone Grit dips to the south, where it is overlain by the Lower and Middle Coal Measures.

**3.23** The Lower Coal Measures extend across the central part of Leeds and include the Stanningley Rock and Elland Flags (both sandstone). These deposits also dip to the south where they are overlain by the Middle Coal Measures which include the Thornhill Rock and Slack Bank Rock. These deposits comprise a thick sequence of alternating bands of clays, shales, sandstone, mudstone and coal.

**3.24** The geological profile across eastern parts of the district is slightly different, with the low north-south ridge of Magnesian Limestone dipping eastwards. These rocks comprise mainly limestone interspersed with bands of thick clay (Middle Permian Marl) and sand (Basal Permian Sand). In the north-eastern corner of the district these are overlain by clays (Upper Permian Marl) and then sandstone (Sherwood Sandstone).

**3.25** Overlying glacial **drift deposits** are absent or sparse across the majority of the southern, central and eastern parts. In northern areas the occasional patches of glacial deposits (boulder clay, sands and gravels), fluvio-glacial and alluvial deposits (silts, sands and gravels) become more concentrated towards the River Wharfe which forms the district's northern boundary.

**3.26** Alluvium is present along the valleys of the Rivers Aire, Calder and Wharfe and the routes of their tributaries. Alluvium is more extensively present around the confluence of the Rivers Aire and Calder in the south-east of the district close to Mickletown, Methley and Allerton Bywater.

### Hydrogeology

**3.27** The Magnesian Limestone is classified by the Environment Agency as a Principal Aquifer (i.e. highly permeable strata), from which water is abstracted for domestic use, agricultural supplies and spray irrigation. Fissuring, often associated with faulting, may provide large borehole yields, but also results in the aquifer being susceptible to pollution.

**3.28** The Millstone Grit is a Secondary A Aquifer (i.e. moderate or variable permeability strata) and a locally important source of groundwater, although faulting may reduce the effectiveness of the rock as an aquifer. The hydrogeology of the Millstone Grit is complex due to extensive faulting and fissuring. It yields only small borehole and spring supplies.

**3.29** The Coal Measures are also a Secondary A Aquifer. The major sandstones are the aquifers, but groundwater flow is extensively affected by the faulting and fissuring of the rocks, and also by the results of coal mining and associated dewatering activities. The Coal Measures, although classed as a Secondary A Aquifer, may provide good borehole yields and many industrial supplies rely on them. However, the yield and quality of water are unpredictable and the demand for water for industry in Leeds has significantly declined in recent years.

**3.30** The alluvium deposits along the Rivers Aire, Calder and Wharfe are considered to be a Secondary A Aquifer. Although not exploited extensively, the alluvium has significant resource potential and water is abstracted from a number of shallow boreholes in Leeds for industrial purposes.

**3.31** In Leeds the relatively poor resource potential of the groundwater is reflected by the low abstraction volume - more surface water is abstracted than groundwater. This abstracted water is used mainly for industrial use, but also irrigation. There are Source Protection Zones located in the north-eastern corner of the district, which are in place to help protect abstractions with potable use.

## Hydrology

**3.32** There are three major surface watercourses within the Leeds area: the Rivers Aire, Calder and Wharfe. The most easterly stretch of the Leeds-Liverpool canal comes in from the west to join the River Aire in the city centre. In addition, there are seven large lakes, one reservoir (Eccup) and numerous smaller ponds and fishing lakes across the district.

**3.33** The **River Wharfe** flows eastwards from its rise on the eastern flank of Pen-y-Ghent (694m AOD) in the Yorkshire Dales. It defines the majority of Leeds' northern district boundary. The Wharfe is of generally high quality along its stretch within the Leeds district. Its water is extensively exploited for high sensitivity use including potable supply, fish farming and game fishing. Industrial activity is limited and consequently, water quality problems and pollution incidents are few. The river supports a thriving fish population, including trout and grayling, as well as coarse fish such as roach, dace, chub, gudgeon and barbel.

**3.34** There are extensive informal washlands (natural floodplains) on the stretch of the River Wharfe along the northern boundary of Leeds. An area of some 13 hectares in Otley suffers from frequent flooding.

**3.35** 23.5 million cubic metres of water is licensed to be abstracted on average from the River Wharfe in the Leeds area per annum. The majority of this (19 million cubic metres) is abstracted at Arthington for public water supply, and much

of the remainder (4 million cubic metres) is licensed to be abstracted for industrial process water in Otley.

**3.36** The **River Aire** flows eastwards from its source in Malham in the Yorkshire Dales through Skipton, Keighley and Bradford before reaching Leeds. Here it crosses the southern half of the district, flowing eastwards through the middle of the city. The **River Calder** flows eastwards from its source in Todmorden through Halifax, Dewsbury and Wakefield before its confluence with the River Aire at Castleford. It forms only a small portion of the south-eastern district boundary.

**3.37** Unlike the Wharfe, both the Aire and Calder flow through many urban and industrial areas and as a result their quality has been significantly impacted. The overall volume licensed to be abstracted on average from the River Aire in the Leeds area has fallen to 6.7 million cubic metres per annum.

**3.38** A large proportion of both rivers, particularly through the Leeds area, continues to be of poor quality. Contamination of the surface waters may be due to surface water run off, trade discharges, mine waters, industrial discharges, pesticides, land contamination and historic landfilling. The River Aire from Esholt to the River Calder is currently failing Water Framework Directive's chemical classification.

**3.39** As a consequence of increased development along the Aire Valley in, and south-east of, Leeds city centre, there has been a reduction in the availability of floodplain. This has resulted in the need to control flooding along the route of the Aire. Major controlled 'washlands' exist along the eastern stretch of both rivers, downstream of the city centre. These are found on the Aire between Skelton and Fairburn Ings, mainly due to subsidence from deep mining but also created from former surface coal mines. Some of these washlands are important wildlife habitat, for example, Fairburn and Newton Ings are sites of Special Scientific Interest. In these areas, the Environment Agency estimates the return period for floods is as high as 1 in 5 years.

## **Rainfall**

**3.40** Across the Leeds area the annual rainfall averages 600mm.

## **Forests & Woodland**

**3.41** Information held by West Yorkshire Ecology indicates that there are 338 hectares of Semi-natural Ancient Woodland and 374ha of Plantation Ancient Woodland in Leeds district over 2ha in size. There are likely to be other areas which are smaller than this which have not been identified. Some of this woodland resource is in public ownership, managed and maintained by Leeds City Council. Some woodlands are privately owned, belonging to estates such as Harewood, Bramham Park, Ledston and Parlington.

**3.42** The trees and woodlands of Leeds provide a much valued natural resource. Many of the woodland sites are designated protected sites (see below). There are over 2000 Tree Preservation Orders (TPOs) and 79 Conservation areas in the

Leeds District, protecting woodlands, groups and areas of trees and individual specimens.

## Protected Areas

**3.43** There are three levels of designated nature conservation sites in Leeds: internationally important, nationally important and locally important:

- **Special Areas of Conservation (SAC)** are designated by Natural England for supporting habitats of European Importance. In Leeds to only site for this is part of the South Pennine Moors SAC which is designated for its blanket bog, dry heath and old sessile oak wood. The same area of land is also designated as a **Special Protection Area (SPA)** for birds which include golden plover, short-eared owl and merlin as well as an additional 10 species which form part of the upland breeding bird assemblage. Only 223ha of this extensive 20,944ha site at Hawksworth Moor, falls within the Leeds District. Areas outside of the site boundary are also recognised as being “functionally linked” to the SPA as the breeding birds use surrounding land for feeding.
- **Sites of Special Scientific Interest (SSSI)** are statutory sites designated by Natural England as being of national importance for their flora, fauna, geology or landforms. There are 17 SSSIs (15 ecological sites and 2 geological sites) dotted across the Leeds area. These range in size from the extensive South Pennine Moors noted above (a SSSI as well as a SAC and SPA) to Micklefield Quarry which covers only 0.6 hectares (designated on account of its geology). Other examples include two important bird sites (Fairburn and Newton Ings and Eccup Reservoir) and a species rich calcareous grassland (Townclose Hills).
- At a local level, **Local Wildlife Sites (LWSs) and Local Geological Sites (LGSs)** are non-statutory sites designated by the West Yorkshire Local Sites Partnership (of which Leeds City Council is a partner) that have countywide importance for nature conservation and for geological features, respectively. LWSs and LGSs are replacing the terms of Sites of Ecological or Geological Interest (SEGIs) and Leeds Nature Areas (LNAs). A written criteria has been produced against which these sites are formally assessed. There are 50 LWSs and 11 LGSs in the Leeds District. A number of sites previously identified in the Unitary Development Plan as LNAs (33 LNAs) and SEGIs (19 SEGIs) are currently being assessed to see if they meet the LWSs and LGSs Criteria and thereafter will be removed as LNAs or SEGIs, but until such a time that an assessment and approval by the West Yorkshire Local Sites Partnership has taken place, they will retain an appropriate level of protection as SEGI/LNA.

**Local Nature Reserves (LNRs)** are of special interest for flora, fauna, geology or landforms and also for public appreciation of these features, they are sites in which the local authority has a legal interest. There are 14 LNRs in the Leeds area - Fairburn Ings, Chevin Forest Park, Middleton Woods, Meanwood Valley, Breary Marsh, Townclose Hills, Letchmire Pastures, Farnley Hall Fish Pond, Ledston Luck, Killingbeck Meadows, Primrose Valley, Wyke Beck Woods, Halton Moor and Arthur's Rein.

**3.44 Leeds Habitat Network (LHN)** was last updated in 2014 and seeks to provide a coherent ecological network for Leeds. It is made up of the 3 categories of sites referred to above, along with other land that has a locally-identified level of nature conservation value which helps to provide strategic physical connectivity.

**3.45** Not all of these protected areas are in rural locations or comprise previously undeveloped land and some have seen former industrial and potentially contaminative use. Examples include Barnbow Common and Thorp Arch, both former munitions factories, quarries such as Roach Lime Hills.

## Land Use Characteristics

**3.46 Rural areas and countryside** with small towns and villages generally exist in broad bands along the northern and eastern parts of the district. Agricultural activity varies across the district. Northern and western parts are used for beefstock, sheep and dairy farming on pastureland. To the east, land is used mainly for cereal crops whilst land to the south is exploited for market gardening. 'Horseyculture' is a major land use everywhere.

**3.47 Parks, public open space and recreational areas** are an important asset to Leeds, with many parts of the district designated for such use, including 338 parks and four major parkland estates. English Heritage's Register of Historic Parks and Gardens lists Oulton Hall, Bramham Park, Armley House (Gotts Park), Harewood House, Ledston Hall, Lotherton Hall, Roundhay Park, Temple Newsam, High Royds Hospital, Pudsey, Lawnswood, Backett Street and Hunslet Cemeteries as being of national importance. In addition, large parts of the district are given to golf courses and playing fields.

