Appendix 1

Broxtowe Borough COUNCIL

Contaminated Land Strategy for Broxtowe Borough Council 2025-2030

In fulfillment of Part 2A of the

Environmental Protection Act 1990 (As Amended)

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Executive Summary

This document is a revision of the Council's Contaminated Land Inspection Strategy last reviewed in January 2018. This revision follows a routine five yearly review. The overall basis of the Strategy remains unchanged from the previous Strategy in that the Planning Regime will primarily be used to deal with land contamination issues in the Borough. This approach followed the decision by central government in 2013 to withdraw funding under the Contaminated Land Capital Grants Scheme used to support Local Authorities in undertaking site investigations and remediation under Part 2A of the Environmental Protection Act 1990 (the Part 2A regime). The changes in funding, investigation and potentially remediation costs under the Part 2A regime now fall entirely to the Local Authority except perhaps for emergency cases and even then, any financial help from Department for Environment, Food & Rural Affairs (Defra) may not be available. These reductions in funding have also occurred at a time of significant cuts to Local Authority Budgets.

The UK has a legacy of land contamination arising from past industrial development. Various industrial practices have led to substances being in, on or under land such as tars, heavy metals, organic compounds, and mining materials. In addition, landfilling of waste sometimes took place without adequate precautions against the escape of landfill gases and leaching of materials.

This Strategy document details how Broxtowe Borough Council, under regulations inserted into the Environmental Protection Act 1990, will inspect the land in its Borough for contamination. It details how the Council will take a rational, ordered, and efficient approach to this inspection.

Defra have indicated that they now expect the vast majority of land contamination to be remediated through the planning process, where (after remediation) as a minimum, land should not be capable of being determined as Contaminated Land under Part 2A of the Environmental Protection Act 1990 and should be suitable for its intended end use.

The investigation of potentially contaminated land under Part 2A of the Environmental Protection Act 1990 is extremely limited. It is likely that for future contaminated land investigations and remediation, the responsibility to fund the majority of such work will fall on the landowner and their insurance companies.

The Council has used all available information and a risk-based approach during the initial screening process and will continue to do so in the detailed inspection of sites to identify Contaminated Land. A rolling inspection programme will be undertaken, running for the duration of this strategy, with the Council producing a public register of any land designated as contaminated.

The process of investigating and remediating land will ensure that all land in the Borough is suitable for use and does not pose unacceptable risks to people, the environment, water, and property.

This revision to the Strategy has been written to reflect this change in emphasis and update on progress made to date.

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1.0 Introduction

1.1 The Problem of Land Contamination

1.1.1 The National Context

The UK has a legacy of land contamination arising from past industrial development. Various industrial practices have led to substances being in, on or under land such as tars, heavy metals, organic compounds and mining materials. In addition, minerals extraction led to backfilling of land with materials of unknown composition and landfilling of waste sometimes took place without adequate precautions against the escape of landfill gases and leaching of materials. Industrial change and demographic shift during the 20th century resulted in the need for large-scale re-organisation of our towns and cities. Industries moved out or disappeared altogether leaving large swathes of underused land, gaps in our urban landscape. Inevitably, these changes have left behind a legacy of land contamination, which in some cases may be harmful.

In response to this, the UK Government, through the establishment of various policies and the introduction of legislation, has provided a framework, which will endeavour to: -

Prevent future contamination from occurring.

Ensure that appropriate action is taken to deal with existing land contamination where it poses unacceptable risks to human health or to the environment.

Part IIA (commonly referred to as Part 2A) of the Environmental Protection Act (EPA) 1990, introduced by s.57 of the Environment Act 1995, came into force in England on 1 April 2000. It was amended in 2005, 2008 and 2021.

The Government regards the implementation of the Part 2A regime as an essential tool in providing an effective framework to deal with the regulation of contaminated land. It is based upon a set of principles which include *'suitable for use'* standards of remediation, the *'polluter pays'* principle for allocating liability, a '*risk based'* approach to the assessment of contamination and ensuring '*sustainable development'*. **Technical Appendix A** outlines the general principles and definitions of the Part 2A process of identifying and managing contaminated land.

National Objectives

The regime provides a means of dealing with unacceptable risks posed by land contamination to human health and the environment, and enforcing authorities should seek to find and deal with such land based on the principles set out in the Act and the supporting Statutory Guidance. Under Part 2A the starting point should be that land is not contaminated land unless there is reason to consider otherwise. Only land where unacceptable risks are clearly identified, after a risk assessment has been undertaken in accordance with Statutory Guidance, should be considered as meeting the Part 2A definition of contaminated land.

The overarching objectives of the Government's policy on contaminated land and the Part 2A regime are:

1. to identify and remove unacceptable risks to human health and the environment;

2. to seek to ensure that contaminated land is made suitable for its current use; and

3. 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.

Enforcing authorities should seek to use Part 2A only where land is clearly identified as 'contaminated' under the definition of Part 2A and where no appropriate alternative solution exists. The Part 2A regime is one of several ways in which land contamination can be addressed.

'Contaminated' land under Part 2A is defined as being land "*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".

This definition sets a relatively high threshold of evidence to demonstrate that land is contaminated. In March 2007 (the last date at which national data was published) 781 sites across the UK had been declared as contaminated.

No sites in Broxtowe have been declared as contaminated.

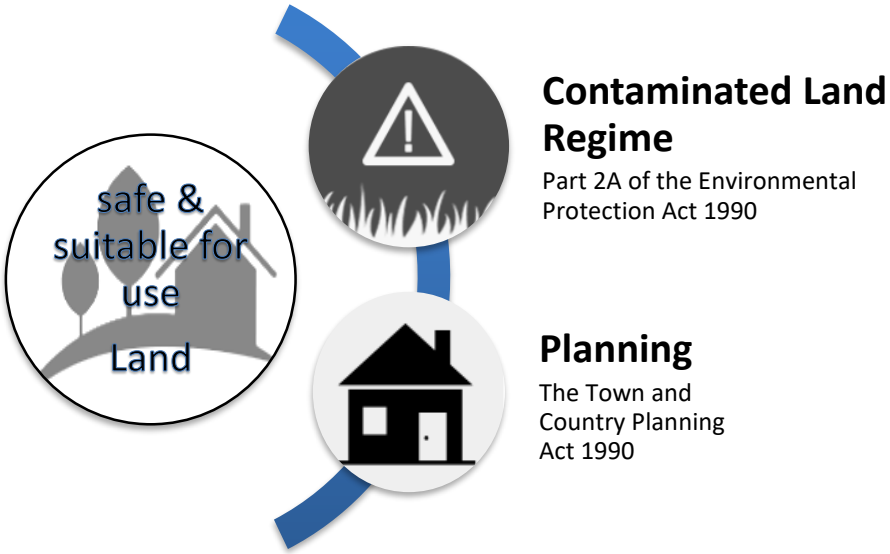
In respect of Japanese Knotweed, DEFRA have previously indicated that Japanese Knotweed (and other problem plants such as giant hogweed) were not intended to be dealt with under the Part 2a regime and that other legislation should be used where required. Part 2a is only used for *land that because of substances, which are in, on or under the land, may cause significant harm or the significant possibility of significant harm to human health or the environment.* ***Substance:*** defined in section 78A(9) as:

"any natural or artificial substance, whether in solid or liquid form or in the form of a gas or vapour.". *HMRC states at CIRD60135 that it interprets "A substance is matter having uniform properties. So, for example, asbestos is a substance but life forms are not."*

Japanese Knotweed (JKW) causes no direct threat of harm to human health and causes no significant pollution to controlled waters.

In 2022 the Royal Chartered Institute of Surveyors updated its guidance and refers to a research paper by Fennell et al (Japanese knotweed (Fallopia japonica): An analysis of capacity to cause structural damage (compared to other plants) and typical rhizome extension), published in 2018, and which reported that Japanese knotweed poses less of a risk of damage to substantial buildings than many trees or woody shrubs.

Land contamination is predominantly addressed using two routes:



In certain circumstances other legislative regimes may also provide a means of dealing with land contamination issues, such as building regulations (Part C); the regimes for waste, water, and environmental permitting (PPC); and the Environmental Damage (Prevention and Remediation) Regulations 2009. Land contamination can also be dealt with under common law.

1.1.2 Dealing with Costs, Benefits and Uncertainties

Under Part 2A, the enforcing authority may need to decide whether and how to act in situations where such decisions are not straightforward and where there is unavoidable uncertainty relating to the facts of each case.

In so doing, the authority should use its judgement to strike a reasonable balance between:

a) dealing with risks raised by contaminants in land and the benefits of remediating land to remove or reduce those risks, and
b) the potential impacts of regulatory intervention including financial costs to whoever will pay for remediation (including the taxpayer where relevant), health and environmental impacts of taking action, property blight, and burdens on affected people.

The aim should be to consider the various benefits and costs of taking action, with a view to ensuring that the regime produces net benefits, taking account of local circumstances.

1.1.3 The Local Context

The Council's Vision for Broxtowe is 'greener, safer, healthier Broxtowe where everyone prospers'.

Broxtowe Borough Council Corporate Plan 2024 – 2029

The contaminated land strategy directly supports the Council's Corporate Priority of Environment – protect the environment for the future as well as complementing other strategies and policies such as health and planning.

Under Part 2A each local authority has to *'cause its areas to be inspected from time to time for the purpose of identifying contaminated land* '(Section 78B). When contaminated land is identified, the local authority must ensure that it is managed in an appropriate manner. Statutory Guidance has been issued to local authorities to take a 'strategic approach' to inspecting their areas.

The aim of this strategic approach to inspection is to ensure that all those affected by and involved in inspections of potentially contaminated land have a clear understanding of the rationale behind the inspection, how it will be carried out and over what timescale.

Historically, Broxtowe, like all other areas of the UK, has been associated with various types of industrial activity that had the potential to have caused land contamination. This is why the Council has a need to focus on the identification and remediation of contaminated land within the Borough.

1.1.4 Enforcement Principles

Much of the Borough's land contamination has been present for long periods of time. It is therefore important to recognise the principle that not all contamination poses problems and much of the contamination which is already present may only be of

concern when or if the land is used for a different particular and more sensitive purpose. Therefore, it may only be necessary to deal with contamination when land is used for a new purpose, such as developing a former industrial site for housing.

However, in some circumstances regulatory action may be needed to make sure that necessary remediation on a site is carried out. The 'suitable for use' approach will ensure that remediation requirements are reasonable and tailored to the needs of individual sites.

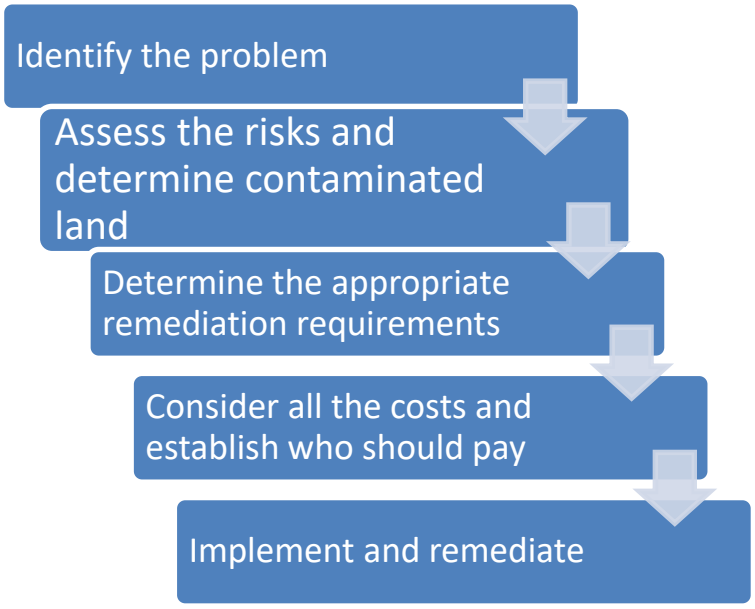
Broxtowe Borough Council has a statutory duty to implement and enforce a diverse range of legislation. The way in which the Council carries out these enforcement duties should be in accordance with the five principles set out by the Legislative and Regulatory Reform Act 2006. The Council has published a corporate Enforcement Policy which sets out in broad terms how the Council will deliver its regulatory functions in accordance with these principles. The principles and practice set out in the Enforcement Policy applies to the way in which this Strategy is delivered.

Depending on particular circumstances, the Council may use a variety of means to ensure that employers, employees, self-employed, landlords and individuals meet their responsibilities. The general principle of the Enforcement Policy is that this will be achieved through escalating interventions from education to advice, guidance, warning letters, statutory notices or prosecutions.

1.2 Regulatory Context

1.2.1 Regulatory role of the Council under Part 2A

The regime is based on the following basic principles: -



Technical Appendix A, D and E expand on these basic principles.

The legal requirement to produce an inspection strategy for contaminated land allows the Council to consider: -

- how best to prepare and implement the strategy through the joint working of individual departments, and.
- the practical working arrangements with external agencies that will have to be in place to effectively implement the new regime.

Statutory Guidance published in 2012 specifies the Council's duty with regard to inspection of its area and also lays down fundamental principles to be followed throughout the inspection process.

In carrying out its inspection duty under Section 78B (1), the Council has taken a strategic approach to the identification of land, which merits detailed individual inspection.

This approach has been:

rational, ordered and efficient

proportionate to the seriousness of any actual or potential risk

seek to ensure that the most pressing and serious problems are located first

ensure that resources are concentrated on investigation in areas where the Council is most likely to identify contaminated land and;

ensure that the Council efficiently identifies requirements for the detailed inspection of particular areas of land.

The Part 2A regime requires that the Council and the Environment Agency work together and share the regulatory duties under this regime. Although the Council have the sole responsibility for the identification of land that meets the statutory definition, the Environment Agency has a duty to provide information and advice, in addition to carrying out inspection at potential 'special sites' on behalf of the Council.

1.2.2 Regulatory role of the Environment Agency

The principal roles of the Environment Agency with respect to contaminated land can be summarised as follows: -

- The regulation of 'special sites' under Part 2A, including the production and maintenance of a public register of special sites remediation.
- The inspection of land that if found to be contaminated, would be a special site under the Contaminated Land Regulations (England) 2006 [as amended] (at the request of and on behalf of the Council).
- The provision of information to the Council on land contamination.
- The provision of advice to the Council on identifying and dealing with the pollution of controlled waters. Where the Environment Agency considers it appropriate, it shall provide site-specific advice on the remediation of sites, which have not been identified as special sites.
- Preparation of a national report on the state of the environment and contaminated land in England.

2.0 Overall Aims and Objectives of the Strategy

Land contamination has the potential to cause significant impacts on both the environment and the economy of the Borough. It is important therefore, that the processes involved in this Strategy document are open and transparent.

2.1 Aims of the Strategy

The Council's priorities when dealing with land contaminated will be: -

Protect	Prevent	Encourage
• Human Health • Controlled Waters • Designated Ecosystems	• Damage to Property • Damage to designated Historic Sites. • Further land contamination	• Voluntary Remedation • the re-use of land considered to be 'affected by contamination 'or '*contaminated*'.

