CONTAMINATED LAND STRATEGY

as required under the provisions of the

ENVIRONMENTAL PROTECTION ACT 1990 - PART 2A

First Adopted: **September 2001**

Reviewed & Updated: **November 2007**

Dacorum Borough Council
Environmental Health Division
Civic Centre
Marlowes
Hemel Hempstead
Hertfordshire
HP1 1HH

Tel: **01442 228455**
Fax: **01442 228477**
Email: **environmental.health@dacorum.gov.uk**

CONTENTS

Page

Introduction

The Strategy

Appendices

INTRODUCTION

i.1 Background To The Legislation

Industrial change and demographic shift during the 20th century resulted in the need for large-scale re-organisation of our towns and cities. As technologies improved and the means by which ores were extracted, stored, processed and utilised has changed, the need for large-scale industrial units has demised. Industries have either moved to cheaper manufacturing locations or have disappeared altogether leaving large “brownfield” gaps in our urban landscape.

At the same time, changes in heating methods, and the advent of the consumer society, has had a significant effect on the type and volume of refuse it has been necessary to landfill. Inevitably, these changes have left behind a legacy of contaminated land that in some cases may be harmful.

The Government, in its response to the 11th report of the Royal Commission on Environmental Pollution in 1985, announced that the Department of the Environment was preparing a circular on the planning aspects of contaminated land. The draft of the circular stated that:

“*Even before a planning application is made, informal discussions between an applicant and the local planning authority are very helpful.*”

“*The possibility that the land might be contaminated may thus be brought to the attention of the applicant at this stage, and the implications explained.*”

This suggested that it would be practical and advantageous for the planning authorities to have available a list of potentially contaminated sites.

In 1988, the Town & Country Planning (General Development) Order required local planning authorities to consult with waste disposal authorities if development was proposed within 250m of land that had been used to deposit refuse within the last 30 years.

In January 1990, the House of Commons Environment Committee published its first report on contaminated land. This document, for the first time, expressed concern that the Government’s suitable for use approach “... *may be underestimating a genuine environmental problem and misdirecting effort and resources*”. The committee produced 29 recommendations, including the proposals that:

- The Department of the Environment concern itself with all land, which has been so contaminated as to be a potential hazard to health or the environment, regardless of the use to which it is to be put, and;
- The Government brings forward legislation to lay on local authorities a duty to seek out and compile registers of contaminated land.

Immediately following the House of Commons report, the Environmental Protection Act 1990 had, at section 143, a requirement for local authorities to compile, ‘Public registers of land which may be contaminated’. If enacted, this would have required local authorities to maintain registers of land that was, or may have been contaminated, as a result of

previous (specified) uses. In March 1992 however, the concern about the blighting effect of such registers resulted in a press release published by the Secretary of State, delaying the introduction of section 143 stating:

"*The Government was concerned about suggestions that land values would be unfairly blighted because of the perception of the registers.*"

Subsequently in July 1992, draft regulations were released with significantly reduced categories of contaminative uses ".... *to those where there is a very high probability that all land subject to those uses is contaminated unless it has been appropriately treated*". It was estimated that land covered by the registers would be only 10% to 15% of the area previously envisaged. This, however, still did not satisfy the City, so on the 24th of March 1993 the new Secretary of State announced that the proposals for contaminated land registers were to be withdrawn and a belt and braces review of land pollution responsibilities was to be undertaken.

This resulted in the Department of the Environment consultation paper, Paying For our Past (March 1994), which elicited no less than 349 responses. The outcome of this was the policy document, Framework for Contaminated Land, published in November 1994. This useful review emphasised a number of key points:

- The Government was committed to the, "polluter pays principle" and "suitable for use approach".
- Concern related to past pollution only (there were effective regimes in place to control future sources of land pollution).
- Action should only be taken where the contamination posed actual or potential risks to health or the environment and there are affordable ways of doing so.
- The long-standing statutory nuisance powers had provided an essentially sound basis for dealing with contaminated land.

It was also made clear that the Government wished to:

- encourage a market in contaminated land;
- encourage its development; and
- that multi-functionality was neither sensible nor feasible.

The proposed new legislation was first published in June 1995 in the form of section 57 of the Environment Act, which amended the Environmental Protection Act 1990 by introducing a new Part 2A to cover contaminated land. After lengthy consultation on statutory guidance, this legislation came into force in April 2000. In August 2006 the regime was extended to cover radioactive contaminated land.

i.2 Explanation Terms

The legislation and guidance is very heavily punctuated with many complex and often unusual terms. To assist in the interpretation of these, an extensive glossary was included in DETR Circular 2/2000, Environmental Protection Act 1990: Part IIA, Contaminated Land. Following the introduction of the radioactive contaminated land legislation in 2006, this document has now been updated (Defra Circular 1/2006, Environmental Protection Act 1990: Part 2A, Contaminated Land).

i.3 National Objectives Of The New Regime

The Government believes contaminated land to be "*an archetypal example of our failure in the past to move towards sustainable development*". The first priority has therefore been specified as the prevention of new contamination via the pollution control regimes.

Secondly there are three stated objectives underlying the suitable for use approach as follows:

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

The suitable for use approach recognises that risk can only be satisfactorily assessed in the context of a specific use with the aim of maintaining an acceptable level of risk at minimum cost, thereby, "*not disturbing social, economic and environmental priorities*".

The specific stated objectives of the new regime are:

- to improve the focus and transparency of the controls, ensuring authorities take a strategic approach to problems of land contamination;
- to enable all problems resulting from contamination to be handled as part of the same process (previously, separate regulatory action was needed to protect human health and to protect the water environment);
- to increase the consistency of approach taken by different authorities; and
- to provide a more tailored regulatory mechanism, including liability rules, better able to reflect the complexity and range of circumstances found on individual sites.

In addition to providing a more secure basis for direct regulatory action, the Government considers that the improved clarity and consistency of the new regime, in comparison with its predecessors, is also likely to encourage voluntary remediation. It is intended that companies responsible for contamination should assess the likely requirements of regulators and plan remediation in advance of regulatory action.

There will also be significant incentive to undertake voluntary remediation in that the right to exemption to pay Landfill Tax will be removed once enforcement action has commenced.

The Government also considers the new regime will assist developers of contaminated land by reducing uncertainties about so called, "residual liabilities", in particular it should:

- reinforce the suitable for use approach, enabling developers to design and implement appropriate and cost-effective remediation schemes as part of their redevelopment projects;
- clarify the circumstances in which future regulatory intervention might be necessary (for example, if the initial remediation scheme proved not to be effective in the long term); and
- set out the framework for statutory liabilities to pay for any further remediation should that be necessary.

i.4 Local Objectives

The Development Plan for Dacorum, which comprises the County Structure Plan, Minerals Local Plan, Waste Land Plan and Dacorum Local Plan, identifies a number of related objectives and policies as follows:

Hertfordshire Structure Plan Review 1991 – 2011 (Adopted April 1998)

Part of the Structure Plan's vision is:

- the environment is protected and enhanced, with limited or minimal noise, water, air and other pollution, creating healthy living environments.

The vision is translated into Aims for Sustainability that includes:

- reduce pollution and the effects it has on ecosystems and human health.

In land use terms the Structure Plan includes the following objectives:

- make adequate provision for development to meet housing, economic and other human needs during the Plan period;
- protect and enhance the air and water environment;
- maximise the benefits from, and minimise the environmental damage caused by waste;
- minimise the effect of mineral operations on the local environment and quality of life while making proper contribution to the mineral needs of the nation.

This strategic policy framework is translated into Development Plan policies as follows:

Structure Plan

Policy 1 promotes sustainable development that aims in particular to "avoid pollution in all its forms, in particular pollution of ground and surface water resources".

Policy 45 supports the restoration of existing damaged and contaminated land and measures to ensure that new development does not create long term damaged or contaminated land.

Dacorum Borough Local Plan 1995

Policy 112 controls the locations for activities storing or using hazardous substances. Also various policies protect sensitive areas of land from inappropriate development such as the Green Belt, the Chilterns Area of Outstanding Natural Beauty and sites of nature conservation and historic value.

Hertfordshire Minerals and Waste Local Plans

Seek to control development relating to mineral extraction and disposal or treatment of waste so as to safeguard against land contamination, require restoration and seek the reclamation of historic sites.

i.5 About This Strategy

The Act itself states in section 78B (1) that:

Every local authority shall cause its area to be inspected from time to time for the purpose:

- of identifying contaminated land; and
- of enabling the authority to decide whether any such land is land which is required to be a special site (see Appendix 1).

Section 78B (2) states that the authorities must act in accordance with guidance issued by the Secretary of State. Statutory guidance was first published within DETR Circular 2/2000 in March 2000 and was updated in Defra Circular 1/2006 in September 2006.

The DETR and Defra circulars state that, in inspecting their areas, local authorities should take a strategic approach to the identification of land that merits further detailed inspection and that this approach should:

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

Local authorities were required to publish a Contaminated Land Strategy by July 2001, after which the strategy should be kept under periodic review.

In order to satisfy the far reaching objectives of the contaminated land regime it will be necessary to assess land throughout the whole of the Borough and to collate significant volumes of information. This will ultimately enable this Authority to make the sometimes difficult and inevitably complex decisions relating to its condition, the risks it presents and who may be liable for it under law. It must be noted that local authorities have the sole responsibility for designating sites as contaminated land and this responsibility cannot be delegated to another body. Therefore, this strategy is the commencement of that process and seeks to express as clearly as possible how each stage will be addressed.

To date, there are no formal mechanisms in place for approval of local authority strategies. However, various national and local bodies were consulted on the Council's strategy in 2001, including the Environment Agency, Hertfordshire County Council, English Nature (now Natural England) and all neighbouring local authorities (a full list of consultees is presented in Appendix 2).

i.6 Roles And Responsibilities

The primary regulator in respect of the contaminated land regime is the local authority. For Dacorum Borough Council the strategy will be under the control of the Head of Public Protection. This is a significant responsibility that complements existing local authority duties under the statutory nuisance and development control regimes. The role in broad terms is:

- to cause the area to be inspected to identify potentially contaminated sites;
- to determine whether any particular site is contaminated (by definition);
- to determine whether any such land should be designated a ‘special site’ ; and
- to act as enforcing authority for contaminated land not designated as a ‘special site’.

The Environment Agency also has four main roles:

- to assist local authorities in identifying contaminated land (particularly where water pollution is involved);
- to provide site specific guidance to local authorities on contaminated land where requested;
- to act as enforcing authority for contaminated land designated a ‘special site’; and
- to publish periodic reports on contaminated land.

Where the presence of contaminated land has been confirmed the enforcing authority must:

- establish who should bear responsibility for remediation;
- decide after consultation what must be done in the form of remediation and ensure it is effectively carried out;
- determine liability for the costs of the remedial works; and
- maintain a public register of regulatory action in relation to contaminated land.

i.7 Outline Of The Statutory Procedure

Contaminated land is defined for the purposes of Part 2A 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.”

What may or may not constitute the various categories of harm is described in the statutory guidance. Controlled waters include inland freshwater, groundwater and coastal waters.

The Council must search the Borough for land that has both sensitive receptors and sources of potential contamination. Where they have good reason to believe these both exist, they must undertake a formal risk assessment in accordance with established scientific principles in order to establish whether there is the potential for them coming together (through a “pathway”) and causing harm or pollution as described. This is known as a “pollutant linkage”.

Where the Council is satisfied that significant harm is occurring, or there is a significant possibility of such harm, or pollution of controlled waters is occurring, they must declare that a significant pollutant linkage exists and that the land is therefore contaminated land by definition. In every case where the land does not fall within the category of a “special site” the Council must commence regulatory action. This involves a series of complex procedures that must include:

- a formal written record of the determination;
- formal notification of all interested parties;
- determination of the physical extent of the land;
- the extent and seriousness of the risks (need for urgent action);
- the number and type of pollutant linkages;
- the effect each significant pollutant may have on controlled waters (if any);
- the most appropriate and cost effective remedial scheme for each significant pollutant linkage;
- identification of liability groups and, appropriate persons, for each pollutant linkage;
- assessment of hardship in the case of each appropriate person; and
- ensure effective remediation of the site and recovery of costs where appropriate.