**3.48** Regarding the known archaeological sites in Leeds, 59 are designated **Scheduled Monuments Class I** (previously known as Scheduled Ancient Monuments) being of national archaeological importance and 166 are non-designated Areas of Special Archaeological Value Class II. There are 2,364 **Listed Building** designations said to cover over 3,300 individual listed buildings and structures within the district and **79 Conservation Areas**. Leeds also has 1 Registered Historic Battlefield and 14 Registered Historic Park and Gardens.

**3.49 Residential areas** principally exist within a semi-circle of some 7km radius, to the north of the city centre (Armley, Pudsey, Horsforth, Moortown, Roundhay, Harehills, Seacroft and Cross Gates), but also within a triangle formed by the M621 and M62 motorways to the south of the city (Morley, Holbeck, Beeston, Middleton). However, with a continuous growing trend towards 'city living', the traditional pattern of residential development in Leeds is changing. It is anticipated that over the next 10 years within the close proximity of Leeds city centre that about 16,500 units of housing will be delivered with half of those being within the areas of Holbeck, Hunslet and Beeston as part of the city's South Bank Regeneration vision. Approximately 2,000 new homes can be delivered as part of the East Leeds Extension with a further 5,000 homes being unlocked through the delivery of the East Leeds Orbital Road which will run from Red Hall to Junction 46 of the M1.

The overall scale and distribution of housing growth is set out as part of the Core Strategy and Site Allocations Plan.

**3.50 Commercial areas** are largely concentrated within the city centre to the north of the River Aire. However, the rapid expansion of business in Leeds and investment in the city has seen the commercial districts expanding south of the River into former industrial areas, with the construction of new purpose-built office complexes to the west. Increasingly high rent rates in the city centre have led to a growth in demand for small offices in more 'out of town' locations and in easy reach of the local transport networks, for instance along the route of the outer Ring Road and close to Leeds-Bradford airport.

**3.51 Industrial areas** continue to exist alongside the River Aire in those parts which initially saw activity during the industrial revolution of the 18th and 19th Centuries. However, strategic location with respect to the road transport links to the rest of the Region and beyond is playing an increasingly significant role. The key heavy industrial areas are found along the Aire Valley, beginning in Armley and Kirkstall to the north-west, extending south-eastwards through the city centre, and then down through Holbeck and Hunslet to Stourton. Lighter industry is found extending south-westwards from the city centre through Wortley and Beeston and along the route of the M621 towards its intersection with the M62, and from here along the route of the M62 itself as it passes to the south of Morley.

**3.52 Waste Management Facilities:** in Leeds there are currently two operational landfill sites. Until a few years ago, these sites accepted around 0.8 million tonnes of waste per year for disposal but this has declined sharply for 3 main reasons. Firstly, both sites are nearing completion and are nearly full; secondly, increases in landfill tax and, thirdly, given the emergence of alternative technology's capable of treating waste arisings, avoiding disposal. The Leeds Recycling and Energy Recovery Facility (energy from waste) is an example of this, having a capacity of 214,000 tonnes. Other waste facilities include household waste sites, aggregate recycling/processing sites, waste transfer stations, anaerobic digestion facilities (for sewage sludge, agricultural-derived waste and food waste) and incinerators (for clinical waste and sewage sludge). There are also a number of specialised recycling sites and scrap yards. In addition to these operational sites, there are some 300 closed landfill sites, some of which are monitored for landfill gases by the Communities and Environment Directorate.

**3.53 Coal Mining, Quarrying & Mineral Extraction:** there are currently 9 active quarries or mineral extraction sites in the area. Across north Leeds the Millstone Grit continues to be worked for sandstone. In Morley to the south, the Thornhill Rock is worked for sawn yorkstone. Brickclay is extracted for the production of bricks at an active brickworks at Morley. Another brickworks at Swillington is currently mothballed. An active limestone quarry can be found at Bramham. Under the 14<sup>th</sup> Onshore Licensing Round 2017, the Government issued a Petroleum Exploration and Development Licence relating to 2 ordnance survey blocks covering parts of south and south-east Leeds (and also parts of the Wakefield district). Currently no planning permissions have been given for any shale-related operations (such as drilling, hydraulic fracturing or production) to begin in Leeds.

**3.54** With two thirds of Leeds underlain by the Coal Measures, the district has historically supported a large coal mining industry. However, deep-mining declined markedly during the 1970s and 1980s culminating in the closure of Allerton Bywater in 1992. Many areas have since seen massive reclamation programmes. Surface coal mining has taken place in east Leeds since 1942. There are currently no operational sites.

## Influential Factors

**3.55** From our appraisal of the characteristics of Leeds and our implementation of the previous Inspection Strategy, the key factors which influence the ongoing Inspection Strategy are summarised below:

Leeds' industrial heritage goes back over 250 years. It is almost inevitable that sites which have seen historic and/or lengthy industrial use will be contaminated to some extent. Many former industrial sites will have been redeveloped without land contamination being considered. Based on Leeds experience thus far, planning records from sites developed prior to 2000 are unlikely to provide evidence on whether contamination issues have been adequately addressed.

From an appraisal of the current and historical land use, we know that industrial activity has been focused along the course of the River Aire, but also in the small towns to the west and north-west of the city centre. Mining and waste disposal activities have historically taken place to the south and east of the city centre. We now have a Historical Land Use Dataset on GIS that includes these current and historical industrial areas which comprise those parts of Leeds where contaminant sources are most likely to be present.

It is commonly accepted that the most sensitive environmental receptors are humans and controlled waters. However, in Leeds, controlled waters are generally of low sensitivity due to poor quality and/or relatively low resource potential. (There are of course notable localised exceptions such as the River Wharfe and the Magnesian Limestone (Principal Aquifer)). **The people who live and work in Leeds are therefore considered to be the district's most sensitive receptors.**

From our knowledge of current land uses and characteristics of Leeds' natural environment, **we know where different types of receptor are likely to be located.**

# 4 AIMS, OBJECTIVES AND PRIORITIES

## Introduction

**4.1** The Statutory Guidance requires the council to set out its aims, objectives and priorities with respect to the Inspection Strategy.

**4.2** Chapter 1 outlined the council's duties with respect to Part 2A. Chapter 2 addressed the council's commitments to achieving environmental improvement and sustainable development, as well as outlining how the Part 2A Inspection Strategy relates to existing council functions. Chapter 3 then described the unique characteristics of the Leeds environment.

**4.3** All of these factors play a crucial part in determining the council's strategic approach to inspection and what it hopes to achieve from carrying it out.

**4.4** This Chapter draws these factors together into a coherent set of aims, objectives and priorities, which directly drive Leeds City Council's Inspection Strategy.

## What Do We Want to Achieve?

**4.5** Set out below is a list of five key **aims** that the council wishes to strive towards through its management of land contamination issues. These are overall aims which interlink with, and are supported by, those of existing council policies and strategies. They also reflect the council's statutory duties.

**4.6** It is not intended for these aims to be achievable solely through the implementation of Part 2A. Delivery of other council strategies and statutory functions may also contribute.

**4.7** Against each aim is a set of **objectives** and **priorities**.

- Objectives are activities that can or must be achieved as a direct result of the implementation of the Inspection Strategy. Each objective goes some way towards achieving the related aim.
- Priorities are the key activities we wish to carry out in the course of fulfilling the objectives. They play an important part in shaping the Inspection Strategy itself and the procedures we follow to implement it.

The order in which the aims, objectives and priorities are presented below is arbitrary.

**4.8** These are the council's *current* aims, objectives and priorities. They may be reviewed and revised as the Inspection Strategy is implemented and targets are achieved, but also in light of changes in council policy, as well as Government guidance and legislation.

<b>Aim 1</b>	<b>To achieve environmental improvement</b>
<u>Objectives</u>	➤ Identify those sites where land contamination is presenting unacceptable environmental risks and ensure remediation takes place
<u>Priorities</u>	<ul style="list-style-type: none"> <li>➤ Prioritise sites for inspection on the basis of environmental risk</li> <li>➤ Prioritise risks to human health above all others</li> <li>➤ Ensure efficiency by directing effort away from those areas where risks associated with land contamination are already being addressed (for example, through other reclamation strategies, planning etc.)</li> </ul>

<b>Aim 2</b>	<b>To reduce the council's impact on the environment</b>
<u>Objectives</u>	<ul style="list-style-type: none"> <li>➤ Identify council-owned/occupied contaminated sites which should be prioritised for remediation as part of asset management</li> <li>➤ Manage and/or reduce the council's liabilities as a landowner or occupier</li> </ul>
<u>Priorities</u>	<ul style="list-style-type: none"> <li>➤ Adopt an exemplary approach as a responsible landowner towards inspecting our own land and dealing with contamination</li> <li>➤ Ensure public confidence in the council's objective assessment of its own landholdings</li> </ul>

<b>Aim 3</b>	<b>To encourage regeneration and redevelopment</b>
<u>Objectives</u>	<ul style="list-style-type: none"> <li>➤ Identify contaminated sites where regeneration and redevelopment could facilitate remediation</li> <li>➤ Enable informed decisions (by council and third parties) regarding future land use</li> </ul>
<u>Priorities</u>	<ul style="list-style-type: none"> <li>➤ Provide information to enable the council to act in accordance with Government planning policy guidance (notably the National Planning Policy Framework)</li> <li>➤ Provide information for planning briefs</li> </ul>

<b>Aim 4</b>	<b>To fulfil the council's responsibilities with respect to implementing environmental legislation</b>
<u>Objectives</u>	➤ Ensure the Inspection Strategy and its implementation meet the requirements of Part 2A
<u>Priorities</u>	➤ Adopt a rational, ordered and efficient approach to inspection ➤ Focus on identifying the most pressing and serious problems first

<b>Aim 5</b>	<b>To raise awareness and promote understanding of land contamination issues</b>
<u>Objectives</u>	➤ Encourage a proactive approach amongst landowners and potential polluters towards investigation of contamination ➤ Encourage voluntary remediation
<u>Priorities</u>	➤ Carry out consultation on future reviews of the Inspection Strategy with stakeholders as considered necessary. ➤ Adopt a transparent approach to implementing the Inspection Strategy ➤ Develop effective procedures for communication, liaison and information exchange within the council and with third parties

# 5 STRATEGY OUTLINE AND WORK PROGRAMME

## Introduction

**5.1** Chapter 4 has defined the council's objectives and priorities for the inspection of Leeds for Contaminated Land. This chapter follows on directly by outlining the Inspection Strategy itself (i.e. the council's methodology for achieving these objectives and priorities), and the work programme for its implementation.

