Woking Borough Council

CONTAMINATED LAND INSPECTION STRATEGY

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Woking Borough Council Contaminated Land Inspection Strategy

SUMMARY

The Contaminated Land (England) Regulations 2000 introduced a new statutory regime for the identification and remediation of contaminated land. The regime is designed to deal with the most polluted sites and the land would only be considered statutorily contaminated if it is causing or likely to cause significant harm to human health or the environment. Under the regulations local authorities are required to produce an inspection strategy, stating their approach to the determination of contaminated land.

This draft strategy for the Woking Borough Council area identifies the local arrangements for fulfilling this new duty. A seven stage risk based inspection programme is proposed running from 2001 –2006.

The duties of the Council for enforcing the Regulations with regard to the remediation of contaminated land and the maintenance of a public register of statutory contaminated land are described. The arrangements for liaising with the Environment Agency, who also have enforcement responsibilities for certain special sites are also outlined.

The Council has consulted widely on the draft strategy as views and comments were sought on the content and style which has resulted in a number of changes being made to produce this final version.

Contents

INTRODUCTION

The Contaminated Land (England) Regulations 2000 made under Part IIA of the Environmental Protection Act 1990 introduced the first comprehensive legal framework for contaminated land. This new framework places a duty on every local authority to inspect its area for contaminated land.

Department of the Environment, Transport and the Regions (DETR) Circular 02/2000 'Contaminated land' gives guidance to local authorities and requires that the approach they adopt in dealing with their duties is:

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

This strategy sets out how Woking Borough Council will fulfil these duties and has been drafted in accordance with the DETR 'Technical Guidance Note on Inspection Strategies'.

Woking Borough Council Corporate Aims

The following Vision Statement prefaces the Corporate Plan:

> ***Working for the community Woking Borough Council will:***
>
> - ***Give best value in all services that we do and deliver quality services.***
> - ***Create a safe, clean and pleasant Borough of which we can be proud.***
> - ***Adopt sustainable economic, social and environmental policies.***
> - ***Treat everyone with fairness and dignity.***

The Key Aim of the Council's Local Plan against which planning applications are determined is:

> ***'The Council will provide for new development which is required to meet the needs of residents visitors and those working in the Borough up to the year 2006. In achieving this the Council will work towards the principal that development shall be sustainable.'***

The overall aims and objectives of the contaminated land inspection strategy complements these corporate objectives as detailed below.

Aims

1	To identify unacceptable risks to human health.
2	To identify unacceptable risks to controlled waters.
3	To protect designated ecosystems.
4	To prevent damage to property.
5	To prevent any further contamination of land.
6	To encourage voluntary remediation of contaminated land.
7	To encourage re-use of brownfield land.

Objectives

1	To undertake an inspection programme in the Borough of potentially contaminated sites to identify unacceptable risks to human, controlled waters, ecosystems and property receptors.
2	To ensure compliance and enforcement of the new statutory requirements of the Environmental Protection Act 1990.
3	To encourage market confidence in the redevelopment of brownfield sites in the Borough and thus promote the recycling of brownfield sites rather than greenfield sites.
4	To address any liability issues associated with the Council's existing land holdings and avoid any new liability associated with land acquisitions.
5	To ensure that procedures are in place for the open provision of information to the public, developers & property surveyors etc.
6	To ensure where redevelopment of sites take place in Woking Borough Council that the process deals effectively with any land contamination.

OUTLINE OF THE STATUTORY CONTAMINATED LAND REGIME

Role of Local Authorities

Local authorities have been given the primary regulatory role with regard to contaminated land under Part IIA of the Environmental Protection Act 1990 as they have historically had responsibility for dealing with any statutory nuisance caused by land contamination and are also the lead authorities on land use planning.

There are 12 key responsibilities for local authorities under Part IIA:

1. Prepare an inspection strategy, setting out how the Council intends to inspect its area for the purpose of identifying contaminated land, by July 2001.
2. Determine whether particular areas of land are contaminated in accordance with the Secretary of States guidance.
3. Decide whether any contaminated land is required to be designated as a special site.
4. Undertake immediate remediation action where there is an imminent danger of serious harm.
5. Decide on the applicability of other regimes and whether they provide a more appropriate means of control than Part IIA.
6. Identify and notify those who may need to take action in relation to contaminated land or a special site.
7. Determine who may be liable to bear responsibility for remediation.
8. Consult with the relevant parties on what remediation action is required and how it is to be carried out.
9. Serve a remediation notice unless restrictions apply.
10. Monitor the effectiveness of any remediation carried out.
11. Maintain a public register containing details of regulatory action taken under Part IIA and through other means.
12. Report progress under Part IIA to the Environment Agency to allow preparation of a National Report on Contaminated Land.

The Role of the Environment Agency

The Environment Agency (EA) has a secondary regulatory role in assisting local authorities.

The main duties of the EA are:

1. To provide site-specific guidance to local authorities.
2. To act as the regulator for any contaminated land categorised as a 'special site'. (These are the more complex and dangerous sites, including those where drinking water may be affected.)
3. To publish a National Report on contaminated land.
4. To make arrangements for carrying out technical research and to act as a centre of expertise.
5. To assist local authorities in identifying contaminated land, particularly in cases involving the pollution of controlled waters.

Definition of Contaminated Land

Contaminated Land is defined for the purposes of Part IIA 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'***
>
> ***Environmental Protection Act 1990 (Section 78A(2))***

In determining significance and likelihood the regulatory authority is required to act in accordance with guidance issued by the Secretary of State.

This statutory definition is narrower and more specific than some of the wider definitions of contaminated land commonly used in the official literature and guidance. For the purposes of this document land will be referred to as 'potentially contaminated land' where no formal determination under Part IIA has been undertaken and the uppercase Contaminated Land will refer to land meeting the statutory definition.