A series of consultations must also be carried out at each stage with the ultimate aim of securing voluntary remediation (without the need for enforcement action). Where the land falls within the definition of a “special site”, the Environment Agency will become the enforcing authority. In these cases, however, the local authority must still make the determination and formally notify the interested parties.

In certain circumstances the local authority may carry out the remedial works. In general terms it has this power where:

- urgent action is necessary (see Part 5 and Appendix 5);
- there is no appropriate person;
- the authority is precluded from taking enforcement action (specified reasons);
- the authority agrees to carry out the works on behalf of an appropriate person; and
- a remediation notice has not been complied with.

In non-urgent cases where a remediation notice is necessary and all the required consultations have been completed, the notice must be served on the appropriate person(s) no sooner than three months after the contaminated land has been identified or declared a “special site”. The notice itself may require further investigation of the site and as a result more pollutant linkages may be identified. Where this is the case, the enforcing authority must go through the same processes again to identify appropriate persons and remedial actions.

The enforcing authority must at all times consider the potential for hardship and undertake cost benefit analysis in respect of all remedial actions. Where remedial actions are undertaken in default of a notice the enforcing authority has the power to recover costs in certain circumstances.

i.8 Situations Where This Regime Does Not Apply

As stated in i.3 above, the primary aim of the Government is to prevent new contamination occurring. There are several situations therefore where existing pollution control legislation would apply to control the effects of land contamination:

Planning and Development Control (Town and Country Planning Act 1990, Building Regulations 1991)
Land contamination, or the possibility of it, is a material consideration for the purposes of town and country planning. This means that local planning authorities should take account of the potential for contamination both in preparing development plans and in determining

individual applications for planning permission. Planning permission may be granted on condition that the site is remediated to the satisfaction of the local authority. Planning Policy Statement 23 (PPS23) “Planning and Pollution Control” was published in 2004 by the former Office of the Deputy Prime Minister (ODPM). This includes an Annex 2 “Development on Land Affected by Contamination” that sets out detailed policy and practice. In addition to the planning system, the Building Regulations require measures to be taken to protect new buildings and their future occupants from the affects of contamination. “Approved Document Part C (Site Preparation and Resistance to Moisture)" published in 2004 sets out how contamination should be addressed in building control.

Pollution Prevention and Control / Integrated Pollution Control (Pollution Prevention and Control Act 1999 / Environmental Protection Act 1990 Part 1)
Under the Integrated Pollution Control (IPC) regime, the Environment Agency control releases to air, land and water from major industrial processes through a system of prior permitting. The regime gives the Agency the power to take action to remedy harm, which could apply to cases of land contamination. A new Pollution Prevention and Control (PPC) regime has progressively replaced IPC, which implements the requirements of the EC Directive on Integrated Pollution Prevention and Control (IPPC). The IPPC Directive requires a wider range of environmental impacts to be taken into account when issuing permits, including site restoration. In order to meet these requirements, operators are required to submit site condition reports when applying for a permit under PPC, and when a site closes. Any contamination occurring during the period of operation as a result of the permitted activities will need to be remediated by the operator.

Waste on Land (Environmental Protection Act 1990 Part 2)
All waste disposal and processing sites (including scrap yards) should be subject to licensing. Contamination causing harm, or pollution of controlled waters, should be dealt with as a breach of the conditions of the licence. In exceptional circumstances, where the problem arises from an unlicensed activity, it is possible that Part 2A could apply. An example of this would be a leak from an oil tank outside the tipping area. Where there has been illegal tipping of controlled waste (fly tipping) this should also be dealt with under section 59 of the 1990 Act.

Pollution of Controlled Waters not Arising from Land (Water Resources Act 1991)
Where a pollution incident has occurred and the pollutant is discharged directly into the body of water, or it has left land and it is entirely in the body of water (i.e. the land is no longer causing pollution), the Water Resources Act 1991 will apply. Additionally, no remediation notice can require action to be taken that would affect an authorised discharge consent.

Statutory Nuisance (Environmental Protection Act 1990 Part 3)
The relationship between Part 2A and statutory nuisance is not straightforward. If land is declared “contaminated land” by definition, it cannot be considered a statutory nuisance. This is understandable and ensures there is no duplication or confusion between the two regimes. However, if the land is investigated and found not to be contaminated land but, “land in a contaminated state” (defined as land where there are substances in, on or under land which are causing harm, or there is a possibility of harm being caused), it also cannot be considered a statutory nuisance for the purposes of Part 3 of the Act. Where land is not “contaminated land” nor “in a contaminated state”, but is causing a nuisance from smell, it could be considered a statutory nuisance.

Health and Safety (Health and Safety at Work etc Act 1974)
Where there is a risk of harm to persons at work from land contamination, this should be dealt with under the Health and Safety at Work etc Act 1974. The enforcing authority will be either the Health and Safety Executive or the relevant local authority depending on the work activity.

Major Accident Hazards (Control of Major Accident Hazard Regulations 1999 (COMAH))
COMAH requires operators of establishments handling prescribed dangerous substances to prepare on-site emergency plans, and the local authority to prepare off-site emergency plans. Where a release, explosion or other major incident occurs that causes land contamination, the restoration and clean up of the environment should be carried out as part of the emergency plans.

Food Safety (Food Standards Act 1999)
Part I of the Food and Environment Protection Act 1985 gives ministers emergency powers to issue orders for the purposes of prohibiting specified agricultural activities in a designated area (e.g. land designated as “contaminated land”), in order to protect consumers from exposure to contaminated food. The above powers are now exercisable by the Secretary of State. Where the Council suspects crops may be affected from contaminated land to such an extent they may be unfit to eat, they will consult the Food Standards Agency to establish whether an emergency order may be necessary.

i.9 Land Under Ownership Of An Enforcing Authority

Where land owned by a local authority is found to be contaminated land, unless it is a special site, there will be no enforcing authority. However, local authorities must carry out their duties as though they were the enforcing authority, undertake the same consultations, assessments and seek appropriate remedial works as necessary. To this end a formal relationship should be maintained between the Department responsible for enforcement of the new regime and that responsible for Council owned land. All information relating to the identification, assessment and remediation of Council owned land must be fully reported to satisfy the needs for transparency.

i.10 The Need For Team Working

This strategy impacts on potentially all departments of the Council, in particular:

Planning and Development Control
The inspection of the Borough will identify areas of potentially contaminated land that may be developed, awaiting development, derelict, protected or part of the green belt. This may result in the need to re-examine past development control files or identify development routes for contaminated sites that may subsequently impact on the Local Development Plan.

Building Control
Officers have the duty to enforce protection measures in new build projects to mitigate the impact of contamination on property. Information they hold will be essential to quantify risks.

Legal
Part 2A is a highly complex piece of legislation that could have significant implications for the Council, landowners and occupiers. The Council solicitor’s advice may be required on

many aspects including those relating to enforcement, liability, powers of entry, data protection and access to information.

Engineers and Highways
Land under highways, pavements, verges and common areas may be contaminated and present a risk to potential receptors. Highways Authorities must maintain registers under Part III of the New Roads and Street Works Act 1991 regarding, amongst other things, streets with “special engineering difficulties”. This includes risks from contamination.

Information Technology
Significant volumes of data need to be held both on database and geographical information systems (GIS). Support is required on the use of these systems and with data protection issues.

Amenities and Housing
Land in use and controlled by other service units may be contaminated and require remediation. Appropriate Heads of Service will be consulted.

Property
The Head of Public Protection will advise the Council on the remediation of any contaminated sites within its ownership.

Finance
This legislation has the potential to have significant resource implications for the Council, both as an Enforcing Authority and landowner.

In addition to close corporate team working, collaboration with neighbouring authorities, interested parties and other statutory consultees will be undertaken to ensure the smooth implementation of the strategy.

i.11 Financial And Manpower Implications

The Government has accepted that successful operation of the Act demands considerable resources.

THE STRATEGY

PART 1 - DESCRIPTION OF THE DACORUM AREA AND HOW IT'S PARTICULAR CHARACTERISTICS IMPACT ON THE INSPECTION STRATEGY

1.1 Brief History

Situated in West Hertfordshire, the Borough of Dacorum was created in 1974 following a review of local government in England & Wales. It is composed of the main towns of Hemel Hempstead, Berkhamsted and Tring, plus a number of large and small villages. Prior to 1974 the area was broken up into five smaller council areas, originally known as the Borough of Hemel Hempstead, the Urban Districts of Berkhamsted and Tring and the Rural Districts of Hemel Hempstead and Berkhamsted.

The towns and villages that make up the Borough of Dacorum have a rich cultural heritage that is portrayed in much of the literature that is available. Situated along the Gade Valley, in the chalk hills of the Chilterns, historical evidence indicates that the Borough was used as a main thoroughfare for trade as far back as Roman times. Indeed it was once known as the Granary of London due to its rich fertile soils and flour making capabilities.

Around 1760-1770, some of the old mills near Hemel Hempstead were converted from grinding corn to papermaking, an industry that has lasted until the present day.

Also in the eighteenth century came the building of the Grand Junction, now known as the Grand Union Canal, which linked London with the industrial West Midlands. Inevitably, as trade grew along the canal, entrepreneurs such as John Dickinson and William Cooper thrived. John Dickinson, the first to move into the area in 1809, bought mills at Apsley and Nash Mills for the production of papermaking. Later came William Cooper, the inventor of the world famous Coopers Sheep Dip (the main active ingredients of which were sulphur and arsenic), who erected his first mill in 1852 at Ravens Lane, Berkhamsted.

Up until the late 1940's, agriculture and the above industries were the mainstay of the Borough. However, this changed when, following the Second World War, new housing was required for the homeless of London. Hemel Hempstead was earmarked for development as a new town and large areas of greenbelt land gave way to housing developments. With the new influx of people came new industries to the area, many of which remain today.

However, with rebirth and an ever increasing technological world, many of the older industries have ceased operating or have left for pastures new and the sites they once occupied have been, or are, in the process of being redeveloped into housing.

1.2 Population Size and Distribution

The population distribution of the borough following the 2001 Census is recorded in the following table.

Location	Population
Hemel Hempstead	81143
Berkhamsted	16498
Tring	13319
Rural	26839
Total	137799

1.3 Land owned by the Council

The Council has tried to be sympathetic in its development of the Borough and has tried to maintain as much as possible of the open spaces and parkland for the enjoyment of residents and visitors. Inevitably historic development has resulted in areas that have become contaminated through operations undertaken over the years, for example waste recycling and small-scale landfill. Therefore, it is accepted that the Borough may have areas of land that may be contaminated. These will be considered under the strategy in the same ways as all other land.

1.4 Broad Geological Characteristics

The make-up of the land covered by the Borough is primarily chalk hills. These are overlain with glacial gravels and boulder clay in the valleys and clay-with-flint covering some areas of higher ground. A major chalk aquifer underlies most of the area covered by the Borough and there are around 30 known private water supplies.

1.5 Protected Locations

The County Archaeological Group is consulted on all planning applications affecting areas of archaeological significance and archaeological potential. It is envisaged that the same consideration will be given to sites that are identified as contaminated land. A substantial part of the Borough is within an Area of Outstanding Natural Beauty, including land occupied by the National Trust at Ashridge. In accordance with the Borough Local Plan 1991-2011, every effort will be made to prevent the loss of any historic park or garden or harm to its historic structure, character, principal components or settings.

1.6 Known information regarding Contamination

There are a number of sites within the Borough that are perceived to be contaminated due to present and past activities. The perceived nature of the contamination in some cases is speculative and is not held on record. These sites will be investigated in order that they can be correctly identified.

1.7 Aims of the Strategy

The legislation and accompanying guidance for the risk-based approach to dealing with contaminated land requires a fair and systematic approach, which depends on help from the community. This Strategy will be implemented by the Environmental Health Division and will emphasise the pursuit of sustainable development, support for the local economy and pursuit of good health, community safety and well being. Specifically the Council aims to ensure:

- A risk-based approach, that is both systematic and objective in order to prioritise those areas which are in need of further investigation and possible remedial action.