**5.2** Details of the procedures which are followed to implement the Inspection Strategy are addressed in Part C.

## Strategy Outline

**5.3** The Inspection Strategy comprises the following principal features:

### **A Development of Key Datasets**

The following key datasets have been compiled using the procedures outlined in Chapter 6:

➤ 'Historical land use' maps.

Historical site uses have been identified and digitised from five epochs of historical maps and then categorised and ranked according to their potential to cause contamination. This data has been supplemented by other datasets of potentially contaminating land uses, for example: closed landfill sites, petrol stations etc. This has resulted in the production of a GIS dataset of potential contaminant sources.

➤ Maps showing Part 2A receptors.

Environmental receptors have been categorised and ranked according to their sensitivity. A series of GIS datasets of receptors have been produced.

### **B Prioritisation of Sites for Detailed Inspection**

The prioritisation process has been completed for the first seven sub-categories of the 'Humans' receptors listed in Appendix B. A preliminary screening of key relevant datasets was carried out to identify Priority List Sites (PLS sites) where potential contaminant linkages exist and over 2900 sites were identified. Sites have been ranked according to potential risk and given a prioritisation score in order to determine their priority for inspection. The procedures that have been followed are outlined in Chapter 6.

Sites presenting risks to the first seven sub-categories of the 'Humans' receptor have been prioritised above all others. The remaining receptors in Appendix B are not considered to be as sensitive and therefore their prioritisation will be considered at a later date.

As the process involved the use of data from only five epochs of historical maps, from time to time other sites come to our attention. These sites are given a prioritisation score and are added to the list as a PLS site.

**C Detailed Inspection**

Those PLS sites with the top scores are subject to detailed inspection first following the procedures outlined in Chapter 7.

**D Contaminated Land GIS and Database**

A dedicated GIS and database have been set up to manage and manipulate the information required to support the inspection process (see Chapters 6 and 7). Further datasets will be added to the GIS throughout the course of the Inspection Strategy implementation, as they are required/developed.

**E Dealing with Council Land**

Council land is not being treated separately or given priority for inspection above any other land – all sites will be prioritised for inspection on the basis of risk alone. As a responsible landowner, the council is addressing land contamination through its asset management programme. Unless urgent, sites will undergo detailed inspection in order of prioritisation score. Procedures for dealing with council land are presented in Chapter 8.

**F Urgent Sites**

Sites from any part of the district, which are considered to present an immediate risk of serious pollution or harm to human health, will be prioritised for inspection as and when they are brought to the council's attention.

**G Strategy Review**

The Inspection Strategy will be reviewed as and when considered necessary and at least every 5 years. This will be to revise and improve procedures, and to keep track of new policies, legislation, guidance etc. Procedures for carrying out the review are detailed in Chapter 11.

**Work Programme****Overview**

**5.4** Under the Inspection Strategy documents dated June 2001 and January 2013, the following detailed inspection, determination and remediation work has been carried out:

<b>Part 2A activity – Jun 2001 to Dec 2012</b>	<b>No. of sites</b>	<b>No. of properties*</b>
Detailed inspection completed	114	3,123
Determination of Contaminated Land	4	48
Remediation of Contaminated Land	4	48
<b>Part 2A activity – Jan 2013 to Oct 2018</b>		
Detailed inspection completed	64	1193

*\*A property is essentially defined as a parcel of land for which a single consent is required, for example: a single private dwelling/garden, landscaped areas of a block of flats, a school and its grounds, a playground or an allotment.*

**5.5** It has become increasingly difficult to estimate when detailed inspection for the whole of Leeds will be complete. This is primarily due to variable factors including unknown workload, for example, where Part 2A resource is redirected to managing the remediation of Contaminated Land. Progress is also dependent on overall service priorities and resources.

**5.6** At the time the January 2013 Inspection Strategy was published, service provision was allowing detailed inspection of approximately 20-30 sites a year. Over the past five and a half years, detailed inspection work has been taking place although at a much reduced rate due to service priorities elsewhere (focussing on increasing planning consultation workloads). However, in meeting the Leeds City Council's obligations under Part 2A, work will be continued in line with the approach set out in the Inspection Strategy but at a more targeted and reduced rate. Subject to continued service monitoring, priority will be placed upon completing those sites where inspection has already commenced with the intention of carrying out detailed inspection of new sites initially up to 10-15 a year.

**5.7** Urgent Sites will be inspected as and when they are brought to our attention.

### **Key Datasets**

**5.8** Key datasets have been developed for the Leeds Metropolitan District allowing site prioritisation to take place.

### **Site Prioritisation**

**5.9** Preliminary site prioritisation has been carried out within all of Leeds City council's boundary. As noted earlier, new sites may need to be added to the prioritisation list as they come to our attention. Based on experience, we have made some amendments to the scoring system as noted in Chapter 6. Reprioritisation of sites may take place at any stage during subsequent detailed inspection as further information is acquired and evaluated.

### **Detailed Inspection**

**5.10** Initially, detailed inspection involves carrying out a Phase I Desk Study including a site inspection. Should it be concluded that further work is necessary, intrusive site investigation works will be carried out. Based on the outcome of this exercise, either further more detailed site investigation will be required or a decision will be taken that no further work is necessary. Further details are contained in Chapter 7.

### **Inspection Strategy Review**

**5.11** The Inspection Strategy will be reviewed as and when necessary but at least every 5 years to take into account five full years of implementation.

# 6 PRIORITISING SITES FOR INSPECTION

## Introduction

**6.1** In Chapter 4 we detailed the rationale behind the Inspection Strategy before presenting an outline of the Strategy itself and the programme for its implementation in Chapter 5.

**6.2** Chapters 6 and 7 will expand on these previous chapters by detailing the actual procedures which will be followed to continue to implement the Inspection Strategy.

**6.3** There are two principal aspects to the implementation of the Inspection Strategy –

**1 Site Prioritisation:** a preliminary screening of key relevant datasets to determine which sites should be inspected first. Sites where potential contaminant linkages exist have been identified. Those sites presenting the greatest potential risks have been prioritised for inspection.

**2 Detailed Inspection:** collation and assessment of further information through desk-based means and, where there is a reasonable possibility that a significant contaminant linkage may exist on the land, intrusive site investigation to determine the existence of contaminant linkages and to decide whether or not sites appear to be Contaminated Land.

**6.4** This Chapter focuses on **Site Prioritisation**, detailing the procedures which have been followed to create and manipulate the key datasets used to carry out this task. Procedures for Detailed Inspection are addressed in Chapter 7.

## Where do we start? – the Definition of Contaminated Land

**6.5** Remembering that the Part 2A definition of Contaminated Land is based on risk assessment, the basis for determining whether a site is Contaminated Land is to establish the presence of a contaminant linkage (i.e. a contaminant-pathway-receptor relationship). Therefore, if we can identify where in Leeds contaminant linkages are most likely to exist, we know where to start our inspection.

**6.6** In order to do this, we have adopted the following approach:

1. Identified location and nature of potential contaminant sources
2. Identified location and nature of receptors
3. Found sites where both contaminants & receptors are present (i.e. identified where *potential* contaminant linkages exist)
4. Scored sites according to potential risk
5. Prioritised sites for inspection

6. Refined prioritisation, where necessary

**6.7** We have used a GIS and associated database to store, interpret and manipulate the data required to carry out these tasks. Details of the procedures followed are presented below.

**Where are the Contaminant Sources?**

**6.8** As outlined in Chapter 5, using the GIS datasets on potential contaminant sources and receptors, we have been able to identify those sites where a potential contaminant linkage may be present.

**6.9** A substantial number of different datasets have been obtained and appraised to identify locations of potential contaminant sources. See Table 1 for a full list. The key dataset amongst these is the Historical Land Use data.

**Table 1: INFORMATION COLLECTED TO DATE**

Dataset	Supplied by	Notes	Format
<b><u>Information on potential Contaminant Sources</u></b>			
OS Landline	Ordnance Survey	Current land use information.	GIS
IPC sites	Environment Agency	Sites authorised under the Integrated Pollution Control Regime.	GIS
Closed Landfill Sites	Leeds City Council	Sites which are being or have been monitored for landfill gas. Gas monitoring data.	GIS & paper
Licensed Waste Sites	Environment Agency		GIS
Sewage Treatment Works	Environment Agency		GIS
Landfill Sites	Environment Agency		GIS
Discharge Consents	Environment Agency		GIS
Petrol Stations	Leeds City Council		GIS

'X' Sites	Leeds City Council	Incomplete record of 'draft' s143 register*. Identifies potentially contaminative uses. Individual paper record for each site, including details of known investigations.	GIS & paper
PCL Sites	Leeds City Council	Electronic database of potentially contaminated sites which have been investigated and/or remediated during redevelopment. Hard copies of some reports held.	GIS & paper
Historic Land use data	BGS/WRc	Derived from appraisal of historical and current maps.	GIS
Mineshaft & Colliery Spoil Data	Coal Authority		GIS
Minerals extraction sites	Leeds City Council		Paper
Aerial Photographs	Leeds City Council	Survey undertaken across whole Leeds District in 1999, 2002, 2006 and 2009.	GIS
Leeds City Council Geotechnical Section Reports	Leeds City Council	Details of desk studies, site investigations and other reports written by LCC Geotechnical section.	GIS & paper
Scrapyards	Leeds City Council	Sites with planning permission for use as scrapyards, derived from planning records held in LCC Minerals and Waste planning team.	GIS & paper
<b><u>Information on potential Pathways</u></b>			
Flood Plains	Environment Agency		GIS
Geological data	BGS	Information on solid and drift deposits; details of BGS boreholes.	GIS
Hydrogeological data	BGS / Environment Agency	Includes information on water wells and aquifer vulnerability.	GIS

\* When the Environmental Protection Act 1990 was first introduced, s143 required local authorities to compile a register of land which may be contaminated. This requirement was later repealed for fear of causing blight and land devaluation. In Leeds, compilation of a 'draft' s143 register was started by the then Department of Planning & Environment, but never completed. This register provides information on 164 potentially contaminated sites.