Pollutant Linkages

For a site to meet the definition of Contaminated Land a pollutant linkage must be established. A pollutant linkage consists of a three part relationship comprising:

Pollutant Linkage = Source + Pathway + Receptor

Source *– A substance or substances in, on or under the ground that could affect health or the environment – such as heavy metals in soil. Some key contaminants associated with industrial land uses and their possible effects are presented in Table 1and 2.*

Pathway *– A means by which a contaminant can come out of the ground and into contact with the receptor, such as children eating soil containing heavy metals. The presence of pathways on a particular site is often related to the soil type and geological/hydrogeological features present in, on or under the ground.*

Receptor *– People, controlled water or property that could be affected if exposed to the contaminants. The receptors recognised as being potentially sensitive are presented in Table 2.*

The identification of each of the three elements – **source, pathway** or **receptor** is linked to the identification of the others. A pathway can only be identified if it is capable of exposing an identified receptor to an identified contaminant. That particular contaminant should likewise be capable of harming or, in the case of controlled waters, be capable of polluting that particular receptor.

A pollutant linkage relates to a single contaminant and therefore there may be more than one pollutant linkage on a piece of land. Any pollutant linkage that forms the basis that the land is contaminated is a '***significant pollutant linkage***.'

Table 1– Contaminants and Associated Effects.

Nature of Contaminant	*Potential Hazard*
'Toxic heavy metals' - e.g. cadmium, lead, arsenic & mercury.	*Potential to restrict growth of plants or completely prevent it.* *Potential to contaminate controlled waters.* *Potentially harmful to humans if ingested (either by direct or indirect routes).*
Stable metals - e.g. copper, nickel & zinc.	*Potential to restrict growth of plants or prevent it. Also called phytotoxicity.* *Potentially harmful to humans if ingested.*
Combustible substances - e.g., coal and coke dust.	*Potential for surface and underground fires. Bonfires on the surface may lead to underground fires, which are difficult to extinguish.*
Flammable gases - e.g. methane – produced by degradation of buried organic material in landfills.	*Potential for build-up of explosive gas beneath buildings.* *May lead to asphyxiation of occupants or explosion beneath or within building.*
Asphyxiant gases & toxic gases e.g. carbon dioxide & carbon monoxide produced by degradation of organic material.	*May lead to asphyxiation of occupants.*
Aggressive substances - e.g. sulphates, chlorides, acids & alkalis.	*Direct chemical attack on building materials most notably concrete foundations or masonry retaining walls.*
Phenols & phenolic compounds	*Risk of contamination of water supply by deterioration of service mains on site (leading to subsequent risk of direct ingestion)* *Potential to contaminate controlled waters.* *Potentially harmful, to humans if ingested or absorbed through direct skin contact.*
Oily & tarry substances – e.g. petrol, diesel & oils.	*Risk of contamination or water supply by deterioration of service mains on site. (leading to subsequent risk of ingestion)* *Potential to contaminate controlled waters.* *Potentially harmful, to humans if ingested or absorbed through direct skin contact.*
Leachates from landfills	*Risk of contamination of groundwater and surfacewater*
Asbestos	*Hazardous if dust is inhaled may cause respiratory conditions.*

This table is included as a guide to the nature of contamination and shows examples of only some of the associated potential hazards and should not be relied upon as an exhaustive information source.

Table 2 - Potentially Sensitive Receptors

Receptor	***Land Use Types***
Human Beings	*Allotments* *Residential with garden* *Residential without gardens* *Schools or Nurseries* *Recreational/Parks – Playing fields, Open Space* *Commercial/Industrial*
Ecological systems or a living organism forming part of a system within protected locations	*Sites of Special Scientific Interest (SSSIs)* *National & Marine Nature Reserves* *Special Areas of Conservation (SACs)* *Special Protection Areas (SPAs)* *Areas of special protection for birds* *RAMSAR sites, European sites*
Property in the form of buildings	*Ancient Monuments & Buildings*
Property of other forms (crops, livestock, home-grown produce, owned or domesticated animals & wild animals subject to shooting or fishing rights)	*Agricultural land* *Allotments and gardens* *Forestry areas* *Other open spaces, rivers & lakes etc.*
Controlled Waters	*Surface Waters* *Drinking Water Abstractions* *Source Protection Zones* *Groundwaters – Private Abstractions* *Groundwaters – Major Aquifers*

This table is a summary of "Table A – Categories of Significant Harm" Annex 3 Chapter A of the Statutory Guidance.

Principles of Risk Assessment

The definition of statutory Contaminated Land under Part IIA is based upon the principles of risk assessment providing a systematic, objective and consistent basis for considering uncertainties, discussing options and making decisions.

Risk *is the combination of:*

1. *The probability, or frequency, of a defined hazard (for example, exposure to a property or a substance with the potential to cause harm), and;*
2. *The magnitude (including the seriousness) of the consequences*

If the three components of the pollutant linkage exist, a risk assessment will be undertaken to determine the likelihood of harm being caused and the likely nature and extent of the harm caused if the predicted event actually occurred. An area of land can only be designated Contaminated Land if a significant risk has been proven.

The hazards and subsequent risk is partly dependent on the nature of contaminants present on a particular site.

Dealing with Statutory Contaminated Land

If an area of statutory Contaminated Land has been identified, the approach for dealing with it will be the same regardless of whether the local authority or the Environment Agency is the regulator. There are four main stages:

1. To establish who is the 'appropriate person' to take responsibility for the remediation (or 'clean-up') of the land.
2. To decide what remediation is required and to ensure that this occurs, through:
   - Reaching a voluntary agreement
   - Serving a remediation notice, if agreement cannot be reached.
   - Carry out works in default if the notice is not complied with.
3. To determine whom should bear what proportion of liability for meeting the costs of the work.
4. To record certain information about regulatory action on a public register.

WOKING BOROUGH COUNCIL APPROACH

Dealing with contaminated land is a corporate issue for Woking Borough Council, and a Contaminated Land Working Group comprising the following service areas has been established. (The current members of the group are listed in Appendix 1):

- Environmental Health
- Building Control
- Forward Planning
- Development Control
- Property Services
- Environmental Services
- Legal Services
- Land Charges

An Inspection Programme for Woking comprising seven stages has been developed to meet the requirements under Part IIA for Woking Borough Council. These are described in detail in the following sections and appendices.

