CONTAMINATED LAND INSPECTION STRATEGY FOR BIRMINGHAM

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CONTAMINATED LAND INSPECTION STRATEGY

Executive Summary

This is the second review of Birmingham City Council's Contaminated Land Inspection Strategy approved by Birmingham City Council's Public Protection Committee on 18th June 2001, first reviewed in 2004. This document details the progress to date in implementing the Strategy, the revised priorities and an outline of the proposed programme for implementation.

Considerable work has been undertaken to set up a comprehensive GIS data storage system to aid in the assessment of land. Land use information as well as other environmental information has been gathered for large areas of the City and this is being used to identify and prioritise areas of land for further assessment and inspection. Prioritisation software is being used as an important part of the process. The methodology adopted ensures consistency in identifying land for further inspection, based on the priorities set out in the strategy.

Historical land use data has been gathered for all areas of the City and is being used in the assessment of land. At the time of this review the initial assessment of land in Phase One of the Strategy has been completed and work on Phase Two of the strategy is ongoing. As of 31st March 2007 approximately 34% of City has been initially assessed and a total of 135 sites have been identified where further detailed inspection is considered necessary.

The review of the Strategy still provides a mechanism where all land in the City will undergo an initial assessment to identify sites of potential concern. However, by categorising sites according to risk of harm to human health, the environment or pollution of controlled waters, this has reduced the number of sites requiring further detailed investigations. The programme for detailed inspection has been reviewed and revised to develop two categories of sites: detailed inspections sites and other sites, where detailed inspection is not considered necessary. Detailed inspection sites reflect sites where there is a high possibility of land contamination and a possibility of pollution linkage exists. Sites where detailed inspection is not considered necessary reflect sites where there is or there has been a potential contaminative land use on the land but the potential to give rise to harm is very low and does not warrant intrusive investigations, or sites where there is a possibility of land contamination, but the risk to its current land usage is considered acceptable (planning sites).

Investigations will only be carried out on sites programmed for detailed inspection as part of the revised Contaminated Land Strategy. Other sites will not be further assessed unless there is a change in use or further information becomes available. In most cases they will be assessed as part of the planning process.

The phases for inspection are shown geographically in appendix 2. With the current level of resources the initial phased assessment is forecast to be completed by 2020.

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1.0 INTRODUCTION

Under the provisions of Part 2A of the Environmental Protection Act 1990 Birmingham City Council is required to inspect land within the area of the Authority for the purpose of identifying contaminated land. This legislation requires that the Authority prepares and publishes an inspection strategy detailing how the Authority will carry out this duty. To comply with this legal requirement Birmingham City Council published a Contaminated Land Inspection Strategy in June 2001 and this was reviewed in 2004. This current document is the second revision of the Strategy.

Within the framework of the Environmental Protection Act 1990 contaminated land is defined on the basis of significant harm to human health, the environment or pollution of controlled waters.

In determining whether any land is contaminated, the Authority must act in accordance with guidance issued by the Secretary of State with the main objective of providing a system for the identification and remediation of land, which is causing unacceptable risks to human health or the wider environment.

The Authority is required:

- **To identify any contaminated land as defined by the legislation.**

- **To take steps to control any risk from any contaminated land identified using voluntary or enforcement action.**

- **To liaise with the Environment Agency regarding sites that may be polluting controlled waters or other special sites.**

The Environment Agency also has a key role in the implementation of this legislation and they are required to:

- **Provide relevant information held by the Agency to local authorities.**
- **Ensure remediation of Special Sites.**
- **Maintain a public register of regulatory action for Special Sites.**
- **Prepare a national report on the state of contaminated land.**
- **Provide advice to local authorities on identifying and dealing with pollution of controlled waters.**
- **Provide advice to local authorities on the remediation of contaminated land.**

In carrying out its inspection strategy the City Council is required to take a strategic approach to the identification of contaminated land. The approach that is being adopted is:

- **Rational, ordered and efficient.**
- **Proportionate to the seriousness of any actual or potential risk.**
- **Seeking to ensure that the most pressing and serious problems are located first.**
- **Ensuring that resources are concentrated on investigating areas where the City Council is most likely to identify contaminated land.**
- **Ensuring that the City Council efficiently identifies requirements for the detailed inspections of particular areas of land.**

The aim of the contaminated land legislation is to ensure that all land is suitable for its current use. The **"suitable for use"** approach recognises that any risk presented by any given contaminant will vary greatly according to the use of the land and to a wide range of other factors such as the geology and the proximity of vulnerable receptors.

The remediation of land under the contaminated land legislation will be limited to removing or controlling risk of harm to an extent that the land is suitable for its current use. When taking enforcement action, the City Council is required to have regard to the statutory guidance and ensure that remediation is reasonable having regard to costs and the resulting benefits.

This Strategy details how the Council will carry out the inspection of land within the City of Birmingham, giving details of its priorities to ensure the protection of the public. It also details how information is to be recorded and made accessible. The Strategy also sets out the current knowledge of contamination issues in Birmingham, the framework for dealing with land contamination and the progress to date in implementing the Strategy.

The implementation of the Inspection Strategy will take many years to complete and as such, the Strategy sets out the Council's timescales for identifying the areas of highest priority in the City. These timescales will be subject to review, as more information becomes available through the inspection process. It is intended that formal review of the Strategy will be undertaken biannually.

The implementation of Part 2A of the Environmental Protection Act 1990 in Birmingham has been delegated to Regulatory Services.

1.1 GENERAL POLICY FOR CONTAMINATED LAND IN BIRMINGHAM

The aims of Birmingham City Council are to protect the health of its people from the affects of land contamination, to work towards sustainable development and to provide public confidence in the development of land within the City. The City Council also seeks to prevent the pollution of controlled waters, prevent damage to property and damage to ecological systems from the effects of substances, which are on, in or under the land.

The policy of the City Council is to be transparent in its approach to dealing with land contamination issues and it aims provide public confidence in the regulatory controls administered by the Authority. The City Council is committed to providing public access to environmental information and will make available to the public details of any assessments carried out in implementing this Strategy.

Land contamination issues will be dealt with sensitively and wherever applicable the community and other interested parties will be consulted on any issues that may affect them.

1.2 LEGAL OBLIGATIONS

The Legal Framework

Part 2A of the Environmental Protection Act 1990 places a duty on Birmingham City Council to inspect land in its area for the purpose of identifying contaminated land. If contaminated land is identified then the Authority is also required to determine whether it should be designated as a special site for which the Environment Agency is the enforcing authority. Once any land is identified as being contaminated land then the enforcing authority (local authority or Environment Agency) may take enforcement action to remove any risk of significant harm. The Authority is also required to place on the public register details of any enforcement action taken in respect of contaminated land.

In fulfilling this duty the City Council is required to prepare and publish an inspection Strategy. The first strategy was adopted by the City Council on 18th June 2001.

It is the intention of the legislation to complement existing legislation, including integrated pollution prevention and control, waste management licensing and planning controls.

For land to be Contaminated Land it must give rise to significant harm or give rise to the significant possibility of significant harm to persons, buildings, ecological systems, or is polluting (or likely to pollute) controlled waters. Part 2A of the Environmental Protection Act 1990 defines contaminated land as:

> ***"any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that***
>
> ***a) significant harm is being caused or there is a significant possibility of such harm being caused;***
>
> ***or***
>
> **b)** ***pollution of controlled waters is being, or is likely to be caused."***

The definition of significant harm, pollution etc. is detailed in the Act, Regulations and associated guidance. (See appendix 3 for references)

To meet the statutory definition of Contaminated Land there must be a pollution linkage (pathway) from a contaminant, which is in, on or under the land to a vulnerable receptor (as illustrated in Figure 1). The contaminant must also be in such a concentration that it is giving rise to significant harm or there is a

significant possibility of significant harm, or pollution of controlled waters is being caused or is likely to be caused. The receptors can be persons, animals, buildings, ecological systems or controlled waters. The receptors that are applicable to this legislation are detailed in Annex 3 of the statutory guidance, Defra Circular 01/2006.

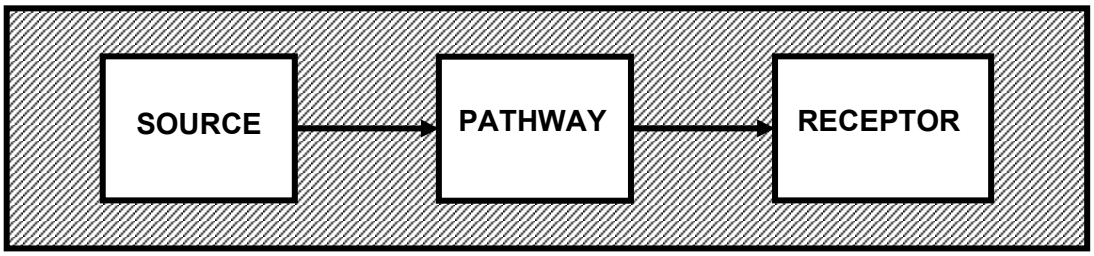

Figure 1: Schematic Diagram of a Pollution Linkage

The legislation permits the Authority to secure the control of such risks through voluntary action or by the serving of an enforcement notice (remediation notice). These powers are not intended to deal with all land contamination issues, but specifically to those that pose an unacceptable risk to the current land use and relate to land contamination which is not regulated through other legislation. In certain circumstance the Authority may carry out remediation of the land and may seek to recover costs of remediation from appropriate persons.

The intention of legislation is that the majority of land contamination should be dealt with through the planning process as land is redeveloped or via voluntary remediation by the landowners.

Land contamination or the possibility of contamination is a material planning consideration under the terms of the Town and Country Planning Act 1990. Therefore, the Planning Authority has to consider the potential implications of contamination both when preparing unitary development plans and when considering individual applications for planning permission. The responsibility for enforcement of planning legislation is designated to the Planning Control Division in the Development Directorate.