<b><u>Information on potential Receptors</u></b>			
Receptors maps	BGS	Derived from current land use information (OS Landline).	GIS
Hydrogeological data	BGS	Includes information on water wells and aquifer vulnerability.	GIS
SSSIs	Leeds City Council		GIS
Ancient Monuments	Leeds City Council		GIS
Surface Water Quality Data	Environment Agency	Information on chemical and biological general quality assessment (GQA).	GIS
Licensed Abstractions	Environment Agency	Details on abstractions from surface water and groundwater.	GIS
Leeds Nature Reserves	Leeds City Council		GIS & paper
Residential property	Leeds City Council	Areas of residential property derived from corporate address data.	GIS
Schools	Leeds City Council		GIS
Leisure facilities	Leeds City Council		GIS
Protected playing pitches	Leeds City Council		GIS
Allotments	Leeds City Council		GIS
Early Years Centres	Leeds City Council		GIS
Private Water Supplies	Leeds City Council		GIS

## Historical Land Use Maps

**6.10** A review of historical maps has been carried out, focusing primarily on identifying industrial sites. Maps from the following broad epochs have been reviewed:

- Pre 1900
- 1905-1919
- 1930s
- 1950s/1960s
- 1970s/1980s

**6.11** Existing in-house maps showing other principal contaminating activities such as petrol filling stations and waste management facilities have also been appraised.

**6.12** Because of the concentrated extent of industrial activity in Leeds, it was considered essential that the OS map review should involve large-scale 1:1,250 and 1:2,500 maps for urban areas. This allowed for identification of individual site uses. Smaller-scale 1:10,000 and 1:10,560 maps were considered sufficient for the rural areas.

### Classification of Sites

**6.13** A scheme has been devised to classify each potentially contaminative site use. 25 'general' industrial categories have been defined following a review of the Government's Department of the Environment Industry Profiles. Examples of categories include 'chemical works', 'metal works' and 'railway land'. The scheme is presented in full in Appendix C.

**6.14** Each category has been scored on a 5-level scale according to its potential to cause contamination. The scoring is based on an appraisal of likely contaminants, their environmental behaviour (persistence, mobility, toxicity etc.), as well as a subjective assessment based on knowledge, experience and professional/technical judgement.

**6.15** Each source category has also been given a secondary score on a 3-level scale to classify the potential to cause contamination in an adjacent receptor site (i.e. the source and receptor do not coincide, but are within 5m of each other). This score is based on the same considerations as in 6.14 above, with an added component of how mobile the typical contaminants from each source category are likely to be.

**6.16** Following the review, a series of digitised historical land use maps or 'layers' (one for each epoch) has been compiled for the Contaminated Land GIS. Within each layer, potentially contaminated sites exist as discrete 'polygons'. Each polygon's 'attributes' include its categorisation and contaminant score, as well as a unique site identification reference.

## Where are the Receptors?

**6.17** The council already holds a number of datasets which provide information on the location of receptors, for example, residential areas, schools and playing fields. These also include maps showing protected areas (SSSIs, Local Nature Reserves etc.), listed buildings, ancient monuments etc. In order to obtain information on controlled waters, maps showing local hydrogeology have been procured and information on surface watercourses, water quality, water abstractions etc. has been supplied by the Environment Agency. These datasets all exist in digital format and are held on our Contaminated Land GIS. A full list of all datasets is presented in Table 1.

**6.18** A review of land use has been carried out to identify where receptors are located. Information has been acquired from LCC data holdings and from an appraisal of land uses via digital OS data, to produce a series of digitised maps or GIS 'layers' for different types of receptor suitable for preliminary screening. For instance, by determining where there is housing and schools, we know where human receptors are located.

### Classification of Receptors

**6.19** Based on the definitions within the Statutory Guidance, receptors have been classified into four different categories. Each category has then been scored from 1 (high) to  $1 \times 10^{-18}$  (low), taking account of both its environmental sensitivity (see Chapter 3) and the council's priorities for environmental protection (see Chapters 2 and 4). The scheme is summarised below and presented in full in Appendix B.

CLASSIFICATION OF RECEPTORS	
Category	Score
Humans	1
Controlled Waters	$1 \times 10^{-6}$
Ecosystems & Fauna	$1 \times 10^{-12}$
Buildings	$1 \times 10^{-18}$

**6.20** Receptors defined by land use may exist as discrete sites or parcels of land (for example, children's playgrounds, allotments etc.), or may cover larger areas (for example, rivers, Principal Aquifers etc.). However, within each layer, the receptors exist as discrete 'polygons' whose 'attributes' include categorisation and score, as well as a unique identification reference.

## Finding and Prioritising Potential Contaminant Linkages

**6.21** Further to obtaining the essential datasets which define potential contaminant sources and receptors, we also need to know where pathways are most likely to be present, and what level of risk any resultant contaminant linkages might pose.

**6.22** Spatial analysis tools in ArcMap GIS is used to identify areas where potential contaminants and receptors are both present, or in close proximity (within 5m of

each other). Once potential contaminant linkages have been identified, they are assigned a score on the basis of potential risk. This is done by taking account of the sensitivity of the potential receptor and the cumulative potential for contamination of the relevant sources. This exercise shows where potential contaminant linkages are most likely to exist and what level of risk each one might pose, enabling us to easily see the order in which sites should be inspected, such that those posing the greatest risk are dealt with first.

**6.23** Full details of the prioritisation scoring system are given in Appendix D.

**6.24** Prioritisation of sites for inspection is being done in four distinct stages, with the most sensitive receptor (humans) being considered first. As detailed inspection of sites with human health receptors is likely to take a number of years, prioritisation for the other three categories of receptor will be carried out at an appropriate time in the inspection process, ensuring that when the prioritisation is done, the most up-to-date information is used.

**6.25** As and when new information comes to light, additional sites are added to the prioritisation list, as noted in Section 5.3.

The purpose of this initial exercise has not been to confirm the existence of a pathway, nor to provide any further information about its nature or integrity. Lateral migration pathways are only considered at this stage as outlined in section 6.15. These issues are the focus of subsequent more detailed work carried out during Detailed Inspection (see Chapter 7).

# 7 CARRYING OUT DETAILED INSPECTION

## Introduction

**7.1** Chapter 6 has explained the procedures for identifying sites where *potential* contaminant linkages exist and then prioritising such sites for inspection.

**7.2** This Chapter follows on directly and explains the next stage of the Inspection Strategy implementation, i.e. 'detailed inspection'. It outlines the procedures we follow to collate and assess further information in order to determine the existence of contaminant linkages so that we may decide whether a site is Contaminated Land.

**7.3** Remembering that the purpose of this document is to provide only the methodology for inspection, the procedures for determining whether a site actually meets the definition of Contaminated Land are not presented here.

## What are we trying to find out?

**7.4** The preliminary screening exercise for human receptors as described in Section 5.3 has resulted in the identification of those sites where potential contaminant linkages exist. The next stage, and thus the purpose of carrying out Detailed Inspection, is to obtain sufficient information:

- (i) about the three elements (i.e. contaminant, pathway, receptor) of the suspected contaminant linkage(s) to determine whether the site appears to be Contaminated Land, and
- (ii) to decide whether the site falls within the definition of a Special Site.

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

## What will Detailed Inspection involve?

Detailed Inspection can include one or all of the following:

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

**7.6** A desk study is required for all sites undergoing Detailed Inspection. If the findings of this study suggest that contaminant linkages exist, but the information is insufficient to determine the site as Contaminated Land, then more detailed work in the form of an intrusive site investigation may be necessary.

**7.7** The collation of information is an iterative process. Each stage of Detailed Inspection may result in the need to acquire further information. This may mean going back to carry out further desk-based research or further site investigation. Detailed Inspection only ends when we have sufficient information to determine the site as Contaminated Land or where there is no longer a reasonable possibility that a significant contaminant linkage exists on the land.

**7.8** The procedures we follow for carrying out Detailed Inspection are based on well-established and industry-adopted good practice techniques. Since such techniques are documented in various authoritative publications, it is not considered necessary to reproduce such material here. Some of those publications referenced are listed in Appendix E.

### **Reprioritisation/Inspection on hold**

**7.9** At any point during the inspection process, information may come to light which leads to a site being reprioritised or the inspection process being placed on hold for a specific period of time. This may occur for a number of reasons - a site visit may show the absence of a specific receptor or contaminant, or the site may already be undergoing remediation under a different regulatory regime, for example, via the planning process. The rationale behind any reprioritisation or postponement of inspection will be recorded and the site re-addressed at the appropriate time. For example, inspection of a site which is currently undergoing development may be placed on hold until the development is complete. The site will then be re-examined to ensure that the appropriate level of remediation has taken place and the site is now 'suitable for use'.

### **Special Sites**

**7.10** If, at any stage of carrying out Detailed Inspection, we suspect that the site could be defined as a Special Site, the Environment Agency will be informed. If they agree on the likely designation, then the site will be passed over to them to carry out Detailed Inspection. All site-specific data held by the council will be copied to the Agency. The Agency's procedures for carrying out inspection are detailed in its own internal standard.

### **The Desk Study**

**7.11** The purpose of the desk study is to gain more information about the potential contaminant linkages identified by the preliminary screening exercise. This involves finding out specific information about contaminants, pathways and receptors to enable a greater understanding of site conditions, including details of site boundaries and a site visit (see below). Carrying out desk-based research also serves to identify further potential contaminant linkages that may be present.

Obtaining all this information ultimately allows us to develop a 'conceptual site model' – i.e. a picture of all potential contaminant linkages at the site.

### **Information collected to date**

**7.12** The first step of the desk study is to review data already held by the council. This may be in electronic format (for example database or GIS records) or hard copies. A full list of those datasets collated for the purpose of the Inspection Strategy, including where they came from and what information they provide, is presented previously in Table 1 (Chapter 6).

**7.13** Where we identify clear gaps in existing information which prevent decision-making, further documentary data is sought and obtained from appropriate sources such as other council departments, the Environment Agency, other statutory bodies or stakeholders (see below).

**7.14** Datasets provided by third parties (Ordnance Survey, Environment Agency, Natural England etc.) are updated as and when updates are issued by their suppliers. All other datasets are revised and updated when new information comes to our attention.

### **Storage of Site-Specific Information**

**7.15** The Contaminated Land GIS enables all digitised data about any one site to be viewed simultaneously. GIS data is supported by the Contaminated Land database which is used to log, reference and store site-specific information (derived from GIS or other datasets) in a standard format.

### **Site Visit**

**7.16** The purpose of the site visit is to gather further information about already identified potential contaminant linkages. This may be to determine the likelihood that contaminants and receptors are present, and/or to gather further information about relevant pathways. In some cases the site visit allows us to clarify and verify desk study information and in particular, to consider in more detail the site boundaries. Also, the site visit may be used to assist in the planning of any intrusive site investigation which may be required.

**7.17** In the majority of cases the site visit is limited to a visual inspection of the site carried out as a walkover exercise or viewing the site from its boundary. A standard checklist has been developed for this purpose. During the site inspection, notes and photographs are taken. Where relevant, inspection is also carried out on land directly outside the site boundaries.