2.2 Contaminated Land Strategy Objectives

1. To follow the overarching objectives of the *Contaminated Land Statutory Guidance (April 2012)* Section 1.
2. To follow the approach, with regard to inspection, contained within Section 2 of the *Contaminated Land Statutory Guidance (April 2012)*.
3. To ensure that where redevelopment of land takes place within the Borough that the planning process deals effectively with any land contamination such that the land is suitable for its intended use in accordance with the NPPF.

4. To ensure that the Strategy is compatible with the Borough Council's Sustainability Objectives, Development Objectives and Corporate Plans.
5. To make information freely available to all relevant services of the Council to enable consideration to be given about land contamination during the policy making process.
6. To protect the Council's own assets from being damaged or devalued due to contamination.
7. To avoid any unnecessary blight of land within the Borough.
8. To provide information to the Environment Agency for its report on Contaminated Land.

3.0 Council's Priority Actions and Timescales

This section sets out the specific approach the Council will be taking to meet the Aims and Objectives outlined in Section 2. It sets out priorities for actions and activities to meet the regulatory requirements.

3.1 Priority Actions

The 5-stage process outlined below follows the principals found in Section 2 of the Statutory Guidance:

Preliminary Stages

Stage 1 - Production of the Strategy Document

A first Contaminated Land Strategy for Broxtowe was produced and adopted in 2001. It has been revised in various iterations, most recently in 2018, to take into account changes in national priorities and revisions in Part 2A and the Statutory Guidance.

Stage 2 – Dealing with urgent sites

Throughout the process of Strategy production, strategic inspection and detailed inspection, if any sites were strongly suspected of causing significant harm, or if any site is referred by the Environment Agency for determination as a "Special Site", then these needed to take priority. This remains the case. All sites will be investigated using procedures laid out in this document.

Strategic Inspection

Stage 3 – Acquisition and input of data into Geographical Information System (GIS)

In order to identify and prioritise sites the Council purchased and acquired data for this purpose. A list of the datasets collated is given in **Technical Appendix B**, the majority of this data was in a digital form, easily entered into the Councils Geographical Information System (GIS); however, some information obtained was in a paper format which required digitising.

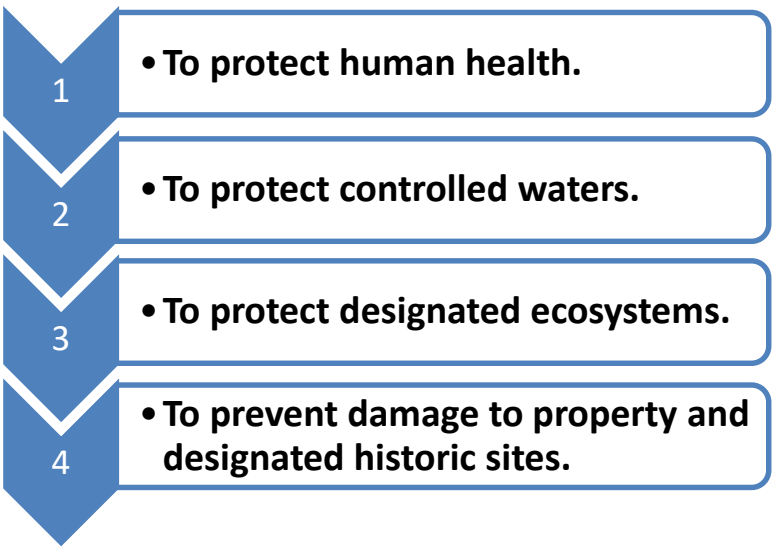
Stage 4 – Prioritisation of sites for detailed inspection

A structured and coherent process for identifying sites which could present the most pressing and serious problems has been implemented.

The list in **Technical Appendix B** outlines potentially contaminative industries given by the then Department of the Environment "Industrial Profiles".

Technical Appendix C describes the risk assessment process which has been followed in order to identify the sites likely to present the most pressing and serious problems.

The Council's receptor priorities are, in order: -



The Council used a computerised screening package which used a numeric 'risk assessment' based approach to prioritise sites **Technical Appendix C**. Some limited walkover survey work was also necessary in order to fill in gaps in the data in relation to pathways and receptors.

Detailed Inspection

Stage 5 - Detailed Inspection of Sites (Technical Appendix D)

Once the ranking process had been completed, some detailed inspection of sites has been undertaken subject to constraints associated with financial resources.

For land to proceed to the next stage of risk assessment there needed to be evidence that an unacceptable risk could reasonably exist. If the authority considered there is little reason to consider that the land might pose an unacceptable risk, inspection activities should stop at that point.

Determination and Apportionment of Liabilities (**Technical Appendix E**)

Where any contaminated land sites are identified, they are determined in accordance with statutory requirements. The sites which are known or suspected to contain contamination, but which do not constitute contaminated land under Part 2A, will only be inspected further if the status of the land changes, for example, if new information about potential contaminants on a site becomes available.

Work outside the Inspection Programme

Triggers for undertaking non-routine inspections

The Strategy recognises that there may be occasions where inspections have to be undertaken outside of the general strategic framework. Triggers for undertaking non-routine inspection include: -

- unplanned events – for example, where an incident, such as a spill, has occurred.
- introduction of new receptors – for example, where a new protected ecosystem is designated, or there is persistent trespass on a site which otherwise does not have a sensitive receptor.
- identification of localised health effects – which appear to relate to a particular area of land.
- responding to information – from other statutory bodies, stakeholders, or other interested parties, which reveal that the site requires urgent action.

Assessment and Remediation though the Planning System

DEFRA have advised that they now expect the vast majority of land contaminated to be remediated through the planning process, where (after remediation) as a minimum, land should not be capable of being determined as Contaminated Land under Part 2A. (See *funding* below)

The National Planning Policy Framework (December 2024) states that:

196. Planning policies and decisions should ensure that:

a) a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation).

b) after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and

c) adequate site investigation information, prepared by a competent person, is available to inform these assessments.

197. Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner.

The NPPF is likely to be subject to further iterations over the lifetime of this Strategy. It is unlikely that the principles set out in NPPF para 196 and 197 will fundamentally change during this time. However, if there are significant policy changes in the NPPF then this Strategy may need to be amended to take account of these national policy changes.

4.0 Work carried out to date

4.1.1 Planning and Development Control Route

Throughout the period of the delivery of this and previous Contaminated Land Strategies, the Council's Environmental Health Service has been working with Broxtowe's Development Control Service to ensure land contamination issues are addressed during the planning process.

The Environmental Health Service is not a statutory consultee under the development control process. However, through a process of custom and practice, Environmental Health professionals have been invited to make comment on a variety of potential environmental impacts associated with planning applications, including the potential impact of individual development applications on Part 2A.

The Environment Agency (EA) are a statutory consultee, and the EA are invited to submit comments on relevant planning applications.

Figure 1 below illustrates the volumes of planning applications per year which have been assessed and commented on by the Environmental Health service since the start of the Part IIA statutory duty.

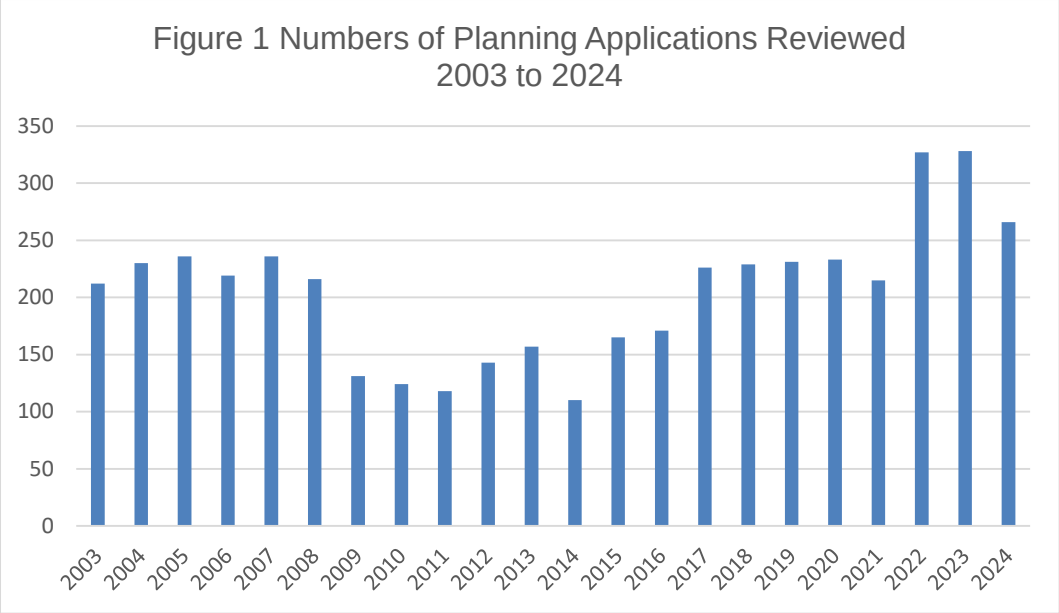
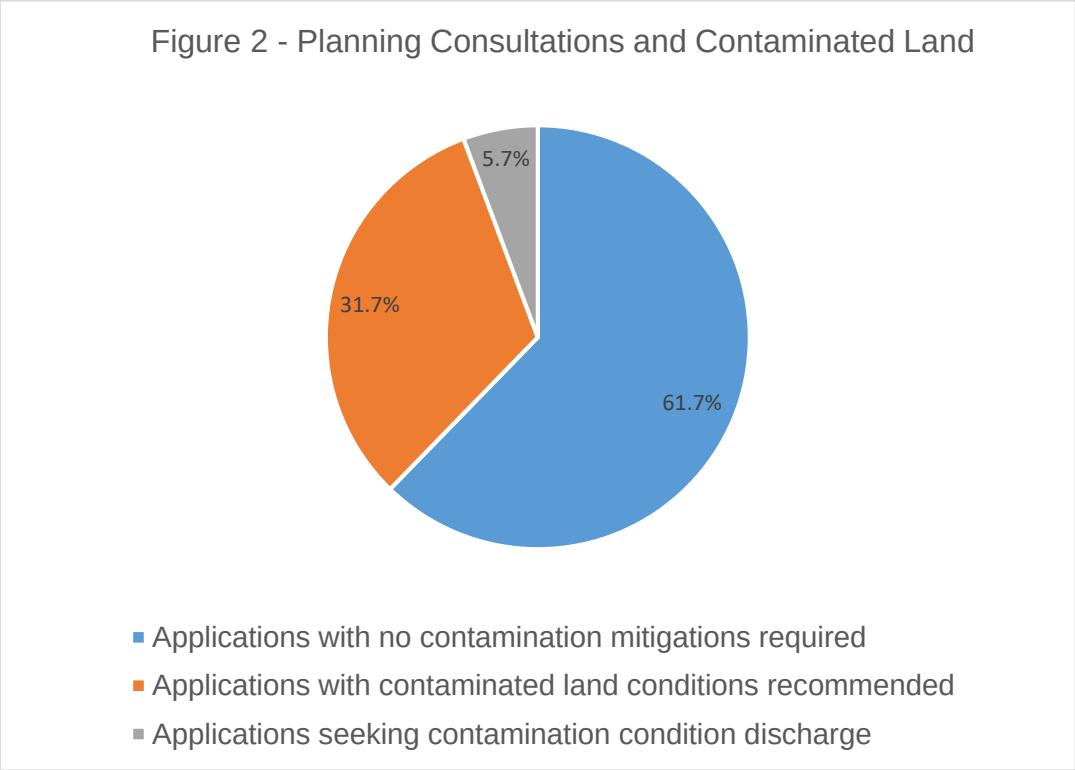


Figure 2 below illustrates the proportion of planning application consultations which resulted in recommendations for contamination mitigation. Note that the data in figure 2 is based on analysis from a single representative year of consultations (in 2020).



The National Planning Policy Framework makes it clear that planning conditions should be kept to a minimum. Therefore, any consultation responses which seek to impose a planning condition must make a sufficiently compelling case and must demonstrate that the need meets the six tests set out in planning policy guidance, namely that the conditions are:

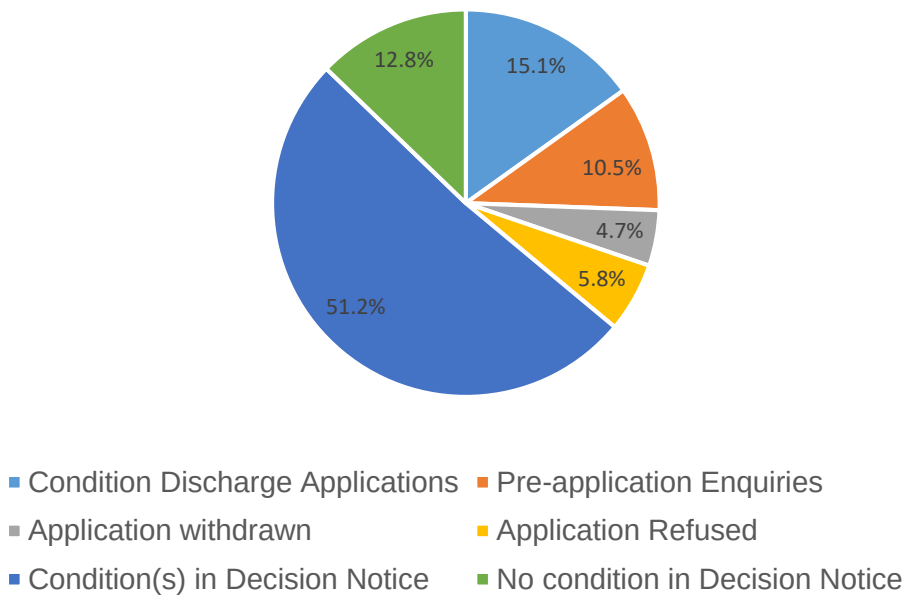
1. necessary.

2. relevant to planning.
3. relevant to the development to be permitted.
4. enforceable.
5. precise; and
6. reasonable in all other respects.

Planning Officers have to make the decision, based on the consultation responses received and all other considerations, about whether to impose contamination related conditions if an application is approved.

Figure 3 illustrates the relative proportion of the outcome of planning applications after a contamination condition had been recommended by the environmental health consultee.

Figure 3 Outcomes Following Contamination Consultations on Planning Applications



The data in Figures 1 to 3 illustrate that:

- Annually, between 120 and 330 planning applications are assessed for their potential impacts on land contamination.
- 38% of planning applications which are assessed for their potential impacts on land contamination, receive constructive feedback with proposals to address the potential residual risk from land contamination.
- 87% of planning applications in which consultees recommend that the planning process deal with potential land contamination legacy are either dealt with by this route or do not progress through to permission for other reasons.

This data provides a high degree of assurance that Objective 3 of this Strategy (see section 2.2) is being met.

During the process of generating the data for Figure 2 it was noted that officers did not object to any planning applications as a result of concerns about land contamination. This reflects how officers are seeking to find workable solutions to balance the demands for economic growth through land redevelopment and the need to protect communities who may be affected by this redevelopment of contaminated sites.