- Where possible, site owners are encouraged to voluntarily remediate sites and help promote the use of these sites for redevelopment rather than use “greenfield” sites.
- Where voluntary remediation is not forthcoming, determination of the most appropriate action to ensure compliance with, and enforcement, of the appropriate legislation.
- That sites identified as “contaminated land” are effectively dealt with through consultation and monitoring.
- Any previous action taken to deal with contaminated land is checked to ensure that the previous regime was stringent enough to deal with the contamination in order to meet with current guidelines.
- Procedures are in place to produce and publish a Public Register of the enforcement history of land statutorily designated as “contaminated land”.

1.8 Objectives

- To provide an efficient mechanism by which information derived from existing records, members of the public, industry, etc can be collected, collated, assessed, updated and disseminated.
- To review procedures and standard legal documentation for property searches to minimise possible future liabilities.
- To formalise a protocol for the dissemination of information, when requested, which is not in contravention of relevant legislation.
- To standardise the information in a format that can be readily understood by officers of other disciplines and other interested parties.

PART 2 - IDENTIFICATION OF POTENTIALLY CONTAMINATED SITES AND THEIR PRIORITISATION ACCORDING TO RISK

2.1 Information

In undertaking its duty to inspect the Borough under Part 2A, the Council will take into consideration the particular characteristics of the area, including:

- Potential sources of contamination.
- Relevant geology, hydrogeology and hydrology.
- Potential specified receptors (all human receptors, sensitive water receptors, sensitive property receptors and relevant ecological receptors).

Consideration will also be given to the existence of sites and receptors which, if found to be contaminated land, would be designated as “special sites” (see Appendix 1).

2.2 Potential Sources of Contamination

Past Industry
The vast majority of potentially contaminated sites will be identified through the close examination of historical data in the form of old ordnance survey maps, plans and photographs for evidence of past industrial use. Consultation with the Town and Parish Councils and with members of the public for local knowledge of past industry will also be an important information source.

Current Industry
The present industrial areas of the Borough are potential sources of contamination and these will be inspected in accordance with the statutory guidance to establish whether there is a potential for contamination, and if there is, whether it is controlled by another agency.

Pollution Prevention and Control
The Pollution Prevention Control (PPC) regime has gradually replaced Integrated Pollution Prevention Control (IPC), which both control releases to air, land and water from industrial processes. There are numerous permitted activities within the Borough ranging from petrol storage facilities to concrete crushers and vehicle finishing processes. Both regimes should control unauthorised discharges to land, but their presence will need to be noted and the potential for long-term pollution assessed, particularly post closure.

Hazardous Substances
The Planning (Hazardous Substances) Act 1990, the Planning (Hazardous Substances) Regulations 1992 and the Planning (Control of Major Accident Hazards) Regulations 1999 (COMAH) require that Hazardous Substances consent be sought in respect of any proposal which would result in the presence on site of hazardous substances in excess of certain specified quantities. A register of applications for hazardous substances consent (and decisions on those applications) is maintained by the Council’s Planning Department.

COMAH Sites
The Control of Major Accident Hazards Regulations 1999 are enforced by the Environment Agency and Health and Safety Executive (HSE) to control both on and off site risks from industries with a high potential for disaster from dangerous substances (flammable, toxic

or explosive). The Council's Planning Department maintains a list of sites within the Borough that have been notified to the Council by the HSE because of the presence of toxic, highly reactive, explosive or inflammable substances.

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

Current Landfill and Waste Processing Sites
Such sites are licensed by the Environment Agency under the provisions of Part 2 of the Environmental Protection Act 1990. Details of all these sites have already been provided by the Agency.

Closed Landfill Sites
These are a potentially significant source of risk, especially those that operated before the licensing requirements of the Control of Pollution Act 1974. All closed landfills in the Borough will be identified and their association with any specified receptors considered.

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

Mines and Minerals Extraction
The geology of the area has resulted in areas used for the extraction of minerals, particularly chalk and clay. Many of the resulting quarries and pits have been filled with refuse or other materials. These can present a particular risk to water resources. An attempt will be made to identify all past quarrying sites and assess the risk that they present.

Waste or Derelict Land
Such land may have been used to dispose of wastes and effluents illegally. Records of reported pollution incidents of this type will be reviewed to identify such sites.

Ministry of Defence Land
There are currently no areas occupied by Defence Agencies within the Borough.

Previously Developed Contaminated Sites
Inspection of the Borough will identify many potentially contaminated sites that have been redeveloped over the years. In some cases the methods and extent of remediation may be unknown; in others it may be known but the adequacy of the remediation will need to be examined.

A more comprehensive list of previous uses considered to be potentially contaminative can be found in Appendix 4. Any site with the potential to cause pollution will be identified at this preliminary stage.

2.3 Potential Specified Receptors

Land can only be considered contaminated if it impacts on specified receptors:

Human
The present population of the Borough is approximately one-hundred and thirty-eight thousand, mainly distributed amongst the three main population centres of Hemel Hempstead, Berkhamsted and Tring. The remainder are distributed throughout the many villages and smaller settlements of the rural area. Human receptors may therefore be present to some degree at almost any location within the Borough. The potential for persons either living on or frequenting a potentially contaminated site will be considered in every case. Priority will be given to sites frequented by children.

Property - Buildings
All buildings and underground services (within the footprint of the building) are potential receptors and will be considered in every case where contamination and buildings exist. Ancient Monuments as listed by English Heritage will also be specifically identified as part of the strategy and the potential impact of contaminants considered. A full list of scheduled Ancient Monuments is provided in the Dacorum Borough Local Plan 1991-2011.

Property - Crops including Timber
Being a largely rural area, crop growing regions will not be specifically identified but taken into consideration as necessary. Where contamination is known or suspected, associations with poor yield and crop failure will be investigated. There are several parts of the Borough growing timber. Crop failure as a result of contamination is, however, most unlikely except perhaps where trees have been planted on contaminated land as part of a remediation programme.

Property - Produce Grown Domestically and on Allotments
There are many acres of allotments within the Borough and these will all be identified and their potential for contamination considered as a result of previous uses or activities. Similarly any domestic gardens likely to be contaminated will be identified and assessed.

Property - Livestock, Game and other Owned Animals
Again being a largely rural area, the presence of livestock or other animals in an area will not be specifically identified but taken into consideration as necessary.

Ecological Receptors
All identified ecological receptors will be considered as part of the strategy. There are several specified sites including Sites of Special Scientific Interest (SSSI), Local Nature Reserves (LNR) and other areas of ecological importance. Significant contamination is unlikely but all areas will be identified, examined and any risks carefully quantified with Natural England and the Environment Agency.

Water - Controlled Waters
All surface water receptors, such as rivers, streams, tributaries, reservoirs and lakes, will be considered as part of the inspection strategy. All groundwater receptors including major, minor and non-aquifers will be specifically identified with their location, depth and vulnerability according to cover. Potential risks from identified sources of contamination will be considered carefully with advice from the Environment Agency.

Water - Public Water Supplies
All public water supply abstraction points will be considered with their location, depth, strata/surface water supply they draw from and volume of supply. All other authorised abstraction points will also be considered including those used for agricultural or recreational use.

Water - Private Water Supplies
There are approximately thirty known private water supplies in the Borough. The protection of these is particularly important due to the heavy reliance on them by local communities. The Council already monitors these supplies as part of its duties under the Private Water Supplies Regulations 1991.

2.4 Prioritising According to Risk

The identification of contaminated land will be carried out in an ordered, rational and efficient manner based firmly on the principles of risk assessment. Any significant and imminent risks to human health will always be given the highest priority.

Before a piece of land can be determined as “contaminated land”, a “significant pollutant linkage” must be identified. The process of identifying pollutant linkages and of assessing the significance of each linkage is based on “contaminant-pathway-receptor” methodology.

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

A **receptor** is either (a) a living organism, a group of living organisms, an ecological system or piece of property and is being or could be harmed by a contaminant, or (b) controlled waters that are being or could be polluted by a contaminant, or (c) any person who is, or could be, subject to lasting exposure so far as is attributable to radioactivity.

A **pathway** is one or more route(s) or means by or through which a receptor (a) is being exposed to or affected by a contaminant or (b) could be so exposed or affected.

Unless all three elements of a pollutant linkage are identified, land cannot be considered contaminated. All search strategies will therefore be prioritised on areas where both contaminants and receptors are known or likely to exist. It is important to fully understand this concept as it forms the basis of all future site investigation and prioritisation procedures.

If, for example, an area of land was known to be affected with potentially dangerous contaminants, it would not be considered of the highest priority if studies confirm there are no specified receptors within the area of influence. If receptors are present, the risk assessment process will seek to determine the likelihood of them coming together at any time. If the chances of this are calculated as significant and the consequences would result in significant harm, or pollution of controlled waters, then a significant pollutant linkage will be said to exist and the land will be declared “contaminated land”.

In summary, for land to be determined as “contaminated land”, the following are prerequisites:

- one or more contaminant substances;
- one or more specified receptors;
- at least one plausible pathway between contaminant and receptor (to complete a pollutant linkage); and
- a reasonable chance that the pollutant linkage will result in significant harm to one of the specified receptors or cause pollution of controlled waters.

The strategy for identification will therefore be initially based on a desk top survey of the Borough and will involve:

- Initial identification of all potentially contaminated land.
- Review of all such land to identify candidate “contaminated land” sites and assign a priority for inspection.
- “Detailed inspection” of sites, which may include any or all of the following:

    - the collation and assessment of documentary information, or other information from other bodies;
    - a visit to the particular area for the purposes of visual inspection and, in some cases, limited sampling (for example of surface deposits); or
    - intrusive investigation of the land (for example by exploratory excavations).

Potentially contaminated land will, prior to detailed inspection, be listed and categorised according to a preliminary assessment of risk. The approach used will be based on the “PG01: Risk Prioritisation Methodology for sites of potentially contaminated land” developed for the Manchester Area Pollution Advisory Council (MAPAC). This methodology has been adopted by many local authorities in their prioritisation work. Full details of the methodology are presented in Appendix 6. Each potentially contaminated site is risk scored depending on its past and current use as well as various other environmental factors. Following completion of the risk scoring, the sites are ranked into order, highest first, to give a final prioritised list of sites. Detailed inspection of sites will then proceed with the site ranked highest in the prioritised list and will continue until all sites have been assessed.

2.5 Information, Complaints and Queries from Members of the Public

All information supplied to the Council will be dealt with confidentially, especially where the informant requests to remain anonymous. An initial investigation will be made by the appointed officer within 5 days to aid the prioritisation process. Information supplied that is non-specific and generalised will not be considered sufficient for initial investigation, although this will be at the discretion of the appointed officer.

It is envisaged that complaints will continue to be received about fly-tipping, accumulations, with the consequent potential for contaminated land. These complaints will be investigated in accordance with existing protocols and enforcement policies to establish whether the complaint is justified. If so, the particular circumstances will be evaluated to establish which enforcement process would be most appropriate.

Complaints may be received about particular sites needing further investigation that may give rise to concern, especially where a potential sale has failed as a direct result of the suggestion that the land may be contaminated. Those so affected may seek an early investigation to clarify their position, thereby seeking to circumvent the prioritisation process. Such requests for priority inspection will, where resources allow, be dealt with as considerately as possible.

2.6 Concluding Comments on Identification and Prioritisation

Assessments at the preliminary stage are made on a limited amount of often incomplete basic data and information, such as old surveys, maps, geological information, etc. As

more knowledge of sites is obtained, assessments will be revised and the order of prioritisation may change.

PART 3 - OBTAINING FURTHER INFORMATION ON POLLUTANT LINKAGES AND THE RISK ASSESSMENT PROCESS

3.1 Further Investigations

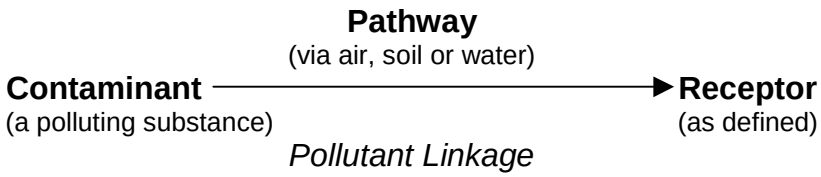
Once the Council becomes aware of the (possible) existence of a pollutant linkage, in accordance with the prioritisation procedure, the risk assessment process will commence. The definition of contaminated land is based on the principles of risk assessment and is defined as the combination of:

- the probability, or frequency, of occurrence of a defined hazard; and
- the magnitude of the consequences.