The Planning Authority is required to satisfy itself that the potential for contamination is properly assessed and the development incorporates any necessary remediation. A “suitable for use” approach is also adopted, but this relates to both the land’s current and proposed use. This is in contrast to the approach of Part 2A, which only considers its current land use and circumstances.

Other legislation has provided a framework for preventing land contamination through a system of permitting or licensing. The controls provided under the following legislation interact with the land contamination legislation under Part 2A of the Environmental Protection Act 1990:

1. **Integrated Pollution, Prevention and Control (IPPC)- Environmental Protection Act 1990 and Pollution Prevention Control Act 1999 gives the Environment Agency and Local Authorities powers to remedy harm caused in breach of IPPC controls.**

2. **Pollution Prevention and Control (PPC) – Pollution Prevention Control Act 1999.**

3. **Waste Management Licensing – part 2 of the Environmental Protection Act 1990 places controls over the handling, treatment and disposal of wastes.**

In general, except for historical contamination, the other legislation will take precedence when dealing with contamination on permitted or licensed sites.

When inspecting the land the Authority may, if it suspects land being contaminated, enter the land to carry out intrusive and non-intrusive investigations. Such investigations will only be necessary if initial inspection indicates that there is likely to be significant harm or a significant possibility of significant harm and the landowner or appropriate persons is not prepared to carry out their own site investigations.

The Inspection Strategy

It is left to each local authority to decide the priorities and strategic approach to inspecting its land. The approach will be dependant on many local issues such as geology, contaminative uses or available resources. The strategy must set out how the Authority intends to carry out its duties. The Authority is obliged to consult with the Environment Agency and other appropriate persons prior to the finalisation of the Strategy and its first publication.

Enforcement

Statutory guidance recommends that the principal route for dealing with land contamination issues be through the planning process and voluntary action of the landowners. The basis for remediation will be "suitable for use" and landowners will not be required to carry out remediation of land to a standard that is higher than is necessary to ensure the safety of the occupiers of land or the control of pollution of controlled waters. Each site will be considered on its own merits in relation to vulnerable receptors.

Part 2A of the Environmental Protection Act gives powers to local authorities to intervene when land poses significant harm or there is a significant possibility of significant harm due to substances on, in or under the land. Statutory intervention will normally only be necessary in case of emergency or the landowners/polluters are not prepared to remedy the problem.

On identifying any contaminated land the Authority must attempt to identify the persons responsible. Where there is more than one person involved, it can apportion liability.

If contaminated land is identified, the Authority is required to establish:

a) who is the owner of the land

b) who appears to be in occupation of all or part of the land; and

c) who appears to be the appropriate person to bear responsibility for any remediation action that might be necessary.

To remove or control any significant harm identified the Authority can serve a "Remediation Notice" on appropriate persons, as defined in the legislation, requiring them to take steps, specified in the notice, to make the land safe. The measures specified must be reasonable for dealing with the risk of harm identified.

Except in an emergency, the Authority should consult with the appropriate person and the owner of the land prior to taking any action. At any time in this process the appropriate persons may elect to carry out voluntary remediation and submit proposals to the Authority.

Prior to taking statutory action the Authority must notify in writing the appropriate persons and the Environment Agency detailing:

a) a copy of the written record of the determination made by the Authority that the land appears to be contaminated land

b) information on the availability of site investigation reports, with copies of the full reports being available on request

c) an indication of the reason why particular persons appear to the Authority to be appropriate persons

c) the names and addresses of other persons notified at the same time or previously, indicating the capacity in which they were notified (owner or appropriate person)

d) information regarding tests for exclusion from apportionment of liability

In the event that a voluntary scheme to remediate the land cannot be agreed the Authority may serve a remediation notice. The appropriate person or persons have a right of appeal within 21 days of receiving a remediation notice. There is no statutory provision for extending this time limit. The grounds of appeal are listed in the statutory guidance.

The Authority has a duty to place on the public register any remediation notice, voluntary remediation statement and other prescribed matters. (See section 6.1) The Authority has the right to carry out any necessary works in default, in the event that the appropriate person fails to comply with the requirements, and recover any costs.

In certain circumstances the Authority may carry out remediation under its statutory powers without the requirement to serve a remediation notice. Prior to carrying out such works the Authority is required to prepare a remediation statement. If it is not possible to recover all of the costs of remediation the Authority can apply to the Department for the Environment, Food and Rural Affairs (Defra) for grant funding under the Capital Project Support Programme to fund such work.

The enforcement of the contaminated land regime is the responsibility of the Authority. However, there are exceptions where the Environment Agency may take the role of regulator. The Contaminated Land (England) Regulations 2006 specify that when contaminated land pollutes specified controlled waters or it arises from certain industrial sites then these sites will be termed Special Sites. The enforcing authority for such sites is the Environment Agency. In respect of controlled waters Special Site status may apply if the contamination affects public drinking supplies, causes controlled waters to fail quality standards set under the Water Resources Act 1991 or reaches controlled waters contaminated in specific underground strata. The industrial sites that could be classified as Special Sites

include waste acid tar lagoons; oil refining, explosives; Integrated Pollution Prevention and Control (IPPC) permitted sites, Pollution Prevention and Control (PPC) sites, nuclear sites, defence land, and radioactive contamination. Prior to determining land a Special Site the Authority would first consult with the Environment Agency. Only certain controlled waters may be considered a receptor for Special Site Status and the Authority may still be required to regulate some sites where pollution of controlled waters is occurring.

It is not intended in this Strategy to detail fully the procedures to be followed in taking statutory action in respect of contaminated land. Full details of the enforcement powers and statutory procedures are to be found in Part 2A of the Environmental Protection Act 1990 and Defra Circular 01/2006 dated September 2006.

The enforcement of the contaminated land legislation by Birmingham City Council will be carried out in accordance with current statutory guidance. Any intrusive investigations or remediation of contaminated land may be influenced by other legislation and where appropriate this will receive due consideration. In particular it is recognised that the Conservation (Natural Habitats etc) Regulations 1994 and the Wildlife and Countryside Act 1981 may need to be considered when dealing with certain ecologically sensitive sites. English Nature has been consulted regarding the Strategy and their recommendations are to be incorporated in to the inspection protocols. This also applies for sites of archaeological interest. Further guidance in respect of this is provided in the Defra Circular 01/2006.

1.3 HISTORY OF THE STRATEGY

Under the provisions of Part 2A of the Environmental Protection Act 1990 all local authorities in England are required to inspect their area for the purpose of identifying contaminated land. This legislation requires the Birmingham City Council to prepare and publish an inspection strategy detailing how the Authority will carry out this duty. To comply with this legal requirement Birmingham City Council published its first Contaminated Land Inspection Strategy in June 2001. This was further reviewed in 2004. This document is the second revision of the Strategy.

The assessment of the City of Birmingham has been split into four phases with phase one being the areas where it was thought that there is higher likelihood of identifying contaminated land, and phase four being predominately industrial land, parks or agricultural land. The phases are further described in section 4.1 of this Strategy.

1.4 CHANGES IN THIS REVIEW

Considerable expertise has been developed when implementing the Strategy. It has been necessary to develop comprehensive information recording systems and develop prioritisation protocols.

Since implementation of the Strategy in 2001 proactive assessment has identified numerous sites across the City requiring detailed inspection. Several sites have since been investigated and remediation works have been carried out at contaminated land sites. With the experience gained it has been possible to further appraise the risk potential of sites of concern based on the experiences learnt to date. This Strategy includes a decision-making matrix in Section 3. The Matrix has been developed to concentrate resources on those areas of land that have the greatest potential of risk. The decision-making matrix provides two categories of sites: detailed inspection sites and other sites where detailed inspection is not considered necessary. Detailed inspection sites reflect sites where there is a high possibility of land contamination and a possibility of pollution linkage exists. Other sites where detailed inspection is not considered necessary reflect sites where there is or there has been a potential contaminative land use on the land but the potential to give rise to harm is very low and does not warrant intrusive investigations, or sites where there is a possibility of land contamination, but the risk to its current land usage is considered acceptable (planning sites).

Investigations will only be carried out on sites programmed for detailed inspection as part of the revised Contaminated Land Strategy. Other sites will not be further assessed unless there is a change in use or further information becomes available. In most cases they will be assessed as part of the planning process.

The matrix is complemented by a comprehensive information system which has been developed to monitor changes in land use or record additional information so that at all times the current status of each programmed site is known.

The Strategy sets out in Section 3 the assessment and detailed inspection procedures. These consist of initial assessment of land to identify sites of concern, prioritisation of sites for investigation, investigation of sites, determination of contaminated land sites and remediation of contaminated land identified.

In Section 4 the timescales have been revised in the light of experience. It is proposed to complete the initial phased assessment process by 2020. During this period a programme of detailed inspection/intrusive site investigations will be undertaken at sites prioritised for inspection.

1.5 AIMS AND OBJECTIVES

The objectives for this contaminated land inspection Strategy are to fulfil the following requirements.

- **To fulfil the Birmingham City Council's statutory duty to prepare and publish an inspection Strategy.**
- **To demonstrate how the City Council will implement its inspection Strategy in accordance with any statutory guidance.**
- **To inform the citizens of Birmingham and other interested persons how the Council will implement the inspection of land in the City and identify its priorities.**
- **How the Council intends to make information available to the public and the Environment Agency for any inspections or assessment carried out.**

The revised Strategy has been prepared on the basis of current knowledge already available to the City Council. The following sections of this Strategy detail more fully the above objectives.

2.0 BACKGROUND

Birmingham was once a major industrial city and as such there is now a legacy of land contamination issues. Consequently, the Council has extensive experience of dealing with land contamination issues associated with its industrial heritage.