The Environmental Health Service will take the lead role for the implementation of the Inspection Strategy and Property Services will take the lead role regarding the new requirements for the management of Council-owned land.

The new contaminated land regime complements the Council's existing powers to deal with contamination issues under the Town and Country Planning Act 1990, Building Act 1984 and the statutory nuisance provisions of the Environmental Protection Act 1990. As the new and existing duties will involve a number of service areas roles need to be defined and close liaison maintained.

Planning Services

The vast majority of contaminated land issues are currently and will continue to be addressed through the planning regime where contamination is a material consideration for the purposes of the Town and Country Planning Act 1990. *'Planning Policy Guidance Note 23' (PPG23)* provides advice to local authorities on dealing with contaminated land during the planning process. The Council has regard to this advice identifying through consultation with Environmental Health and the Environment Agency those areas of land subject to redevelopment that may be contaminated. Where contaminated land is identified the Council seeks to secure the investigation and remediation of that land through the use of appropriate conditions.

Planning files hold records of the Borough's planning history. Records are also held digitally on the Council's GIS system. Details are held on file of site investigations submitted in support of planning applications. These are an important information resource related to the history of potentially contaminated sites and remediation works that have occurred in the past.

Building Control

It is a requirement of the Building Regulations 2000 that *'reasonable precautions shall be taken to avoid danger to health and safety caused by substances found on or in the ground to be covered by the building'*. Guidance on satisfying this requirement is contained within the *'Building Regulations Approved Document C, Site preparation and resistance to moisture'*. This document outlines appropriate means of dealing not only with solid and liquid contaminants arising out of previous use of land but also gases, particularly landfill gas.

The requirement applies to all buildings, which fall within the control of the Building Regulations, but only to the ground to be covered by that building (which is stated to include ground to be covered by its foundations). The Building Regulations themselves do not apply to certain buildings, or to certain extensions to buildings. In particular, agricultural buildings are frequently exempt from control.

In view of the existence of a number of Approved Inspectors, authorised by the Construction Industry Council to supervise the Building Control function, owners of land may choose to have works supervised by someone other than a Local Authority Building Control Surveyor. Consequently any contamination found and precautions agreed could remain unknown to the Council.

In the event that a Building Control Surveyor from this Council supervises buildings or extensions to buildings erected on contaminated land, liaison with the Environmental Health Service occurs. In the event that precautions are not considered to be reasonable, plans will not be approved (or conditionally approved with specific conditions as to further information/precautions required) and/or enforcement action will be pursued under the Building Act 1984.

Property Services

Details are held of the land that is and has been owned and leased by the Council. These records are administered by Property Services and can be examined to identify any land that may have been contaminated by former Council activities.

The Council is currently preparing an Asset Management Plan that will address land currently owned or leased by the Council that may be contaminated. Where land is identified as being potentially contaminated it will be prioritised for more detailed inspection by Property Services in conjunction with the Environmental Health Service. Proposed procedures regarding the management of Council-owned land are presented later in the document.

Environmental Health Service

The Environmental Health Service has previously had limited powers to deal with contaminated land through the statutory nuisance provisions of the Environmental Protection Act 1990. Such cases will now be dealt with through the new powers under Part IIA as detailed below.

A service request regarding contaminated land will be dealt with following the same procedure as currently used by the Environmental Health Service to deal with environmental control service requests.

All clients are asked to supply their names and addresses and if appropriate the address giving rise to the issue. The identity of the client remains confidential. The only circumstance in which this information might be made public would be in the case of a remediation notice being appealed in a court of law, as is the case with statutory nuisance.

The Environmental Health Service does not normally undertake any investigation based on anonymously supplied information and this general policy will be adopted for contaminated land issues. This policy does not however preclude investigation of an anonymous complaint in exceptional circumstances based on likely risk.

Any anecdotal evidence provided to the Council relating to contaminated land is recorded but no determination of statutory Contaminated Land will occur without robust scientific evidence. In all cases the Environmental Health Service will use knowledge and experience to decide whether further investigation is required following a complaint or a provision of information in accordance with this strategy.

Where information indicates that there is an imminent danger of serious harm or serious pollution of controlled waters as a result of the presence of a significant pollution linkage being present the Council will notify the Environment Agency and other external consultees and consider the need for urgent action. Should it be decided that urgent action is required this shall be entered into as soon as reasonably practicable.

Under Section 108(6) of the Environment Act 1995 the Council has been granted powers of entry to carry out investigations. At least seven days notice will be given of proposed entry onto any premises unless there is an immediate risk to human health or the environment. Environmental Health will maintain the Contaminated Land Public Register.

Legal Services

Legal Services are responsible for providing advice on the Council's duties under Part IIA, in particular with regard to identifying appropriate persons who may be responsible for the investigation or remediation of land. The Land Charges Section have four standard enquiries on the land search form relating to information that will be held on the Public Contaminated Land Register.

Data Protection

The Council takes care to ensure that it complies with all the requirements of the Data Protection Act 1998.

The local authority now has a duty to disclose some information received in the course of its contaminated land investigations. Whether the information is disclosable will depend on whether the Council has received it in a public manner. Such information may be received under a number of Acts.

In the UK the *'EU Directive on Public Access to Environmental Information'* has been implemented through the Environmental Information Regulations 1992. These regulations require all information held by central or local Government to be publicly accessible. This requirement is however qualified in certain respects. These include exemptions for reasons of commercial confidentiality, international relations and public and national security. The regulations exclude internal communications, unfinished documents, judicial matters and personal data.

The Council also recognises the potential for information gathered during the process of inspection to be misinterpreted and to cause through its misinterpretation blight. To prevent the possibility of blighting of individual sites the Council will maintain as confidential information gathered in the inspection stages of this strategy.

Risk Communication

The complex nature of contaminated land issues does not lend themselves to easy explanation to the layperson. Development of effective methods of risk communication is therefore essential.

The Conraminated Land (England) 2000 Regulations grant only limited powers to local authorities to deal with potentially contaminating materials present in, on or under ground. Many members of the public believe that any material that is not naturally present in the ground should be removed especially if it is in the vicinity of their own home. It will be critical to explain this can only be done where this is a risk of significant harm and it is to be expected that some members of the public will have difficulty accepting this.