There are two steps in applying the definition of contaminated land:

STEP 1

The Council must satisfy itself that at least one pollutant linkage exists:

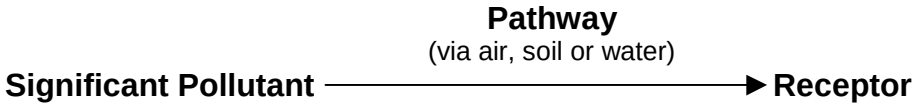


Pollutant Linkage

This, for the purposes of the strategy, this is termed a Stage 1 risk assessment.

The contaminant(s) must have the potential to have a defined detrimental impact on the receptor(s) and the pathway has to be plausible. It is not necessary for direct observation of the pathway but if a reasonable scientific assessment suggest the two could come together then a pollutant linkage is said to exist and the authority will proceed to step two.

STEP 2



Significant Pollutant Linkage

At this stage a more detailed investigation must be undertaken to confirm that the pollutant linkage identified is:

- resulting in significant harm (or the significant possibility of such harm) being caused to the receptor(s); or
- resulting in (or likely to result in) the pollution of controlled waters.

If either of these is confirmed then the land becomes contaminated land by definition and the pollutant linkage becomes ‘significant’.

This, for the purposes of this strategy is termed a Stage 2 risk assessment.

The detailed investigation of contaminated land is invariably a very time consuming and expensive process. Therefore it must be emphasised that all investigations will be carried out on an incremental basis and terminated if it is clear that no significant pollutant linkage exists.

Similarly where one significant pollutant linkage has been identified and others are suspected, it will generally be the case that the Council will cease its investigation at this stage and declare the land contaminated. Further investigation of other possible pollutant linkages may then be required as part of the enforcement process.

In cases where imminent risk of serious harm or serious pollution of controlled waters has been confirmed, the Council will authorise urgent action in accordance with protocols agreed between the Council and the Environment Agency.

As has been explained in the introduction to this strategy, the suggestion that land may be contaminated can have a significant impact on the way others view it, and in particular, its perceived value. The Council will therefore seek to obtain as much information as possible about a suspected site and handle such information so as not to cause unnecessary alarm.

Once sufficient information has been obtained which confirms a pollutant linkage does not exist, or, if it does, it is not significant, then the investigation will cease and no further action will be taken. However, should circumstances be identified whereby a significant pollutant linkage could occur at some time in the future, arrangements will be made to keep such situations under review.

Where evaluation of all available data suggests that a significant pollutant linkage may exist, it may be necessary to visit sites and carry out some form of on site testing, or take away samples for analysis. In every case, a “suitable person”, adequately qualified to undertake the work, will carry this out. Discretion will be used at all times to minimise undesirable effects.

Intrusive investigations will be carried out in accordance with appropriate technical procedures to ensure that:

- they are effective;
- do not cause any unnecessary damage or harm; and
- do not cause pollution of controlled waters.

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

Statutory powers of entry are conferred on the Council to enable it to carry out its functions under Part 2A. Generally the Council will only use these powers to obtain information about the condition of land where:

- it is unable to obtain information from third parties without the need for entering the site; or
- a person offers to provide credible information within a reasonable and specified time, and fails to do so.

The Environment Agency is responsible for any land that is declared by the Local Authority as a Special Site. Before making that determination, the Council will consult with the Environment Agency on the best approach to that particular site. It may be that an initial joint investigation will be undertaken before a formal decision is made.

The Environment Agency does not have the power under Part 2A to investigate land that may be contaminated land without the authorisation of the Council. Therefore, where the Environment Agency (or their agents) wishes to carry out formal investigation on behalf of the Council, it will be appointed as “suitable person(s)”.

3.2 Determining Land to be Contaminated

There are six possible grounds for determining land as contaminated:

(a) significant harm is being caused;
(b) there is a significant possibility of significant harm being caused;
(c) pollution of controlled waters is being caused;
(d) pollution of controlled waters is likely to be caused;
(e) harm so far as attributable to radioactivity is being caused; or
(f) there is a significant possibility of harm so far as attributable to radioactivity being caused.

In making any determination the Council will take all relevant information into account, if necessary, carry out appropriate scientific assessments, and act in accordance with the statutory guidance. The determination will identify all three elements of the pollutant linkage and explain their significance.

3.3 Determining Land Not to be Contaminated

Situations may arise where, with the information available, it is not possible to determine whether a pollutant linkage is significant in accordance with the statutory guidance. In such cases the Council will determine that, on the balance of probabilities, it would seem that the land does not fall within the statutory definition of contaminated land. However, the situation will be kept under review and reopened at any time new information becomes available.

Inspection may identify contamination that would form a significant pollutant linkage should new receptors be introduced to the site. In such circumstances this information will be recorded and the site monitored for any changes in use. Should such a site be identified for future development, the information obtained during the investigation will be made available to the planning authority and the owners/developers.

PART 4 - THE WRITTEN RECORD OF DETERMINATION AND FORMAL NOTIFICATION

Where a site is to be determined as “contaminated land”, the Council will afford all opportunities for the land owner and/or responsible person(s) to undertake their own suitable remediation. However, if the Council is of the opinion that the time scale or the remediation method proposed will not alleviate the risk, then the Council will determine the land as “contaminated land” by statutory definition, and the Council will prepare a written record to include:

- a description of the pollutant linkage(s) confirmed;
- a summary of the evidence which confirms the existence of the pollutant linkage(s);
- a summary of the risk assessment(s) upon which the pollutant linkage(s) were considered to be significant; and
- a summary of the way the requirements of the statutory guidance were satisfied.

The Council will formally notify all relevant parties in writing that the land has been determined “contaminated land”, including:

- the owner(s);
- the occupier(s);
- those liable for remediation (‘appropriate persons’ in the guidance); and
- the Environment Agency.

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

If land has been determined as “contaminated land” and also falls within one or more of the “special site” descriptions prescribed in the regulations made under Part 2A (see Appendix 1), it is required to be designated a “special site”. The Environment Agency then becomes the enforcing authority for that land.

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

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

Appropriate persons will be provided with written explanations of the test for exclusion and apportionment.

PART 5 - LIABILITY & ENFORCEMENT

Land may be determined as “contaminated land” upon the identification of only one significant pollutant linkage. Full liability cannot therefore be determined until all significant pollutant linkages on the site have been identified. When significant pollutant linkages have been identified, the procedure relating to the apportionment of liability must commence. This has five distinct stages as follows:

- Identifying potential appropriate persons and liability groups.
- Characterising remediation actions.
- Attributing responsibility to liability groups.
- Defining members of liability groups.
- Apportioning liability between members of a liability group.

These procedures are complex, commencing with the establishment of liability groups. All appropriate persons for any one pollutant linkage are a ‘liability group’. These may be either class ‘A’ or class ‘B’ persons.

APPROPRIATE PERSONS - Class ‘A’
These are, generally speaking, the polluters, but also include persons who “knowingly permit pollution”. This would include developers who leave contamination on a site that subsequently results in the land being determined as contaminated land.

APPROPRIATE PERSONS - Class ‘B’
Where no class ‘A’ persons can be found, liability reverts to the owner or the occupier of the land. These are known as class ‘B’ persons.

The Council will make all reasonable enquiries to identify class ‘A’ persons before liability reverts to owners or occupiers.

Appropriate persons must be considered for each significant pollutant linkage. Therefore, where a site has had a series of contaminative uses over time, each significant pollutant linkage will be identified separately and liability considered for each.

5.1 Apportionment Of Costs

Generally speaking the members of a liability group will have the total costs falling on the group as a whole apportioned between them. It may also be necessary to apportion costs between liability groups. There are three basic principles applying to exclusion and apportionment tests:

- The financial circumstances of those concerned have no relevance.
- The Council must consult persons affected to obtain information (on a reasonable basis having regard to the cost). If someone is seeking to establish an exclusion or influence an apportionment to their benefit then the burden of providing the Council supporting information lies with them.
- Where there are agreements between appropriate persons the local authority has to give effect to these agreements.

There are six tests specified to identify Class ‘A’ groups who should be excluded from liability. These will be applied in sequence and separately for each pollutant linkage. The

exclusion of Class 'B' persons is much less complex. A single test merely excludes those who do not have an interest in the capital value of the land. Tenants therefore are excluded.

The statutory guidance also sets out considerations to which the enforcing authority should have regard when making any cost recovery decision. Therefore the Council will consider whether any of those liable for the remediation of "contaminated land" may not be able to afford the necessary work before serving any remediation notices.

5.2 The Enforcement Process

Before remediation notices are served an extensive consultation process will be completed and encouragement given to arrive at an informal solution. The Council will do all it reasonably can to consult the appropriate person(s), owners, occupiers, etc regarding their views on the state of the land. This could be a difficult and protracted process and may cause delays. For example, where a housing estate is affected it would be reasonable to expect home owners, land owners, developers, lenders, insurers, surveyors, geotechnical engineers, residents groups, etc all to have differing views according to their position.

Remediation notices will be served only as a last resort (notwithstanding urgent cases), and then only after this lengthy consultation process has been completed. Notices will be authorised after two tests are satisfied:

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

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

5.3 Specifying Remediation

The Head of Public Protection will specify what remediation measures are to be carried out in the remediation notice. These will be both appropriate and cost effective, employing 'best practicable techniques'. The aim of the remediation will be to ensure that the land is no longer contaminated, taking the shortest and lowest cost route. This means in most cases attention will be focussed on the pathway, rather than the contaminant or receptor.

The reasonableness of the remediation requirements is an important factor. This is determined in relation to the cost of carrying out the remediation against the cost of failing to do so (i.e. the costs, or potential costs, resulting from the continuing pollution).

5.4 Remediation By The Local Authority

Before the Council can serve a Remediation Notice it will first determine whether it has the power to carry out any of the remediation actions itself. There are five specified circumstances where this may be the case:

- where urgent action is required (see below);
- where no appropriate person can be found;
- where one or more appropriate persons are excluded (e.g. on hardship grounds);

- where the local authority has made an agreement with the appropriate person(s) that it should carry out the remediation; and
- in default of a remediation notice.

5.5 Urgent Action

Urgent action must be authorised where the Council is satisfied that there is imminent danger of serious harm, or serious pollution of controlled waters, being caused as a result of contaminated land. In such circumstances the procedures identified in the statutory guidance will be followed which may involve forced entry into the premises.

The terms “imminent” and “serious” are not defined, so local authorities are advised to use the normal meaning of the words. There is, however, guidance on what may constitute “seriousness” when assessing the reasonableness of remediation.

The Council will undertake remediation in urgent cases where it is the enforcing authority, if it is of the opinion that the risk would not be mitigated by enforcement action. In the case of a “special site”, the Council will determine the land as “contaminated land” in accordance with the statutory procedure, and then notify the Environment Agency, which will then be responsible for the remediation.

In appropriate cases the Council will seek to recover costs of remediation works it has completed.

PART 6 - DATA HANDLING AND ACCESS TO INFORMATION

The Council was required by Statute to produce this contaminated land strategy and formally publish it by the end of June 2001. Subsequently it must maintain a register of regulatory action taken under Part 2A, which must be made available for public inspection at all reasonable times.

6.1 The Environmental Information Regulations 2004

Implementation of the strategy will, however, also result in significant volumes of data that will be held on computer databases and geographical information systems, as well as in paper form. There is no statutory obligation to disclose this information therefore the Council must comply with the requirements of the Environmental Information Regulations when dealing with requests for disclosure.

These Regulations require local authorities to make any environmental information they hold available upon request, subject to certain exemptions. These are complex but it would be likely that the Council will have to respond to requests for information on land it has identified as part of, for example, the inspection of the Borough, as outlined in Part 2 of this strategy.

Below are the broad exemptions to the right to environmental information:

- Information is not held.
- The request is manifestly unreasonable.
- The request is too general.
- The request is for unfinished documents or data.
- The request is for internal communications.