Much of the City has not been affected by industrial activity or other contaminative land uses and therefore in order to target resources to areas of greatest perceived risk a strategic approach has been adopted in the Strategy. The first priority when developing strategy is the protection of human health and the assessment process has been developed to target the areas of greatest concern as a priority.

Regulatory Services hold records on contaminative land activities such as former landfill sites; other waste disposal activities such as scrap yards and waste transfer stations and land where land contamination has been investigated. This information, which is continually updated, has been used as background information for the implementation of the Strategy. The information is available to the public as part of an environmental search service.

For land to be considered as contaminated land, in accordance with the legislation, there must be a source of contamination and a pathway from that source to a receptor. Receptors include people, buildings, controlled waters or ecological systems. The statutory definition for contaminated land requires that a substance(s) is in, on or under the land and that there is risk of significant harm or a significant possibility of significant harm to the receptor. It is believed that only a relatively low number of sites will fall within this definition.

The initial task of the City Council is to identify land where potentially contaminative land uses have been carried out and determine whether there is likelihood that contamination may affect a receptor. Once suspect land has been identified the City Council will carry out detailed inspection of the land to establish whether there is contamination present to an extent that significant harm (or possibility of significant harm) may be caused.

The Strategy has been prepared on the basis of statutory guidance and seeks to control any risks associated with land contamination by seeking the co-operation of landowners wherever possible.

2.1 BIRMINGHAM'S HISTORY

The City of Birmingham, in terms of population, is the largest unitary authority in the United Kingdom covering an area of 27,030 hectares. It has a mix of land uses including manufacturing industry, commercial activities, residential, public open space and agriculture. Originally, Birmingham was not one local authority, but a collection of smaller towns, villages and agricultural land that has, with the expansion of Birmingham, been incorporated into the city that exists today. Some of these villages and towns still retain their original identity in what is now an urban city. The last major change occurred in 1974 when the Borough of Sutton Coldfield, to the north of the city, was incorporated into the City of Birmingham to form the current city area. Since then only relatively minor boundary changes have taken place.

Birmingham is situated at the heart of the United Kingdom and owes much of its development and success to its strategic position at the centre of canal and railway networks. The growth of road transport, with the central hub of the UK motorway network converging in Birmingham has lead to the City's continual development.

Birmingham has changed greatly since it's beginning in 1166 when a royal charter was granted for a market in the Digbeth area. This area of Birmingham was historically the safest crossing point of the river for some distance and was bordered by three counties. The market attracted artisans to Birmingham to practice their trades and the industry grew initially in this area. Today, there is still a high concentration of industry in the Digbeth area of Birmingham.

The Industrialisation of Birmingham continued to increase and by 1832 Birmingham had become a market town. In 1889 Birmingham received City status. Birmingham's success is attributable to its ability to adapt and produce a varied range of manufactured goods. As a result Birmingham has been called the "city of a thousand trades" and "workshop of the world". Varied industries carried out in Birmingham include the manufacturing of brass products, jewellery, small arms and buttons. In the last century, car and other road vehicle manufacture has been a major industry in the city. Currently, there are three vehicle-manufacturing centres at Longbridge, Castle Bromwich and Saltley.

Much of Birmingham is occupied by housing, public open space and agriculture. The majority of such land can be considered free from historical contamination. Approximate land use areas for Birmingham are shown in Table 1.

Land Use Category	Area (hectares)	% of total area
Housing (including hotel and hostels, curtilages and gardens etc	14,090	52
Leisure and open space	3,800	14
Agriculture (including allotments)	2,370	9
Manufacturing	1,820	7
Commercial (including offices, retail, wholesale and storage)	1,080	4
Education	1,060	4
Transportation (including car parks, roads, canals, rivers and railways)	990	4
Utility Services (including crematoria, refuse tips)	790	3
Community and Health Services (including hospitals, day centres, churches, police stations etc)	560	2
Vacant Land	450	1
Defence (TA centres)	20	<1
Total	**27,030**	**100**

Source Department of Planning and Architecture, Birmingham City Council, 1992

Table 1: Land Use in Birmingham

Industry in Birmingham is mainly confined to a central band that stretches across the middle of the city. Some industrial development can also be found in Small Heath, Longbridge, Sutton Coldfield, Handsworth, Stechford, Selly Oak and Perry Barr. Although Birmingham's wealth and prosperity has been founded on its industrial past, today only 7% of Birmingham is currently used for manufacturing with a further 4% used for commercial uses such as offices, retail, wholesale and storage.

To accommodate a population of a million people the greatest land use in Birmingham is housing and accounts for approximately 52% of the city area. The level of housing is increasing as brownfield development is taking place across much of the City. Historically, there have been several phases of residential development in the City. In Birmingham's earlier history the first phases centred on the inner city area, which also formed the part of the City where early industrialisation occurred. These initial areas were not well planned and housing was poor, with inadequate amenities and overcrowding. These areas were the first to be cleared as part of slum clearance and much of the earlier land is now used for commercial use. The population rise increased the need for residential housing that consisted of Victorian terraces built on the outskirts of the inner city at locations such as Harborne, Quinton, Small Heath, Handsworth, Nechells and Erdington. Terraced housing is still a principle house type in these areas today. There was further significant house building during the period 1919-1939 when about 50,000 houses were built in the outer suburban areas of the city.

The second highest land use in Birmingham is public open space such as parks, which account for 14% of the total area. This is closely followed by agricultural land and allotment gardens, which account for 9% of the total area.

2.2 GEOLOGY OF BIRMIMGHAM

In geological terms, Birmingham can be considered as being separated into two distinct rock formations divided by a geological fault (the Birmingham Fault), which roughly runs in SW-NE direction through the city. A fault is a zone of geological weakness in the earth crust where different strata are shifted against each other. This causes significant variations in the characterisation of geological and hydrogeological features.

To the west of the fault line the rock strata predominantly consists of red and red-orange sandstones of the Sherwood Sandstone Group. The Sherwood Sandstone has variable permeability; with both primary and secondary (fissure) flow. This rock type therefore allows rainwater to percolate into the ground. The Sherwood Sandstone Group to the west of the Birmingham Fault is considered to be a major aquifer, which contains groundwater in exploitable quantities.

To the east of the Birmingham Fault the strata predominantly consists of red and red-brown mudstones of the Mercia Mudstone Group, which are inter-bedded by several silt and sandstone bands. In contrast to the Sherwood Sandstone, the Mercia Mudstone has very low primary porosity and a low permeability. As a water resource this strata is classified as a non-aquifer and contains insignificant quantities of groundwater. However within the Mercia Mudstones there can be localised minor aquifers found within superficial deposits. Both the Sherwood Sandstone and Mercia Mudstone groups are of the Triassic period.

Superficial deposits such as Glaciofluvial deposits and Boulder Clay overlie the solid geology in places. Alluvium deposits are associated with the valley floors of the Hockley Brook, River Rea, River Tame and are designated Minor Aquifers

under the Environment Agency “Policy and Practice for the Protection of Groundwater”.

Minor aquifers will seldom produce large quantities of water for abstraction. They can be important for local supply and in supplying a base flow to rivers. Nevertheless, groundwater transportation through such rocks, although imperceptible, does take place and needs to be considered in assessing the risk associated with persistent pollutants

2.3 CONTAMINATED LAND RISKS

Housing developments

Many of the housing developments were principally built on greenfield land. Materials for the construction were obtained locally from quarries and clay pits throughout the City. The environmental consequence was that many of these pits were subsequently in-filled with waste materials. Since the 1960s a total of 67 former landfill sites have been identified in the City. Initial phases of the assessment of the City have identified other in-filled areas, which will be further assessed as part of the Strategy. The majority of identified landfill sites are situated next to housing and some are located on Birmingham's major aquifer. A landfill site can give rise to landfill gas migration and the pollution of groundwater or surface water.

There are 67 known landfill sites within the City boundary, of which 37 are in City ownership (partially or solely). Site investigations to assess any risk and remediation schemes have already been carried out on many of these sites. The last municipal landfill site to be infilled in the City is situated at Old Horn Crescent, Great Barr. This was completed in the early 1990s and incorporates a landfill gas protection scheme, which until recently generated electricity for the national grid. The site is manned by 3 staff and is monitored to ensure there is no risk to people or buildings situated nearby. The majority of the other former landfill sites in City ownership are now used as public open space.

The remaining former landfill sites are in private ownership and information on the majority of these sites at the time of publication of the original Strategy was limited. Since implementing the Strategy, the City Council has undertaken exploratory investigations on several of these sites to obtain information about land conditions. This has assisted in preparing a programme of detailed inspection as part of the Strategy. Other private sites have been investigated by developers to comply with planning requirements.

Public Open Space and Agricultural Land

Public open space is the second largest land use in the city. Except for the 85 hectares that are former landfill sites, this land is not likely to be affected by

contamination. The largest area of public open space is Sutton Park to the north of the City. This area is protected as a Site of Special Scientific Interest (SSSI) and a National Nature Reserve. Implications for contamination of this land are considered minimal as the park is surrounded on all sides by residential properties. A further SSSI, situated at Edgbaston Pool, is equally surrounded by residential properties.

The Unitary Development Plan (UDP) identifies 41 Sites of Importance for Nature Conservation (SINCs). SINCs and SSSIs will be considered as a potential receptor as part of the Strategy. The UDP also identifies 6 Local Nature Reserves (LNR). These will be considered as potentially vulnerable receptors.

The City has still retained a relatively large amount of agricultural land with much of it situated to the north-east of the City at Sutton Coldfield. A lesser amount is to be found at Woodgate Valley to the south-west. Except for isolated pockets of contamination due to land filling or industrial activities the majority of this agricultural land is of green field status and thus should be free of contamination.

Industrial Land and Commercial Land

Manufacturing had its peak in the 1960s and 1970s and since then there has been a general decline. In the last century much of the manufacturing capacity in Birmingham has centred on car manufacturing. Historically, Birmingham has had a very broad spectrum of industries. Many of these have the potential to leave a legacy of land contamination.