It is important to appreciate that the expectations of some members of the public will not be met by the powers local authorities may exercise under contaminated land legislation.

Consultation

The Council is committed to consultation with all sections of the community in addition to statutory consultees and will consider any comments received from interested parties prior to finalising the Inspection Strategy. A list of external contact organisations is presented in Appendix 2.

DESCRIPTION OF BOROUGH

This section gives the background information on the Woking Borough area mainly in relation to the types of pathways and receptors that are present in the Borough and how this influences the Council's approach to inspection for contaminated land.

Geographical Location

The Woking Borough area covers 6,359 hectares (22 square miles). It mainly comprises a continuous urban area centred on Woking town centre but stretching from Byfleet and West Byfleet in the east to Knaphill in the west surrounded by open Green Belt countryside. Within the countryside there are small settlements the largest of which are the villages of Brookwood and Mayford. The area protected by Green Belt comprises about 60% of the Borough.

Woking lies in Surrey County and is divided by the M25 motorway that passes through the northeast corner of the Borough. The Borough comprises an area of woodland and heathland lying to the north of the North Downs. The adjoining Councils are Elmbridge, Guilford, Surrey Heath and Runnymede.

Figure 1 - Map of Woking

The Borough includes the valleys of the River Wey, Bourne and Hoe Streams. The Wey Navigation built in 1653 to link Guilford with the Thames River meanders along the southeastern boundary of the Borough and the Basingstoke Canal completed in 1794 crosses from west to east. The Hoe Valley runs through the centre of Woking from Mayford to Old Woking.

Population Distribution

The population of the Borough is estimated as 93,800 (Registrar General, 2000) and has been rising steadily over the past twenty five years with the construction of major new housing estates, in particular Goldsworth Park. Further expansion of the built up area is now constrained by Green Belt designation. Only in the Knaphill / Brookwood area and to an extent in Westfield is land available on the edge of the urban area for development. At present population growth in Woking is approximately 700 per year however population forecasts show this growth ceasing in the next few years with the population in 2006 little different from today.

The Borough is also a major employment centre. In 1991 there were over 38,300 people working in the Borough. From 1981 –1991 the number of jobs in Borough grew by 27% which was the highest rate of increase for that period in Surrey.

Table 3 - Demographic Information for Woking

Name of Ward	*Resident Population*	*% aged less than 16 years*	*% aged 16 to 59 years*	*% aged 60 years or over*	*Indices of Deprivation 2000 (of 8414 wards)*
Brookwood	*2100*	*23*	*58*	*19*	*7803*
Byfleet	*7400*	*19*	*61*	*20*	*6915*
Central & Maybury	*5800*	*24*	*63*	*13*	*2505*
Goldsworth Park	*12700*	*23*	*65*	*11*	*6416*
Horsell East & Woodham	*3900*	*19*	*59*	*22*	*7512*
Horsell West	*7200*	*21*	*62*	*17*	*8255*
Kingsfield & Westfield	*5400*	*21*	*59*	*21*	*4639*
Knaphill	*11100*	*22*	*65*	*13*	*7012*
Mayford & Sutton	*2100*	*18*	*62*	*21*	*7462*
Mount Herman East	*4900*	*19*	*61*	*20*	*6385*
Mount Herman West	*4300*	*10*	*69*	*20*	*8094*
Old Woking	*2600*	*23*	*61*	*16*	*5626*
Pyrford	*5500*	*17*	*59*	*24*	*8357*
Sheerwater	*3600*	*27*	*55*	*18*	*1572*
St Johns	*8100*	*18*	*59*	*23*	*8305*
West Byfleet	*4900*	*19*	*61*	*20*	*8402*

From National Statistics 2001

Current Land Use Characteristics

Approximately 40% of the Borough is urban and 60% is Green Belt. Current industrial activity is generally restricted to a number of small-medium size industrial estates with only a handful of large manufacturing operations. There are now no operating extractive industries such as brick earth pits, gravel pits or landfills in the Borough.

Protected Locations

Woking Borough has a varied environment and contains over 30 areas that are designated for their ecological value. The sites provide valuable habitats and together with other key features including the Canal and River corridors provide stepping stones for wildlife from one habitat to another. Various rare species of flora and fauna protected by National and International legislation are found throughout the Borough many within the heathland habitats. The biodiversity of the Borough is one of its major natural assets.

The Green Belt is a ring of countryside and generally open land around London that has been protected since the 1950's. The present Green Belt in Woking Borough was confirmed in 1993. To the north of the urban area the Green Belt stretches from Horsell Common to Littlewick Common and the area to the north of Knaphill. This area is characterised by heathland and low lying pasture land with isolated market garden units, To the south the Green Belt stretches from Brookwood Cemetery to Hook Heath, Smart's Heath, Mayford, Sutton Green, Pyrford Common and the areas to the south of West Byfleet and around Byfleet. Council policy is to protect and conserve all designated Green Belt land and oppose development that would adversely affect their value.

Woking Borough contains or borders the following:

Special Protection Areas SPA
The **Thames Basin Heaths potential Special Protection Area** is the only SPA within or adjacent to Woking Borough. The SSSIs that make up the pSPA that are within/adjacent to Woking Borough are Ash to Brookwood Heaths, Colony Bog to Bagshot Heaths (including Sheet's Heath), Horsell Common and Whitmoor Common (on the Borough Boundary with Guildford).

Special Areas of Conversation SAC
Thursley, Ash, Pirbright and Chobham candidate Special Areas of Conversation is the only cSAC within or adjacent to Woking Borough. The only SSSI that is within/adjacent to Woking Borough and is included within the cSAC is Ash to Brookwood Heaths.

Site of Special Scientific Interest SSSI
There are 8 SSSIs within or adjacent to Woking Borough. The SSSIs are as follows:-

- Ash to Brookwood Heaths SSSI
- Basingstoke Canal SSSI
- Colony Bog to Bagshot Heath SSSI
- Horsell Common SSSI
- Ockham and Wisley Commons SSSI
- Papaercourt SSSI
- Smarts and Prey Heaths SSSI
- Whitmoor Common SSSI

Woking is part of a wider area to the southwest of London that contains a large number of water bodies that form important wetland habitats. Their international importance has recently been recognised through their designation as Special Protection Area for Birds and as a Wetland of International Importance under the Ramsar Convention (see Glossary).