**7.18** On some sites it may be appropriate or necessary (for example, on operational sites) to be accompanied by the site owner, occupier or another representative during the visit. Such persons may be interviewed to find out additional information and, if necessary, to discuss access issues and practicalities for potential future intrusive site investigation work.

## **Intrusive Site Investigation**

**7.19** The purpose of the intrusive site investigation is to collect sufficient information to better characterise actual or potential contaminant linkages at the site, where there is a reasonable possibility that a significant contaminant linkage exists on the land. On completion of the intrusive site investigation, we should be in a position to decide whether any of the contaminant linkages actually do exist and whether any could be described as 'significant'.

**7.20** The intrusive site investigation may involve the excavation of trial pits, drilling of boreholes, installation of monitoring wells, soil augering etc. in order to allow the sampling and subsequent chemical analysis of site soils/waters and/or monitoring of gases/vapours. Any samples would be submitted for chemical laboratory analysis. The level of investigation required will be decided on a site-specific basis. This will be dictated by issues such as the level of information required, the number and nature of potential contaminant linkages at the site, local environmental sensitivities, the level of confidence required, the practicalities of investigation (access restrictions etc.), cost implications etc.

**7.21** All work is carried out so as to ensure that no further harm or pollution, or damage to the environment or property, is caused by the investigation itself.

**7.22** Advice from the Environment Agency is sought for investigations of sites where there is potential significant pollution of controlled waters. Similarly, other statutory bodies will be consulted ahead of carrying out investigations on sites in which they have an interest (see sections 7.28 to 7.32 below). For the purpose of this Inspection Strategy, the West Yorkshire Archaeological Service will be treated as a statutory body.

## **Data Evaluation**

### **Risk Assessment**

**7.23** After each stage of Detailed Inspection, all new information is logged in the site record in the Contaminated Land database. This is then reviewed alongside existing information and used to refine the conceptual site model and the risk assessment. The findings of this assessment are logged in the site record in the Contaminated Land database.

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

## Assessment of Chemical Data

**7.25** Chemical data on contaminant concentrations in soil may be obtained through desk-based research or from sampling carried out during the intrusive site investigation. Such data is, in the first instance, compared to current Government generic guidelines. Different guidelines are applicable for different receptors and land uses. However, when suitable guideline values do not exist, advice is sought from appropriate authoritative publications or organisations on the best way to assess contaminant data. This comparison is used as a first step in decision-making to determine whether a contaminant is present in concentrations which could lead to significant harm, or significant pollution of controlled waters for non-radioactive contaminants (or 'harm' in the case of radioactive contaminants).

Comparison with guidelines alone are not used as a substitute for risk assessment.

**7.26** Where necessary, advice is sought from the Environment Agency for evaluation of chemical data for surface waters or groundwater.

## Liaison & Consultation with other Parties

**7.27** During the course of Detailed Inspection it may be necessary for the council to liaise with and/or consult other parties for the following reasons:

- to determine whether the site is being or could be investigated under another regulatory regime
- to find out or request site-specific information
- to request assistance or advice for the site visit or intrusive site investigation
- to discuss findings and/or request assistance in assessment of facts
- if a site crosses the boundary of two local authorities
- to arrange site access

## Statutory Bodies

**7.28** As it carries out Detailed Inspection, the council consults as necessary with the **Environment Agency, Natural England, English Heritage, the Department for Environment, Food and Rural Affairs (DEFRA), West Yorkshire Archaeological Service** and other statutory bodies. These bodies will be consulted about sites for which they have some responsibility (either as a regulator, owner or occupier) or involvement (for instance, because they have designated the site as a protected area). Consultation will ensure the avoidance of unnecessary duplication of investigation or overlaps in regulatory activity.

**7.29** They will be asked to provide any relevant site specific information they may hold, and particularly that which may assist in the characterisation of potential or identified contaminant linkages. It is considered likely that, in particular, all bodies will be able to provide specific information about receptors, their sensitivity and hence potential impact from exposure to contaminants or potential damage which may result from intrusive site investigations. In recognition of their knowledge and

areas of expertise these statutory bodies will also be asked to provide advice or assistance for the site visit and intrusive site investigation aspects of Detailed Inspection.

**7.30** For any particular site, the council will keep the relevant statutory body informed of its activities. They will be consulted, where necessary, as part of the decision-making process and specifically when determining the existence of a contaminant linkage and/or its significance.

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

**7.32** The council will liaise with **neighbouring local authorities** at the earliest opportunity about priority sites which cross the district boundary. Each such site will be dealt with individually and consultation will be carried out to determine whether it is appropriate for one or both authorities to carry out Detailed Inspection. This may depend on the extent of the site falling within each authority area, where the potential contaminant(s) and receptor(s) are located etc. Information held by the two authorities will be shared and the council will ensure that both authorities are involved in the decision-making process.

### **Stakeholders**

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

**7.34** The council is aware of the need to avoid alarm and potential blight due to the creation of unnecessarily high perceptions of risks when communicating with the public about land contamination issues. The council's statutory duties and the reasons for requiring further information will be clearly explained.

### **Arranging Site Access**

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

### **Powers of Entry**

In accordance with Section 108 of the Environment Act 1995, the council has statutory powers to authorise suitable persons to carry out Detailed Inspection.

The council can only exercise these powers if it is already satisfied that:

- there is a reasonable possibility that a contaminant linkage exists and
- for cases involving intrusive site investigation, it is likely that a contaminant is actually present and a receptor exists (or is likely to exist) given the current land use

Section 108 powers cannot be exercised for intrusive site investigation:

- when the council already has the information it needs to decide whether or not the site appears to be Contaminated Land, or
- if a person provides the necessary information within a reasonable and specified timescale.

**7.36** The council will give at least seven days' notice of proposed entry on residential premises or on sites where an intrusive site investigation using heavy equipment (excavators, drilling rigs etc.) is to take place. If the occupier fails to grant consent for inspection, the council will seek to obtain a Magistrate's warrant in order to gain access.

**7.37** Prior to entering a site to carry out a site visit or intrusive site investigation, the council will attempt to gain prior consent from the current site occupier and/or owner, who will be provided with information that includes:

- the period of inspection,
- what the inspection will involve,
- who will carry out the inspection, and
- if appropriate, who is required to be present for interview during the inspection.

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

## **Who will carry out Detailed Inspection?**

**7.38** The City Development Directorate has responsibility for implementing Part 2A in Leeds. Within the directorate, the day-to-day implementation of the Inspection Strategy will be managed by the Team Leader (Contaminated Land).

**7.39** The desk study and site visit aspects of Detailed Inspection will be the responsibility of the Contaminated Land team. Assistance and advice will be sought, where necessary, from other statutory bodies for these tasks.

**7.40** Although it will depend on the nature and extent of any required intrusive site investigation, it is considered likely that initial limited site investigation work will be carried out by the Contaminated Land team, and more detailed or specialist site investigation work is more likely to be contracted out to a third party which will report directly to the Team Leader (Contaminated Land). The council will not use such parties to make decisions regarding the existence of contaminant linkages or determination of a site as Contaminated Land.

# 8 LEEDS CITY COUNCIL LAND

## Introduction

**8.1** This Chapter explains the procedures being followed by Leeds City Council to address contamination of its own land.

## Current Land-holdings

**8.2** The council (and its predecessors) currently owns, occupies or has formerly owned or occupied a significant number of properties and land-holdings within the district. This land will hereon be referred to as 'Council Land'.

**8.3** Amongst its current portfolio the council has

- 159 schools
- 55,576 houses
- 37 directly managed community centres
- 34 public libraries
- 17 leisure centres
- 9 museums and galleries
- 101 allotments
- 3000 km of roads
- over 3250 hectares of land used for parks, public open space and playing fields

**8.4** Information on these current landholdings is held within Asset Management, Strategic Asset Management, Housing Leeds, Children's Services, Parks and Countryside and Highways and Transportation.

## A Responsible Landowner

**8.5** As a responsible landowner, the council is proactively addressing and investigating potential contamination of its current land-holdings through a number of means. These activities are in addition to any which will be carried out as part of the Inspection Strategy and to include:

- Asset Management Plans
- Land transactions

**8.6** In accordance with Government requirements, the council produces an **Asset Management Plan** explaining its approach to managing and ensuring the effective utilisation of its land and property assets. The Plan outlines how the council will approach the issue of contamination affecting Council Land at both a Corporate and Directorate/service level.

**8.7** The council has responsibility for a wide range of operational and non-operational land and property that are inspected for a variety of purposes and reasons. It is recognised that these routine visits could be used to address potential land contamination issues. An option for facilitating this includes the use of standardised checklists during departmental asset management site visits. These checklists are to be used on a council-wide basis, where relevant, to identify potentially contaminative site uses, as well as evidence of potential contamination during a site visit (such as ground discoloration, evidence of spillages/leaks etc.).

**8.8** Information from such visits can then be considered and its severity assessed, as necessary. Urgent remedial work can be addressed, as appropriate.

**8.9** The asset management site visits will provide information which can feed directly into the Part 2A inspection process. This, as well as the more detailed information obtained through the implementation of the Inspection Strategy, will help the council when carrying out detailed inspection of Part 2A sites.

## **Land Transactions**

**8.10** Prior to disposal of its land holdings, two approaches may be taken if it is considered that contamination or site features such as residue from demolition may or may not present a development constraint for the proposed purchaser or onward development. The council will often agree transactions whereby the proposed purchaser, who is selected following marketing, will undertake its own site investigation work and this is properly assessed by the Council's Geo-technical team for its accuracy and robustness. Any abnormal site costs for remediation works are then discussed as part of the onward transaction. Alternatively, the council may carry out a desk study and, if necessary, an intrusive site investigation in order to characterise any potential land contamination. This enables likely remediation costs to be determined and the impact they may have on the land's apparent value. In addition, it allows the council to identify any liabilities it may have with respect to residual contamination. This information can then be provided to any potential purchasers to consider but they are also invited to carry out their own investigations. The approach taken is determined on a site by site basis.

**8.11** When acquiring land or property, the council carries out appropriate investigations as part of due diligence work in advance of purchase to ensure that it is fully aware of any potential land contamination.

## **Part 2A Inspection Strategy**

### **Site Prioritisation**

**8.12** It is considered that all sites should be prioritised for Detailed Inspection on the basis of environmental risk alone. The council's policy is therefore not to prioritise its own current or former landholdings above all others for Detailed Inspection. Council Land will be inspected according solely to its priority status

assigned on the basis of an assessment of the potential contaminant linkages and environmental risk (see procedures in Chapter 6).

### **Detailed Inspection**

**8.13** Detailed inspection of all Council Land will be carried out in exactly the same way as for all other sites. Close liaison with Corporate Property Management and the relevant holding Service will be essential. It is anticipated that the desk study element will be carried out more efficiently since the council will already hold much relevant site-specific information.