As with many industrial cities, energy requirements have changed as new technologies have become available. Birmingham is no exception. The production of energy from coal to produce town gas or electricity has obvious contamination issues and there are several areas of Birmingham where historically such activities have been undertaken. One of the earlier town gas works was situated in Gas Street near the city centre and later gas works are to be found in the Nechells area. These sites are well defined and they will be the subject of detailed assessment as part of this Strategy.

Transportation Systems

Another land use with land contamination potential is transportation. This includes roads, canals, railways and airports. At the heart of the United Kingdoms road and rail network, Birmingham has considerable land that may be contaminated due to these activities. Eleven areas of railway land have been identified which will require assessment. Birmingham Airport is situated outside the City boundary in Solihull and therefore is not considered as part of this Strategy, however there is a former airfield at Castle Bromwich, which has since been developed for other uses. The former airfield land at Castle Bromwich has undergone extensive site investigations in recent years and many land contamination issues have been addressed as part of redevelopment proposals.

Waste Disposal and Utilities

Waste disposal activities have considerable potential for land contamination. Disposal activities in Birmingham range from complex waste treatment plants dealing with highly hazardous waste to waste transfer stations handling inert building waste and soil. The potential land contamination issues in respect of landfill sites have been considered previously, but all waste disposal activities will be the subject of assessment.

With a population of one million people, it is understandable that the City has a large sewage treatment facility. The current sewage treatment works is situated at Minworth and covers an area of 250 hectares. The plant was originally built and operated jointly by the City Council and the neighbouring authorities. In 1974 it was transferred to Severn Trent Water Authority. At present it is operated by Severn Trent Water plc. A smaller operational sewage treatment works is to be located in Sutton Coldfield. Historically there were other sewage treatment works in Birmingham, which are now closed. The locations for these sites are known and will be assessed as part of the inspection process.

Key Controlled Water Protection Issues

The major aquifer to the west of the Birmingham Fault was historically used for industrial and other purposes. The Environment Agency has provided details of all licensed groundwater abstractions points within the City. The water is used for a variety of purposes including potable supply, food preparation/brewing and industrial end uses. Several of these have associated source protection zones due to the particularly sensitive nature of the end use of the abstracted water. Some of the current licensed underground water abstractors are classified as private water supplies as they are associated with food preparation or used for drinking. The numbers of private water supplies is reducing and in 2007, a major abstraction ceased with the closure of HP Sauce factory in Aston. The remaining public water supplies will continue to be monitored by the City Council on a regular programmed basis.

The use of groundwater by industry has reduced since the 1970s. This has led to a steady rise in the height of the water table to pre-industrial levels in some areas. This has caused considerable inconvenience to some parts of the City with the flooding of cellars in domestic housing. Increased water table levels have created the potential for the groundwater to come into contact with contaminated ground, which was previously in the unsaturated ground above the water table.

In addition to the underground water supply systems, there are also several surface water abstractors. These are predominately from streams or pools. These are sensitive receptors and will be considered as a priority when inspecting the surrounding land. In general, land contamination has the potential to affect any surface water and due regard will be made during any inspections to watercourses in the locality. The Environment Agency has supplied information on water quality and watercourses.

Historically, ground and surface waters in and around Birmingham were used for the public supply of water. With the construction of the Elan Valley reservoirs in Wales and the construct of an aqueduct to Birmingham in the early part of the twentieth century the majority of public water supplies in Birmingham have been derived via this source. Accordingly land contamination matters will not directly affect public water supplies for the majority of the City as they are derived from a clean source in Wales. A part of Sutton Coldfield is supplied from groundwater in the neighbouring authority area in Staffordshire and this source is beyond the scope of this Strategy. Research has indicated that water abstraction is being carried out in the neighbouring local authorities of Lichfield, Sandwell, and Walsall, which may be influenced by groundwater infiltration in the Birmingham District.

2.4 CONTAMINATIVE LAND USES

A very extensive range of land use activities can give rise to land contamination. To ensure a consistent approach this Strategy has set out in Appendix 1 the land use activities that will be considered when undertaking the initial phased site assessment. The potentially contaminative land uses in Appendix 1 are based on Department of the Environment (DoE) Industrial Profiles and other appropriate guidance.

3.0 DELIVERY OF THE STRATEGY

Procedures for the identification of contaminated land in Birmingham

The inspection framework has been prepared following detailed development work and after evaluation of the processes used to identify land requiring detailed inspection.

The process has been developed to comply with current guidance and meet the following elements:

- **To adopt a strategic approach to inspections.**
- **To identify factors relevant to site history.**
- **To prioritise sites in a transparent, un-biased, efficient and rational way by identifying the most pressing and serious problems first.**

The assessment and detailed inspections of all land in the City is being carried out in the following phased approach:

- **Initial desk study assessment using current and historic maps, aerial photography, and current and historic land use maps together with other sources of information to identify whether the land has any potential for land contamination.**
- **Land is further assessed using a GIS-based risk prioritisation software package in connection with a database system. This is to establish source-pathway-receptor linkages. An initial risk score is calculated at this stage to rank sites for further inspection. Initial piloting work has established a minimum risk score for which further inspection and assessment is required.**
- **Initial site inspection consisting of a site walkover and further desk studies to identify all relevant information about the land. The site walkover is undertaken to confirm the conceptual understanding of the land. At this point, it is possible to eliminate some sites from further inspection if sufficient information is available to establish that there is no significant pollution linkage. An assessment matrix (see figure 3) has been developed based on experience to further identify any sites where there is a reasonable possibility that a pollution linkage could exist and further inspection is necessary. All assessments are recorded in a database and the information is made available to the public via the environmental enquiry service.**

- **Any land where there is a reasonable possibility that a pollution linkage exists is prioritised for detailed intrusive and non-intrusive investigations as part of an inspection programme. The hierarchy of risk and subsequent order of priority is based on the potential impact on human health, any evidence of pollutants on the land, the numbers of persons that could be potentially be affected and its significance in respect of the pollution of controlled waters. The priority of all sites is reviewed should further information become available and any decisions are recorded in a database.**

- **All priority sites are inspected in order of their ranking in the programme and the first stage of inspection is to carry out a detailed desk study.**

Any assessment of the land will be reviewed in light of these investigations and appropriate action will be taken in the event of significant harm or possibility of significant harm being identified.

Information Used in the Initial Assessment.

It is believed that only a small proportion of land within Birmingham is contaminated sufficiently to warrant formal action. The objective is to target those areas, which are likely to give rise to concern, taking as a first priority any risk to human health.

A Geographical Information System (GIS) has been set up and further developed to store environmental information. Some of this information was originally researched as early as 1997. Since then, the GIS has undergone continuous improvement with more information being added over the years. Records now include historic and current maps, aerial photography and detailed information about closed landfill sites, regulated industrial processes, IPPC and PPC Permits, waste disposal sites, scrap yards and site investigations.

The GIS holds:

- Geological information, including solid geology, drift and artificial deposits

- Hydro geological information

- Hydrological information

- Site investigation and planning information going back as far as 1984.

- Additional information has been obtained from other sources such as the Environment Agency.

The GIS is used as the basis to carry out the initial desktop studies and complements databases holding site assessment records. The desk study process is carried out in accordance with relevant government guidance.

The initial assessment involves the identification of current and historic land uses from maps, aerial photography, site visits and other related sources. Current and historic land uses are compared with the contaminative uses classification in Appendix 1 of Birmingham's Contaminated Land Strategy and any land where a contaminative land use has been identified as medium or high risk is further assessed.

Site Prioritisation Mechanisms

On completion of the initial desktop study assessment land is prioritised for further assessment or investigation. This initial prioritisation is carried out using specialist software package called CLARA (Contaminated Land Assessment Risk Analyst). This is supplemented by databases developed in house to record the current status of the land and information relating to the contamination potential of the land. At any stage it is possible to review the data and reprioritise if appropriate. Reprioritising would typically occur on the receipt of additional information from site investigation reports or if information is provided by the public, businesses or other organisations.

The screening criteria have been developed for the purpose of identifying sites of greatest concern and potential risk. The screening criteria do not imply that the land is contaminated or free from contamination, but it indicates whether there is a reasonable possibility that a pollution linkage is present and gives an indication of the potential risk. Priority is given in the screening to reflect the following hierarchy for inspection.

- **Humans. For example residential areas, recreational land or allotments.**
- **Controlled Waters (e.g. rivers, streams, groundwater, water abstractions, source protection zones).**
- **Ecological Systems (e.g. nature reserves or sites of special scientific interest).**
- **Damage to Buildings.**
- **Other Property (e.g. listed buildings or monuments).**

See figure 2, which details the elements and decision points of this process.

The initial aim is to identify and prioritise parcels of land, which could be a source of contamination and evaluate the land in respect of its potential to impact on a vulnerable receptor. Before identifying the land for detailed inspection it is

necessary to confirm the conceptual understanding of the land and further assess whether there is a reasonable possibility that a pollution linkage exists. This is achieved by a site walkover and review of any other available information.

Site Walkovers

The site walkover is intended to review the conceptual understanding of the land and qualitatively review the potential risk. The assessment of risk is based on experience gained as part of the implementation of the strategy.

It has been found from experience that to demonstrate significant possibility of significant harm considerable investment of investigation resources are required. Therefore before carrying out such any detailed inspection it is necessary to evaluate whether investigations are likely to identify significant pollution linkage that would justify site investigations on the land.

The initial assessment process detailed above will identify all potential contaminative sources. Many of these will not pose a significant risk that would justify detailed inspection when applying the priorities detailed in this strategy.

Sites identified during the initial screening process can be classified into 4 types as follows:

High Priority Sites – Sites where there is a high possibility of land contamination and a reasonable possibility that a pollution linkage exits.