Designation places an obligation on the Government to promote conservation of the site and take steps to avoid any significant pollution, disturbance or deterioration of their habitats.

Protected Properties

There are five Scheduled Ancient Monuments in the Borough. These are Old Woking Palace and its moated riverside site, the site of Manor House at Sutton Place, Goldsworth (Langman's) bridge and several barrows (ancient burial sites) on Horsell Common. Surrey County Council also keeps a Sites and Monuments Record List which records 81 archaeological sites in Woking.

Woking contains 24 Conservation Areas designated for their historic interest, special architectural character or appearance. These range from the historic village centres, residential areas and features such as the Basingstoke Canal.
Woking also contains over 160 buildings statutorily listed for their architectural or historic merit with a number of these located within Conservation Areas. The statutory Listed Buildings are complemented by a list of 330 buildings of character that the Council considers to be of local significance.

Controlled Waters & Hydrogeology

Natural waters can be both sensitive receptors and pathways for the transport of contaminants. It is therefore important to consider ground and surface water features from both perspectives.

The Environment Agency is responsible for the protection of 'controlled waters' from pollution under the Water Resources Act 1991. These controlled waters include all water courses and groundwater contained in underground strata. It is an offence to cause pollution of controlled waters either deliberately or accidentally.

Three Valleys Water Company supplies Woking Borough's drinking water.

<u>Groundwater</u>

Controlled groundwater is normally afforded greater protection from pollution than surface waters such as rivers and streams. Aquifers are water-bearing layers in the ground and aquicludes are confining layers that do not bear water (such as clay layers). The vulnerability of groundwater towards pollutants is dependent upon the presence and nature of the overlying soils and drift deposits, the geology and the depth to the water table. Drift deposits that overlay the aquifer may provide a degree of protection, therefore reducing the vulnerability to pollutants. Where surface deposits have been removed for example by mineral extraction the vulnerability of the aquifer to pollution is increased.

Groundwater source protection zones are designated zones around public water supply abstractions and the Environment Agency publication 'The Policy and Practice for the Protection of Groundwater' sets out the risk-based framework for evaluating proposals that may impact on underlying groundwater. There are three source protection zones based on the travel time of a substance to the point of abstraction.

- Zone I (Inner Source Protection - 50 day travel time)
- Zone II (Outer Source Protection – 400 day travel time)
- Zone III (Source Catchment - complete catchment)

No public water supply abstraction points or source protection zones are located in this Borough. The groundwater in the Borough is classed as minor aquifers. There are some private water abstractions from this water source but these are not registered with the Council as private drinking water supplies. The Council will obtain further information from the British Geological Survey and the Environment Agency as part of the Dataset Collection detailed later in this document.

Surface Waters

The Woking Borough falls within the surface water catchment area of the Wey River and controlled surface waters include the River Wey, Hoe Stream, Bourne Stream and the Basingstoke Canal. Surface waters are more susceptible to contaminants than groundwater because of the direct influences of surface run-off and are ecologically sensitive in this Borough.

From sampling carried out by the Environment Agency the river quality of the River Wey and its tributaries is predominately categorised as 'good' or 'very good'. Protection of these high standards of river quality from contamination is therefore a major objective of this Inspection Strategy. Maps of these will be obtained from the Environment Agency.

The Borough does contain Areas at Risk of Flooding as defined by the Environment Agency.

Geological Characteristics

The geology and soil types present across the Borough are important elements in determining if significant contaminant pathways are present on individual sites.

Much of the Borough is underlain by Bagshot, Bracklesham and Barton Beds comprising mostly sands and gravels which give rise to dry soils low in nutrients. The remainder is underlain by London Clay that gives heavy poorly drained soils susceptible to flooding in the river valleys. Much of the Wey Valley is covered by river gravel and alluvium deposits. The poor sandy soils over the Bagshot beds support heathland vegetation and have mostly remained as areas of common land.

The geology of the Borough is shown on *'Ordnance Survey, Geological Survey of Great Britain Map 285, Aldershot'*. These maps and accompanying book - *'The Geology of the County around Aldershot & Guildford, Great Britain Geological Survey (1929)'*, are held at the Surrey History Centre. Further very detailed maps (at a smaller scale) of the geology of the Borough may need to be obtained from British Geological Survey as part of the Dataset Collection detailed later in this document.

Areas of Naturally Metal Enriched Soils

The soils within Woking may well have naturally elevated levels of arsenic based on local surveys carried out by developers. Although no authoritative survey has been conducted the Council plans to obtain information from the Cranfield University Soil Survey and Land Research Centre when it becomes available as part of the Dataset Collection detailed later in this document.

HISTORICAL LAND USE IN WOKING

The historical land use of the Woking Borough area provides information on the types of potential contamination sources present in the Borough and how this influences the Council's approach to inspection for contaminated land. The earliest forms of industrial activity in the Borough were focussed in the areas around the navigable waterways of the Wey Navigation and the Basingstoke Canal and included timberyards, brickworks, tanneries, breweries and printworks as well as agricultural related industries.

Sand/Brick Earth Extraction

Sand and brick earth was an important mineral resource in the Borough. Some of the Borough's area has been subject to brick earth extraction activities close to the navigable waterways. Worked out sand/brick earth pits often became points for uncontrolled or poorly controlled waste disposal activities.

Railway, Gasworks and Sewage Treatment.

The construction of the railway in the 1850's with the significant railway junction, at what is now the centre of Woking town, caused an increase in development activity. The town of Woking itself was built on the excess land acquired for the Brookwood Cemetery that was subsequently sold on to property developers for housing. With the development of the urban areas came the development of gasworks, sewage treatment plants and railway engineering works.

Prisons, Hospitals and Ministry of Defence.