The outcomes of the work to deliver Objective 3 is summarised below

Summary of Work Carried Out to Date

Planning
Since 2003, 4,494 planning applications have been assessed for their potential impact on Part 2A. An estimated 2,800 planning applications have been subject to comments, intervention or conditions through the development control process. An estimated 250 planning applications seeking discharge of conditions relating to contamination conditions have been submitted. It is estimated that planning conditions to mitigate land contamination risk have been included in 2,300 decision notices.

4.1.2 Part 2A Assessments

Work on the Strategic Inspection process (Stages 3 and 4 above) began in 2003. The most recent substantive review of the Strategic Inspection database was carried out in 2017.

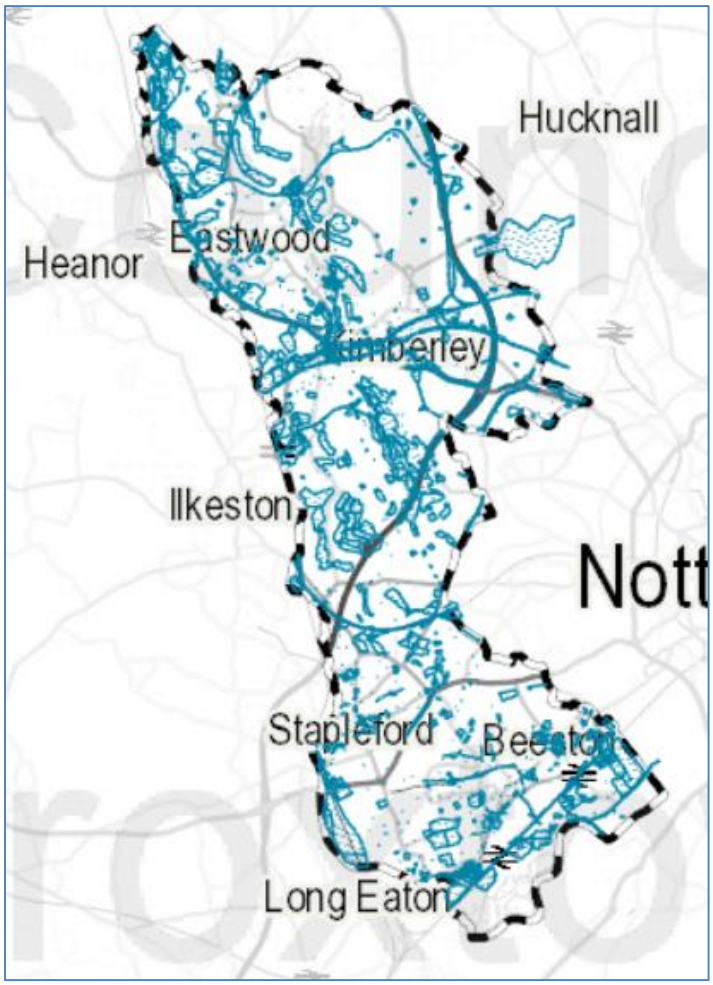
The outputs from the Strategic Inspections are summarised below.

Summary of Worked Carried Out to Date

Part 2A
Total area of Broxtowe Borough 80.08km^2 1,553 sites identified and prioritised covering an estimated area of 8.1km^2 3 sites have been subject to Detailed Inspections No sites have been determined as ‘contaminated’.

Figure 4 below provides an illustration of all of the land which has been subject to the risk assessment process described in this Strategy.

Figure 4 Areas subject to risk assessment in Broxtowe



The table below provides a summary of the diversity of former industrial uses which have been identified through the Strategic Inspection process and the relative numbers of different industry types which have been identified.

Industry Type Description	No of Sites Identified
Animal and animal products processing	7
Ceramics, cement and asphalt manufacturing works	20
Chemical works: Coatings (paints and printing inks)	1
Dockyards and docklands	2
Engineering works: aircraft manufacturing works	1
Electrical & electronic equipment manufacturing works	10
Mechanical engineering and ordnance work	7

Gas works, coke works, coal carbonisation plants	2
Metal manufacturing: Iron and steelworks	34
Metal manufacturing, refining and finishing works: Lead works	1
Pulp and paper manufacturing works	3
Railway land	216
Road vehicles: Garages and filling stations	42
Road Vehicles: Transport and haulage centres	46
Sewage works and sewage farms	14
Textile works and dye works	29
Timber products manufacturing works	14
Waste: Landfills and other waste treatment & disposal	15
Waste recycling, treatment & disposal: Metal recycling	6
Dry cleaners	2
Printing and bookbinding works	4
Machinery: engines, building & general industrial	2
Electricity production & distribution	197
Unknown Filled Ground (Pond, marsh, river, stream, etc)	6
Mining & quarrying general	46
Unknown Filled Ground (Pit, quarry etc)	302
Factory or works - use not specified	125
Heap, unknown constituents	10
Mining of coal & lignite	63
Food processing	6
Cemetery or Graveyard	9
Military Land	5
Brewing & malting	6
Former Marsh	1
Air Shafts	5
Chemical manufacturing general	1

Coal storage and depot	3
Pumping station	2
Water works	1
Unknown	219

4.2 Funding for Inspections

Local authorities are required to investigate potentially contaminated sites in accordance with the Statutory Guidance and, where necessary, at their own expense. Where sufficient evidence is obtained to conclude that sites are 'contaminated' then the" polluter pays" principle will apply, should more investigations, prevention or clean-up ("remediation") be necessary. Where the polluter cannot be found or is otherwise not liable, the current owner/occupier may become liable. Where no responsible person(s) can be found, the local authority may be required to undertake this work at their own expense.

Prior to April 2014, local authorities were able to apply for DEFRA funding from the Contaminated Land Capital Grants Scheme in such situations. However, funding has been reduced in recent years, from £17.5m in 2009/10 to £0.4m for 2016/17; DEFRA have now ceased supporting these costs altogether via the capital grant programme.

However, the Council still has a statutory duty to investigate and, where necessary, remediate Contaminated Land. Consequently, should any relevant sites now come to the Council's attention, and should investigation and/or remediation by the local authority be required under Part 2A, this will need to be funded entirely from the Council's existing budgets.

This, like many statutory functions delegated to local authorities, is a residual risk. This risk is potentially very significant as site investigations can be very expensive (running into the tens or hundreds of thousands) and take many months should intrusive sampling be required. Remediation of sites can run into £millions. The significance of this risk is considered to be 'medium' for the purposes of the Council corporate risk register on the basis that no evidence has emerged of the Council becoming liable for the remediation of a contaminated land site, but investigation costs could arise. Should this become the case, applications for additional funding (revenue or capital or other funding sources (such as UKSPF) will be pursued.

Should any liabilities emerge as a result of any sites emerging as priorities from either the Strategic or Detailed assessment processes, Broxtowe Borough Council may be able to recover some or all of the costs of remediation from the polluter or current owner/occupier of the land although this may take many years. Any pursuit of costs would need to be in accordance with the guidance, on a case by-case basis and avoiding undue hardship.

Previous desk study and intrusive investigations have been undertaken when finding was available, and some have been supported by Planning and Economic Development in order to gain further evidence of whether sites are suitable for alternative development or to facilitate our own site developments. Where remediation of our own land is required due to development of a different end use (such as old garage sires for housing), the cost of this is incorporated into the project costs.

5 Action Plan 2025 - 2030

The majority of sites impacted by land contamination will continue to be dealt with via the planning regime.

2025: Review the system used for contaminated land prioritisation and renew or replace as identified. If the system is to be replaced, there will need to be a project plan to implement any changes and retain/transfer the data as appropriate.

We will explore options to ensure land dealt with via the planning regime can be recorded on our data management system and cross referenced with the prioritised list of sites. This will ensure the prioritised list of sites is kept up to date and we can record the number of sites dealt with via the planning regime each year.

Work can then continue on reviewing the prioritisation list and assessing the current highest priority sites to see if further detailed and intrusive investigations are required. It is likely that the highest priority sites will take the longest to assess and by definition are the sites most likely to require further work.

6 Review of the Strategy Document

Following the Strategy being formally adopted and published, the Council has a duty to keep it under periodic review.

If significant changes to the Strategy are required, it may be appropriate to carry out further annual reviews. If no major changes are necessary the Strategy will remain in place for the period of the work plan, in which case the next full review date will be 2030.

7 References

Contaminated Land Statutory Guidance, DEFRA, 2012

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Appendix I

Characteristics of the Borough

This Appendix gives background information about Broxtowe Borough and highlights some of the factors, in relation to contaminant linkages, that will influence the Councils approach to the inspection of contaminated land.

2.1 Geographical Characteristics

Broxtowe Borough lies on the west side of the Nottingham conurbation. It is bounded to the east by the City of Nottingham, to the north and south by the districts of Ashfield and Rushcliffe respectively, and to the west by the towns of the Erewash Valley in Derbyshire.

The population of Broxtowe at the 2021 Census was estimated to be 110,813. The bulk of the population is concentrated in the urban areas which centre in Beeston, Stapleford, Eastwood and Kimberley. Beeston and Stapleford form part of the more built-up southern part of the borough, where approximately two thirds of its population live. Eastwood and Kimberley are separate towns surrounded by an area which is more rural in character, containing several villages.

The northern settlements developed in association with coal mining, although there are now no active collieries in the area. As a consequence of this decline considerable physical, economic and social change has occurred in tandem with extensive recent housing and industrial development. The towns in the south of the borough, whilst historically related to the textile industry of the Nottingham area and the Erewash Valley, have developed as part of the wider built-up area around Nottingham and include extensive post-war residential development.

2.1.1 Mineral extraction

Mining for coal was well established in the northern half of the borough, particularly along the Erewash valley, by the 15th century using small bell pits. In the 18th and 19th centuries these shallow workings became exhausted and larger deeper mines were sunk. The last deep mined coal was raised at Moorgreen in 1985 and there are now no active collieries in the borough.

Opencast mining has also taken place extensively as much of the northern part of the borough is on the exposed coalfield, where the coal seams can be found just below the subsoil. In connection with the opencast operations a number of dedicated blending, stocking and loading facilities were provided. Currently no open casting is being carried out in the borough.

Whilst much of the dereliction associated with the mining operations has been dealt with, in some cases reclamation has been combined with an opencast scheme (e.g.

Moorgreen colliery and Cossall). However, potential gas migration and ground stability still need to be taken into account when any building work takes place.
Sharp sand and gravel have been worked at Attenborough but the site has now become a nature reserve.

Bricks were manufactured at a number of sites in the borough and the associated clay pits have been used as landfills.

2.1.2 Railways

Rail development within the borough was largely influenced by the coal mining industry after the initial connection of Nottingham and Derby in 1839 by a line running through Beeston and Attenborough. This route now forms part of the current main line from Nottingham to London. Further development of the Midland Railway company resulted in the Erewash Valley line running along the Western boundary of the borough with a large marshalling yard and associated facilities at Toton, and a cut off route from Trowell to Nottingham principally for passenger trains. These routes are still in use, however, there are now areas of derelict land around the Toton site and some abandoned associated branch lines such as Bennerley – Kimberley – Watnall.

Vested coal and iron interests brought a second railway network to the borough in the 1870's. This was the Great Northern Railway in association with the Stanton Ironworks Company and various coal owners. This system included a second route for Nottingham to Derby via Kimberley as well as a second route up the Erewash Valley from Awsworth through Eastwood, plus some associated branch lines. These railways were abandoned completely by 1970 and while some sections remain derelict, others have been used as landfill sites, footpaths or redevelopment. Additionally, an extensive private rail system was operated by Barber Walker and Company of Eastwood (Later the National Coal Board). This connected Langley Mill, Underwood, Eastwood and Watnall, and was closed in stages between 1956 and 1985.

2.1.3 Light industry

Light industry in the form of textiles, electrical and pharmaceutical manufacturers historically dominated the southern part of the borough and, whilst some decline has taken place, many of these sites are still in operation. Currently, working practices and pollution controls ensure that any new contamination is minimal, and historic contamination is being dealt with as and when sites are redeveloped.

2.1.4 Ministry of Defence land

A large area of land in Chilwell came under the control of the Ministry of Defence (MOD) during World War One, and since 1990 parcels have been released for redevelopment. Remediation has been undertaken on each piece of land by the developer in agreement with the Council. Redevelopment is still on going and a considerable area remains in MOD ownership with further development expected in the lifetime of this strategy.

2.1.6 Protected locations

There are a wide range of protected habitats across the borough, including:

- 7 Sites of Special Scientific Interest (SSSI's) protected under the Wildlife and Countryside Act 1981 and Countryside and Rights of Way Act 2000.
- 15 local nature reserves.

As well as its rich natural habitat and diversity, the borough has a significant historic built environment with:

- 153 listed buildings
- 6 ancient monuments
- 16 designated Conservation Areas.

2.1.7 Key surface water bodies and river network

The southern boundary of the borough is formed by the River Trent and the western boundary closely follows the River Erewash for much of its length. Additionally, a large reservoir is present at Moorgreen, and large man-made lakes created at Attenborough by mineral extraction, now form the Attenborough Nature Reserve.

2.2 The Geology of the Borough

2.2.1 Drift geology (unconsolidated deposits)

Alluvial deposits form the surface geology of the southern extremity of the borough taking in Beeston and Attenborough down to the southern boundary of the River Trent as well on a thin strip immediately alongside the River Erewash on the western boundary.

These types of deposits are associated with rivers and often comprise sandy material which allows ready passage of water, or water borne contaminants. Additionally, marshland often found adjacent to watercourses, is likely to be a source of methane and other gases associated with vegetation.

2.2.2 Solid geology (bedrock)

The solid rocks underlying the Alluvial deposits in the south of the borough are Permo-Triassic Sandstones which extend to form the surface geology of the rest of Beeston, Chilwell, Toton and much of Stapleford as well as the north eastern edge of the borough. These rocks form part of the principal aquifer, which extends eastwards across the rest of Nottinghamshire, and is used as a source of potable water.

From an ancient geological line passing through the north of Stapleford, and above Bramcote, Coal Measures are to be found at the surface and have been the subject of both opencast and underground coal workings, although currently no extraction is taking place.

The general dip of the strata is from west to east with the Coal Measures continuing under the Permo-Triassic rocks on the eastern boundary of the borough.

2.2.3 Hydro geology (water pathways and groundwater receptors)

The drift deposits in the south of the borough connect with the Permo-Triassic rocks below to form a pathway for water and possible contaminants into the ground water, used on a supply of potable water further east.

The Coal Measures which allow the passage of water as well as contaminants, extend beneath the Permo-triassic. However, these are not generally used as supply of water because of their acidic nature caused by both the rocks and past mining activity.

2.2.4 Possible sources of contamination

Within the Coal Measures acid water is present both in the form of surface water entering via old mine workings, and the associated disturbed strata as well as water trapped present since the formation of the rocks. Springs are also common in this formation and therefore may give rise to contaminated surface water flows.

Additionally, various gasses are usually present in both the Coal Measures (methane released from coal, carbon dioxide) and Drift deposits close to rivers.