Medium Priority Sites - Sites where there is a high possibility of land contamination but the significance of a pollution linkage is less than the high priority sites.

Low Priority Sites – Sites where there is or there has been a potential contaminative land use on the land but the potential to give rise to harm is very low and does not warrant intrusive investigations.

Planning Sites – Sites where there is a high possibility of land contamination due to its current land use or historical land use, but the land does not require detailed inspection as the risk to the current land users is acceptable and risks to controlled waters are low. Such sites would normally only require further inspection should the land use change and this would normally be regulated through the planning control process.

It has been possible by applying the experience gained from implementing the Strategy to develop a decision matrix and guidance to further prioritise sites for detailed inspection. This matrix is detailed in figure 3 below. The matrix is applicable to the majority of situations and therefore provides a consistent approach for the prioritisation of sites for inspection. Provision has been made in this process to accommodate any exceptions should sites fall outside these definitions or there is potential significant pollution linkage to controlled waters.

All **High Priority** and **Medium Priority** sites will be programmed for detailed inspection. No detailed inspection will be carried out on Low Priority sites and Planning Sites, which will only be assessed if the land use should change or further information becomes available to show that the potential risk has increased.

Assessment Process

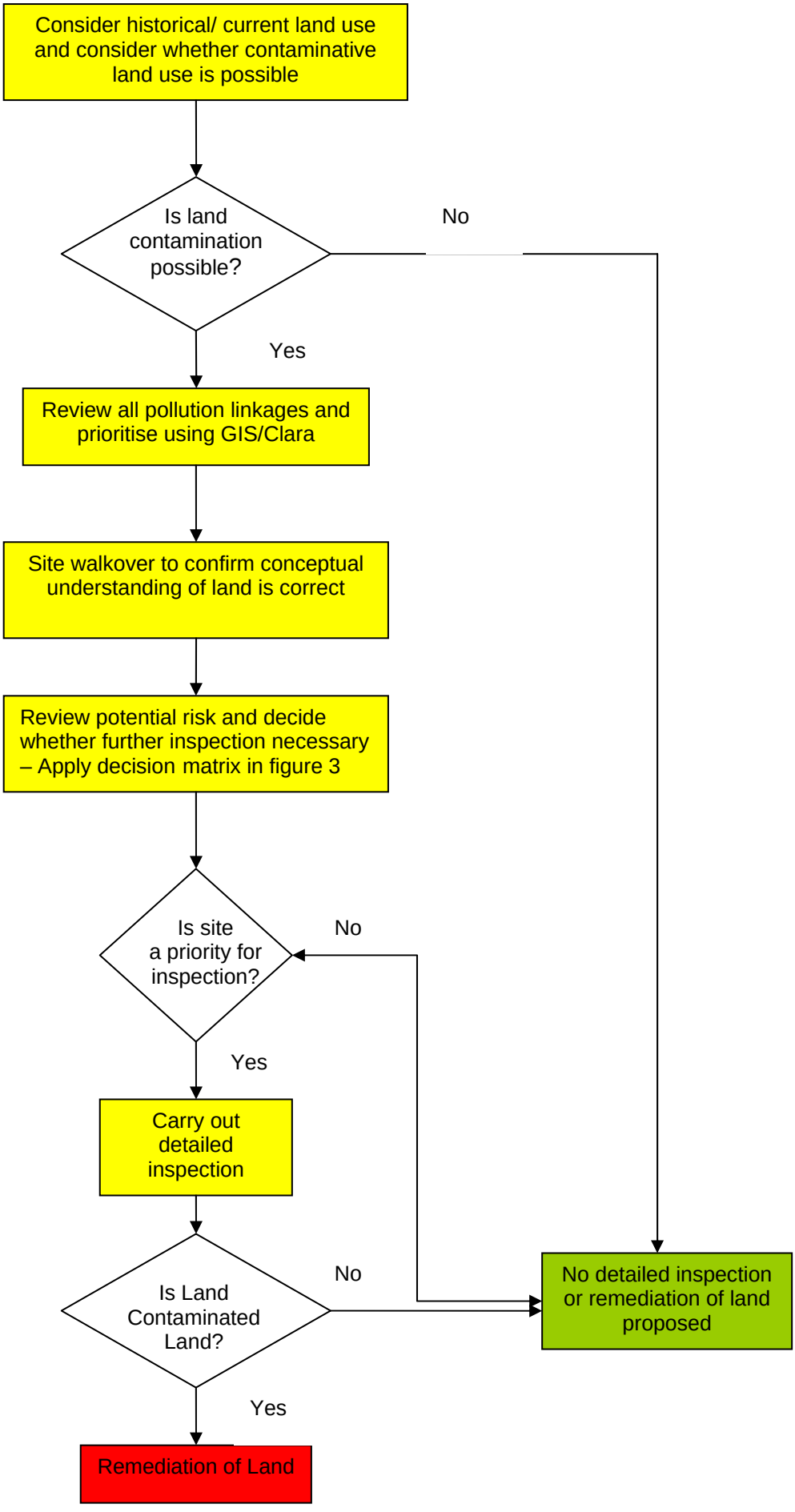

Fig 2: Flow Diagram of Risk Prioritisation.

Decision Matrix for Further Inspection

Present Day Land Use (increasing exposure potential ⟶)	Ponds$_1$/ Shallow fill$_2$	Storage/ depots$_3$	Small-scale industry$_4$	Light industry$_5$	Heavy industry$_6$	Landfill Sites/ Significant infilled areas$_7$ (not gassing or gas protection)	Landfill sites/ Significant infilled areas$_7$ (gassing or no Information)
Residential with gardens	Low Priority	Low Priority	Low Priority	Medium Priority	High Priority	High Priority	High Priority
Pre-school nurseries	Low Priority	Low Priority	Low Priority	Medium Priority	High Priority	High Priority	High Priority
Allotment gardens	Low Priority	Low Priority	Low Priority	Medium Priority	High Priority	High Priority	High Priority
Residential with landscaping	Low Priority	Low Priority	Low Priority	Medium Priority	Medium Priority	Medium Priority	High Priority
Schools	Low Priority	Low Priority	Low Priority	Low Priority	Medium Priority	Medium Priority	High Priority
Residential-hard surfaced	Low Priority	Low Priority	Low Priority	Low Priority	Low Priority	Low Priority	High Priority
Playing fields & public open space	Low Priority	Low Priority	Low Priority	Low Priority	Low Priority	Low Priority	Low Priority
Commercial & public buildings	Planning	Planning	Planning	Planning	Planning	Planning	Low Priority
Industry	Planning	Planning	Planning	Planning	Planning	Planning	Low Priority
Vacant land	Planning	Planning	Planning	Planning	Planning	Planning	Planning

Contaminative Land Use (increasing contamination potential ⟶)

Low Priority / Planning	Sites potentially affected by contamination- *not* priority for inspection
High Priority / Medium Priority	Sites potentially affected by contamination-priority for inspection

Figure 3, Decision matrix for inspection

Notes for use with matrix

1	Ponds	Small water features located in agricultural fields. Unlikely to be of significant depth.
2	Shallow fill	Clay/gravel/sand pits shown on pre-war historic maps and located in agricultural fields. Often shown as disused. Not associated with an industrial process e.g. brickworks. Area generally <5000m^2.
3	Storage/depots	Activities defined within planning use class B8.
4	Small-scale industry	Smaller industrial premises found located within areas of pre-1920 housing. Area generally <1000 m^2. Site subsequently redeveloped as part of a wider regeneration program.
5	Light industry	Extensive industrial premises. Activities defined within planning use class B2.
6	Heavy industry	Extensive industrial premises. Activities defined within planning use classes B3-B7 or DoE Profile available.
7	Significant infilled areas	Clay/gravel/sand pits. Area generally >5000 m^2.
8	Active petrol filling stations	Due to the high potential for off-site migration of contamination and subsequent risk to human health via the inhalation of indoor air pathway these are always assigned medium priority status.

9 Site investigation data may be available for some sites and remedial actions may have been recommended. Unless evidence is available to show that all likely significant pollutant linkages have been considered and that remedial measures have been successfully implemented then sites should be assigned a priority status in accordance with the assessment matrix and site status will be considered further at the detailed inspection desk study stage.

10 The officer undertaking the site walkover may consider that a site should be assigned a priority status other than that prescribed by the assessment matrix. This would include land where the risk to controlled waters is high or receptor is not precisely covered by the matrix. In such cases the officer should consult with another team member, and if it is agreed that an alternative priority status is appropriate then the reasons for this decision, and officer codes of those involved in the consultation, shall be recorded on the site walkover form and within the CLARA Database.

Carrying out detailed inspections

A programme of detailed inspection has been developed targeting the most pressing and serious problems first. The programme of inspection is in order of priority, reflecting the impact on human health, the existence of evidence of pollutants, the number of properties or people potentially affected and the significance of any impact on controlled waters. The ownership of the land will not be a material consideration when developing priorities for detailed inspection. Prior to finalisation of the programme the Environment Agency are consulted on sites where there is a risk to controlled waters.

Detailed inspection has begun on some parcels of land within the City and it is proposed to continue to work through the programme as resources permit. Detailed inspection is carried out in accordance with current government guidance. The first stage is to undertake a detailed desk study and prepare a conceptual model for the site. It may be necessary at this stage to undertake limited sampling to establish degree of risk. The assessment is then reviewed and the priority for inspection changed to reflect the conceptual understanding of the site. Once satisfied that it is still appropriate to undertake detailed inspection specialist consultants are commissioned to review the preliminary desk studies and design an investigation strategy. The investigation strategy then forms the basis of securing appropriate funding.

At the detailed desk study stage consideration is given to the possibility that the site may subsequently become classified as a special site. Should it be decided that the site is a potential special site the Environment Agency will be consulted and the Agency may be requested to undertake detailed inspection on behalf of the City Council.