A public authority may also refuse to disclose information or withhold part of it in order to protect the following:

- Confidentiality of proceedings
- International relations / public security / defence
- The course of justice and right to fair trial
- Commercial confidentiality
- Intellectual property rights
- Personal / voluntary data
- Environmental protection

In all circumstances where there is any doubt regarding the release of information, the Council's Legal Section and Corporate Information Officer will be consulted.

"Information", for the purposes of the Regulations includes records, registers, reports, returns and information on computers.

It has been suggested that information held as a result of the Council's initial inspection of the Borough and subsequent prioritisation for further investigation, could be classified as "a record which is in the course of completion", and therefore should not be disclosed under the Regulations. It should however be understood that sites should not be so

identified unless there are sound reasons based on scientific judgement that a pollutant linkage may exist. Once the preliminary inspection of the Borough has commenced, each assessment about each and every site could constitute a “record” in itself.

More significantly, should a third party purchase land following a refusal on the part of the Council to supply information requested on its condition, and the Council has identified it as potentially contaminated land, that party may wish to seek a remedy against the Council should the site be subsequently declared contaminated land and lose value as a result.

Requests for information will therefore be dealt with promptly and no later than 20 working days after they are made. A charge will usually be made for the supply of information in accordance with the Regulations. Where the Council must refuse a request for any of the reasons stated in the Regulations, it will provide details of the reasons in writing at no cost to the applicant.

6.2 The Data Protection Act 1998 – A Brief Overview

The Act applies to anyone holding records of living individuals on computer, paper and manual records and it strengthens the rights of individuals and sets new rules for the transfer of data outside the European Union.

The Act imposes a number of obligations which must be satisfied before obtaining, recording, or holding personal information and applies to all personal data that is processed (unless certain exemptions apply). The Act grants individuals rights in relation to the processing by others of their personal data (in Part 2 of the Act), whilst requiring the data controller (e.g. the Council) not to process personal data without complying with the eight data protection principles (see Schedule 1 of the Act).

The Act seeks to give some protection to individuals (known as data subjects in the Act) in respect of essentially three potential dangers:

1. The use and distribution of personal information that is inaccurate, incomplete or irrelevant.
2. The possibility of access to personal information by unauthorised persons.
3. The use of personal information in a context or for a purpose other than that for which the information was collected.

In order to understand the Act, key definitions are explained in broad terms below:

Data – this term encompasses not only information processed or which is intended to be processed by means of automatic devices (such as IT systems), but also information recorded on what the 1998 Act calls relevant filing systems.

Relevant filing systems – these refer to any structured set of information that is organised by reference to individuals or by criteria relating to individuals so that specific details about a particular person may easily be selected from that system.

Personal data – this relates to data from which it is possible to identify a living individual, either directly from that information or from additional information which is in (or likely to come into) the possession of anyone processing that data.

Processing – this term covers almost any conceivable use of data, from the moment the data are obtained, to the method of recording, retrieving, disclosing and destroying the data.

The implications of holding information relating to the condition of potentially polluted property, and persons associated with that property and the pollution, may be significant. Accordingly the Solicitor to the Council and the Council's Corporate Information Officer will be consulted on this matter when appropriate.

6.3 Contents of Formal Contaminated Land Registers

Part 2A requires each enforcing authority to keep a public register. The public register is intended to act as a full and permanent record, open for public inspection, of all regulatory action taken by the enforcing authority in respect of the remediation of contaminated land. Schedule 3 of the Contaminated Land (England) Regulations 2006 provides details of the information required to be entered on the register. The Council's contaminated land register will be maintained at the offices of the Environmental Health Division. Members of the public will be able to view the register free of charge during normal office hours. Written, telephone and electronic requests for copies of documents should be made to the Council's Contaminated Land Officer. An administration charge will be levied.

PART 7 - QUALITY CONTROL, PERFORMANCE INDICATORS AND ARRANGEMENTS FOR REVIEW

In 2005 the Government introduced Best Value Performance Indicators (BVPI) for contaminated land in order to try to assess overall progress in the task of identifying the inherited legacy of contaminated land and ensuring its remediation. These recognised that Part 2A action is not the sole measure of progress (e.g. remediation through the planning process). However, it is likely that the contaminated land BVPI will be withdrawn as a large variety of methodologies have been used by local authorities in the derivation of the BVPI figures making comparison between different local authorities meaningless.

Information on inspection and remediation is also gathered by the Environment Agency from time to time as part of their role in preparing periodic reports of contaminated land ("State of Contaminated Land Report").

7.1 Review

Whilst the Council has a duty to inspect the Borough "from time to time" to identify contaminated land, the frequency of inspection is not prescribed. In practice inspection will be a continuum, balancing a systematic approach with the availability of resources. The Council has a duty to review its inspection strategy on a regular basis and to meet its statutory responsibilities. Two main aspects of review will be built into the strategy:

- triggers for reviewing inspection decisions; and
- review of the inspection strategy.

In addition to the routine review of inspection findings, there will be situations that will trigger reassessment, including:

- change of use of surrounding land (introduction of new receptors);
- the potential for pollutant linkages to become significant or urgent as a result of unplanned events (e.g. flooding, subsidence, spillages, etc) or a change in circumstances;
- identification of localised effects that could be associated with the land;
- responding to new information.

The strategy as a whole will be reviewed on an annual basis and any proposed changes will be reported to Members and incorporated as necessary. Particular matters to be kept under review include:

- the content of the strategy generally;
- priorities for further investigation of potentially contaminated sites;
- the potential for the introduction of new receptors;
- the potential for new contamination;
- progress on voluntary remediation;
- the enforcement process generally and the identification of appropriate persons;
- identification of special sites;
- progress with the implementation; and
- budget requirements for the following year.

PART 8 - PROJECTED COSTS AND TIMETABLE

The Government has identified that to implement this highly complex and demanding piece of legislation will involve local authorities in considerable expenditure. The Defra Contaminated Land Capital Projects Programme is available to assist local authorities in fulfilling their responsibilities under Part 2A, including the costs of site investigations and also remediation in certain cases. However, applications for funding of projects must be accompanied by appropriate supporting evidence to show that it is likely that a contaminant is actually present and that, given the current use of the land, a receptor is present, or is likely to be present. This evidence should be presented in the form of an initial conceptual site model developed from information obtained from desk study, site walkover and, where appropriate, limited surface sampling investigations. The costs of this preliminary work are not eligible for funding, as these are constituted as revenue expenditure.

The Council's Contaminated Land Strategy was first published in 2001. The strategy was produced with the help of consultants at a cost of approximately £1,000. It was envisaged that the initial identification of potentially contaminated sites and their prioritisation for further more detailed inspection would take between one and two years, would cost in the region of £5,000 and would require no additional employment of staff. However, this process actually took over five years to complete, required £12,000 investment in electronic historical land use data and involved payment of £10,000 to consultants for the development of a GIS database for prioritising potentially contaminated sites. Additionally, the Council's first full-time Contaminated Land Officer was appointed in the autumn of 2006 in order to progress the implementation of the strategy, which initially included the completion of the site prioritisation exercise.

The detailed investigation of the prioritised sites (around 700 sites have been identified) commenced in 2007 and is expected to take many years to complete. The first stage of detailed inspection for each site will involve a review of any Council records held (including planning and environmental health files). Should this review identify further work is required, a desk study and site walkover will then be performed. The current annual Contaminated Land budget has provision for some limited surface soil sampling from sites if this proves to be necessary. However, potentially significant sums may be required to perform more detailed site investigations, and possibly, to take enforcement action and to carry out remediation. Should significant site investigations and/or remediation requirements be identified for a specific site, it is anticipated that an application for funding from the Contaminated Land Capital Projects Programme would be made.

It should be noted that the above arrangements relate specifically to the Council's regulatory and enforcement role and not that as landowner. Should land in possession of the Council be identified as contaminated land, then funding of remediation will be considered on a case-by-case basis. In the event of significant remediation costs being involved, it is likely that an application will be made for funding via the Contaminated Land Capital Projects Programme.

PROPOSED TIMETABLE FOR THE IMPLEMENTATION OF PART 2A

Duty	Year
Production and publication of statutory contaminated land strategy	2001
Identification of potentially contaminated sites and prioritisation for further investigation	2001 - 2007
Detailed inspection and assessment of potentially contaminated sites	2007 – 2020?

APPENDICES

APPENDIX 1 - SPECIAL SITES

Once the Council has formally identified land as “contaminated land”, it must also consider whether it falls into the category of a “special site”. For any “special site”, the Environment Agency is the enforcing authority for the purposes of the Part 2A regime. What constitutes a “special site” is specified in the Contaminated Land (England) Regulations 2006. There are four main groups of cases where land can be designated a “special site”.

Water Pollution Cases

- Wholesomeness of drinking water – where contaminated land affects controlled waters used for the supply of drinking water.
- Surface water classification criteria – where controlled waters are being affected so that those waters do not meet relevant surface water criteria.
- Major aquifers – where particularly difficult pollutants are affecting major aquifers.

Industrial Cases

- Land contaminated with waste acid tar.
- Land used for oil refining.
- Land used for the manufacture or processing of explosives.
- Integrated Pollution Control (IPC) sites with Part A prescribed processes.
- Pollution Prevention and Control (PPC) sites with Part A(1) installations.
- Land used as nuclear sites.

Defence Cases

- Land owned or occupied by a defence organisation for naval, military or air force purposes.
- Atomic Weapons Establishment land.
- Land used for the production or disposal of chemical and biological weapons.
- Certain land at Greenwich Hospital.

Radioactivity Cases

- Land contaminated by radioactivity.

Where adjacent or adjoining land to a special site has been affected by the contamination so that it meets the definition of “contaminated land”, this land also forms part of the special site.

APPENDIX 2 - LIST OF CONSULTEES

Dacorum Borough Council (Internal)

- Building Control Manager
- Chief Financial Officer
- Head of Community and Culture
- Head of Planning
- Head of Public Protection
- Head of Street Care
- Senior Manager – Corporate Property and Assets
- Senior Manager – Landscape and Recreation
- Service Development Manager – E-Government
- Solicitor to the Council

Hertfordshire County Council

Town & Parish Councils

- Aldbury Parish Council
- Berkhamsted Town Council
- Bovingdon Parish Council
- Chipperfield Parish Council
- Flamstead Parish Council
- Flaunden Parish Council
- Great Gaddesden Parish Council
- Kings Langley Parish Council
- Little Gaddesden Parish Council
- Markyate Parish Council
- Nash Mills Parish Council
- Nettleden with Potten End Parish Council
- Northchurch Parish Council
- Tring Rural Parish Council
- Tring Town Council
- Wigginton Parish Council

Neighbouring Local Authorities

- Aylesbury Vale District Council
- Chiltern District Council
- St Albans District Council
- South Bedfordshire District Council
- Three Rivers District Council

External Consultees

- Dacorum Environmental Forum
- Department for Environment, Food and Rural Affairs (Defra)
- English Heritage
- English Partnerships
- Environment Agency
- Food Standards Agency
- Health and Safety Executive
- Natural England

APPENDIX 3 - POLLUTION OF CONTROLLED WATERS

For the purposes of Part 2A, controlled waters are defined as in Part 3 (section 104) of the Water Resources Act as:

- Coastal waters including docks
- Relevant territorial waters (usually to three miles)
- Inland fresh waters (relevant rivers, watercourses, lakes, ponds and reservoirs)
- Ground waters

Section 86 of the Water Act 2003 amended the definition for Part 2A purposes so that "ground waters" does not include waters contained in underground strata above the saturation zone (often known as the "unsaturated zone"). This ensures that the regime deals effectively with situations where contaminating substances have left the surface of land, are contained in underground strata, but have not yet fully entered the saturation zone.

Part 2A defines the pollution of controlled waters as:

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

There is currently no power in the Act to enable the Secretary of State to issue guidance on what degree of pollution may constitute pollution of controlled waters. However, section 86 of the Water Act 2003, once fully commenced, will amend the crucial definition of "contaminated land" so that Part 2A will only apply where "significant" pollution of controlled waters is being caused, or there is a "significant" possibility of such pollution being caused. This will ensure that only "significant" water pollution will trigger the regime, thus avoiding land being formally identified as "contaminated land" on the basis of very small amounts of matter entering controlled waters. Section 86 also provides for statutory guidance to be issued by the Secretary of State for the determination of what is "significant" pollution in this context.