2.2.5 Pathways for contamination

The borough is covered by soils of high permeability meaning that they readily allow water or contamination to pass to the rock below. All of the solid and drift geology below the surface soils can act as pathways for contamination but the most important pathway is via the drift deposits and the Permo-Triassic rocks as this will affect the potable water supply further east.

2.2.6 Geological receptors for contamination

The principal receptor for contamination is the Permo-Triassic strata as already mentioned because of implications for the water supply. Both the River Trent and River Erewash are also receptors as are any other watercourses.

Technical Appendices

Technical Appendix A

General Principles and Definitions of the Part 2A Process for Land Contamination

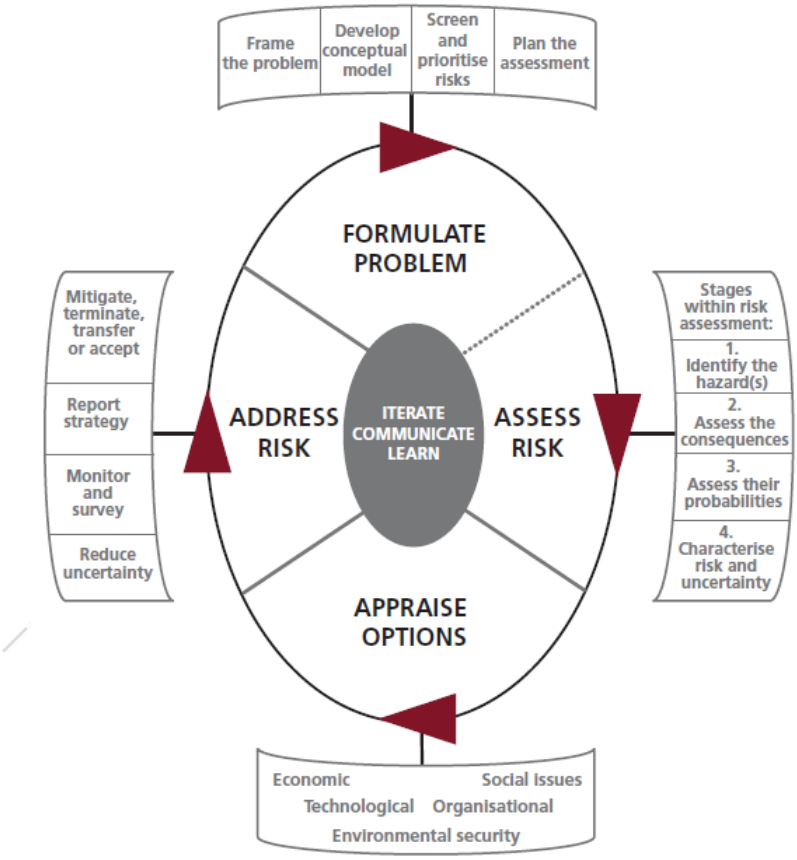
Principles and Definitions

General Principles of risk assessment

The statutory guidance promotes a risk-based approach to dealing with potentially contaminated land in the UK; based on the approach set out in *'Guidelines for Environmental Risk Assessment and Management – Green Leaves III'.* (See below)

The aim of this type of approach is to protect human health and the environment without unnecessarily wasting finances on the clean-up of all contamination. The need for and extent of any remediation is determined from an assessment of the risks posed to human health and the environment, whilst taking into account the current use of the site.

This 'suitable for use' approach acknowledges that the risk which is presented by a level of contamination will largely be dependent upon the use of the land in addition to other site-specific factors. Accordingly, risks need to be assessed on a site-by-site basis.



Source- Guidelines for Environmental Risk Assessment and Management – Green Leaves III; Cranfield University; Defra, 2011

A framework for environmental risk assessment and management

The Three Tiers of Assessment

The principles of risk assessment used in land contamination fit within a tiered assessment structure set out in *Green Leaves III*. The tiers are applied to the circumstances of the site under consideration with an increasing level of detail required by the assessor in progressing through the tiers.

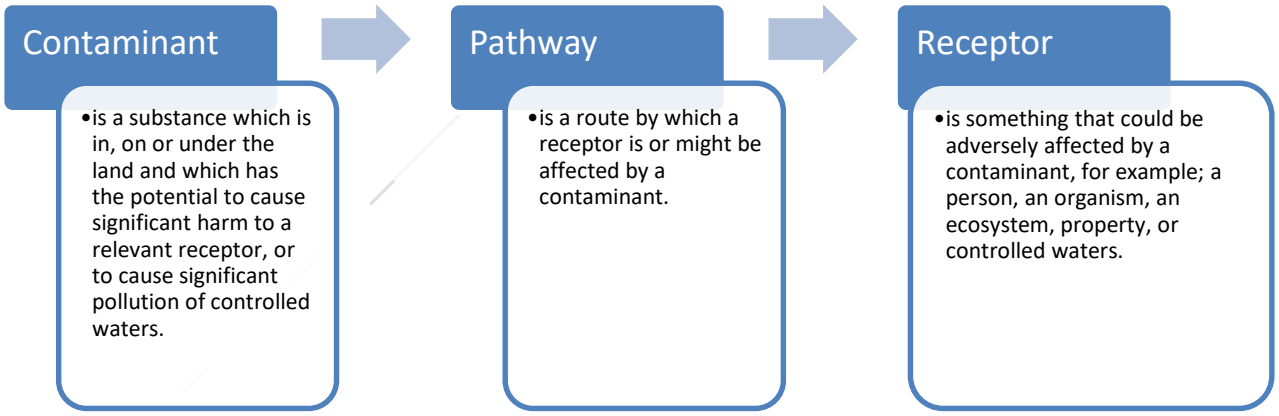
The three tiers used in the specific context of land contamination are:

1. Preliminary risk assessment.
2. Generic quantitative risk assessment.
3. Detailed quantitative risk assessment.

Once the need for risk assessment has been identified, it will always be necessary to carry out a preliminary risk assessment. However, depending on the circumstances and the outcome, it may not be necessary to carry out further risk assessment, or it may be appropriate to use only one of the two approaches to quantitative risk assessment rather than both.

The Contaminant Linkage

For contaminated land to be so designated there must exist one or more 'contaminant linkage(s)' by which a relevant receptor might be affected by the contaminants in question; this linkage consists of:

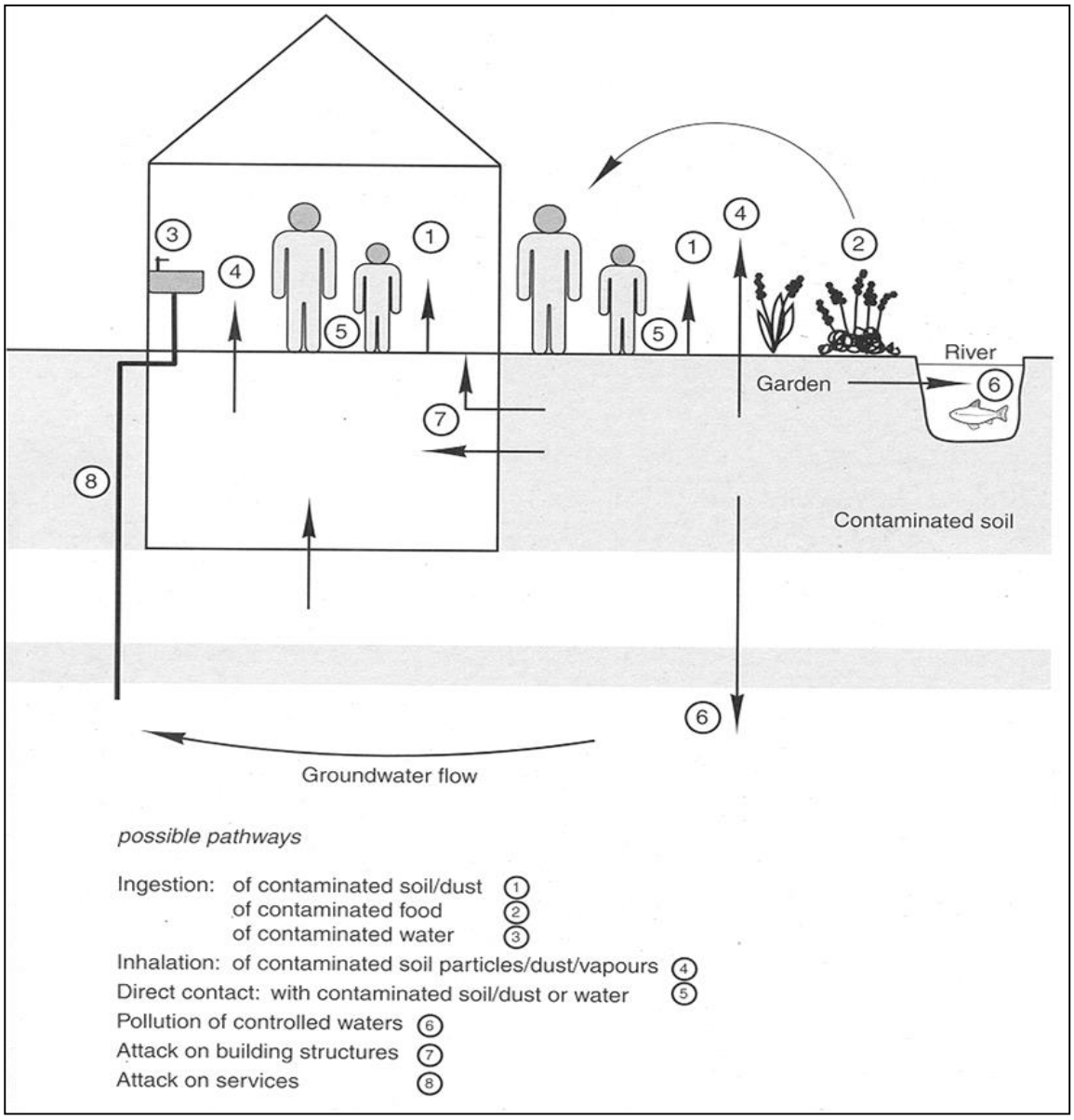


The term "contaminant linkage" therefore refers to the relationship between a contaminant, a pathway and a receptor. All three elements of a contaminant linkage must exist in relation to particular land before the land can be considered potentially to be contaminated land under Part 2A, including evidence of the actual presence of contaminants.

The term "significant contaminant linkage", as used in the Statutory Guidance, means a contaminant linkage which gives rise to a level of risk sufficient to justify a piece of land being determined as contaminated land.

The Conceptual Site Model

The process of risk assessment involves understanding the risks presented by land, and the associated uncertainties. In practice, this understanding is usually developed and communicated in the form of a "*conceptual site model*" (CSM) which indicates all the contaminant linkages and uncertainties associated with each.



Source- Guidance for the Safe Development of Housing on Land Affected by Contamination; Environment Agency and the NHBC; 2nd edition. R&D Publication 66; 2008.

Simple Conceptual Model of the Contaminant Linkage(s)

The Part 2A Risk Assessment Process

The Statutory Guidance recognises that there are two broad types of "inspection" likely to be carried out by local authorities:

(a) strategic inspection, for example collecting information to make a broad assessment of land within an authority's area and then identifying priority land for more detailed consideration (also known as prioritisation); and
(b) carrying out the detailed inspection of particular land to obtain information on ground conditions and carrying out the risk assessments which support decisions under the Part 2A regime relevant to that land.

This document refers to the former as "strategic inspection" (**Technical Appendix C**) and the latter as "detailed inspection" (**Technical Appendix D**).

The inspection process is carried out through a staged process of understanding of the risks starting with the strategic inspection and then moving onto detailed inspection; involving a preliminary risk assessment informed by desk-based study; a site visit and walkover; a generic quantitative risk assessment; and various stages of more detailed quantitative risk assessment.

The process should normally continue until it is possible for the local authority to decide:

(a) that there is insufficient evidence that the land might be contaminated land to justify further inspection and assessment; and/or
(b) Whether or not the land is contaminated land.

For land to proceed to the next stage of risk assessment there should be evidence that an unacceptable risk could reasonably exist. If the authority considers there is little reason to consider that the land might pose an unacceptable risk, inspection activities should stop at that point.

Definition of Contaminated Land under Part 2A

The definition of contaminated land is given in section 78A (2) of Part 2A as follows:

any land which appears to the LOCAL AUTHORITY in whose area it is situated to be in such a condition by reason of substances in, on or under the land, that

a) SIGNIFICANT HARM is being caused or there is a SIGNIFICANT POSSIBILITY of such harm being caused; or

b) SIGNIFICANT POLLUTION OF CONTROLLED WATERS is being caused or there is a SIGNIFICANT POSSIBILITY of such pollution being caused.[1]

Where harm is attributable to radioactivity, the definition of Contaminated Land has been modified by regulation 4(a) of the Modification Regulations[2] 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

These definitions aim to enable the identification and remediation of land on which contamination is causing unacceptable risks to human health or the wider environment. Accordingly, the definition does not include all land where contamination may be present.

Significant Harm to Human Health

Section 78A (4) defines 'harm' as 'harm to the health of living organisms or other interference with the ecological systems of which they form part and, in the case of man, includes harm to his property'.

Harm in the context of radiation is defined in section 78A (4) (as modified) as:

'lasting exposure to any person resulting from the after-effects of a radiological emergency, past practice or past work activity'.

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

(a) the local authority has carried out an appropriate, scientific and technical assessment of all the relevant and available evidence; and
(b) on the basis of that assessment, the authority is satisfied on the balance of probabilities that significant harm is being caused by a significant contaminant(s).

The following health effects should always be considered to constitute significant harm to human health:

- death.
- life threatening diseases (e.g. cancers).
- other diseases likely to have serious impacts on health.

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[1] Changes to the definition for Controlled Waters were brought in via the Water Act 2003 section 86. The Water Act 2003 (Commencement No. 11) Order 2012 (SI 2012/264).

[2] Radioactive Contaminated Land (Modification of Enactments) (England) Regulations 2006

- serious injury[3];
- birth defects.
- and impairment of reproductive functions.

Other health effects may be considered by the local authority to constitute significant harm. For example, a wide range of conditions may or may not constitute significant harm (alone or in combination) including:

- physical injury.
- gastrointestinal disturbances.
- respiratory tract effects.
- cardio-vascular effects;
- central nervous system effects.
- skin ailments.
- effects on organs such as the liver or kidneys.
- or a wide range of other health impacts.

In deciding whether or not a particular form of harm is significant harm, the local authority should consider the seriousness of the harm in question: including the impact on the health, and quality of life, of any person suffering the harm; and the scale of the harm.

The authority should only conclude that harm is significant if it considers that treating the land as contaminated land would be in accordance with the broad national objectives of the regime as described in Section 1.1.1.

Significant Possibility of Significant Harm (SPOSH)

In deciding whether or not a significant possibility of significant harm to human health exists, the local authority should first understand the *possibility of significant harm* (POSH) from the relevant contaminant linkage(s) and the levels of uncertainty attached to that understanding; before it goes on to decide whether or not the possibility of significant harm is significant.