Any procedures adopted for detailed site investigation will consider any guidance provided in current British standards or codes of practice such as British Standards Institution Code of Practice for the Investigation of Potentially Contaminated Sites, BS10175:2001.

Following detailed inspection the land will be reassessed on the basis of any findings and reclassified, if necessary, for further investigation or formal action. The enforcement options open to the Authority have already been identified in previous sections of the Contaminated Land Inspection Strategy. The City Council has enforcement policies and procedures, which will be followed in the event of any formal action being taken. Any decisions will be recorded in the GIS, databases or, in cases where formal action is required, on the public register.

3.1 PROGRESS SO FAR

The initial assessment of the City has been split into four phases with phase one being the areas where there is higher likelihood of identifying contaminated land, and phase four is principally industrial or agricultural land. This is further detailed in Section 4.1 and Appendix 2.

The initial assessment of land in Phase One of the Strategy has been completed and work on Phase Two of the Strategy is ongoing. As of 31st March 2007 approximately 34% of City has been initially assessed and a total of 135 sites have been identified where further detailed inspection is considered necessary.

During Phase One a review of all allotments and preschool nurseries was undertaken. Limited sampling was undertaken at all preschool nurseries and at the allotment gardens. No significant areas of concern were identified at the preschool nurseries that were assessed. At the allotment gardens some of the allotments sampled showed slightly elevated levels of metal contamination. Further sampling of soils crops, soils and crop growing trials were undertaken. The investigations concluded that there was no unacceptable risk to the current users of the allotments.

A programme of detailed inspection has been prepared and several exploratory investigations have been carried out since the implementation of the Strategy in 2001.

In 2004 following detailed inspection three sites were identified as contaminated land. All three sites were former landfill sites, two of which had been redeveloped for residential housing and the other had been reclaimed for recreational use.

The two residential sites affected 41 and 39 residential properties respectively and significant possibility of harm related to metal contamination identified in the garden soils. The two sites were determined as contaminated land in 2004. Remediation was undertaken at one of the sites in 2007 and remediation is planned at the other site in 2008. The remediation works were/are being undertaken by the City Council using statutory powers under Part 2A of the Environmental Protection Act 1990.

The third contaminated land site relates to a horse grazing paddock and associated stable facilities. This former landfill site had been infilled with incinerator ash and high levels of metal contamination were identified in the soils. Following detailed investigation and revaluation of site-specific risk levels in 2006 it was found that the contaminated areas of concern were less than previously thought. The area of site that poses an unacceptable risk was found to be situated in hotspots at the edge of the paddock area. The dust monitoring has shown that the risk associated with inhalation of dust particles during grooming and other activities at the sites does not pose a risk to the users. Local Services are now reviewing options to improve the quality of the paddocks and deal with the areas of contamination of concern at the edge of the paddocks.

Details are provided on the Register of Contaminated Land (see Section 6.1)

4.0 DELIVERY TIMESCALES

The programme of initial assessment is set out in Table 2 in Section 4.1 below. The programme consolidates the assessment and inspection work already undertaken in Phase One and sets out the areas for initial assessment in years 2003-2020. The programme of assessment will be subject to further review as the Strategy is implemented. In conjunction with this initial assessment of all land in the City by the year 2020, a programme of detailed inspection, within the resources available, will also be carried out. The detailed inspection programme cannot be finalised until all the initial assessment phase is complete.

Following the completion of the initial assessment phase a detailed inspection programme and provisional timescale for implementation will be prepared. The timescales for completion of the programme will be influenced by many factors. In particular all investigations will be site-specific, and they are likely to be resource intensive. Should contaminated land be identified during the investigation then resources will be directed to securing the remediation of the land. This will impact on the timescales for completion of the programme.

4.1 PHASING

The initial assessment programme in Table 2 has been prepared on the basis of general housing development phases within the City and it is intended that all areas of the City will be eventually assessed by the year 2020. The location of these phases is represented geographically in the map in Appendix 2.

Inspection Phase	Year	Inspection Areas
One (Already undertaken)	1-2 (2001-2002)	Assess and inspect land which is on or adjacent to former landfill sites Assess land within the groundwater protection zones Assess principal areas of the City where residential property development has taken place since 1945 Inspect allotment gardens Inspect pre-school Children's nurseries
Two	3-10 (2003-2010)	Conclude assessment of Phase One area and inspect potentially contaminated land identified as part of prioritised inspection programme. Assess principal areas of the City where residential property development has taken place during 1919-1944. Assess and inspect schools and playing fields in the phase two area.
Three	11-15 (2011-2015)	Conclude any outstanding assessment from Phase Two and continue inspection of potentially contaminated land identified as part of prioritised inspection programme. Assess areas of the City where residential properties were built on land before 1919 period. Assess and inspect any schools and playing fields in Phase three area.
Four	16 -20 (2016-2020)	Conclude any outstanding assessment from Phase Three and continue inspection of potentially contaminated land identified as part of the prioritised inspection programme Protected ecological systems. Scheduled Ancient Monuments. Parks (including other public open space) Assessment and inspection Commercial/Industrial land in Phase Four area. Agricultural land. Surface waters not previously assessed.

Table 2: Initial assessment programme for Birmingham.

5.0 CONTAMINATED LAND SITES

The main objective of contaminated land legislation under Part 2A of the Environmental Protection Act 1990 is specifically to provide a system for the identification and remediation of land where land contamination is causing unacceptable risks to human health or the wider environment. It is applicable solely in the context of its current land use and the circumstances of the land. The legislation defines what constitutes contaminated land in terms of significant harm or significant possibility of significant harm and the pollution of controlled waters. It also defines what receptors are to be protected in the context of the legislation. Further details of the receptors and what constitutes significant possibility of significant harm are detailed in Tables A & B of Annex 3 of the Statutory Guidance, Defra Circular 01/2006. (See Appendix 3)

The legislation places a statutory duty on the Authority to carry out inspections and identify land that constitutes Contaminated Land as defined by the legislation. On identification of Contaminated Land the legislation empowers the Authority to intervene where it is necessary to prevent risk of harm or pollution resulting from land contamination.

The Strategy has been developed to direct investigations and detailed inspection to those sites of greatest concern. As detailed in Section 3.1, three sites in Birmingham have been determined as Contaminated since the Strategy was introduced in 2001. Based on experience it is envisaged that land falling within the definition of Contaminated Land will be limited to a relatively low number of sites where there is a significant pollution linkage.

Should Contaminated Land be identified then the Authority will encourage voluntary remediation or should it be necessary use its statuary powers to make the land safe.

The main mechanisms for dealing with land contamination will continue to be voluntary remediation or through the planning legislation as land is redeveloped.

5.1 REMEDIATION

The Authority will use its statutory powers to ensure the remediation of any Contaminated Land identified. In the first instance the Authority will endeavour to encourage voluntary remediation of land, but should it be necessary the Authority will use its enforcement powers to secure remediation of the land. The Authority will only intervene and undertake any remediation if it is an emergency or the Authority is unable to secure remediation by voluntary remediation, or there has been non-compliance with a Remediation Notice or the full costs of remediation cannot be recovered.

Any remediation undertaken by the Authority will be limited to removing the significant pollution linkages to make the land safe for its current use and basic reinstatement will be undertaken. Prior to undertaking any remediation the Authority will undertake an options appraisal to determine the most appropriate remediation strategy. The remediation strategy adopted will be chosen on the basis of practicality, the technical effectiveness and the durability of the scheme. Consideration will be given to minimising the impact on individuals and the sustainability of the method of remediation adopted. The remediation of any site will be dependant on securing appropriate funding for undertaking the works.

Within the terms of the legislation the Authority will seek to recover any costs of remediation wherever possible taking into consideration the statutory guidance and subject to the City Council hardship policy.

5.2 RECOVERY OF COSTS OF REMEDIATION

It is the policy of the City Council to recover costs for carrying out any remediation works where practical to do so. It will consider each case on its merits.

When seeking to recover costs, Section 78P(2) of the Environmental Protection Act 1990 requires the Authority to consider whether this would cause hardship. In such circumstances the Authority may waive or reduce the recovery of costs. The statutory guidance recommends that the local authority may wish to make available a policy statement of the circumstances when the Authority will waive or reduce cost recovery having regard to hardship and the statutory guidance. The Public Protection Committee approved a policy for the recovery of costs for remediation on 24th June 2005 and the policy will be subject to regular review.

6.0 COMMUNICATION AND INFORMATION

The principal agencies that have been identified for regular liaison and communication in respect of this Strategy are as follows:

External Agencies

1. **Environment Agency in respect of surface water, groundwater, prescribed processes under the provisions of Part 1 of the Environmental Protection Act 1990, waste disposal facilities under the provisions of Part II of the Environmental Protection Act 1990 and designation of "Special Sites"**

2. **English Nature and Wildlife Trust in respect of protected ecological systems (i.e. Sites of Special Scientific Interest)**

3. **Neighbouring Local Authorities.**

4. **Other agencies as appropriate.**

Internal to Birmingham City Council

1. **Department of Planning in respect of planning development and major remediation proposals.**

2. **Economic Development Department in respect of vacant land.**

3. **Individual land owning departments as appropriate**

Citizens and Other Land Owners in Birmingham

As the inspection programme is implemented it will be necessary to consult and inform individual citizens and landowners of any findings of initial desk studies or investigations. The City Council will endeavour to keep all interested parties informed of progress of any investigations that may affect them. Such communication will be carried out by personal communication or newsletter and will be tailored to the needs of the individual area and local requirements. If matters of major local importance are identified, written and verbal communications will be taken to the local Ward Committees.

Systems and procedures will be developed in the light of experience, but anyone will be free at any time to contact the Regulatory Services or use the Environmental Enquiry Service for information. (See Section 6.1)

6.1 INFORMATION FOR THE PUBLIC

Storage of Information

All information is collected in the form of computerised databases, GIS and digital maps. This permits ease of searching, updating and cross verification of information.