The development of the town included the building of prisons and hospitals. During the period of the First and Second World Wars Ministry of Defence activities and barracks also came to be located within the Borough. Works and factories associated with aircraft (and possibly weapons) manufacture are known to have occurred at this time.

Petrol, Diesel & Oil Storage

Factories, transportation industries and works were built in designated industrial areas and many of these uses may have included boilers and/or fuel storage with associated under-ground and above ground storage tanks. Surrey County records show 35 past and present petrol stores in the Borough including the present day petrol stations.

Landfills

Controlled landfills did occur in the Borough and there were two officially Council-owned landfills, which have both now, been closed. Anecdotal historical information suggests that prior to the Waste Management Licensing provisions of the Environmental Protection Act 1990, worked out sand/brick earth pits and other naturally occurring depressions such as streambeds often became points for uncontrolled or poorly controlled waste disposal activities. It is possible that some of these pits may now be in close proximity to housing or commercial developments.

Agriculture/Horticulture

Nursery gardens have been and continue to be an important part of the local economy. These form the majority of arable land in the Borough and much of what is now Woking Town was built on what was nursery land.

The common heathland has poor sandy soils and was formerly used for rearing sheep. Reclaimed areas of common land may not be suitable for arable farming and support livestock, usually beef cattle. The majority of the remaining agricultural land in the Borough is now in some form of pastoral use.

Past Redevelopment

Prior to the introduction of planning control there was very little regulation to control redevelopment or require measures to treat or prevent contamination. Since the war redevelopment has been subject to planning control and there are more extensive records of the history of redevelopment, including measures to remediate existing sites and control new activities.

Urban development has been predominantly residential but there were also significant areas developed for commercial purposes. These have been extensively redeveloped over the years, both to meet commercial development needs and in some cases to replace commercial with residential use.

Information on Past Contaminated Land Uses

The Council holds some information on contaminative uses in the Borough as part of the development control process. If development is proposed on an area of land where past use may have resulted in contamination the Council will often request site investigation and remediation as a planning condition. Planning and Building Control records will form a valuable resource during the Dataset Collection and Site Investigation Programmes detailed later in this document. Listings of potentially contaminated land uses produced by DETR are included in Appendix 3.

INSPECTION PROGRAMME OVERVIEW 2001 - 2006

The programme is based on an initial investigation into the history and characteristics of Woking Borough. At this stage it is not possible to prioritise any particular area or areas to be concentrated on first. Anecdotal information suggests that the Borough contains approximately 200 sites associated with potentially contaminative historical uses (personal communication Landmark/Ordnance Survey). Most of these sites are associated with in-filling operations in the past i.e. former earth or sand extraction pits.

The Council is committed to investigating its own land holdings and it is proposed that investigation of Council–owned land will be considered a high priority.

The initial objective to inspect the Borough for potentially contaminated land will require the completion of three preliminary steps.

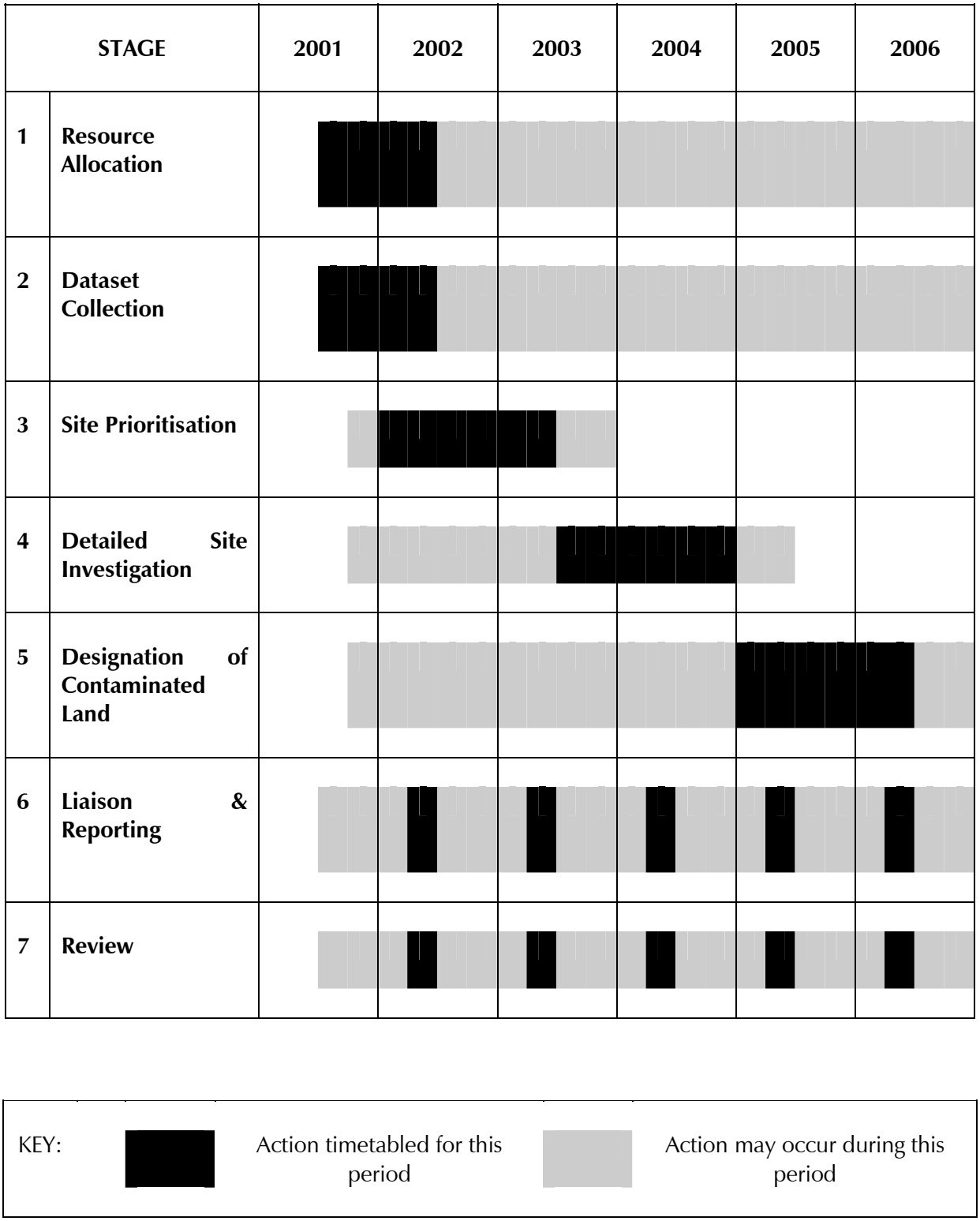
1. Recruitment of staff - with experience in contaminated land.
2. Budget allocation - sufficient to procure informational data requirements.
3. Informational resources - procured and functional database linked with GIS established.