The Statutory Guidance defines the term “possibility of significant harm” as it applies to human health, as being the risk posed by one or more relevant contaminant linkage(s) relating to the land. It comprises:

(a) The estimated likelihood that significant harm might occur to an identified receptor, taking account of the current use of the land in question.
(b) The estimated impact if the significant harm did occur i.e. the nature of the harm, the seriousness of the harm to any person who might suffer it, and (where relevant) the extent of the harm in terms of how many people might suffer it.

In estimating the likelihood that a specific form of significant harm might occur the local authority should, among other things, consider:

(a) The estimated probability that the significant harm might occur:
    i. if the land continues to be used as it is currently being used; and

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[3] Physical injury in relation to significant harm would include injury caused by chemical and biochemical properties of substances, such as injury resulting from explosive or asphyxiating properties of gases. It would not extend to injury caused by only physical properties of substances, such as injury caused by falling onto sharp or hard objects made of relevant substances.

ii. where relevant, if the land were to be used in a different way (or ways) in the future having regard to the guidance on "current use".

(b) The strength of evidence underlying the risk estimate. It should also consider the key assumptions on which the estimate of likelihood is based, and the level of uncertainty underlying the estimate.

When does POSH become SPOSH?

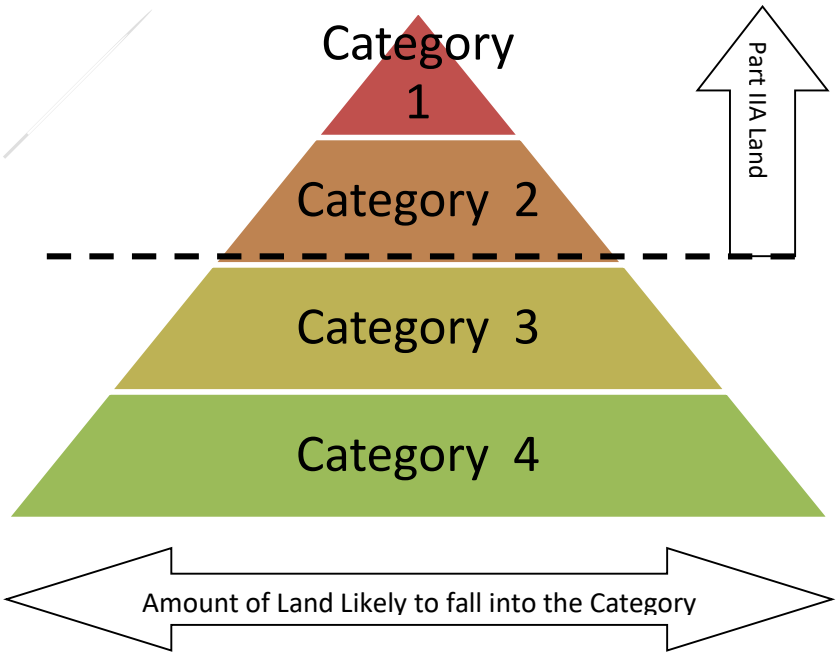
In deciding whether the possibility of significant harm being caused is significant, the local authority is deciding whether the possibility of significant harm posed by contamination in, on or under the land is sufficiently high that regulatory action should be taken to reduce it, with all that would entail. In taking such decisions, the local authority should take account of the broad national aims of the regime set out in Section 1.1.1.

Coming to the decision that SPOSH is being caused is a complex one which will require multiple lines of evidence to assist the Local Authority in making the determination. Starting from the position that the land is not 'contaminated' the Local Authority should build a case based on robust scientific evidence and the principles found in the Statutory Guidance.

The Statutory Guidance indicates that the local authority should use the following categorisations in their assessments:

Categories 1 and 2: would encompass land which is capable of being determined as contaminated land on grounds of significant possibility of significant harm to human health.

Categories 3 and 4: would encompass land which is not capable of being determined on such grounds.



Schematic of the Human Health Categorisation

Human Health Categorisation (after: Sections 4.19 – 4.25 of Statutory Guidance 2012)

Category 1	Category 2	Category 3	Category 4
Land should be deemed to be a Category 1: Human Health case where: (a) the authority is aware that similar land or situations are known, or are strongly suspected on the basis of robust evidence, to have caused such harm before in the United Kingdom or elsewhere; or (b) the authority is aware that similar degrees of exposure (via any medium) to the contaminant(s) in question are known, or strongly suspected on the basis of robust evidence, to have caused such harm before in the United Kingdom or elsewhere. (c) the authority considers that significant harm may already have been caused by contaminants in, on or under the land, and that there is an unacceptable risk that it might continue or occur again if no action is taken. Among other things, the authority may decide to determine the land on these grounds if it	Land should be placed into Category 2 if the authority concludes, on the basis that there is a strong case for considering that the risks from the land are of sufficient concern, that the land poses a significant possibility of significant harm, with all that this might involve and having regard to Section 1 of the Statutory Guidance. Category 2 may include land where there is little or no direct evidence that similar land, situations or levels of exposure have caused harm before, but nonetheless the authority considers on the basis of the available evidence, including expert opinion, that there is a strong case for taking action under Part 2A on a precautionary basis.	Land should be placed into Category 3 if the authority concludes that the strong case described in Section 4.25(a) of the Statutory Guidance does not exist, and therefore the legal test for significant possibility of significant harm is not met. Category 3 may include land where the risks are not low, but nonetheless the authority considers that regulatory intervention under Part 2A is not warranted. This recognises that placing land in Category 3 would not stop others, such as the owner or occupier of the land, from taking action to reduce risks outside of the Part 2A regime if they choose. The authority should consider making available the results of its inspection and risk assessment to the	Land should be deemed to be a Category 4: Human Health case where: (a) Land where no relevant contaminant linkage has been established. (b) Land where there are only normal levels of contaminants in soil, as explained in Section 3 of the Guidance. (c) Land that has been excluded from the need for further inspection and assessment because contaminant levels do not exceed relevant generic assessment criteria in accordance with Section 3 of the Guidance, or relevant technical tools or advice that may be developed in accordance with paragraph 3.30 of the Guidance. (d) Land where estimated levels of exposure to contaminants in

considers that it is likely that significant harm is being caused, but it considers either: (i) that there is insufficient evidence to be sure of meeting the "balance of probability" test for demonstrating that significant harm is being caused; or (ii) that the time needed to demonstrate such a level of probability would cause unreasonable delay, cost, or disruption and stress to affected people particularly in cases involving residential properties.		owners/occupiers of Category 3 land.	soil are likely to form only a small proportion of what a receptor might be exposed to anyway through other sources of environmental exposure (e.g. in relation to average estimated national levels of exposure to substances commonly found in the environment, to which receptors are likely to be exposed in the normal course of their lives).

In making its decision on whether land falls into Category 2 or Category 3, the local authority should first consider its assessment of the possibility of significant harm to human health, including:

- the estimated likelihood of such harm,
- the estimated impact if it did occur,
- the timescale over which it might occur,
- and the levels of certainty attached to these estimates.

If the authority considers, on the basis of this consideration alone, that the strong case described in **Error! Reference source not found.** *'Category 2'* does or does not exist, the authority should make its decision on whether the land falls into Category 2 or Category 3 on this basis regardless of the other factors discussed below.

If the authority considers that it cannot make a decision based on the above, it should consider other factors which it considers are relevant to achieving the national objectives set out in Section 1.1.1. This should include consideration of:

(a) The likely direct and indirect health benefits and impacts of regulatory intervention. This would include:
   i. benefits of reducing or removing the risk posed by contamination.
   ii. any risks from contaminants being mobilised during remediation.
   iii. and any indirect impacts such as stress-related health effects that may be experienced by affected people, particularly local residents.

   If it is not clear to the authority that the health benefits of remediation would outweigh the health impacts, the authority should presume the land falls into Category 3 unless there is strong reason to consider otherwise.

(b) The authority's initial estimate of what remediation would involve;
   i. how long it would take,
   ii. what benefit it would be likely to bring,
   iii. whether the benefits would outweigh the financial and economic costs,
   iv. any impacts on local society or the environment from taking action that the authority considers to be relevant.

If, having taken the above factors into account, the local authority still cannot decide whether or not a significant possibility of significant harm exists, it should conclude that the legal test has not been met, and the land should be placed in Category 3.

Significant Harm to other Receptors

In considering non-human receptors, the local authority should only regard receptors described in Statutory Guidance Tables 1 and 2 (Appendix IV) as being relevant for the purposes of Part 2A (e.g. harm to an ecological system outside the description in Table 1 should not be considered to be significant harm).

Similarly, in considering whether significant harm is being caused or there is a significant possibility of such harm, the authority should only regard the forms of harm described in Tables 1 and 2 as being relevant.

Pollution of Controlled Waters

The Council will also act in accordance with statutory guidance in determining whether pollution of controlled waters is being or is likely to be caused. Section 78A (9) defines the pollution of controlled waters as: 'the entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter'.

Section 78A (9) was amended by section 86 of the Water Act 2003 so that for Part 2A purposes "ground waters" does not include waters contained in underground strata but above the saturation zone (often known as the "unsaturated zone")[4].

The definition of Contaminated Land where attributable to radioactivity does not currently cover any pollution of controlled waters. This approach reflects the Government's wish to assess the implications of the Water Framework Directive (2000/60/EC) before considering how a significance test might be applied.

Significant Pollution of Controlled Waters

The following types of pollution should be considered to constitute significant pollution of controlled waters:

(a) Pollution equivalent to "environmental damage" to surface water or groundwater as defined by The Environmental Damage (Prevention and Remediation) Regulations 2009, but 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 Environment 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)).

The local authority may consider that the following types of pollution may constitute significant pollution:

(a) Significant concentrations of hazardous substances or non-hazardous pollutants in groundwater; or

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[4] This change was brought into force on 1 October 2004 by the Water Act 2003 (Commencement Order No.2, Transitional Provisions and Savings) Order 2004 (S.I. 2004/2528 (C.106).

(b) Significant concentrations of priority hazardous substances, priority substances or other specific polluting substances in surface water; at an appropriate, risk-based compliance point.

The local authority should only conclude that pollution is significant if it considers that treating the land as contaminated land would be in accordance with the broad national objectives of the regime as described in Section 1.1.1.

This would normally mean that the authority should conclude that less serious forms of pollution are not significant.

Significant Possibility of Significant Pollution to Controlled Waters

The local authority should first understand the possibility of significant pollution of controlled waters posed by the land, and the levels of certainty/uncertainty attached to that understanding, before it goes on to decide whether or not that possibility is significant.

The term “possibility of significant pollution of controlled waters” means the estimated likelihood that significant pollution of controlled waters might occur.

Before making its decision on whether a given possibility of significant pollution of controlled waters is significant, the local authority should consider:

(a) The estimated likelihood that the potential significant pollution of controlled waters would become manifest; the strength of evidence underlying the estimate; and the level of uncertainty underlying the estimate.
(b) The estimated impact of the potential significant pollution if it did occur. This should include consideration of whether the pollution would be likely to cause a breach of European water legislation or make a major contribution to such a breach.
(c) The estimated timescale over which the significant pollution might become manifest.
(d) The authority’s initial estimate of whether remediation is feasible, and if so what it would involve and the extent to which it might provide a solution to the problem; how long it would take; what benefit it would be likely to bring; and whether the benefits would outweigh the costs and any impacts on local society or the environment from taking action.

The authority should then decide which of the following categories the land falls into. Categories 1 and 2 would comprise cases where the authority considers that a significant possibility of significant pollution of controlled waters exists. Categories 3 and 4 would comprise cases where the authority considers that a significant possibility of such pollution does not exist.

Water Categorisation (after: Section 4.46 of Statutory Guidance 2012)

Category 1	Category 2	Category 3	Category 4
This covers land where the authority considers that there is a strong and compelling case for considering that a significant possibility of significant pollution of controlled waters exists. In particular this would include cases where there is robust science-based evidence for considering that it is likely that high impact pollution (such as the pollution described in paragraph 4.38 of the Statutory Guidance) would occur if nothing were done to stop it.	This covers land where: a. the authority considers that the strength of evidence to put the land into Category 1 does not exist; but b. nonetheless, on the basis of the available scientific evidence and expert opinion, the authority considers that the risks posed by the land are of sufficient concern that the land should be considered to pose a significant possibility of significant pollution of controlled waters on a precautionary basis, with all that this might involve (e.g. likely remediation requirements, and the benefits, costs and other impacts of regulatory intervention).	This covers land where the authority concludes that the risks are such that (whilst the authority and others might prefer they did not exist) the tests set out in Categories 1 and 2 above are not met and therefore regulatory intervention under Part 2A is not warranted. This category should include land where the authority considers that it is very unlikely that serious pollution would occur; or where there is a low likelihood that less serious types of significant pollution might occur.	This covers land where the authority concludes that there is no risk, or that the level of risk posed is low. In particular, the authority should consider that this is the case where: a. no contaminant linkage has been established in which controlled waters are the receptor in the linkage; or b. the possibility only relates to types of pollution described in paragraph 4.40 of the Statutory Guidance; or c. the possibility of water pollution similar to that which might be caused by “background” contamination as explained in Section 3 of the Statutory Guidance.

	Among other things, this category might include land where there is a relatively low likelihood that the most serious types of significant pollution might occur.		

Technical Appendix B

Stage 3

Strategic Inspection. Acquisition and input of data into Geographical Information System (GIS).

Geographical Information System (GIS)
A GIS is a digital system for the storage, manipulation, analysis and visualisation of spatial data. At the heart of a GIS is a database that allows the spatial data (information for which a grid reference can be given e.g. maps) to be linked to attribute data (information about what is at a particular point or area).

Datasets containing both spatial and attribute data can be brought together into a common system, simplifying their analysis. This integration between databases and maps means that a GIS is a powerful tool for the analysis of environmental data. The Council has and will continue to use ArcMap GIS software to enter information about land as it is investigated. The following methods of data ratification and quality control will be employed.

Data Management
Environmental datasets, in both paper and digital form, are an important and valuable resource. They are often unique and irreplaceable and may be expensive to collect. Appropriate data management is therefore, essential to protect this resource.

Quality Assurance of data
Datasets will very rarely be error free. In order to obtain valid conclusions from data it is important to be able to quantify and assess errors. Documentation outlining the quality and reliability of all data, ‘metadata’, is required where possible.

Information Collection

In order to assess the potential for land to be classed as contaminated a large amount of information is required on potential sources, pathways and receptors. The table below outlines the resources utilised.