The Authority also has a duty to maintain a register of statutory action taken in respect of any contaminated land identified. The Register is in the form of a paper record system. A summary of the entries on the Register is also available for public viewing on the City Council web site. Further details of what are to be included in the register are detailed below.

This Register only applies to land that has been determined as contaminated land within the definition of this legislation. It is envisaged that there will be relatively few entries on the statutory register.

Access to Information

The public register will be made available for public viewing during office hours. Regulatory Services also operates a more detailed environmental enquiry service, which provides details of all inspection assessments as they are carried out. Details of where to view the public register and access the environmental enquiry service are detailed below.

The environmental enquiry service is tailored to the individual enquirer's requirements and includes information on contaminative uses together details of the current assessment status for the land. A typically inspection assessment will include details of the current land use, historical land uses, specific information of processes carried and details of any contaminants known to be present. It will also include details of any remediation action being carried out or proposed, the source of information and whether detailed inspection is proposed. Any site investigation reports or sampling carried out by the Regulatory Services will be available for viewing by prior arrangement.

The information will be made available to other sections of the City Council for planning purposes.

Confidentiality of Information

The majority of information being used for assessment by Regulatory Services is already in the public domain and the public are entitled to view the original documents as part of any public registers held by the City Council. Any assessments carried out will include details of the source information used.

Some of the information available may be confidential. Subject to any legal requirement in allowing the public access to such information, the City Council proposes to respect confidentiality where appropriate, but reserves the right to make any assessments based on these documents available to the public. It is envisaged that the assessment reports provided by Regulatory Services as part of its environmental enquiry service will be sufficient for most purposes.

Register of Contaminated Land

Under the provisions of Section 78R of the Environmental Protection Act 1990, Part 2A, Birmingham City Council is required to keep a public register. This is intended to act as a full and permanent record of all regulatory action taken by the Authority in respect of the remediation of contaminated land, and will include information about the condition of the land.

The register shall contain full particulars of the following matters:

- Remediation notices
- Appeals against remediation notices
- Remediation declarations
- Remediation statements
- Appeals against charging notices
- Designation of special sites
- Notification of claimed remediation
- Convictions for offences under section 78M
- Guidance issued under section 78V(1)
- Other environmental controls

These are detailed in Schedule 3 of The Contaminated Land (England) Regulations 2006. SI No. 2006/1380.

The Register is available for viewing by the public during office hours at the Environmental Protection Unit Offices, 581 Tyburn Road, Birmingham. B24 9RF. To arrange an appointment to view the Register contact 0121 303 9956/57 or email: contaminatedland@birmingham.gov.uk

A summary of the entries on the Register can be viewed at: www.birmingham.gov.uk/contaminatedland

For further information regarding the Strategy.

Contact:

Contaminated Land Team
Environmental Protection
Regulatory Services
581 Tyburn Road
Birmingham
B24 9RF

Tel: 0121 303 9900
Fax: 0121 303 9901
e-mail: contaminatedland@birmingham.gov.uk

6.2 LIAISON WITH OTHER AGENCIES

Provision of Information to the Environment Agency

The Environment Agency is obliged to prepare and publish a report on the state of contaminated land in England. To do this the Agency will collate information it holds and any information held by local Authorities. Much of this information is needed in a summarised format for ease of handling. Part 2A of the Environmental Protection Act 1990 requires each local Authority to provide any information necessary to produce this report. The City Council will provide information on any determination of contaminated land as it arises and any other information requested on an annual basis. A standard format for the provision of information has been agreed nationally for this purpose.

The implementation of this Inspection Strategy requires that there are strong liaison links with the Agency on water protection issues. Some of the information gathered as part of the inspection Strategy will relate to this aspect and such information will be made available to the Agency as required. It is envisaged that this will normally be necessary whenever land is to be classified as a Special Site.

Cross Boundary Issues and Liaison with Neighbouring Authorities

Land contamination may transverse local Authority boundaries and it is intended that formal liaison links be established to assess any impact. Initial assessments indicate that some groundwater source protection zones in the neighbouring districts of Lichfield, Sandwell, and Walsall, may be influenced by land use in the

Birmingham district. It is also possible that other land bordering the neighbouring authorities may have implications due other land contamination issues. A liaison group for the local authorities in the West Midlands is already established and it is intended that group will be used as the mechanism to exchange information on cross-boundary issues.

For those Local Authorities bordering Birmingham, but not members of the West Midlands Liaison Forum, direct contact will be made to establish communication links.

APPENDIX 1

POTENTIALLY CONTAMINATIVE LAND USES FOR DESK STUDY SCREENING ASSESSMENT

As part of the screening process the following land uses have been adopted. Land falling within any of these categories may not necessarily be contaminated, but will be assumed to have the potential to give rise to contamination unless proven otherwise by more detailed investigation. The potentially contaminative land uses are based on Department of the Environment (DoE) Industrial Profiles and other appropriate guidance.

To ensure that any contaminated land uses are not missed during the screening process, all land used for industrial activity, storage and handling of fuels, energy generation, and waste disposal activities will be assumed to be potentially contaminated unless evidence is available to confirm that contamination is unlikely. When carrying out initial assessments, it must be assumed that although processes on first assessment appear to be low contaminative uses, many industrial premises historically have used solid fuels and stored oils on their sites, which may give rise to local contamination. Assessment would initially need to establish the likelihood of contamination from these sources prior to reducing their risk rating. In determining this, the following uses will be assumed to give rise to contamination and will require further assessment.

Potential Contaminative Land Uses

Agriculture

Burial of diseased animals and any associated substances.

Extractive Industry

Extracting, handling and storage of carbonaceous materials such as coal, lignite, petroleum, natural gas, bituminous shale (not including the underground workings) (Coal mines and coal preparation plants, oil refineries and petrochemicals).

Extracting, handling and storage of ores and their constituents. (Mineral workings and mineral processing works).

Energy Industry

Producing gas from coal, lignite, oil or other carbonaceous material. (Other than sewage or other waste), or from mixtures of those materials. (Gasworks and coal carbonisation plants, oil refineries).

Reforming, refining, purifying and odourising natural gas or any product of the processes as above. (Gasworks and coal carbonisation plants, oil refineries).

Pyrolysis, carbonisation, distillation, liquefaction, partial oxidation, or other heat treatment, conversion, purification, or refining of coal, lignite, oil, other carbonaceous material or mixtures and products thereof, otherwise than with a view to gasification or making of charcoal. (Gasworks and coal carbonisation plants, oil refineries, coal mines and coal preparation plant).

A thermal power station (including nuclear power stations and production, enrichment and reprocessing of nuclear fuels) (power stations, radioactive materials and asbestos works).

Electricity sub-station (Power stations, electrical equipment).

Production of Metals

Production, refining or recovery of metals by physical, chemical, thermal or electrolytic or other abstraction processes. (Metal processing, heavy engineering).

Heating, melting or casting metals as part of an intermediate or final manufacturing process (including annealing, tempering or similar process) (metal processing, heavy engineering and miscellaneous trades).

Cold forming processes (including pressing, rolling, extruding, stamping, forming or similar processes).

Finishing treatments, including anodising, pickling, coating and plating or similar processes. (Metal processing, heavy engineering, electroplating and metal finishing, miscellaneous trades).

Production of Non-metals and their Products

Production or refining of non-metals by treatment of ore. (Metal processing works).

Production or processing of mineral fibres by treatment or processing of mineral fibres by treatment of the ore. (Mineral processing and asbestos works).

Cement, lime and gypsum manufacture, brickworks and associated processes (Mineral processing works).

Glass Making and Ceramics

Manufacture of glass and products based on glass (glass manufacture).

Manufacture of ceramics and products based on ceramics, including glazes and vitreous enamel.

Production and Use of Chemicals

Production, refining, recovery or storage of petroleum or petrochemical or their by-products, including tar and bitumen processes and manufacture of asphalt (oil refineries and petrochemicals, mineral processing works, drum and tank cleaning).

Production, refining and bulk storage of organic or inorganic chemicals, including fertilisers, pesticides, pharmaceuticals, soaps, detergents, cosmetics, toiletries, dyestuffs, inks, paints, fireworks, pyrotechnics materials or recovered chemicals. (Bulk inorganic and organic chemicals, fine chemicals, fertiliser manufacture, pesticides, pharmaceuticals, textile and dye industry, paint and ink manufacture, miscellaneous trades and drum and tank cleaning).

Production, refining and bulk storage of industrial gases not otherwise specified above. (Fine chemicals).

Engineering and Manufacturing Processes

Manufacture of metal goods, including mechanical engineering industrial plant or steelwork, motor vehicles, ships, railway or tramway vehicles, aircraft, aerospace equipment or similar equipment. (Heavy engineering, engineering works, car manufacturing, ship building).

Storage, manufacture or testing of explosives, propellants, ordnance, small arms or ammunition. (Heavy engineering).

Manufacture and repair of electrical and electronic components and equipment. (Electrical and electronic equipment manufacture, miscellaneous trades).

Food Processing Industry

Manufacture of pet food or animal feed stuffs. (Food preparation and processing)
.
Processing of animal by-products including rendering or maggot farming but excluding slaughterhouses and butchering. (Animal processing and miscellaneous trades).

Paper, Pulp and Printing Industry

Making of paper pulp, paper or board, products, including printing or de-inking. (Pulp and paper manufacture, printing works, miscellaneous trades).

Timber and Timber Products

Chemical treatment and coating of timber and timber products. (Wood preservative industry and timber treatment works, miscellaneous trades).

Textile Industry

Tanning, dressing, fellmongering or other processes for the preparing, treating or working leather. (Animal processing works, miscellaneous trades).

Fulling, bleaching, dyeing or finishing fabrics or fibres. (Textile and dye industry, miscellaneous trades).