The Inspection programme is broken down into seven stages as shown in Figure 2 covering a period between 2001-2006 which represents a reasonable best estimate five year timetable for the implementation of the inspection strategy. This inspection programme will be used to benchmark the progress of implementation on the set targets, subject to review.

Although the areas shaded black correspond to targeted time tabled action periods the extended grey shaded areas show that action may occur prior to and beyond these periods. It may be the case that prior to or during site prioritisation the Council will become aware of a site that may require action to be taken immediately leading to detailed site investigation and possible designation as contaminated land.

Procedures for dealing with Council-owned land have been presented in the final section of this document and will be managed by Property Services with advice from the Environmental Health Service. This maintains the appropriate separation between the enforcement and land-owning functions of the Woking Borough Council.

Figure 2 – Inspection Programme



Stage 1 – Resource Allocation

Overview

A commitment to implementing the requirements of Part IIA as presented in this Inspection Strategy will require an investment in staff, training, equipment, external expertise/consultants, and in the short-term a significant investment in information from external sources.

The purchase of the datasets and hardware/software for the GIS Land Quality Database will be the major capital investment necessary to undertake the Inspection Strategy. The major staffing investment will be to recruit a Scientific Officer primarily to undertake the contaminated land role but who will also undertake other environmental control duties in the Environmental Health Service.

	Actions	***Completion***
1	*Recruit appropriate staff to undertake the contaminated land officer role.*	*By November 2001*
2	*An estimate of budget requirements to undertake the Stages of the Strategy presented to Executive Committee including estimates for the following items.*	*By January 2002*
3	*Purchase of on-going training/expert advice for all staff within the Council undertaking duties in relation to land holdings with possible contaminated land implications.*	*November 2001 – July 2006*
4	*Purchase of up-to-date reference materials on site investigation, remediation and validation for use by contaminated land staff (See References).*	*On going from November 2001*
5	*Purchase of historical land use information, geological information, and appropriate hardware/software to run a GIS Land Information Database.*	*From April 2002 (dependent on budget and method)*
6	*Purchase of risk prioritisation and risk assessment database package linked to GIS System.*	*From April 2002*
7	*Hire of external contractors to undertake detailed site investigations and sample analysis.*	*Ongoing from November 2001*
8	*Provisions for identification of a contingency budget related to determination of Statutory Contaminated Land (possible appeals/court costs)*	*Ongoing from 2001*

Stage 2 - Dataset Collection

Overview

The quality of the information gathered would be the significant limiting factor to the speedy, efficient and valid completion of the land inspections detailed in the following sections. It is also likely to be the Council's major capital investment necessary to undertake the new requirements of Part IIA. This document refers to this informational tool as the 'GIS Land Information Database'.

For these reasons the Scientific Officer once in post will develop this programme with input from the Council's Contaminated Land Group and a detailed Options Report will be produced in due course to enable final decisions on funding and direction for this programme to be decided.

Actions		***Completion***
1	*Options Report prepared by Scientific Officer and Environmental Health Services Manager and presented to Members for final decision on methodology and budget.*	*By March 2002*
2	*Arrange to purchase/obtain of up-to-date reference materials for assessment of site investigation, remediation and validation reports and purchase/hire of field equipment where and if necessary.*	*By April 2002*
3	*Dataset Collection Programme – GIS Land Information Database set up and running.* *Datasets of contamination sources, receptors and pathways in the Borough collected, purchased, and set up in appropriate software/hardware as a functional tool for desktop land investigations.*	*By July 2002 (dependent on budget & method)*