Resource	**Description**	*Use*
Historic Maps	1880,1900,1915,1940,1960, 1975,1985 Digital maps	To identify sources
OS Mapping	Digital present-day mapping	To identify sources
Aerial Photography	Digital historic and present-day photography	To identify sources
Geological Maps	Solid & Drift, Made Ground and Superficial digital maps.	To characterise sources and pathways
Water Abstractions	Details of public and private water abstractions from EA	To identify pathways and receptors (controlled waters)
Water Courses	Rivers, streams, ponds and lakes. River quality data all from the EA	To identify pathways and receptors (controlled waters)
Groundwater Vulnerability Zones	Aquifer vulnerability digital maps.	To identify receptors (controlled waters)
Groundwater Source Protection Zones	Zones around water abstraction points	To identify receptors (controlled waters)
Radon areas	Areas effected by natural radiation	To identify sources
Nitrate Vulnerable Zones	DEFRA information on sensitive areas	To identify potential receptors
Sites of Special Scientific Interest	Natural England information	To identify potential receptors
Sites of Importance for Nature Conservation	Nottinghamshire Biological and Geological Records Centre lists.	To identify potential receptors
Local Nature Reserves	Councils' own records of sites	To identify potential receptors
Sites containing Protected Species	Nottinghamshire Biological and Geological Records Centre lists.	To identify potential receptors

Sites and Monuments Record	Nottinghamshire County Council	To identify potential receptors
Areas of Industrial Archaeological Interest	Nottinghamshire County Council	To identify potential receptors
Listed Buildings	Councils' own records	To identify potential receptors
Tree Preservation Orders	Councils' own records	To identify potential receptors
Ancient Woodlands	Councils' own records	To identify potential receptors
EPR Installations	Councils' own records	To identify sources
Current Landfill Sites	Councils' own records	To identify sources
Local Plan	Broxtowe Borough Councils plan showing new development	To identify potential receptors
Landfill and Quarrying Records	Information from EA and Councils own records	To identify sources
Petroleum Records	Past and present filling stations	To identify sources
Electrical Sub Stations	Past and present sub stations	To identify sources
Scrap Yards	Past and present scrap yards	To identify sources
Trade Directories Information	Kelly Directories and Yellow Pages to identify potential contaminative uses	To identify sources
Schools/Colleges	Councils' own records	To identify potential receptors
Recreation Grounds/Park Land	Councils' own records	To identify potential receptors
Allotments	Councils' own records	To identify potential receptors

Table 1 - Resources needed to determine potential contaminant linkages

Potential Sources of Contamination

Industrial History

The first step in the process of identifying potentially contaminated sites is to closely examine historical data in the form of old Ordnance Survey plans and photographs from the early part of the century to the present day. These have been obtained from this Council's archives and the County records office.

Current Industry

The present industrial areas of the Borough are potential sources of contamination, and these have been reviewed in accordance with the statutory guidance to establish whether there is a potential of contamination to exist, and, if there is, whether it is controlled by another agency.

Environmental Protection Act 1990 Part I / Pollution Prevention & Control Act

'Part A1' processes permitted under the Environmental Permitting Regulations regulated by the Environment Agency and 'Part A2' processes regulated by the local authority. The EPR Regime should adequately regulate emissions to land and water; however these sites have the potential for historical contamination and need to be adequately managed, particularly in the closure and de-commissioning phases.

There are currently four A1 processes in Broxtowe which hold environmental permits issued by the Environment Agency.

'Part B' processes are permitted under the Environmental Permitting Regulations for air pollution control by Broxtowe Borough Council. There are currently twenty-five installations which hold permits issued by the Council. These installations are only regulated for their atmospheric emissions; however they have the potential to pollute the land.

Hazardous Substances

This Council is a Hazardous Substances Authority for the purposes of the Planning (Hazardous Substances) Act 1990 and the Planning (Hazardous Substances) Regulations 1992. This legislation requires consent to allow the presence on land of hazardous substances above a specified quantity. These regulations were amended by the Planning (Control of Major Accident Hazards) Regulations 1999 (SI 981) to take account of the COMAH Regulations (see below). There are currently four authorised sites in the Borough. The Planning Office maintains a register for this purpose.

COMAH Sites

The Control of Major Accident Hazards Regulations 1999 (SI 743) are enforced by the Environment Agency and Health & Safety Executive (joint competent authority) to control both on and off-site risks from industries with a high potential for disaster from dangerous substances (flammable, toxic or explosive). There are no COMAH sites within the Borough.

It should be noted that all sites notified to the HSE under the Notification of Installations Handling Hazardous Substances Regulations 1982 (NIHHS sites) and COMAH sites, will be held on the hazardous substances register, so there should be no need to consult with the HSE on their location.

Explosives

Are not directly covered by the hazardous substances regulations but are controlled by the Health & Safety Executive under licences issued under the Explosives Act 1875. Any licensed sites will be identified.

Current Landfill and Waste Processing Sites

Are generally permitted by the Environment Agency under the provisions of the Environmental Permitting Regulations or Part II of the Environmental Protection Act 1990. Details of all these sites have already been provided by the Agency for this purpose.

Closed Landfill Sites

Are a potentially significant source of risk, especially those which operated before the licensing requirements of the Control of Pollution Act 1974. All closed landfills in the Borough have been identified and their association with any specified receptors considered in detail.

Sewage Works and Land used for the Disposal of Sewage Sludge

Land dedicated for the disposal of sewage sludge is notified to the Environment Agency under the Sludge (Use in Agriculture) Regulations 1989. This land, together with all operating and redundant sewage works has been identified and assessed.

Mines and Minerals Extraction

The geology of the area has resulted in large areas used for the extraction of minerals and stone. Many of the resulting quarries then being filled with refuse or other materials. These can present a particular risk to water resources. An attempt has been made to identify all past quarrying sites and assess the risk they present, although the former use of land for minerals extraction is not always obvious from historical OS maps.

Waste or Derelict Land

Often land owned by the utilities, railways or the Council is left seemingly abandoned because it has no particular use or is difficult to access. These areas can accumulate unwanted materials and can be used to dispose of wastes and effluents illegally.

Ministry Of Defence Land

Land occupied by Defence Agencies has the potential for contamination and unexploded ordinance.

Previously Developed Contaminated Sites

The inspection of the District has identified many potentially contaminated sites that have been developed over the years. In many cases which pre-date the Part IIA regime, the methods and extent of remediation is unknown, in others it may be known but the remediation suspected of being inadequate.

Potentially Contaminative Industries

The list below has been drawn up to provide a broad indication of the type of sites that are known to use, or to have used in the past, materials that could pollute the soil. It must be understood that the list is not exhaustive, also that inclusion on this list does not necessary infer the existence of a contaminant linkage.

Abattoirs
Adhesives manufacture
Agriculture
Aircraft manufacture
Airports
Animal burial
Animal by-product processing
Anodisers
Anti-corrosion treatment
Asbestos products
Asphalt works
Automotive engineering
Battery manufacture
Bearings manufacture
Blacksmiths
Boiler makers
Bookbinding
Brass and copper tube manufacture
Brass founders
Brewing
Car manufacture
Carbon products manufacture
Cement works
Chemical manufacture and storage
Chrome plating
Ceramics manufacture
Coal carbonisation
Coal merchant
Concrete batching
Coppersmiths
Descaling contractors (chemical)
Detergent manufacture
Distilleries
Dockyards
Drum cleaning
Dry cleaners
Dye works
Dyers and finishers
Electricity generation
Electrical engineers
Electro platers
Engineering works
Explosives manufacture (including fireworks)
Farms
Fertiliser manufacture
Fellmongers
Fibre glass works
Food processing
Foundries
Fuel manufacture
Fuel storage
Garages and depots
Gas mantle manufacture
Gas works
Glass works
Glue manufacture
Gum and resin manufacture
Hatters
Hide and skin processors
Ink manufacture
Iron foundry
Iron works
Lacquer manufacture
Laundries
Leather manufacture
Metal coating
Metal manufacture
Metal sprayers and finishers
Mining
Mirror manufacture
Motor vehicle manufacture
Oil fuel distributors and suppliers
Oil merchants
Oil refineries
Oil storage

Paint and varnish manufacture
Paper works
Pesticides manufacture
Petrol stations
Photographic film works
Photographic processing
Paper manufacture
Plastics works
Plating works
Power stations
Print works
Printed circuit board manufacture
Radioactive materials processing
Railway land
Railway locomotive manufacture
Refiners of nickel and antimony
Resin manufacture
Rubber manufacture
Scrap metal dealers
Sealing compound manufacture
Sewage works
Sewage sludge disposal areas
Sheet metal merchants and works
Ship breakers
Ship builders
Skein silk dyers
Small arms manufacture
Smokeless fuel manufacture
Soap manufacture
Solvent manufacture
Solvent recovery
Steel manufacture
Stove enamellers
Synthetic fibre manufacture
Tank cleaning
Tanneries
Tar and pitch distillers
Textile manufacture
Thermometer makers
Timber treatment
Timber preservatives manufacture
Tin plate works
Transport depots
Tyre manufacture and retreading
Vehicle manufacture
Vulcanite manufacture
Vulcanisers
Waste disposal
Waste recycling
Waste treatment
Zinc works

Potentially Sensitive Receptors

RECEPTOR	LAND USE TYPE
Human beings	• Allotments • Residential with gardens • Residential without gardens • Schools and Nurseries • Recreational/parks, playing fields, open space. • Commercial/industrial
Eco systems	• European Sites Special Areas of Conservation (including candidate SAC's) classified pursuant to Article 4 of European Council Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora, and Special Protection Areas (including potential SPA's) classified pursuant to Article 4 of European Council Directive on the Conservation of Wild Birds. • Ramsar Sites Listed under the Convention on Wetlands of International Importance. • Sites of Special Scientific Interest (SSSI's) Notified under section 28 of the Wildlife and Countryside Act 1981 (as amended) • National Nature Reserves (NNR's) Declared under section 19 of the National Parks and Access to the Countryside Act 1949 or section 35 of the Wildlife and Countryside Act 1981 (as amended). • Areas for the Special Protection of Birds Established under section 3 of the Wildlife and Countryside Act 1981 (as amended). • Local Nature Reserves (LNR's) Declared under section 21 of the National Parks and Access to the Countryside Act 1949. • Sites of Importance for Nature Conservation (SINC's) Afforded planning policy protection under Broxtowe Borough Local Plan.
Property	• Buildings (including below ground) • Ancient monuments • Listed Buildings, historic parks and gardens

	• Conservation areas • All crops including timber • Produce grown domestically or on allotments for consumption • Livestock • Other owned or domesticated animals • Wild game subject to shooting or fishing rights
Water	• Territorial sea water (to three miles) • Coastal waters • Inland fresh waters (rivers, streams, lakes, including the bottom / bed if dry) • Ground waters, Source Protection Zones, Major Aquifers, Water Abstraction Points • Water Resources Act 1991 s104

Statutory Guidance TABLE 1: Ecological systems effects

Relevant types of receptor	Significant harm	Significant possibility of significant harm
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 (PPS 9) on nature conservation (i.e. 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.	The following types of harm should be considered to be significant harm: • harm which results in an irreversible adverse change, or in some other substantial adverse change, in the functioning of the ecological system within any substantial part of that location; or • harm which significantly affects any species of special interest within that location and which endangers the long-term maintenance of the population of that species at that location. In the case of European sites, harm should also be considered to be significant harm if it endangers the favourable conservation status of natural habitats at such locations or species typically found there. In deciding what constitutes such harm, the local authority should have regard to the advice of Natural England and to the requirements of the Conservation of Habitats and Species Regulations 2010.	Conditions would exist for considering that a significant possibility of significant harm exists to a relevant ecological receptor where the local authority considers that: • significant harm of that description is more likely than not to result from the contaminant linkage in question; or • there is a reasonable possibility of significant harm of that description being caused, and if that harm were to occur, it would result in such a degree of damage to features of special interest at the location in question that they would be beyond any practicable possibility of restoration. Any assessment made for these purposes should take into account relevant information for that type of contaminant linkage, particularly in relation to the ecotoxicological effects of the contaminant.

Statutory Guidance TABLE 2 – Property effects

Relevant types of receptor	Significant harm	Significant possibility of significant harm
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.	For crops, a substantial diminution in yield or other substantial loss in their value resulting from death, disease or other physical damage. For domestic pets, death, serious disease or serious physical damage. For other property in this category, a substantial loss in its value resulting from death, disease or other serious physical damage. The local authority should regard a substantial loss in value as occurring only when a substantial proportion of the animals or crops are dead or otherwise no longer fit for their intended purpose. Food should be regarded as being no longer fit for purpose when it fails to comply with the provisions of the Food Safety Act 1990. Where a diminution in yield or loss in value is caused by a contaminant linkage, a 20% diminution or loss should be regarded as a benchmark for what constitutes a substantial diminution or loss. In this Chapter, this description of significant harm is referred to as an "animal or crop effect".	Conditions would exist for considering that a significant possibility of significant harm exists to the relevant types of receptor where the local authority considers that significant harm is more likely than not to result from the contaminant linkage in question, taking into account relevant information for that type of contaminant linkage, particularly in relation to the ecotoxicological effects of the contaminant.
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.	Structural failure, substantial damage or substantial interference with any right of occupation. The local authority should regard substantial damage or substantial interference as occurring when any part of the building ceases to be capable of being used for the purpose for which it is or was intended. In the case of a scheduled Ancient Monument, substantial damage should also be regarded as occurring when the damage significantly impairs the historic, architectural, traditional, artistic or archaeological interest by reason of which the monument was scheduled. In this Chapter, this description of significant harm is referred to as a "building effect".	Conditions would exist for considering that a significant possibility of significant harm exists to the relevant types of receptor where the local authority considers that significant harm is more likely than not to result from the contaminant linkage in question during the expected economic life of the building (or in the case of a scheduled Ancient Monument the foreseeable future), taking into account relevant information for that type of contaminant linkage.

Technical Appendix C

Strategic Inspection

Stage 4

Prioritisation of sites for detailed inspection

Information Evaluation

Risk Screening Exercise

The Council has decided that any potentially contaminated land shall, prior to detailed investigation, be listed and categorised using a risk screening methodology; computer software, in conjunction with the GIS. The software utilises the available data regarding:

- potential source, scale, nature and toxicity of contaminant sources (from historical mapping and local knowledge)
- potential pathways (from environmental, hydrologic and geologic/hydrogeologic data sources)
- potential nature and behaviour of receptors (from land use and features mapping sources)

The software determines individual scores for the potential source and for the various pathway/receptor linkages.

Broxtowe Borough Council has utilised the GeoEnviron 8 software system to undertake the strategic risk assessment of all sites of interest within the Borough.

GeoEnviron 8 is an environmental data management system dedicated to managing data gathered from routine inspections, complaint investigations and monitoring activities. GeoEnviron 8 will be subject to a system review in 2025 to determine whether it will continue to be used, or a replacement system/process will be procured and implemented.

During the data gathering phase, key information about each site of interest was obtained from the data sources described in Technical Appendix B. This key information consisted of a characterisation of the former and current industrial uses at each site and a summary of all the potential receptors on or near to the site of interest.

Stage 1 prioritisation is based on the type of industrial uses the sites have been subject to as well as the sensitivities of the various receptors. The GeoEnviron database contains information on all the industry profiles published by the DoE to support the Part IIA regime. Each of these profiles has been hazard ranked in relation to its impact on land use (humans, ecology, buildings, etc), ground and surface water receptors. An objective methodology (which is not detailed here) has been used to obtain the scores.