**8.14** In many cases, we will have the benefit of site visit information from routine asset management site visits. It should be stressed however, that such information will be treated solely as supplementary information to be considered during the desk study stage. These site visits will not serve as replacements for the Part 2A Detailed Inspection site visit.

### **Impartiality & Objectivity**

**8.15** In order to ensure impartiality and objectivity, the council proposes that its decisions with respect to determining the presence (or absence) of contaminant linkages on its own land will be discussed, and agreement reached, with a neutral party, such as a neighbouring local authority or the Environment Agency.

# 9 PROVIDING INFORMATION TO THIRD PARTIES

## Introduction

**9.1** The implementation of the Inspection Strategy will result in the collation of a large quantity of information which may be useful to other parties. This may be site-specific data or information referring to the whole of the Leeds area.

**9.2** This Chapter outlines how other parties can access this information and in what format it will be available. It also presents details of which parties the council will automatically issue information to.

It should be stressed that, at the council's discretion, certain information which may be confidential, personal, relate to national security etc. may be withheld. **We will, of course, at all times comply with the legal requirements governing access to information, copyright etc. and in particular, the Freedom of Information Act 2000, the Environmental Information Regulations 2004 and the Data Protection Act 2018** (as noted in Chapter 2).

## Provision of Information to the Public

### General Site-Specific Information

**9.3** General factual site-specific data will be made available on request to members of the public, those carrying out conveyancing work or other interested parties. This will generally comprise information from those datasets listed in Table 1 (see Chapter 6).

Requests should be made in writing and include

- the site address (including postcode)
- the six figure site grid reference
- a plan which clearly shows the site boundaries
- details of the information required

**9.4** We will aim to respond to all requests within 10 working days.

## Information from Detailed Inspection

**9.5** Certain interpretative site-specific information will arise from, or be developed during, Detailed Inspection. Examples might include a conceptual site model, identification of contaminant linkages, risk assessment findings etc. Because such information may be potentially subjective in nature, unverified and/or used in decision-making, it may be considered confidential at that stage.

**9.6** Until Detailed Inspection is complete and a site has or has not been determined as Contaminated Land, this information may not be made publicly available.

## The Part 2A Public Register

**9.7** In accordance with Part 2A and the Contaminated Land (England) Regulations 2006, the council is required to maintain a Public Register.

**9.8** This Part 2A Public Register serves as a permanent record of all regulatory action carried out to ensure the remediation of any site which has been determined as Contaminated Land. Sites which have been determined as Contaminated Land but where no consequent action has yet been taken will not appear on the Register.

It is important to note that the Part 2A Public Register is **not** a register of

- all sites determined as Contaminated Land,
- sites which may be Contaminated Land,
- sites which are potentially contaminated, or
- sites which the council has investigated as part of Detailed Inspection.

**9.9** The Part 2A Public Register is available at [www.leeds.gov.uk/contaminatedland](http://www.leeds.gov.uk/contaminatedland). Please contact the Team Leader (Contaminated Land) (contact details provided below) should a hard copy of the Register be required.

## Contact Point

**9.10** All enquiries should be addressed to the:

Team Leader (Contaminated Land)

City Development  
Leeds City Council  
Merrion House  
110 Merrion Centre  
Leeds  
LS2 8BB

Tel: 0113 378 7608/09

e-mail: [contaminated.land@leeds.gov.uk](mailto:contaminated.land@leeds.gov.uk)

## **Provision of Information to Stakeholders**

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

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

## **Provision of Information to the Environment Agency**

**9.13** As detailed in previous chapters, site-specific information acquired during the implementation of the Inspection Strategy will be provided to the Environment Agency under the following circumstances:

- when the council considers the site is likely to be designated as a Special Site
- when the council considers there to be an issue with respect to pollution of controlled waters or to radioactive contamination
- if the council considers land contamination at the site should be dealt with by the Environment Agency under another regulatory regime
- when requested by the Environment Agency.

**9.14** Information will be provided free of charge and in paper and/or electronic format.

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

## **Provision of Information to Other Statutory Bodies**

**9.16** Site-specific information acquired during the implementation of the Inspection Strategy will be provided to other statutory bodies (DEFRA, Natural England, English Heritage etc. and other local authorities) under the following circumstances:

- when the statutory body has an interest in the site itself (through ownership, occupation, management, protection or other means)
- when the statutory body has an interest in a receptor being impacted by contaminants from another site
- when requested by the statutory body.

**9.17** Information will be provided free of charge and in paper and/or electronic format.

## **Supply of Information for other Council Functions**

**9.18** In accordance with the council's objectives and priorities for the Inspection Strategy (specifically those detailed under Aims 2 and 3), pertinent general and site-

specific information acquired through the implementation of the Inspection Strategy will be made available to those carrying out other council duties or activities, as and when necessary.

**9.19** These activities have already been detailed in Chapter 2, and include asset management and the development of council planning policy.

### **Planning Services**

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

**9.21** A GIS dataset showing 'Potentially Contaminated Areas', collated as part of the Part 2A inspection process has been made available to Planning Services via Corporate GIS. This dataset can be used by planning officers and their supporting administration teams to identify proposed developments where contamination issues may need to be considered.

# 10 RESPONDING TO INFORMATION FROM THIRD PARTIES

## Introduction

**10.1** During the course of implementing the Inspection Strategy the council may receive complaints or information relating to land contamination. This information may be forthcoming from the public or other stakeholders, or from statutory bodies including the Environment Agency.

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

**10.3** This Chapter outlines the procedures we will adopt to respond and react to such communications.

## Who May Provide Us With Information?

### Statutory Bodies

**10.4** As a result of carrying out their day to day functions, the Environment Agency and other statutory and regulatory bodies may be able to provide the council with information about land contamination issues at a particular site or in a specific area.

### The Public

**10.5** The public, businesses and other organisations may come across potential land contamination issues which give them cause for concern. Such information may be forthcoming as an enquiry or a complaint.

### Stakeholders

**10.6** Information may be provided by site owners or occupiers, or other relevant interested parties. This information may be provided ahead of any inspection activity commencing due to concerns about land contamination at the site. Alternatively, it may be provided voluntarily or on request during Detailed Inspection.

## How Will We Deal With It?

**10.7** The way in which we respond to the information provided will depend very much on what it tells us.

**10.8** If the site has already been assigned a priority status, this may be revised by taking into account the new information. As a result the site's priority for inspection may be increased or decreased.

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

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

**10.11** If the information indicates that the site should be dealt with under another regulatory regime, discussions will be held with the relevant regulatory authority to agree the best way to proceed.

**10.12** The council will inform the informant of our actions. The details relayed to the informant (for instance, about whether the existence of a contaminant linkage has now been confirmed, or whether the site now appears to be Contaminated Land etc.) will depend on what interest they have in the site.

**10.13** Other than when they are statutory bodies, the identity of informants will remain confidential and will not be reported to stakeholders or members of the public.

## How Should You Contact Us?

**10.14** All information or complaints should be sent *in writing* or *via e-mail* and include

- the name and address of the informant/complainant
- the site address
- specific details of the complaint/information being provided

### Anonymous & Anecdotal Information

**10.15** All information provided anonymously or other than in writing will be noted, and will be acted upon or investigated at the discretion of the Team Leader (Contaminated Land).

**Contact Point**

**10.16** All correspondence should be addressed to the:

Team Leader (Contaminated Land)  
City Development  
Leeds City Council  
Merrion House  
110 Merrion Centre  
Leeds  
LS2 8BB  
  
Tel: 0113 378 7608/09  
e-mail: [contaminated.land@leeds.gov.uk](mailto:contaminated.land@leeds.gov.uk)

# 11 INSPECTION STRATEGY REVIEW

## Introduction

**11.1** Previous chapters have outlined the Inspection Strategy itself and the procedures we will follow to carry it out.

**11.2** This Chapter explains why, when and how we will review the Inspection Strategy and its procedures.

## Why Will We Review the Inspection Strategy?

**11.3** The council has a duty under Part 2A to keep its Inspection Strategy under periodic review. The main reasons why we will carry out a review are:

- To see how we are progressing – i.e. to determine whether we are achieving our objectives and priorities
- To revise and improve procedures
- To take account of changes in legislation
- To take account of the establishment of significant case law or precedent
- To take account of changes in guidance for dealing with land contamination (in particular, risk assessment techniques, guideline values etc.)
- To reflect changes in council policies and strategies

## When Will We Review the Inspection Strategy?

**11.4** The council considers it appropriate to review the Inspection Strategy as and when considered necessary, and at least every 5 years, until routine detailed inspection of the Leeds area is complete.

**11.5** This is considered to be the most efficient and effective way of not only making sure the Inspection Strategy is up to date and reflects current practices, but also that it is realistic and achievable.

## **How Will We Review the Inspection Strategy?**

**11.6** The review will be carried out by those implementing the Inspection Strategy who will also consult with other Services across the council, as considered necessary. Consultation with external organisations including neighbouring authorities will also be carried out, as deemed necessary. Discussions will be held with the Environment Agency which, as part of its statutory duty under Part 2A, has to assess each local authority's Inspection Strategy and its effectiveness in its report on the state of Contaminated Land. Any suggested changes to the Inspection Strategy will then be reported, for approval, to the council.

**11.7** Details of all significant proposed changes will be sent to consultees as necessary including statutory and public authorities. These details will also be published on the council's website.

**11.8** Following the consultation period, the Inspection Strategy document will be revised and re-published. The changes to the Inspection Strategy will then be adopted and implemented.

## REFERENCES

- Department for Communities and Local Government. 'National Planning Policy Framework'. July 2018.
- Department for Environment, Food and Rural Affairs. 'Environmental Permitting Guidance 'The IPPC Directive Part A(1) Installations and Part A(1) Mobile Plant - For the Environmental Permitting (England and Wales) Regulations 2010'. March 2012.
- Department for Environment, Food and Rural Affairs. 'Environmental Protection Act 1990: Part 2A. Contaminated Land Statutory Guidance'. 2012.
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- Environment Act 1995.
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- Leeds City Council. 'Best Council Plan 2018/19 – 2020/21'.
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- Leeds City Council. 'Leeds Core Strategy – Leeds Local Development Framework'. November 2014.
- Leeds Initiative. 'Leeds 2030 ... our vision to be the best city in the UK'. Vision for Leeds 2011 to 2030.
- Part IIA (Contaminated Land). Environmental Protection Act 1990.
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- Statutory Instrument 2009 No. 153. Environmental Protection, England. 'The Environmental Damage (Prevention and Remediation) Regulations 2009'.
- Statutory Instrument 2012 No. 263. Environmental Protection, England. 'The Contaminated Land (England) (Amendment) Regulations 2012'.