Before determining that pollution of controlled waters is being, or is likely to be, caused, the local authority must be satisfied that a substance is continuing to enter controlled waters or is likely to. Land should not be designated as contaminated land where:

- a substance is already present in controlled waters;
- entry into controlled waters of that substance from land has ceased; and
- it is not likely that further entry will take place.

Substances should be regarded as having entered controlled waters where:

- they are dissolved or suspended in those waters; or
- if they are immiscible with water, they have direct contact with those waters on or beneath the surface of the water.

Local authorities will rarely deal with pollution of controlled waters, with most cases being assessed by the Environment Agency. Below is a summary of the issues relating to controlled waters.

Where pollution of groundwater has occurred and the source cannot be identified, or the polluting substances are contained entirely within the body of water (and not in or on the land), then Part 2A does not apply and the matter would be dealt with by the Environment Agency under Part III of the Water Resources Act 1991 (see also section i.8 above).

Where pollution has occurred from land which subsequently affects the wholesomeness of drinking water within the meaning of Part 3 of the Water Industry Act 1991 (defined in the Water Supply (Water Quality) Regulations 2000 and the Private Water Supplies Regulations 1991), then the land becomes a “special site”.

Where pollution has occurred from land which results in surface water failing to meet the criteria in Regulations[#] made under section 82 of the Water Resources Act 1991 (classification of quality of waters), then the land becomes a “special site”.

[#] Regulations include:

- The Surface Water (Dangerous Substances) (Classification) Regulations 1989
- The Bathing Waters (Classification) Regulations 1991
- The Surface Water (Dangerous Substances) (Classification) Regulations 1992
- The Surface Water (River Eco System) (Classification) Regulations 1994
- The Surface Water (Abstraction for Drinking Water) (Classification) Regulations 1996
- The Surface Water (Fish life) (Classification) Regulations 1997
- The Surface Water (Shellfish) (Classification) Regulations 1997
- The Surface Water (Dangerous Substances) (Classification) Regulations 1997
- The Surface Water (Dangerous Substances) (Classification) Regulations 1998

Where the pollution of a specified aquifer* is caused by any of the following contaminants the land becomes a “special site”:

- organohalogen compounds and substances which may form such compounds in the aquatic environment;
- organophophorus compounds;
- organotin compounds;
- substances which possess carcinogenic, mutagenic or teratogenic properties in or via the aquatic environment;
- mercury and its compounds;
- cadmium and its compounds;
- mineral oil and other hydrocarbons;
- cyanides.

* Specified aquifers are those contained in the following rocks:

- Pleistocene Norwich Crag;
- Upper Cretaceous Chalk;
- Lower Cretaceous Sandstones;
- Upper Jurassic Corallian;
- Middle Jurassic Limestones;
- Lower Jurassic Cotteswold Sands;
- Permo-Triassic Sherwood Sandstone Group;
- Upper Permian Magnesian Limestone;

- Lower Permian Penrith Sandstone;
- Lower Permian Collyhurst Sandstone;
- Lower Permian Basal Breccias, Conglomerates and Sandstones;
- Lower Carboniferous Limestones.

This, in effect, leaves the Council with the potential responsibility for the pollution of controlled waters where:

- surface waters are affected but not breaching the Regulations made under section 82 of the Water Resources Act 1991 (see above); and/or
- groundwater (other than in one of the specified aquifers listed above) is contaminated and the water is not used for drinking.

APPENDIX 4 - LIST OF POTENTIALLY CONTAMINATIVE LAND USES

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

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

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

APPENDIX 5 - POWERS OF ENTRY AND THE APPOINTMENT OF "SUITABLE PERSONS"

Section 108 of the Environment Act 1995 gives the Council power to authorise, in writing, "suitable persons" to investigate potentially contaminated land. These powers are extensive and will be considered in detail with the Council's Solicitor prior to any resisted entry being attempted. It should be noted that these powers are not available to the Environment Agency. The powers of an authorised officer include:

- Entering at any reasonable time (or in urgent cases, at any time, if need be by force) any premises / land to make such examination and investigations as necessary.
- Taking samples, photographs, carrying out tests, installing monitoring equipment, etc.

At least seven days notice will be given to residential occupiers and to occupiers of land where heavy plant is to be used. Consent will be obtained to enter from the occupier, or failing that, a warrant obtained under Schedule 18 of the Act.

There are no circumstances in which the Council will use these powers to obtain information about the condition of land, where:

- it can obtain the information from third parties without the need for entering the site; or
- a person offers to provide the information within a reasonable and specified time, and does so.

URGENT ACTION

Urgent action must be authorised where the Council is satisfied that there is imminent danger of serious harm or serious pollution of controlled waters being caused as a result of contaminated land. In such circumstances the procedures identified in the statutory guidance will be followed, which may involve the forced entry into the premises.

The terms "imminent" and "serious" are not defined, therefore the Council will use the normal meaning of these words. There is, however, guidance on what may constitute "seriousness" when assessing the reasonableness of remediation.

The Council will undertake the remediation in urgent cases where it is the enforcing authority if it is of the opinion that the risk would not be mitigated by enforcement action. In the case of a "special site", the Council will determine the land "contaminated land" in accordance with the statutory procedure, and then notify the Environment Agency who will then be responsible for the remediation.

In appropriate cases the Council will seek to recover costs of remediation works it has completed.

All intrusive investigations will be carried out in accordance with appropriate technical procedures to ensure that:

- They are effective.
- They do not cause any unnecessary damage or harm.
- They do not cause pollution of controlled waters.

COMPENSATION

Schedule 18 of the Environment Act 1995 makes clear the circumstances when the Council must pay compensation for loss or damage as a result of the use of these powers. The Head of Public Protection will therefore ensure that only appropriate technical procedures are deployed, the utmost care is taken at all times, and the conditions carefully recorded before, during and after completion of the necessary works.

"SUITABLE PERSONS"

The science and associated technical procedures relating to the investigation and assessment of contaminated land are complex. Knowledge of several specialised disciplines is required together with an ability to interpret significant volumes of data and make a reasoned judgement, often in difficult circumstances.

The consequences of "getting it wrong" could, in many cases, have a major impact on the Borough and on people's lives. On the one hand, an entire area could be unnecessarily blighted and homes rendered worthless overnight, whilst on the other, a generation of children could be left at risk from an unidentified pathogen.

Neither the Act nor the guidance considers what may constitute a "suitable person" for the purposes of the investigation and assessment of contaminated land. There is no designated list of approved consultants. Consultants come from a range of backgrounds including:

- Environmental health
- Other environmental science disciplines
- Surveyors
- Engineers
- Geologists
- Hydrologists
- Soil scientists
- Chemists

Responsibility for determining what land may and may not be declared contaminated, by definition, lies with the Head of Public Protection. They will often need to rely on the advice of appointed "suitable persons". Under these circumstances criteria have been developed to assist in their selection.

PROCEDURE FOR THE APPOINTMENT OF "SUITABLE PERSONS" FOR THE PURPOSES OF PART 2A

There are two prerequisites to commencing the process of appointing suitable external consultants/contractors:

- adequate funding to support the process; and
- a well qualified person "in house" to act in the Client role.

Such a person, as well as having sufficient knowledge and experience to specify the contract, must have sufficient time to monitor it. The Contaminated Land Officer within the Environmental Health Division has been identified for this purpose.

The Client officer will produce a comprehensive, unambiguous but succinct draft specification for each contract which clearly identifies the work to be carried out, its purpose, timetable and client/contractor responsibilities. They will produce a list of appropriate companies, taking care to seek out those most prominent and successful in the field, rather than only those who promote themselves to the Council. Each of these will then be contacted in turn for an informal discussion as to their capability, expertise and experience. Prior to commencing this process the Client officer will produce a selection of questions relevant to the contract to ask each company. This will result in a short list of six or so companies who will be asked to quote/tender for the work based on a final specification.

Once appointed, the Client officer will be responsible for monitoring the contract to ensure that:

- the contractors are kept fully aware of their responsibilities at all times;
- quality control requirements are met;
- amendments are quickly agreed and documented;
- the timetable is strictly adhered to; and
- the aim of the contract is achieved.

APPENDIX 6 – RISK PRIORITISATION METHODOLOGY FOR SITES OF POTENTIALLY CONTAMINATED LAND

PG01 Risk Prioritisation Methodology for sites of potentially contaminated land

Purpose: **A preliminary procedure for identifying broad areas and sites of geographical coincidence or close proximity between sources, pathways and receptors of contamination, and prioritising these identified sites for more detailed assessment using a risk scoring system.**

Description: The local authority must identify the existence of all three elements of a pollutant linkage to determine whether any land appears to be contaminated land, as defined in section 78A(2) of EPA 1990. To fulfil this requirement, detailed risk assessment will be necessary, but to first identify the most serious and pressing problems, a preliminary screening tool is required to identify and prioritise sites where a coincidence exists between a source of contamination, a pathway and a receptor.

Procedure PG01 has been developed, using several references, as a preliminary (Phase 1) procedure for prioritising sites where potential pollutant linkages exist, for further phases of investigation work identified in Dacorum Borough Council's Contaminated Land Strategy. The ranked order will place sites according to their potential, but not actual, risk, since the assignment of scores is empirical only. Site rankings are not absolute, although pilot tests have attempted to ensure that the worst types of sites are accentuated upwards and vice versa. Following a phased approach aims to meet the requirement for a rational, ordered and efficient approach to inspection, as stated in B.9 of DETR Circular 02/2000.

Steps 1 to 5 of PG01 are followed to prioritise potential sites based on existing information. Step 6 suggests reference methods to identify new sites, and by repeating Steps 2 to 5, each new site is processed to assign and rank its risk score. The output will be a continually updated list of sites in ranked order of priority, for further, more detailed assessment (Phase 2) in line with the aims of Dacorum Borough Council's Contaminated Land Strategy.

Step	Inputs	Action	Output
1	Files, maps, plans, datasets, and/or GIS	Organise information sources and decide on the order of assessing files (alphabetical, wards, etc)	Rational plan of work which will determine method of data storage
2	Files, maps, plans, datasets, and/or GIS	Process site files through each of the Risk Scoring Tables, evaluate information and assign scores.	Sequence of numerical scores for each site on a scoresheet
3	Sequence of scores for each site	Create suitable database, spreadsheet or table, & record scores.	Auditable record of scores (decisions)
4	Sequence of scores for each site	Calculate total score for each site using IT or manually; record totals.	Total score for each site
5	Total scores for all sites	Use IT facilities or manual method to rank the total scores	List of sites in ranked order of priority for further assessment
6	Historical maps, archives, Industry Profiles, CLR3	Identify potential sites from archives, then repeat Steps 2 to 5.	Continually updated list of sites in ranked order of priority

References: Listed on Page 58

Scope of methodology

On undertaking the preliminary prioritisation, the aim is to start with the files retained by the team or unit that has responsibility for contaminated land, recognising that other files may exist elsewhere within the authority. Such new site information will need to be gathered in a systematic way and processed and scored in conjunction with Step 6, which entails the identification of new sites by the process of scrutiny of historical maps, archives and records. Step 6 would need to be undertaken as a second phase, within the timeframe indicated by Dacorum Borough Council's Contaminated Land Strategy and using published references such as CLR 3: *Documentary research on industrial sites* (RPS Ltd., 1994, for DoE).

Method

1. Start with internal files and records relating to contaminated land. Decide on how to tackle going through each file and record, using the simplest system. Options include alphabetical street name or site name paper files, or ward by ward files, and so on, depending on office filing structure.

2. Decide how to record the risk scores on a scoresheet (page 13), spreadsheet, or database.

3. Have available the reference maps, plans and datasets, as listed before each table.

4. Consider sources of contamination first by attaching scores to the inherent hazards on a site. Instances of absent or incomplete data are accommodated by a mid-range default value within each table, which is intended to ensure that such sites will not defer to the bottom, nor to the top of the ranking list, although the use of defaults is minimised by use of reference data. Work through Table 1.01, the highest scores are applied to those factors about a site that would give rise to the highest hazards. Then consider, in Table 2.01, evidence of any circumstances that may mitigate risks.