The range of possible industrial hazard scores that can be assigned to a profile is defined in the software with the scoring range is from 1 (low) to 6 (very high).

Using the objective methodology mentioned above, 95 different industry profiles are assigned an industrial risk score.

The Stage 1 prioritisation continues with assigning sensitivity scores to the range of current uses, source protection zones and ground and surface water receptors being considered.

First the sensitivity scoring range for the receptors is defined. This ranges from the highest level of sensitivity scored 9 (very high – human health) to the lowest level of sensitivity scored 0.

41 different 'current land' use classifications are used to categorise all sites of interest. Each of these current land use classifications are allocated a receptor sensitivity score.

Following this, historical industrial site use (ISU) information is entered into the risk matrix. Each site of interest has been classified as falling within one of 95 different classifications of industrial use. The software contains default classifications based on the DoE industry profiles; however, a handful of additional profiles have been created where former land uses did not fall within any of the default industry profiles. More than one industry profile can be allocated to individual sites of interest.

Once the relevant information has been entered for the site, the site risk scores (SRS) are automatically calculated using the equation:

SRS = IRS × RSS

Where SRS is the Site Risk Score, IRS is the Industrial Risk Score and RSS is the Receptor Sensitivity Score.

Separate Site Risk Scores are calculated for four different receptor types, namely:

- Human Health
- Groundwater
- Ecology / Property
- Surface Water

The maximum site risk score for land use related receptors (i.e. human health and ecology / property) is 30. The maximum for ground and surface water receptors is 25.

The overall risk score for each site of interest is a sum of each of the four Site Risk Scores. Therefore, the maximum possible score for a single site is 30 + 30 + 25 + 25 = 110.

The BBC risk assessment matrix also includes an "Other Factors" component of the Stage 1 Risk assessment which allows officers to define any range of factors that also need to be taken into account as part of the risk assessment. Such factors could for example be favourable (i.e. where there is information suggesting that the site was remediated satisfactorily) or aggravating (i.e. where there is sample data confirming that the site is contaminated).

The initial risk screening process identified 1,553 sites of interest. All of these sites of interest have been processed through the risk assessment model, with output risk scores being in the range 4 (lowest score) to 79 (highest score). The distribution of the risk assessment scores for the sites of interest is summarised as follows:

Risk Score Range	Number of Sites within the Risk Score Range
80 - 110	0
71 – 79	6
61 – 70	45
51 – 60	107
41 – 50	182
31 – 40	292
21 – 30	434
11 – 20	427
0 – 10	60

Technical Appendix D

Detailed Inspection

Stage 5

Detailed Inspection of Sites

Arrangements for carrying out Detailed Inspections

The process of Detailed Inspection of a given site is to confirm that the contaminant linkage(s) identified is/are:

- resulting in significant harm (or the significant possibility of such harm) being caused to the receptor(s), or
- harm (where attributable to radioactivity)

If either of these is confirmed then the land becomes contaminated land by definition and the contaminant linkage becomes, 'significant'.

The detailed inspection of contaminated land is invariably a very time consuming and expensive process; therefore, it must be emphasised that all investigations will be carried out on an incremental basis and terminated immediately it is clear that no significant contaminant linkage exists.

Land Contamination Risk Management (LCRM)

The LCRM replaced the Model Procedures for the Management of Land Contamination (CLR11) in 2020. Both have been developed to provide the technical framework for applying a risk management process when dealing with land affected by contamination.

The process involves identifying, making decisions on, and taking appropriate action to deal with land contamination in a way that is consistent with government policies and legislation within the UK.

Each tier of the risk assessment process will conclude by assessing whether any contaminant linkage(s) exists, and if so whether it is considered to be 'significant'. If it is considered that any such linkage exists then the inspection process will move onto the next phase of risk assessment ultimately reaching a proposal for remediation, if required.

See Flow Diagram pE3 [extract from CLR11]

In cases where imminent risk of serious harm or serious pollution of controlled waters has been confirmed, the Council will authorise urgent action.

Obtaining Desk Top Information (Tier 1 Preliminary Risk Assessment)

The suggestion that land may be contaminated can have a significant impact on the way others view it, and in particular, its perceived value. The Council will therefore seek to obtain as much information as possible about a potential site without causing unnecessary alarm. This may involve detailed inspection of historical data in its possession such as Planning and Building Control files.

Also, the consultation of others who may possess information such as:

- The Environment Agency
- Department of Environment, Food and Rural Affairs
- English Heritage
- Nottinghamshire County Council
- Food Standards Agency
- The Health & Safety Executive
- Developers
- Previous occupiers
- and others

Once sufficient information has been obtained which confirms a contaminant linkage does not exist, or, if it does, it is not significant, then the investigation will cease and no further action will be taken. A Written Statement (see **Technical Appendix E**) will be produced and kept on file, should a request for information be made.

It may be, however, that circumstances will be identified whereby a significant contaminant linkage could occur at some time in the future, and in this case arrangements will be made to keep the situation under review.

Inspection of Land (Quantitative Risk Assessment)

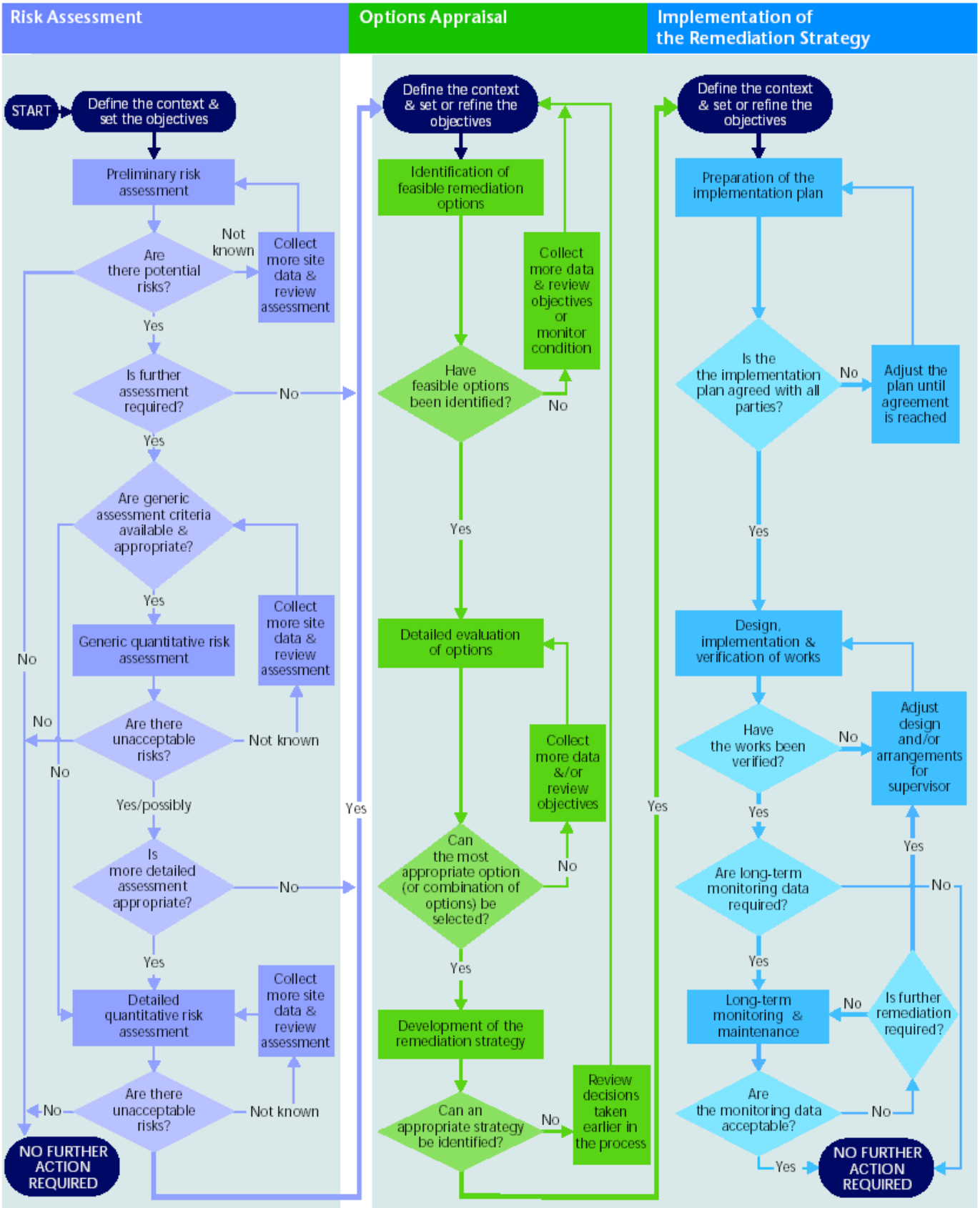
Where evaluation of all available data suggests a significant contaminant linkage may exist, it may be necessary to visit the site and carry out some form of on-site testing or take away samples for analysis.

In every case this will be carried out by a “suitable person”, adequately qualified to undertake the work. The Council may, from time to time, employ external consultants to carry out site investigation works. The appointment of external consultants will be carried out in accordance with the Councils procedures.

Intrusive investigations will be carried out in accordance with appropriate health and safety and technical guidance to ensure:

a) they are effective.
b) do not cause any unnecessary damage or harm; and
c) do not cause pollution of controlled waters.

To ensure the most appropriate technical procedures are employed the Council will have regard to the most up to date Government guidance available.



Note: The process may apply to one or more pollutant linkages each of which may follow a different route. For some linkages, it may be possible to stop at an early stage – others will progress all the way through the process. The level of complexity of each stage may also vary and in some cases may be very simple.

Source: Model Procedures for the Management of Land Contamination CLR11 superceded by LCRM

Flow Diagram showing Detailed Inspection Stages

CLEA Model and Generic Soil Screening Values

Soil Guideline Values (SGVs)

A set of generic soil guideline values (SGV's), and a risk assessment model – the Contaminated Land Exposure Assessment (CLEAUK) model has been produced by DEFRA and the Environment Agency. These SGV's have been derived using a set of generic base site information and so they should only be used for the Tier 2 risk assessment.

In practice the only SGV still used are those for dioxins and dioxin like PCBs – all the others have been superseded.

Generic Assessment Criteria (GACs)

Risk assessment may also be required for substances or scenarios for which there is no SGV's; where there is an information gap the Authority may use other available generic assessment criteria (GACs) values provided:

(i) they understand how they were derived and how they can be used appropriately,
(ii) they have been produced in an objective, scientifically robust and expert manner by reputable organisations, and
(iii) they are only used in a manner that is in accordance with Part 2A and the Statutory Guidance.

Category 4 Screening Levels (C4SLs)

As we have seen in **Technical Appendix A** (pA-7) the revised statutory guidance (2012) has introduced the concept of classification of land (Classes 1 – 4). Part of the implementation of the guidance has seen the creation of Category 4 Screening Levels (C4SLs) which will provide a higher simple test for deciding that land is suitable for use and definitely not contaminated land.

The Use of Screening Values

Whilst generic guidelines (SGV, LQM/CIEH, S4UL, CL:AIRE GAC or C4SL) can be used in the Tier 2 Generic Quantitative Risk Assessment. Exceedance of such GAC should not be used as direct indicators of whether a significant possibility of significant harm to human health may exist.

The level of risk raised by land contamination will depend on more than simply the concentrations of contaminants in the soil, i.e. the amount a screening value is exceeded by. For example, it may also depend on:

- what form the contaminants take,
- where they are in the soil,
- the efficiency of the pathway by which receptors may be exposed,
- the sensitivity of receptors,
- the likely degree and duration of exposure,
- the dose-response relationship,
- natural background levels; etc.

These factors will vary from case to case, sometimes very substantially.

To further define the risks and help remove any uncertainties, a site specific *'detailed quantitative risk assessment'* may be conducted (Tier 3 assessment). The CLEA UK model will be used as a preferred option when appropriate, however, other risk assessment models may be considered, should they be required.

Background levels

The revised statutory guidance (DEFRA 2012) introduced the concept of "normal" levels of contaminants in the soil. Normal levels of contaminants in soil should not be considered to cause land to qualify as contaminated land, unless there is a particular reason to consider otherwise. Therefore, if it is established that land is at or close to normal levels of particular contaminants, it should usually not be considered further in relation to the Part 2A regime

Normal levels of contaminants in soil are considered to result from:

(a) The natural presence of contaminants (e.g. caused by soil formation processes and underlying geology) at levels that might reasonably be considered typical in a given area and have not been shown to pose an unacceptable risk to health or the environment.

(b) The presence of contaminants caused by low level diffuse pollution and common human activity other than specific industrial processes. For example, this would include diffuse pollution caused by historic use of leaded petrol and the presence of benzo(a)pyrene from vehicle exhausts, and the spreading of domestic ash in gardens at levels that might reasonably be considered typical.

The statutory guidance gives further advice to Local Authorities on taking "normal" levels into consideration when making Part 2A decisions.

Risk Assessment for Controlled Waters

Advice will be sought from the Environment Agency on the risk assessment if controlled waters are the receptor in a particular contaminant linkage prior to determination. It is anticipated that risk assessments and remediation will be carried out in accordance with Environment Agency guidance.

Risk Communication

Communicating about land contamination and proposed remediation solutions is exceedingly complex and often emotionally charged because of the potentially serious implications of the problem, the diverse range of people involved and competing priorities.

Effective risk communication is not just about convincing people about what you perceive as the 'real' risk following a technical risk assessment but must be based on an understanding that people will have different perceptions of the risk as a result of their own situation and values.

In communicating with affected parties, the Council will ensure that the methods used: -

- are relevant to the group requesting the information.

- are clear, consistent and concise.
- are not overly technical.
- allow equal access to all information.
- officers are available for discussions, meetings, etc.
- that all relevant partners are included.
- that feedback will be invited.
- that risk-based information will be communicated objectively, and the sources of those assessments are identified.
- that the information and decision linking process is timely, transparent, objective and consistent.

Powers of Entry

Statutory powers of entry are conferred on the Council to enable it to carry out its functions under Part 2A. There are no circumstances in which the Council will use these powers to obtain information about the condition of land, where:

- It can obtain the information from third parties without the need for entering the site; or
- A person offers to provide all the information required by the Council within an agreed and a reasonable and specified time and does so.

Land which may be a Special Site

Where the Council is aware that land it intends to investigate would, if declared contaminated land, be a special site, it will notify the Environment Agency in writing requesting any information it may have on the land and the likelihood of contaminant linkages. According to the wishes of the Environment Agency, it may be that a joint investigation will be undertaken.

Where the Environment Agency (or their agents) wish to carry out formal investigation on behalf of the Council their officers will need to be appointed as, “suitable persons”. The Environment Agency do not have the power under Part 2A to investigate land which may be contaminated land without the authorisation of the Council.

Determining that land is Contaminated Land

There are six possible grounds for determining if land is contaminated:

a) Significant harm is being caused,

b) There is a significant possibility of significant harm being caused,

c) Significant pollution of controlled waters is being caused,

d) There is a significant possibility of significant pollution of controlled waters being caused,

e) Harm is being caused (in relation to radioactivity), or

f) The possibility of harm being caused is “significant” (in relation to radioactivity).