- Statutory Instrument 2012 No. 2214. Building and Buildings, England and Wales. 'The Building Regulations 2010'.
- Water Act 2003.
- Water Resources Act 1991.

## GLOSSARY

- Contaminant** a substance relevant to the Part 2A regime which is in, on or under the land and which has the potential to cause significant harm or to cause significant pollution of controlled waters for non-radioactive contamination (or harm for radioactive contamination). Has the same meaning as 'pollutant' and 'substance'. A contaminant forms part of a contaminant linkage.
- Contaminant linkage** the relationship between a contaminant, a pathway and a receptor.
- Contaminated Land** 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 –
- for non-radioactive contamination -
- (a) significant harm is being caused or there is a significant possibility of such harm being caused, or;
  - (b) significant pollution of controlled waters is being caused or there is a significant possibility of such pollution being caused.
- for radioactive contamination –
- (a) harm is being caused; or
  - (b) there is a significant possibility of such harm being caused.
- Controlled waters** defined by reference to Part 3 (section 104) of the Water Resources Act 1991; this embraces territorial and coastal waters, inland fresh waters, and ground waters. For this purpose, controlled waters has the same meaning as in Part 3 of the Water Resources Act 1991, except that "ground waters" does not include water contained in underground strata but above the saturation zone.
- Current use**
- (a) The use which is being made of the land currently.
  - (b) Reasonably likely future uses of the land that would not require a new or amended grant of planning permission.
  - (c) Any temporary use to which the land is put, or is likely to be put, from time to time within the bounds of current planning permission.
  - (d) Likely informal use of the land, for example children playing on the land, whether authorised by the owners or occupiers, or not.
  - (e) In the case of agricultural land, the current agricultural use should not be taken to extend beyond the growing or rearing of the crops or animals which are habitually grown or reared on the land.

<b>GIS</b>	Geographical Information System
<b>Harm</b>	<p>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 for non-radioactive contamination.</p> <p>For radioactive contamination, harm should be regarded as being caused where lasting exposure gives rise to doses that exceed one or more of the following: (a) an effective dose of 3 millisieverts per annum; (b) an equivalent dose to the lens of the eye of 15 millisieverts per annum; or (c) an equivalent dose to the skin of 50 millisieverts per annum. The skin limit shall apply to the dose averaged over any area of 1cm<sup>2</sup>, regardless of the area exposed.</p>
<b>Pathway</b>	is a route by which a receptor is or might be affected by a contaminant.
<b>Pollution of controlled waters</b>	the entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter.
<b>Possibility of significant harm</b>	a measure of the probability, or frequency, of the occurrence of circumstances which would lead to significant harm being caused.
<b>Receptor</b>	is something that could be adversely affected by a contaminant, for example a person, an organism, an ecosystem, property, or controlled waters. The various types of receptors are explained in the Contaminated Land Statutory Guidance and Radioactive Contaminated Land Statutory Guidance.
<b>Risk</b>	<p>the combination of:</p> <p>(a) the likelihood that harm, or pollution of water, will occur as a result of contaminants in, on or under the land; and</p> <p>(b) the scale and seriousness of harm or pollution if it did occur.</p>
<b>Significant harm</b>	means any harm which is determined to be significant in accordance with the Contaminated Land Statutory Guidance.
<b>Significant contaminant linkage</b>	a contaminant linkage which forms the basis for a determination that a piece of land is Contaminated Land.
<b>Significant pollution of controlled waters</b>	<p>the following types of pollution should be considered to constitute significant pollution of controlled waters:</p> <p>a) Pollution equivalent to “environmental damage” to surface water or groundwater as defined by The Environmental Damage (Prevention and Remediation) Regulations 2009, but</p>

which cannot be dealt with under those Regulations.

- b) Inputs resulting in deterioration of the quality of water abstracted, or intended to be used in the future, for human consumption such that additional treatment would be required to enable that use.
- c) A breach of a statutory surface water Environmental Quality Standard, either directly or via a groundwater pathway.
- d) Input of a substance into groundwater resulting in a significant and sustained upward trend in concentration of contaminants (as defined in Article 2(3) of the Groundwater Daughter Directive (2006/118/EC))

**Significant possibility of harm or significant harm**

a possibility of significant harm or harm being caused which is determined to be significant in accordance with the Contaminated Land Statutory Guidance and Radioactive Contaminated Land Statutory Guidance, respectively.

**Special Site**

a site defined as such in the Contaminated Land Regulations (England) 2000. These are sites which meet the definition of Contaminated Land and fall within one of the descriptions given in the Regulations, which include:

- certain water pollution cases
- industrial cases
  - waste acid tar lagoons
  - oil refining
  - explosives
  - certain IPC sites
  - nuclear sites
- Land owned by the Ministry of Defence.
- All radioactive Contaminated Land

<b>Substance</b>	has the same meaning as 'pollutant' and 'contaminant'. For non-radioactive contamination, any natural or artificial substance, whether in solid or liquid form or in the form of a gas or vapour. For radioactive contamination, covers only substances containing radionuclides which have resulted from the after-effects of a radiological emergency or have been processed as part of a past practice or past work activity.
<b>Sustainable Development</b>	a wide reaching concept of environmental policy with numerous definitions. Most commonly supported definition is development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.
<b>Unacceptable risk</b>	a risk of such a nature that it would give grounds for land to be considered Contaminated Land under Part 2A.

## APPENDIX A - RECEPTORS

**Receptors are as defined in the Contaminated Land Statutory Guidance for non-radioactive contamination. Under the radioactive contaminated land regime, receptors are limited to human beings only.**

### **Human beings**

Any **ecological system**, or **living organism** forming part of such a system, within a location which is:

- a site of special scientific interest (under section 28 of the Wildlife and Countryside Act 1981);
- a national nature reserve (under s.35 of the 1981 Act);
- a marine nature reserve (under s.36 of the 1981 Act);
- an area of special protection for birds (under s.3 of the 1981 Act);
- a "European Site" within the meaning of regulation 8 of the Conservation of Habitats and Species Regulations 2010;
- any habitat or site afforded policy protection under paragraph 6 of Planning Policy Statement 9 (PPS9) on nature conservation (ie candidate Special Areas of Conservation, potential Special Protection Areas and listed Ramsar sites); or
- any nature reserve established under section 21 of the National Parks and Access to the Countryside Act 1949.

### **Property** in the form of:

- crops, including timber;
- produce grown domestically, or on allotments, for consumption;
- livestock;
- other owned or domesticated animals;
- wild animals which are the subject of shooting or fishing rights.

### **Property** in the form of buildings.

For this purpose, "building" means any structure or erection, and any part of a building including any part below ground level, but does not include plant or machinery comprised in a building, or buried services such as sewers, water pipes or electricity cables.

### **Pollution of Controlled Waters**

For this purpose, controlled waters has the same meaning as in Part 3 of the Water Resources Act 1991, except that “ground waters” does not include water contained in underground strata but above the saturation zone. The focus is on pollution which:

- (i) may be harmful to human health or the quality of aquatic ecosystems or terrestrial ecosystems directly depending on aquatic ecosystems;
- (ii) which may result in damage to material property; or
- (iii) which may impair or interfere with amenities and other legitimate uses of the environment.

## APPENDIX B- RECEPTOR CLASSIFICATION & SCORING SCHEME

Category	Sub-categories to include	Score
<b>HUMANS</b> (based on land use)	<ul style="list-style-type: none"> <li>➤ Residential properties with gardens [<i>occupiers</i>]</li> <li>➤ Residential properties without gardens (flats, apartments) [<i>occupiers</i>]</li> <li>➤ Allotments [<i>users, consumers</i>]</li> <li>➤ Schools [<i>pupils, teachers, workers, visitors</i>]</li> <li>➤ Children's play areas [<i>children</i>]</li> <li>➤ Playing fields &amp; sports grounds [<i>users</i>]</li> <li>➤ Other educational establishments [<i>students, workers, visitors</i>]</li> <li>➤ Parks &amp; Open Spaces [<i>users</i>]</li> <li>➤ Commercial premises [<i>workers/visitors</i>]</li> <li>➤ Vacant Land [<i>trespassers</i>]</li> <li>➤ Health Centres &amp; Hospitals [<i>patients, workers, visitors</i>]</li> </ul>	<b>1</b>
<b>CONTROLLED WATERS</b>	<ul style="list-style-type: none"> <li>➤ Surface watercourses [streams, rivers, becks etc.]</li> <li>➤ Groundwater</li> <li>➤ Canals</li> <li>➤ Lakes</li> <li>➤ Reservoirs</li> <li>➤ Ponds</li> </ul>	<b>1x10<sup>-6</sup></b>
<b>ECOLOGICAL, FLORA &amp; FAUNA</b>	<ul style="list-style-type: none"> <li>➤ Special Protection Areas/Special Areas of Conservation</li> <li>➤ Sites of Special Scientific Interest</li> <li>➤ Local Nature Reserves</li> <li>➤ Crops</li> <li>➤ Fishing ponds</li> <li>➤ Fish farms</li> <li>➤ Farm animals / grazing animals</li> <li>➤ Game (estates)</li> <li>➤ Kennels &amp; catteries</li> </ul>	<b>1x10<sup>-12</sup></b>
<b>BUILDINGS/ PROPERTY</b>	<ul style="list-style-type: none"> <li>➤ Scheduled Ancient Monuments</li> <li>➤ Listed Buildings</li> <li>➤ Buildings in Conservation Areas</li> </ul>	<b>1x10<sup>-18</sup></b>

## APPENDIX C - SITE CLASSIFICATION&SCORING SCHEME

Adjacent-Only score = score for those categories of previous potentially contaminative use that fall adjacent to (5m) a receptor.