5. The remaining risk scoring tables have been devised for receptors and pathways. These tables have been designed for simplicity and ease of use, aiming to briefly characterise the conditions at the site and on adjacent land. Site visits could confirm or support most desk assessments, but would slow down the processing of sites, and are perhaps more appropriate to a later phase of investigation when considering specific sites in more detail.

6. Once all scores for the site are obtained, they are summed up following the protocol below and using the scoresheet on page 13. Weightings have been applied so as to ensure that harm to human health is always a higher priority than risks to other types of receptor, and uses cascaded scores with increased distance of receptors from site. During later phases, identified receptors influenced by more than one source site, will need to be noted spatially (map or GIS) and prioritised further.

7. The summing protocol is as follows: *(Example: S2.01 = score from Table 2.01)*

GRAND TOTAL = (S2.01 * S1.01) * (S3.01 + S3.02 + S4.01 + S5.01 + S6.01 + S6.02 + S6.03 + S7.01 + S8.01)

8. Step 5 requires that the risk scores for each site be ranked into order, highest first. A suitable calculating system will be required, via spreadsheet or database.

SOURCES

1: LAND USE ASSESSMENT

The assessor will need to take into account the worst case land use evident on the land under assessment, as determined from present day and historical maps, aerial photographs and other substantiated information sources. Other files and databases may exist elsewhere within the authority, but in order to quickly produce a prioritised list of sites, and not get delayed in waiting for responses from its retainers, such additional information will need to be considered during a second phase of work.

Note that present day boundaries may not conform to past contaminative land use boundaries, and so the assessor will need to decide which boundary they will use in classifying land. Using present day boundaries fits well with comparisons against Development Plans (UDP) and current premises databases used for other inspection and service request work undertaken by Council departments.

However, historical industrial premises or landfills may now be built over and occupied by several different premises with different landowners and possibly with different sensitivities of receptor. Further, contaminative uses may have overlapped on a site over time, and similarly, development of large plots of land may have been undertaken in a piecemeal manner.

The variety of possible scenarios will complicate the picture of resultant ground conditions on site for which there will be no straightforward single approach, so the assessor will need to err on the side of caution, and to be as clear as possible in recording their decisions.

Table 1.01 Risk-based classification of predominant land use

Where to find the information:

- Present day maps, historical maps and other documentary sources, following CLR No. 3 (RPS Consultants, 1994).
- Aerial photographs: present day and historical.
- Supporting information in the DoE Industry Profiles (DoE, 1996).

Also be aware of:

- Discontinued and subsidiary uses.
- Pollution Control officers' notes, records of anecdotal evidence or information from the public, newspaper articles and so on.
- Major pollution incidents, fly tipping and other illegal activities such as cable burning.

Table 1.01 – PREDOMINANT LAND USE CLASSIFICATION	**Land-mark usage codes**	**Perceived risk category**	**RISK SCORE**
1 Asbestos manufacture, abrasives and related products.	ML	**HIGH**	**50**
2 Chemical works (organic & inorganic) Manufacture of cosmetics, bleaches, manure, fertilisers & pesticides, detergents, oil, organic based pharmaceuticals, other chemical products incl. glues, gelatins, recording tapes, photographic film. Dyes, pigments. Paint, varnishes, printing inks, mastics, sealants and creosote.	CH DY PA		
3 Radioactive materials processing and disposal.	N/A		
4 Gas works, coke works, coal carbonisation and similar sites. Production of gas from coal, lignite, oil or other carbonaceous material other than waste.	GA		
5 Refuse and waste disposal sites, including hazardous wastes, incinerators, sanitary depots, drum and tank cleaning, solvent recovery.	RF		
6 Oil refining and bulk storage of oil and petrol. Gasometers which are not gas works.	LL		
• **LANDFILL SITE – KNOWN TO BE ACTIVELY PRODUCING GAS**	LA		
7 Abbatoirs and animal slaughtering; Animal products processing into animal by-products e.g. soap, candles & bone works. Tannery, leather goods and skinnery.	AB AN TY	**HIGH**	**40**
8 Engineering (heavy and general). Manufacturing of distribution, telecoms, medical, navigation, metering and lighting. Manufacture & repair incl. Ships, aerospace, rail engines and rolling stock. Heavy products manufacture - rolling and drawing of iron, steel & ferroalloys – includes tube works. Manufacturing of electrical and electronic domestic appliances. Manufacture of cars, lorries, buses, motorcycles, bicycles. Manufacturing of engines, buildings & general industrial machinery, including nuts & bolts, gas fittings, wire rope/cable and ordnance accessories.	HE HT HM HS LT MA		
9 Metal smelting and refining. Includes furnaces and forges, electroplating, galvanising and anodising. Ferro and aluminium alloys-manganese works, slag works.	FY PL		
10 Civilian manufacture & storage of weapons, ammunition, explosives & rockets including ordnance. All military establishments including firing ranges (if not specified as civilian.	MG MD		
11 Recycling of metal waste incl. Scrapyards and car breakers.	SP		
12 Natural and synthetic rubber products including tyres and rubber products. Tar bitumen, linoleum, vinyl and asphalt works.	RB		
13 Paper, card etc. products (packaging). Pulp, paper and cardboard manufacture.	PD PR		
• **UNDERGROUND STORAGE TANKS ON SITE**	UST		
• **LANDFILL SITE – STRONGLY SUSPECTED TO BE PRODUCING GAS, based on available information on age and content of fill.** • Manufacture of clay bricks & tiles, including associated activities e.g. brickfields, also solitary kilns (other than lime kilns). • Extraction of alluvial sediments (sand, stone, clay, peat, marl and gravel) • Quarrying of all stone (including limestone, gypsum, chalk and slate) and ores, includes all opencast mining and slant workings – also slate/slab works, flint works, flint works, stone yards.	LB BK PT QU		

Table 1.01 – PREDOMINANT LAND USE CLASSIFICATION	**Land-mark usage codes**	**Perceived risk category**	**RISK SCORE**
14 Airports and similar (Air & space transport).	AP	**MEDIUM**	**30**
15 Concrete, ceramics, cement and plaster works. Concrete, cement, lime & plaster products, also including solitary lime kilns. Tableware & other ceramics.	 CE CR		
16 Dry-cleaning & laundries (larger scale, not usually "High Street")	LY		
17 Flat glass products manufacture	GL		
18 Photographic processing			
19 Coal storage/depot. Coal mining (and the manufacturing of coke and charcoal) – areas include associated surface activities in area, & coal mine shafts. Areas of mining and single or groups of shafts other than coal, or not specified – including levels, adits, etc also areas associated with mineral railways.	CC CY MN		
20 Electricity generation and distribution, including large transfer stations. Power stations (excluding nuclear power stations). Batteries, accumulators, primary cells, electrical motors, generators & transformers.	PW BT		
21 Printing of newspaper. Printing works other than news print and bookbinding (usually excludes "High Street" printers)	NW PN		
22 Railway land, including yards and tracks. (Railway tracks – up to 4 tracks wide or 30m)	RW RL		
23 Sale of automotive fuel. Road vehicle fuelling, transport depots, road haulage and commercial vehicle fuelling, local authority yards and depots. Repair and sale of cars & bikes, parts and motorway services. Transport depots – road haulage, corporation yards.	FU GG DP		
24 Sewage treatment works. Sewerage, septic tanks, effluent – including all filter beds.	SW		
25 Textiles manufacturing -Natural and man made textile manufacture and products including hemp rope and linoleum.	TX		
26 Timber treatment works and manufacturing. Sawmills, planning & impregnation (i.e. treatment of timber), wood products, telegraph works, timber yard e.g. veneer.	WD		
27 Computers, office machinery, business/industrial electrical goods. Insulated wire & cable for electrical/tel purposes.	LE WR		
• **LANDFILL SITE – GAS PRODUCTION IS POSSIBLE, based on historical map evidence of infilled quarry, water body or other void.**	LC		
• **DEFAULT** setting where information is absent about a site or landfill.			
28 Plastic products manufacture, moulding and extrusion; building materials; fibre glass, fibre glass resins and products. Manufacturing of Tar, Bitumen & Asphalt.	PS	**MEDIUM / LOW**	**20**
29 Dockyards and wharves. Boat building, wharf and quays, cargo/transport handling facilities – marine or inland.	DK		
30 Brewing and malting. Spirit distilling & compounding. Major food processing, including large dairies. Exceptionally large scale corn/flour milling.	BW DL FD		
31 Constructional steelwork, metal structures & products & building materials.	MP		
32 Cemetery, modern burial ground and grave yard.	GV		
33 All hospitals including sanatoriums but not lunatic asylums.	HL		
• **LANDFILL SITE – GAS PRODUCTION UNLIKELY, based on available information on age and content of fill**	LD		
None of the above uses noted – enter a suitable score based on other research or knowledge about the land uses on site. **DEFAULT = 30, MEDIUM RISK** **or = 1, LOW RISK**		**Enter** **Default/ LOW**	**Enter** **30** **1**

References: Syms, 1998; DoE Industry Profiles 1996; historical land use classification used by Landmark Limited in their land use database (comprising digitised land uses from 1:10,360 and 1:10,000 scale maps).

Sum Score: 1.01 =

2: RISK EVIDENCE

Table 2.01 – Risk evidence

Where to find the information:

- Site investigation reports, land condition records, completion reports, Waste Management Licence surrender documents, planning files (development control) and other supporting information on file, where it is readily available.

Table 2.01 – Risk evidence	**Risk score**
CONTROLLED RISKS – Satisfactory remediation undertaken on site	0.1
Site file exists, but contains satisfactory evidence that site is not a source	0.2
Remediation undertaken on site – 1990 or later	0.4
Remediation undertaken on site – pre-1990	0.6
NO EVIDENCE OF CONTROL OF RISKS – No information available either way (Default setting)	1.0

Sum Score: 2.01 =

PATHWAYS

3: GEOLOGY

Table 3.01 – Solid geology

Where to find the information:

- Geological Survey 1:50,000 scale map (or better). Ordnance Survey.
- Digitised geological information.

Table 3.01 – Solid Geology	**Risk score**
LOW RISK – e.g. Low permeability solid rock	1
MEDIUM / LOW RISK	2
MEDIUM RISK	3
MEDIUM / HIGH RISK	4
HIGH RISK – e.g. Permeable, fractured or fissured rock. By default where receptor situated on site.	5
No data – default = 5	Enter

Table 3.02 – Drift geology and made ground

Where to find the information:
- Geological Survey 1:63,360 scale (or better). Ordnance Survey.
- Digitised geological maps.

Table 3.02 – Drift Geology	**Risk score**
LOW RISK – e.g. Predominantly deep clay across site (low permeability)	1
MEDIUM / LOW RISK	2
MEDIUM RISK	3
MEDIUM / HIGH RISK	4
HIGH RISK – e.g. no drift present, or Made ground, or Natural sand, peat, gravels (high permeability) By default where receptor situated on site itself.	5
No data – default = 5	Enter

Sum Score: 3.01 + 3.02 =

4: MINES, DRAINS AND SERVICES

Table 4.01 – Mining, drainage and services on or near to site

Where to find the information:
- Site investigation reports, planning files (development control), and other supporting information.
- Present day and historical maps.
- Aerial photographs: present day and historical.

Table 4.01 – Mining, drainage and services	**Risk score**
No drainage, services (including culverted rivers), wells or suspected mining/quarrying activities across site.	1
The presence of drainage, services (including culverted rivers), wells or suspected mining/quarrying activities across site is **unlikely** given the historical use of the site.	2
	3
The presence of drainage, services (including culverted rivers), wells or suspected mining/quarrying activities across site is **likely** given the historical use of the site.	4
HIGH RISK – e.g. no drift present, or Made ground, or Natural sand, peat, gravels (high permeability) By default where receptor situated on site itself.	5
No data – default = 3?	Enter

Sum Score: 4.01 =

5: ACCESSIBILITY TO SITE SURFACE

Table 5.01 – Accessibility to site surface

There are two main considerations here. Firstly, the likelihood of access to, and direct human contact with, any contaminants on the site surface or within the upper soil strata that may be handled during sport, recreation, gardening and so on. Secondly, and of a lower order of priority than health risks, a soft surface may be more susceptible to rainwater infiltration and leachate formation (water pollution risk).