Before making any determination, the local authority should have identified one or more significant contaminant linkage(s), and based on a robust, appropriate, scientific and technical assessment of all the relevant and available evidence.

If the authority considers that conditions for considering land to be contaminated land do not exist it should not decide that the land is contaminated land.

Deciding that land is not Contaminated Land

In implementing the Part 2A regime, the Council is likely to inspect land that it then considers is not contaminated land. For example, this will be the case where the authority has ceased its inspection and assessment of land on grounds that there is little or no evidence to suggest that it is contaminated land. In such cases, the authority should issue a Written Statement to that effect (rather than coming to no formal conclusion) to minimise unwarranted blight. (See **Technical Appendix E**)

Situations may arise where, it is not possible to determine whether a pollutant linkage is significant in accordance with the statutory guidance, i.e. that the nature of soil contamination means it is never possible to know the exact contamination status of any land with absolute certainty, and that scientific understanding of risks may evolve over time.

Such a lack of certainty should not stop the Council from deciding that land is not contaminated land. The starting assumption of Part 2A is that land is not contaminated land unless there is reason to consider otherwise.

Inspection may identify contamination that would form a significant pollutant linkage should new receptors be introduced. In such circumstances this information will be carefully recorded and the site monitored where the introduction of relevant new receptors seems likely. Should such a site be identified for future development the information obtained during the investigation will be made available to the planning officer and the developer.

The Written Record of Determination and Formal Notification

Record of Determination

Once an area of land has been declared contaminated by statutory definition, the Council will prepare a written record to include:

- location, boundaries and area of the land in question (inc. OS grid ref).
- a Risk Summary (See **Technical Appendix E**)
- a summary of why the Council considers that the requirements of the Statutory Guidance have been satisfied.

The Council will then formally notify in writing all relevant parties that the land has been declared contaminated, these to include:

- the owner(s)
- the occupier(s)

- those liable for remediation ('appropriate persons' in the guidance)
- the Environment Agency

Notification

At the notification stage it may not be possible to identify all the relevant parties, particularly the appropriate persons. The Council will, however, act on the best information available to it at this time and keep the situation continually under review as more information comes to light.

Special Sites

In the case of any land which, following determination as contaminated land, would be likely to meet one or more of the descriptions of a "Special Site" set out in the Contaminated Land Regulations 2006, the Council should consult the Environment Agency before deciding whether or not to determine the land, providing the Agency with a draft record of the determination.

The Council should take the Agency's views into full consideration, and it should strive to ensure it has the Agency's agreement to its decision (although the decision is for the Council to make subject to the provisions of Part 2A).

Voluntary Remediation

The legislation and statutory guidance have been designed to try to encourage *voluntary remediation* (without the need for enforcement action). The formal notification procedure commences the process of consultation on what remediation might be most appropriate. To aid this process the Council will therefore provide as much information to the relevant parties as possible:

- a copy of the written record of determination.
- copies of site investigation reports (or details of their availability)
- an explanation of why the appropriate persons have been chosen
- details of all other parties notified

The appropriate persons will also be provided with written explanations of the test for exclusion and apportionment.

It may be at this stage that the Council will need further information on the condition of the site to identify whether any additional significant contaminant linkages exist. If that is the case an informal attempt will be made to obtain this information from the appropriate persons already identified.

Remediation of Contaminated Land

Once land has been determined as contaminated land, the enforcing authority must consider how it should be remediated and, where appropriate, it must issue a remediation notice to require such remediation.

The enforcing authority for the purposes of remediation may be the local authority which determined the land, or the Environment Agency, which takes on responsibility once land has been determined if the land is deemed to be a “special site”. The rules on what land is to be regarded as special sites, and various rules on the issuing of remediation notices, are set out in the Contaminated Land (England) Regulations 2006.

The broad aim of remediation should be:

(a) to remove identified significant contaminant linkages, or permanently to disrupt them to ensure they are no longer significant and that risks are reduced to below an unacceptable level; and/or
(b) to take reasonable measures to remedy harm or pollution that has been caused by a significant contaminant linkage.

In cases where the aim of remediation is to remove or permanently disrupt significant contaminant linkages, remediation treatment should involve demonstrable disruption or removal of the significant contaminant linkage(s) that led to land being determined as contaminated land, in order to reduce or remove unacceptable risks to receptors.

This might involve one or more of the following:

(a) Reducing or treating the contaminant part of the linkage
(b) Breaking, removing or disrupting the pathway parts of the linkage.
(c) Protecting or removing the receptor.

Technical Appendix E

Detailed Inspection

Stage 5

Determining Liabilities and Information Management

Liability & Enforcement

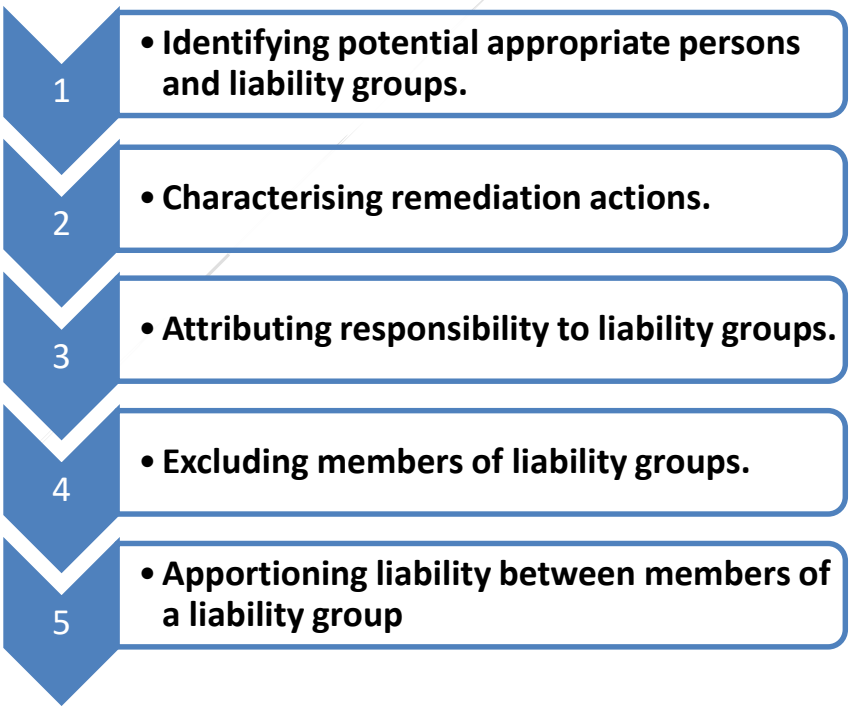
For some land, the process of determining liabilities will consist simply of identifying either a single person (either an individual or a corporation such as a limited company) who has caused or knowingly permitted the presence of a single significant contaminant, or the owner of the land. The history of other land may be more complex.

A succession of different occupiers or of different industries, or a variety of substances may all have contributed to the problems which have made the land "contaminated land" as defined for the purposes of Part 2A. Numerous separate remediation actions may be required, which may not correlate neatly with those who are to bear responsibility for the costs.

The degree of responsibility for the state of the land may vary widely. Determining liability for the costs of each remediation action can be correspondingly complex. The main provisions for the establishment of liability are set out in Part 2A legislation itself and the 1990 Act should always be the primary reference.

The Five Step Procedure

The procedure for determining liabilities has five distinct steps as follows:



Liability Groups

The process commences with the establishment of liability groups. All appropriate persons for any one contaminant linkage are a 'liability group'.

These may be class 'A' or class 'B' persons.

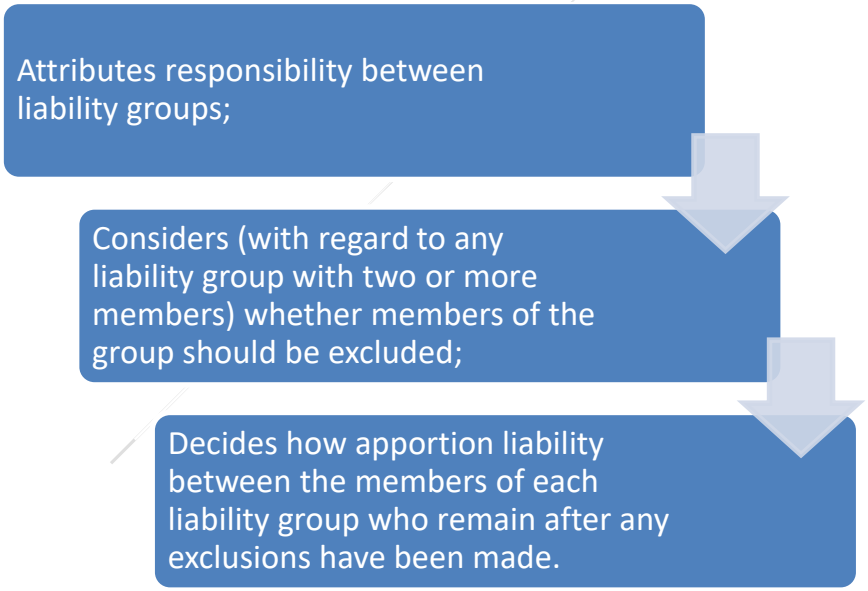
> **APPROPRIATE PERSONS - Class 'A'** - These are, generally speaking the polluters, but also included are persons who, "knowingly permit". This includes developers who leave contamination on a site which subsequently results in the land being declared contaminated.
>
> **APPROPRIATE PERSONS - Class 'B'** - Where no class 'A' persons can be found liability reverts to the owner or the occupier. These are known as class 'B' persons.

The Council will make all reasonable enquiries to identify Class 'A' persons before liability reverts to Class 'B' owners or occupiers.

The matter of appropriate persons must be considered for each significant contaminant linkage. Therefore, where a site has had a series of contaminative uses over the years, each significant contaminant linkage will be identified separately and liability considered for each.

Attribution and Apportionment of Liabilities

The Council must then follow a process found in the 1990 Act and supplemented by the Statutory Guidance, whereby the Council:



Reference is made back to the 1990 Act and Statutory Guidance for further details of Attribution, Exclusion tests and Apportionment of liabilities.

The Enforcement Process

Before remediation notices are served the extensive consultation process will be completed and ample encouragement given to arrive at an informal solution. The

Council will do all in its power to consult the appropriate person(s), owners, occupiers etc about their views on the state of the land.

Remediation notices are served only as a last resort (not withstanding urgent cases), and then only after this lengthy consultation process has been exhausted. Notices will be authorised after two tests are satisfied:

- that the remediation actions will not be carried out otherwise.
- that the Council has no power to carry out the work itself.

If these are met the Council will serve a remediation notice on each appropriate person. These cannot be served less than three months after formal notification that the land is contaminated unless the urgent action is deemed necessary (where there is imminent risk of serious harm).

Information Management

General Principles

A large amount of information, in the form of reports, maps, letters and documents will be required to enable the Council to undertake its inspection duties. This data will come from a variety of sources and many different formats. The management of data concerning the environment is covered under The Environmental Information Regulations 2004, whilst Part 2A of the Environmental Protection Act1990 covers the information required for the register of contaminated land. The revision to the Statutory Guidance introduces the Written Statement and Risk Summary.

Detailed Inspection Outputs

Written Statements

Where detailed inspection ceases, on the grounds that there is little or no evidence to suggest that the land would be contaminated land, the Council will issue a Written Statement detailing its decision.

The statement should make clear that on the basis of its assessment, the authority has concluded that the land does not meet the definition of contaminated land under Part 2A. The authority may choose to qualify its statement (e.g. given that its Part 2A risk assessment may only be relevant to the current use of the land, or based on the information held at the time).

The Written Statement will be issued to all effected parties where the Council has carried out a Phase II assessment; as part of the ongoing communications strategy for the project. Where the Council has ceased investigations at the Phase I stage (desk-top study), and no communication with landowners has occurred, the Written Statement will be put on the project file and used in response to any requests for information.

Risk Summaries

The Council should produce a risk summary for any land where, on the basis of its risk assessment, the authority considers it is likely that the land in question may be determined as contaminated land.

The risk summary should explain the Council's understanding of the risks and other factors the authority considers to be relevant. The Council should seek to ensure that the risk summary is understandable to the layperson, including the owners of the land and members of the public who may be affected by the decision. The Risk Summary forms the major part of the Record of Determination (See **Technical Appendix D**).

Risk summaries should as a minimum include:

(a) A summary of the authority's understanding of the risks, including a description of:
   i. the contaminants involved.
   ii. the identified contaminant linkage(s) (Conceptual Site Model).
   iii. the potential impact(s).
   iv. the estimated possibility that the impact(s) may occur; and
   v. the timescale over which the risk may become manifest.

(b) A description of the Council's understanding of the uncertainties behind its assessment.

(c) A description of the risks in context, for example by setting the risk in local or national context, or describing the risk from land contamination relative to other risks that receptors might be expected to be exposed to in any case.

This need not involve a detailed comparison of relative risks, but the Council should aim to explain the risks in a way which is understandable and relevant to the layperson.

(d) A description of the authority's initial views on possible remediation. This need not be a detailed appraisal, but it should include:
   i. a description of broadly what remediation might entail.
   ii. how long it might take.
   iii. likely effects of remediation works on local people and businesses.
   iv. how much difference it might be expected to make to the risks posed by the land; and
   v. the authority's initial assessment of whether remediation would be likely to produce a net benefit.

In the case of land which would be likely to be a special site, the Council should seek the views of the Environment Agency, and take any views provided into account in producing this description.

Local authorities are not required to produce risk summaries:

(a) For land which will not be determined as contaminated land following Detailed Inspection (e.g. land that would be in Categories 3 and 4). In such cases the authority should produce a Written Statement.
(b) For land which has been prioritised for detailed inspection (See **Technical Appendix B**), but which has not yet been subject to risk assessment (See **Technical Appendix D**).
(c) For land determined as contaminated land before the 2012 revision of the Statutory Guidance came into force.

The Public Register

The public register will be located in: -

Public Protection Service,
Broxtowe Borough Council,
Foster Avenue,
Beeston,
Nottingham,
NG9 1AB

It will be available for inspection within normal office hours Monday to Friday.

The public register is intended to act as a full and permanent record, open for public inspection, of all regulatory action taken by the Council in respect of the remediation of contaminated land, and will include information about the condition of that land.

The register maintained by the Council will contain full particulars of the following matters, in a readily accessible paper format. All information is to be added to the register as soon as it is reasonably practical to do so: -

- Remediation notices served
- Appeals against remediation notices
- Remediation declarations
- Remediation statements
- Appeals against charging notices
- Designation of special sites
- Notification of claimed remediation
- Convictions for failure to comply with a remediation notice.
- Guidance issued by Environment Agency concerning contaminated land
- Other environmental controls

- Information on Contaminated Land that the Council is responsible for.

Confidentiality of Register Information

Issues relating to information being excluded from the public register on the grounds of:

(a) National Security; or
(b) Commercial Confidentiality

will be considered in detail by the Council's Solicitor and Data Protection Administrator.