Manufacture of carpets or other textile floor coverings including linoleum works. (Textile and dye industry).

Rubber Industry

Processing of natural or synthetic rubber including tyre manufacture or re-treading. (Fine chemicals, tyre manufacture).

Infrastructure

Marshalling, dismantling, repairing or maintenance of railway rolling stock. (Heaving engineering, docks and railway land)

Dismantling, repairing or maintenance of marine vessels, including hovercraft. (Shipbuilding and ship breaking, docks and railway land)

Dismantling, repairing or maintenance of road transport or road haulage vehicles. (Road transport and road haulage, garages and filling stations)

Dismantling, repairing or maintenance of air or space transport systems. (Engineering works, airports)

Waste Disposal

Treating of sewage or other effluent. (Sewage works and farm)

Storage, treatment or disposal of sludge including sludge from water treatment works.

Treating, keeping, depositing or disposing of waste, including scrap and includes infilled canal basins, docks or river courses (Landfills and other treatment and disposal sites, scrap yards, drum and tank cleaning)

Storage or disposal of radioactive materials.

Miscellaneous Activities

Demolition of buildings, plant or equipment used for any activity above. (Demolition)

Charcoal works, dry cleaning, fibreglass and fibreglass resin manufacturing, photographic processes, and printing.

APPENDIX 2

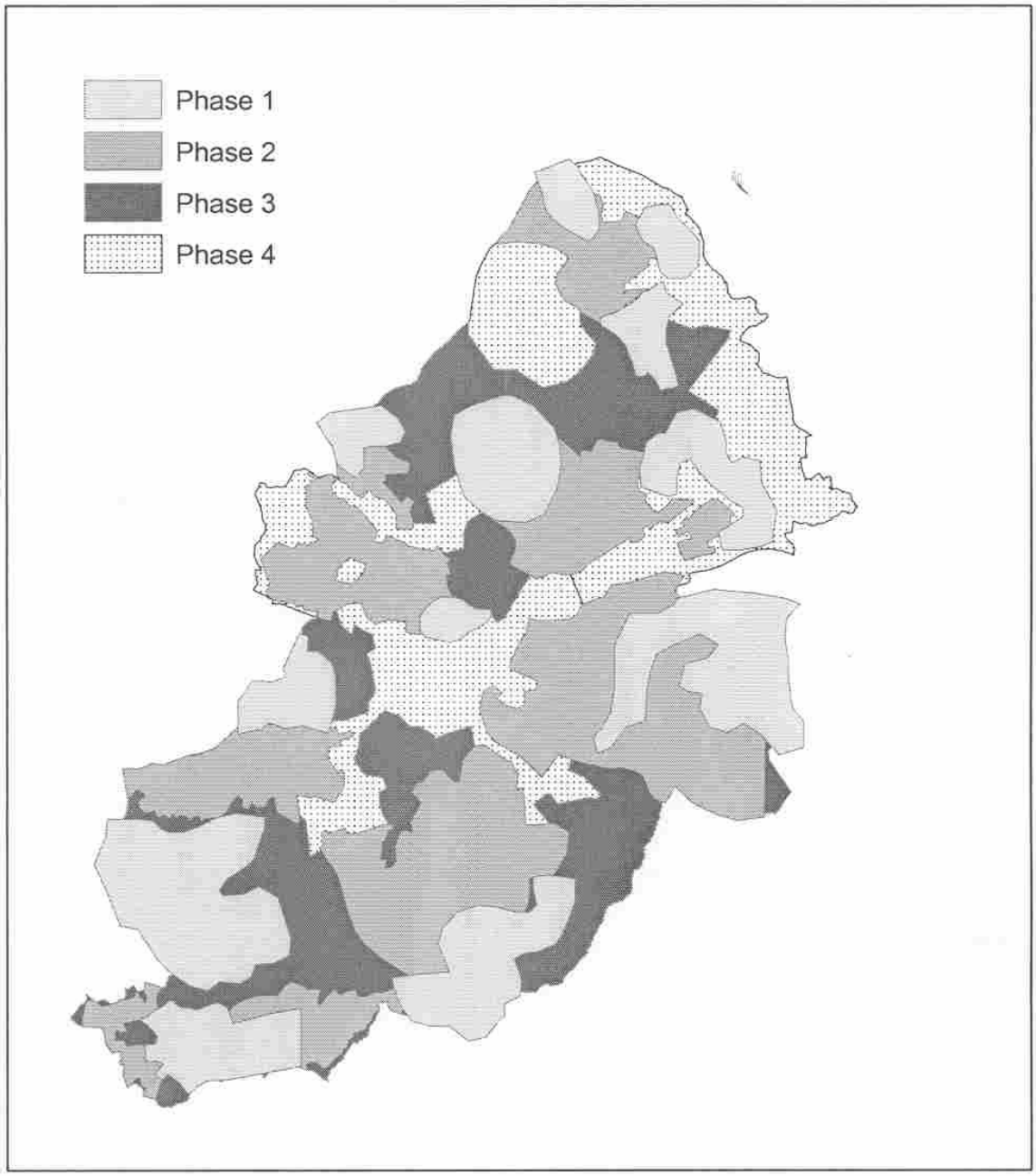

Figure 3: Map showing areas of Phased Site Assessments

APPENDIX 3

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APPENDIX 4

GLOSSARY OF TERMS

Contaminated Land: defined in Section 78 A (2) of the Environmental Protection Act 1990 as

> *"any land which appears to the local Authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that*
>
> *a) significant harm is being caused or there is a significant possibility of such harm being caused;*
>
> *or*
>
> *b) pollution of controlled waters is being, or is likely to be caused."*

Controlled Waters: Is defined in Section 104 of the Water Resources Act 1991 and includes territorial and coastal water, inland fresh waters, and groundwater. For the purpose of Part 2A it does not include waters contained in underground strata but above the saturation zone.

Current Use: any use which is currently being made, or is likely to be made, of the land and which is consistent with any existing planning permission (or otherwise lawful under town and planning legislation). The definition is subject to qualifications detailed in Annex 6 of Circular 01/2006.

Harm: is defined in Section 78 A (4) of the Environmental Protection Act 1990 as

> *"harm to the health of living organisms or other interference with the ecological systems of which they form part and, in the case of man, includes harm to his property"*
>
> *or with respect to radioactive contamination defined in section 78A(4) (as modified) as:*
>
> *"lasting exposure to any person being resulting from the after effects of radiological emergency, past practice or past work activity"*

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

Orphan Linkage: Is a significant pollutant linkage for which no appropriate person can be found, or where those who would otherwise be liable are exempted by one of the relevant statutory provisions.

Owner: Is defined in Section 78 A (9) of the Environmental Protection Act 1990 as

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

Pollutant Linkage: The relationship between a contaminant, a pathway and a receptor.

Pollution of Controlled Waters: Is defined in Section 78 A(9) of the Environmental Protection Act 1990 as

> *"the entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter"*

Possibility of Harm: relates to radioactivity contamination only and is measure of the probability, or frequency of the occurrence of circumstances, which would lead to lasting exposure being caused.

Possibility of Significant Harm: Is a measure of the probability, or frequency, of occurrence of circumstances, which would lead to significant, harm being caused.

Receptor: Is either

> *"a) a living organism, a group of living organisms, an ecological system or a piece of property which:*
>
> *1) is category listed in Table A in Chapter A type receptor (Circular 01/2006, and*
> *2) is being, or could be harmed, by a contaminant, or*
>
> *b) controlled waters which are being, or could be, polluted by a contaminant or*
> *c) a person subjected to lasting exposure resulting from the affects of radiological emergency, past practice or past work activity"*

Register: The public register maintained by the enforcing Authority under the provisions of 78R of the Environmental Protection Act 1990 of the particulars relating to contaminated land.

Remediation: A remediation action falling within the definition of Section 78 A (7) the Environmental Protection Act 1990 or Section 78 A (7) (as modified) in respect of radioactive contamination.

Remediation Notice: Is defined in Section 78E(1) of the Environmental Protection Act 1990 as a notice specifying what appropriate person is to by way of remediation and the periods within which he is required to do each of the things so specified.

Remediation Scheme: The complete set or sequence of remediation actions (preferable to one or more significant pollutant linkages) to be carried out with respect to the relevant land or waters.

Remediation Statement: Is defined in Section 78H(7) as a statement prepared and published by the responsible person detailing the remediation actions which are being, have been, or are expected to be done as well as the periods within which these things are being done.

Risk: Is the combination of

"*a) the probability, or frequency,. of an occurrence of a defined hazard (for example, exposure to property of a substance with potential to cause harm); and*

b) the magnitude (including the seriousness) of the consequences"

Significant Harm: Is defined in Section 78A(5) of the Environmental Protection Act 1990 and it means any harm which is determined to be significant in accordance with the statutory guidance in Chapter A of DETR Circular 01/2006

Special Site: Is defined by Section 78A(3) of the Environmental Protection Act 1990 as

"any contaminated land

a) which has been designated as such by virtue of Section 78C(7) or 78D(6)…and

b) whose designation as such has been terminated by the appropriate Agency under Section 78Q(4)

The effect of the designation of contaminated land as a special site is that the Environment Agency, rather than the local Authority, becomes the enforcing Authority for the land."

Substance: Is defined in Section 78A(9) of the Environmental Protection Act 1990 as

“any natural or artificial substance, whether solid or liquid form or in the form of a gas or vapour”

or with respect to radioactive contamination defined in section 78A(9)(as modified) as:

“whether in solid or liquid form or in the form of a gas or vapour, any substance which contains radionuclides which have resulted from the after effects of a radiological emergency or which are or have been processed as part of a past practice or past work activity, but shall not include radon gas or the following radionuclides: Po-218, P-214, At-218, Bi-214, Bi-214, Rn-218, Po-214 and Tl-210”