Category	Sub-categories to include	Class for On-Site Score	On-Site Score	Adjacent-Only Score
Agricultural Land <sup>(1)</sup>	➤ allotments	Medium	4836	31
Airports / airfields		Medium	4836	31
Animal & animal products processing works	<ul style="list-style-type: none"> <li>➤ abattoirs</li> <li>➤ animal rendering</li> <li>➤ glue works</li> <li>➤ fellmongers</li> </ul>	Low	156	6
Asbestos Manufacture		Low/Medium	936	1
Blacksmiths <sup>(2)</sup>		Low/Medium	936	1
Chemical Works	<ul style="list-style-type: none"> <li>➤ chemicals manufacture</li> <li>➤ pharmaceuticals</li> <li>➤ plastics</li> <li>➤ explosives (not MoD)</li> <li>➤ fertilisers</li> <li>➤ pesticides</li> <li>➤ cosmetics</li> <li>➤ coatings</li> <li>➤ soap works</li> </ul>	High	121836	31
Engineering Works	<ul style="list-style-type: none"> <li>➤ mechanical engineering</li> <li>➤ vehicle manufacture</li> <li>➤ shipbuilding</li> <li>➤ manufacturing</li> <li>➤ processing</li> </ul>	Medium/High	24336	31
Extraction Industries & Mineral Processing <sup>(3)</sup>	<ul style="list-style-type: none"> <li>➤ quarries</li> <li>➤ mineral extraction</li> <li>➤ coal mining (deep/open cast)</li> <li>➤ collieries</li> <li>➤ mineshafts</li> <li>➤ cement works</li> <li>➤ brick works</li> <li>➤ gravel pits</li> </ul>	Medium/High	24336	31
Food industry	<ul style="list-style-type: none"> <li>➤ food manufacture</li> <li>➤ processing</li> <li>➤ breweries</li> <li>➤ bakeries</li> </ul>	Low	156	1

Category	Sub-categories to include	Class for On-Site Score	On-Site Score	Adjacent-Only Score
Gas Works, Coke Works & Coal Carbonisation Works	<ul style="list-style-type: none"> <li>➤ charcoal manufacture</li> <li>➤ gas lighting works</li> <li>➤ gas purification</li> <li>➤ gas holders (storage)</li> <li>➤ gas distribution</li> </ul>	High	121836	31
Hospitals & Cemeteries	<ul style="list-style-type: none"> <li>➤ crematoria</li> <li>➤ burial grounds</li> <li>➤ clinics</li> </ul>	Low/Medium	936	1
Leather Works <sup>(4)</sup>	<ul style="list-style-type: none"> <li>➤ tanneries</li> </ul>	Medium	4836	6
Metal Works	<ul style="list-style-type: none"> <li>➤ metal manufacturing</li> <li>➤ refining</li> <li>➤ finishing</li> <li>➤ smelting</li> </ul>	High	121836	6
MOD Land	<ul style="list-style-type: none"> <li>➤ barracks</li> <li>➤ stores</li> <li>➤ rifle ranges</li> <li>➤ explosives / munitions works</li> <li>➤ training grounds</li> <li>➤ airfields</li> </ul>	Medium/High	24336	6
Oil Refineries	<ul style="list-style-type: none"> <li>➤ processing of tar/bitumen</li> <li>➤ manufacture of asphalt</li> <li>➤ road coating manufacture</li> </ul>	High	121836	31
Other (miscellaneous)	<ul style="list-style-type: none"> <li>➤ glass manufacture</li> <li>➤ laundries</li> <li>➤ dry-cleaning</li> <li>➤ unspecified works<sup>(5)</sup></li> </ul>	Medium	4836	1
Petrol Filling Stations & Bulk Oil Storage	<ul style="list-style-type: none"> <li>➤ oil distribution depots</li> </ul>	High	121836	31
Power Stations	<ul style="list-style-type: none"> <li>➤ electricity sub-stations</li> </ul>	Medium	4836	6
Pulp and Paper Works	<ul style="list-style-type: none"> <li>➤ manufacturing</li> <li>➤ printing</li> <li>➤ processing</li> </ul>	Medium	4836	6
Railway Land	<ul style="list-style-type: none"> <li>➤ sidings / maintenance</li> <li>➤ depots</li> <li>➤ stations</li> <li>➤ railway lines</li> <li>➤ goods yards</li> </ul>	Medium/High	24336	6



Category	Sub-categories to include	Class for On-Site Score	On-Site Score	Adjacent-Only Score
Road Vehicle Maintenance	<ul style="list-style-type: none"> <li>➤ garages</li> <li>➤ transport &amp; haulage depots</li> <li>➤ dismantling</li> <li>➤ repair and service</li> </ul>	Medium	4836	31
Sewage Treatment	<ul style="list-style-type: none"> <li>➤ Sewage treatment works</li> <li>➤ sewage farms</li> <li>➤ incinerators</li> <li>➤ other wastewater / effluent treatment</li> </ul>	Low/Medium	936	6
Textile Industry	<ul style="list-style-type: none"> <li>➤ textile works</li> <li>➤ mills</li> <li>➤ dyeworks,</li> <li>➤ carpet mills</li> <li>➤ rope works</li> </ul>	Medium	4836	6
Timber Works	<ul style="list-style-type: none"> <li>➤ treatment works</li> <li>➤ timber yards</li> <li>➤ products manufacturing</li> </ul>	Medium/High	24336	6
Waste Management Sites	<ul style="list-style-type: none"> <li>➤ landfill sites</li> <li>➤ transfer stations</li> <li>➤ scrapyards</li> <li>➤ waste processing</li> <li>➤ waste treatment</li> <li>➤ recycling &amp; recovery</li> <li>➤ household waste sites</li> <li>➤ incinerators</li> </ul>	High	121836	31

Changes to original Contaminated Land Inspection Strategy (2001) made within the Jan 2013 version that still apply to this version based on knowledge gained during inspection process.

- (1) Allotments category increased from Low to Medium based on known cases where allotments have been a problem due to eg industrial ash been used as a soil improver and on paths
- (2) Blacksmiths removed from metal works category (high) and into its own category (Medium/Low)
- (3) Extraction and Mineral Processing category increased from Medium to Medium/High
- (4) Tanneries removed from Animal Processing category (Low) and moved into Leather Works category (Medium)
- (5) Unspecified works moved into the Other (miscellaneous) category

## APPENDIX D – PRIORITISATION SCORING

The system of prioritisation scoring is based on the cumulative influence of potential contaminant sources over time. The primary dataset used to identify potential sources of contamination is the Historic Land Use dataset, compiled from the study of historic mapping over 5 separate epochs of time. Land uses are classified into categories as shown in Appendix C, and each of the categories is assigned a potential risk on a 5-level scale. Each of the 5 risk levels is assigned a specific score and the overall prioritisation score is derived from a simple addition of the scores of overlapping sources within the site. The scores are derived in such a way that a single instance of a higher risk source category will always have a greater score than multiple instances of a lower risk category.

Source categories are also assessed on a 3-level scale depending on their potential to cause contamination at adjacent receptor sites, with the scores for any adjacent sources being included in the overall score. Sites where the potential sources are adjacent only to the receptor will always score lower than those where a source and receptor overlap, regardless of what the respective sources are.

When prioritising receptors other than human health (ie controlled waters, ecological receptors and buildings), we will use the same scoring system to produce a ranked list for each receptor type and then apply a reducing factor to each receptor-type list to ensure that, for example, all sites with a controlled water receptor come below any human health receptor sites in the overall list. Other than very exceptional scenarios, the highest possible scores for individual sites are in the  $1 \times 10^{-5}$  range. So to ensure that they all come in as less than 1 (below all possible human health receptor sites), we need to apply a reducing factor of  $1 \times 10^{-6}$  for controlled waters. The same process will be applied to ecological and property receptors, with the reducing factor adjusted accordingly ( $1 \times 10^{-12}$  for ecological receptors and  $1 \times 10^{-18}$  for property receptors).

Source type	Source score	Epochs	Total score
High overlap	121836	5	609180
High overlap	121836	4	487344
High overlap	121836	3	365508
High overlap	121836	2	243672
High overlap	121836	1	121836
High/medium overlap	24336	5	121680
High/medium overlap	24336	4	97344
High/medium overlap	24336	3	73008
High/medium overlap	24336	2	48672
High/medium overlap	24336	1	24336
Medium overlap	4836	5	24180
Medium overlap	4836	4	19344
Medium overlap	4836	3	14508
Medium overlap	4836	2	9672
Medium overlap	4836	1	4836
Medium/low overlap	936	5	4680
Medium/low overlap	936	4	3744
Medium/low overlap	936	3	2808
Medium/low overlap	936	2	1872
Medium/low overlap	936	1	936
Low overlap	156	5	780
Low overlap	156	4	624
Low overlap	156	3	468
Low overlap	156	2	312
Low overlap	156	1	156
High adjacent	31	5	155
High adjacent	31	4	124
High adjacent	31	3	93
High adjacent	31	2	62
High adjacent	31	1	31
Medium adjacent	6	5	30
Medium adjacent	6	4	24
Medium adjacent	6	3	18
Medium adjacent	6	2	12
Medium adjacent	6	1	6
Low adjacent	1	5	5
Low adjacent	1	4	4
Low adjacent	1	3	3
Low adjacent	1	2	2
Low adjacent	1	1	1

## APPENDIX E – REFERENCE PUBLICATIONS FOR DETAILED INSPECTION PROCEDURES

**Procedures for carrying out detailed inspection will be based on documented techniques, including those detailed in the following publications. NB: this list is not exhaustive, but is indicative of key reference sources which are available at the time of publication of this document.**

- British Standards Institute. BS 8485:2015. 'Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings. (2<sup>nd</sup> Edition). 2015.
- British Standards Institution. BS 10175:2011+A1:2013. Investigation of Potentially Contaminated Sites – Code of Practice. (2<sup>nd</sup> Edition). 2013.
- British Standards Institution. BS 5930:2015. 'Code of Practice for Site Investigation. (4<sup>th</sup> Edition). 2015 and BS ENO ISO 14688 1 & 2:2007.
- Building Research Establishment. Special Digest 1. 'Concrete in aggressive ground. 3rd edition. 2005.
- Chartered Institute of Environmental Health & CL:AIRE. 'Guidance on Comparing Soil Contamination Data with a Critical Concentration'. 2008.
- Construction Industry Research and Information Association. C733. 'Asbestos in soil and made ground: a guide to understanding and managing risks. 2014.
- Construction Industry Research and Information Association. C665. 'Assessing risks posed by hazardous ground gases to buildings'. 2007.
- Department for Environment, Food and Rural Affairs. SP1010. 'Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination: Final Project Report'. 2013.
- Department of the Environment (DOE). Industry Profiles. 1995/1996/2006.
- EIH/AGS/CL:AIRE. 'Soil Generic Assessment Criteria for Human Health Risk Assessment'. 2010.
- Environment Agency. 'Remedial Targets Methodology - Hydrogeological Risk Assessment for Land Contamination'. 2006.
- Environment Agency. CLR11. 'Model Procedures for the Management of Contaminated Land'. 2004.
- Environment Agency/NHBC. R&D Publication 66. 'Guidance for the Safe Development of Housing on Land Affected by Contamination'. 2008.

- Health Protection Agency. CHAP HQ HPA. 'Compendium of Chemical Hazards. Asbestos'. 2007.
- Land Quality Management/Chartered Institute of Environmental Health. 'The LQM/CIEH S4ULs for Human Health Risk Assessment'. 2015.