Where to find the information:

- Aerial photographs.

Table 5.01 – Accessibility to site surface	**Risk score**
Concrete hardstands, car parking or derelict buildings on site.	1
Concrete hardstands, car parking and buildings that are occupied. Or: Gravel, bare soil or other soft surface areas, where public access is restricted by secure perimeter fencing (ideally signposted).	2
Gravel, bare soil or other soft surface areas: The land may be in partial or full use, but site occupiers are probably *seldom present* in those areas. Public access is generally restricted by some form of fencing, possibly signposted.	3
Gravel, bare soil or other soft surface areas: Access onto private land is inadequately restricted (incomplete or broken fencing). Public open space, unrestricted access.	6
Gravel, bare soil or other soft surface areas: Part or all of the land is fully in use and site occupiers are probably *often or normally present* in those areas.	10
No data – default = 3?	Enter

Sum Score: 5.01 =

RECEPTORS

6: LAND OCCUPATION TYPES

PEOPLE

Table 6.01 - Present day occupation of site and adjacent land

Where to find the information:

- Present day maps, also UDP.
- Aerial photographs.
- Environmental Health, Planning, Leisure and Housing Department records (possibly also Housing Associations and related).

Table 6.01 – People: Present day occupation of site and adjacent land	**Risk score**
50-250m Outdoor industrial or commercial yards	5
0-50m Outdoor industrial or commercial yards ***50-250m*** Industrial or factory buildings, well-vented or open sided	10
On site Outdoor industrial or commercial yards ***0-50m*** Industrial or factory buildings, well-vented or open sided	20
On site Industrial or factory buildings, well-vented or open sided	40
50-250m Office, leisure, commercial/retail buildings (LFG risks) Public open space for recreational use (c/l risks) Agricultural land and buildings (c/l and LFG risks)	50
50-250m Schools, nurseries, hospitals, institutional buildings (LFG risks)	55
50-250m Managed housing with gardens (c/l and LFG risks) Managed housing no gardens (LFG risks) Private domestic dwellings with gardens (c/l and LFG risks) Private domestic dwellings no gardens (LFG risks) Allotments (c/l risks)	60
0-50m Office, leisure, commercial/retail buildings (LFG risks) Public open space for recreational use (c/l risks) Agricultural land and buildings (c/l and LFG risks)	70
On site Office, leisure, commercial/retail buildings (LFG risks) Public open space for recreational use (c/l risks) Agricultural land and buildings (c/l and LFG risks)	(Critical point) 80
0-50m Schools, nurseries, hospitals, institutional buildings (LFG risks)	80
0-50m Managed housing with gardens (c/l and LFG risks) Managed housing no gardens (LFG risks) Private domestic dwellings with gardens (c/l and LFG risks) Private domestic dwellings no gardens (LFG risks) Allotments (c/l risks)	90

Table 6.01 – People: Present day occupation of site and adjacent land	Risk score
On site Schools, nurseries, hospitals, institutional buildings (LFG risks)	170
On site Managed housing with gardens (c/l and LFG risks) Managed housing no gardens (LFG risks) Private domestic dwellings with gardens (c/l and LFG risks) Private domestic dwellings no gardens (LFG risks) Allotments (c/l risks)	190
None of the above uses noted – enter a suitable score based on other information about the occupation of the site. **For LOW RISK (e.g. derelict sites), enter 10.**	Enter

NATURAL ENVIRONMENT

Table 6.02 - Present day occupation of site and adjacent land

Where to find the information:

- Present day maps, also UDP.
- Aerial photographs.
- Planning Department, Natural England.

Table 6.02 – Accessibility to site surface	Risk score
No designations	1
50-250m Sites of Biological Importance (SBI) designated by the Local Authority	2
50-250m Statutorily Designated Sites (e.g. SSSI)	3
0-50m Sites of Biological Importance (SBI) designated by the Local Authority	10
On-site Sites of Biological Importance (SBI) designated by the Local Authority	15
0-50m Statutorily Designated Sites (e.g. SSSI)	20
On-site Statutorily Designated Sites (e.g. SSSI)	25
Uncertainty – seek specialised advice (Natural England)	Enter

PROPERTY & HERITAGE SITES

Table 6.03 - Present day occupation on site

Where to find the information:
- Present day maps, also UDP.
- Aerial photographs.
- Planning Department, English Heritage, Defra, Food Standards Agency (FSA).

Table 6.03 – Accessibility to site surface	**Risk score**
No designation	1
Sites within conservation areas Other sites and monuments recorded by the local authority Wild animals that are the subject of shooting or fishing rights	4
Ancient monuments, archaeological sites, listed buildings (all categories) Owned or domesticated animals	6
Produce grown domestically, or on allotments, for consumption Crops, including timber	8
Uncertainty – seek specialised advice (English Heritage, Defra, FSA)	Enter

Sum Score: 6.01 + 6.02 + 6.03 =

7: SURFACE WATER

Table 7.01 – Surface water courses and abstractions on site and adjacent land

The following table has been devised to quickly obtain scores for surface water courses (rivers) using readily available datasets, which in practice, tends to be the General Quality Assessment classes A (Good) to F (Bad). However, note the paper describing the current framework for surface water classification (issued by EA February 2001) and bear in mind the following advice provided by the Environment Agency:

Prioritising surface waters based on classification A-C and D-F is not really appropriate, as these are the GQA classes, which are just a description of the current surface water quality. It would be more beneficial to consider the River Quality Objective set using the River Ecosystem classes and to take account of any uses/designations such as salmonid/coarse fisheries, bathing waters (few inland ones actually designated) and type of abstraction as an indicator of sensitivity.

Where to find the information:
- Present day maps and aerial photographs.
- Digitised Ordnance Survey surface water dataset.
- Environment Agency water abstractions list - digitised dataset.
- River quality classes (GQA classes: A - Good to F - Bad) via Environment Agency website.
- River Ecosystem (RE) River Quality Objectives (RQO) - short term and long term - via Environment Agency.

Table 7.01 – Surface water courses on site and adjacent land	Risk score
No surface waters. No surface water abstractions for any purpose within 1,000 metres of the site.	1
50-250m River with Classification D, E or F. (Long term RQO = RE 3 or RE 4) Pond, lake, reservoir	5
50-250m River with Classification A, B or C. (Long term RQO = RE 2 or better) Any surface water abstraction between 500 & 1000m downstream from the site	6
0-50m River with Classification D, E or F. (Long term RQO = RE 3 or RE 4) Pond, lake, reservoir	13
0-50m River with Classification A, B or C. (Long term RQO = RE 2 or better) Any surface water abstraction for drinking water less than 500 m downstream from the site.	16
On-site River with Classification D, E or F. (Long term RQO = RE 3 or RE 4) Pond, lake, reservoir	22
On-site River with Classification A, B or C. (Long term RQO = RE 2 or better) Any surface water abstraction from the site or immediately adjacent to the site.	25
Uncertainty – seek specialised advice from Environment Agency	Enter

Sum Score: 7.01 =

8: GROUNDWATER

Table 8.01 – Ground water vulnerability and Source Protection Zones

Where to find the information:

- Groundwater Vulnerability Map 1:100,000 scale.
- Groundwater Source Protection Zones (SPZ) via Environment Agency website

Table 8.01 – Surface water courses on site and adjacent land	Risk score
Non-aquifer	1
Minor aquifer – low risk	5
Major aquifer – low risk Minor aquifer – medium risk Zone III (Source Catchment)	8
Zone II (Outer Source Protection) Major aquifer – medium risk Minor aquifer – high risk	15
Zone I (Inner Source Protection) Major aquifer – high risk	25
Uncertainty – seek specialised advice from Environment Agency	Enter

Sum Score: 8.01 =

SCORE SHEET

Scores for the site are assigned by working through the risk scoring tables. They can be recorded on the scoresheet below, and scores are summed following the given protocol. The resultant total scores can then be sorted into ranking order, highest first, to produce a prioritised list of sites.

	RISK SCORING TABLES		SCORE
SOURCES	**1**	**Land Use Assessment and Classification**	
	1.01	Risk-based classification of predominant land use	@S1.01
	2	**Risk Evidence**	
	2.01	Risk evidence	@S2.01
		SUB-TOTAL 1	
PATHWAYS	**3**	**Geology**	
	3.01	Solid geology	@S3.01
	3.02	Drift geology	@S3.02
	4	**Mines, Drains and Services**	
	4.01	Mining, drainage and services on or near site	@S4.01
	5	**Accessibility to Site Surface**	
	5.01	Direct human contact and access	@S5.01
		SUB-TOTAL 2	
RECEPTORS	**6**	**Land Occupation Types**	
	6.01	People: present day occupation of site and adjacent land	@S6.01
	6.02	Natural environment: present day occupation of site and adjacent land	@S6.02
	6.03	Heritage sites: present day occupation of site	@S6.03
	7	**Surface Water**	
	7.01	Surface water courses and abstractions on site and adjacent land	@S7.01
	8	**Groundwater**	
	8.01	Groundwater vulnerability and Source Protection Zones	@S8.01
		SUB-TOTAL 3	
	GRAND TOTAL =	(S2.01 * S1.01) * (S3.01 + S3.02 + S4.01 + S5.01 + S6.01 + S6.02 + S6.03 + S7.01 + S8.01)	**GRAND TOTAL**

REFERENCES

Cairney, T. 1995. The re-use of contaminated land – A handbook of risk assessment, Chichester, John Wiley & Sons.

DETR: Department of the Environment, Transport and the Regions. 2000a. *Circular 02/2000: Contaminated Land*. London. The Stationery Office.

DETR: Department of the Environment, Transport and the Regions. 2000b. *Contaminated land inspection strategies – DRAFT Technical advice for Local Authorities.* London. Department of the Environment, Transport and the Regions.

DoE: Department of the Environment. 1991. *Waste Management Paper No. 27, Landfill Gas*. 2nd edition. London. HMSO (now The Stationery Office).

DoE: Department of the Environment. 1996. *DoE Industry Profiles*. 47 volumes, sponsored by Department of the Environment. London. HMSO (now The Stationery Office).

DoE: Department of the Environment. 1996. *DoE Industry Profiles*. 47 volumes, sponsored by Department of the Environment. London. HMSO (now The Stationery Office).

Environment Agency. 1998. *Policy and Practice for the Protection of Groundwater*. 2nd ed. London. The Stationery Office.

Environment Agency. 2000. *Memorandum of Understanding: Environment Agency and Local Government Association. Annexe C. Protocol for land contamination (Proposed revision dated 3/3/2000).* The Environment Agency.

Hooker PJ, Ellison RA, Marchant AP, Shaw RP, Leader RU, Newsham R, Brown MJ. 2000. Some guidance on the use of digital environmental data. British Geological Survey Technical Report WE/99/14. British Geological Survey, Keyworth, Nottingham.

ICRCL: Interdepartmental Committee on the Redevelopment of Contaminated Land. 1987. *Guidance on the assessment and redevelopment of contaminated land.* 2nd edition. London. Department of the Environment (now under The Stationery Office).

MJ Carter Associates. 1995. Contaminated Land Research Report No. 6: *Prioritisation and categorisation procedure for sites which may be contaminated*. London. Department of the Environment (now under The Stationery Office).

NRA: National Rivers Authority. 1991. *Regional Appendix: North West Region*. National Rivers Authority (now Environment Agency).

RPS Consultants Limited. 1994. Contaminated Land Research Report No. 3: *Documentary research on industrial sites*. London. Department of the Environment (now under The Stationery Office).

Syms, P. 1998. *Desk Reference Guide to potentially contaminative land uses*. London. ISVA in association with RICS and CIEH.

Tait, J. 2000. *Geographical Information System, East Riding of Yorkshire Council*. Manchester Area Pollution Advisory Council: Contaminated Land Workshop, 4th October 2000.