Notes

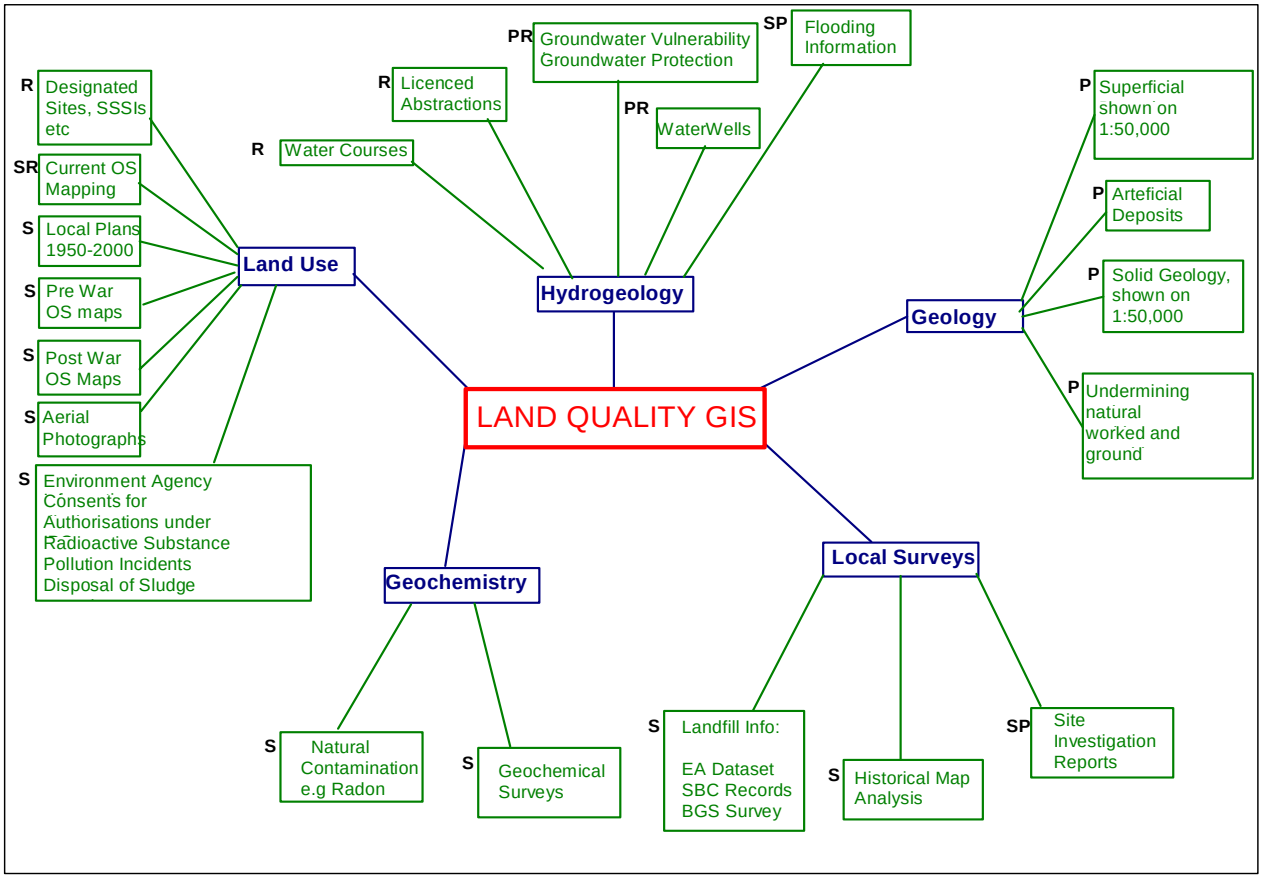
GIS Land Information Database

It is envisaged that the Council's Geographical Information System (GIS) will be the primary tool used to manage contaminated land information. The Council currently runs Geobuild Everest GIS system as a corporate system. This system has the potential to be developed to provide compatibility with the format of the digital data available from the Environment Agency, Ordnance Survey, British Geological Survey who universally use ArcView and/or MapInfo programmes as GIS systems. The GIS requirements for this project will have to be assessed in more depth and possibly some dedicated software/hardware purchased for the benefit of this work and other corporate uses.

Many sources of information will be required to identify potential sources of contamination and potential receptors. The resources are detailed in the following diagram and presented as a table in Appendix 4.

Figure 3 – Information Layers for Land Quality GIS

From *'Some guidance on the use of digital environmental data' BGS (1999).*



Key: S = Source, P = Pathway, R = Receptor

The GIS system will need to be used to correlate all information and determine the proximity of potential receptors (humans, controlled waters) to potential sources of contamination. The GIS will need to be linked to an Access database that will allow statistical information to be drawn together for reporting and comparison with other authorities. The system as a whole will be called the GIS Land Information Database.

Much of the data will be incomplete, incorrectly formatted, duplicated or providing different attributes to a given site. This may not be the fault of the agencies supplying the information more that they are working with different data capture processes. Maps of different scale and epochs will show different information. It is therefore important to verify the site accurately and every effort must be made to ensure the verification process is as thorough as possible. The Environment Agency and British Geological Survey have published a document *'Some Guidance on the Use of Digital Environmental Data'* aimed at providing information and support to local authorities in the use of GIS-based programmes for a variety of land quality issues including land contamination. This will be used as the basis for this Council's GIS Land Information Database. Further notes on the use of GIS Databases are in Appendix 5.

Stage 3 – Site Prioritisation

Overview

This is the initial desktop prioritisation inspection of the Borough for potentially contaminated land to identify potential pollutant linkages as required by Part IIA. It will be undertaken by the Scientific Officer using the GIS Land Information Database collected in the previous step as the primary tool for this process.

The provisions of Part IIA require prioritisation of all contaminated land sites and this will be undertaken to determine which sites are first submitted to the Detailed Site Investigation Stage. The Council has the sole responsibility for determining whether any land appears to be contaminated land and it cannot delegate this responsibility.

	Actions	***Completion***
1	*To develop a plan and detailed timetable for the Prioritisation Inspection for Woking Borough including Council-owned sites.* *This includes selection and adoption of appropriate methodologies for risk prioritisation.*	*January 2002 - April2002*
2	*Complete Prioritisation Inspection - All known potentially contaminated sites in Borough including Council owned inspected and given a priority rating.*	*By July 2003*

Notes

Risk Prioritisation

The *'pollutant linkage = source + pathway + receptor'* concept is the basis for the inspection. It is envisaged that the maps of sites of potentially contaminative historical uses will be overlain on maps of current potential receptors to identify sites where viable pollutant linkages may exist.

The number of receptors in an area will determine the order in which the sites are inspected. The largest urban areas in the Borough will be inspected first, followed by the villages and smaller settlements and finally the Green Belt. The prioritisation inspection of Council-owned land would be carried out alongside the urban inspection schedule and this land will be amongst the first to undergo the site prioritisation process.

The number of sites, which will need to be investigated in this inspection programme, cannot yet be determined. This will only become clear when the information about potentially contaminative historical uses (sources) in the Borough has been collected as described in the previous stage.

When the inspection process reveals the (possible) existence of a pollutant linkage then the site will be ranked in accordance with risk prioritisation methodology to determine the order in which sites proceed to the detailed site investigation stage described in the next section.

There are several risk prioritisation methodologies that could be adopted by this Council. It is proposed that the Scientific Officer be involved with testing and selecting a methodology that will be appropriate for Woking.

Stage 4 - Detailed Site Investigation

Overview

Following the previous desktop inspection and prioritisation exercise, the objective at this stage is to determine if an actual pollutant linkage exists on a site-by-site basis, by means of a more detailed risk assessment and investigation of the site.

The Scientific Officer will action this stage.

A detailed investigation will be undertaken where it is necessary to confirm whether the potential pollutant linkage identified:

- Is resulting in significant harm (or the significant possibility of such harm) being caused to receptors. or
- Is resulting in (or likely to result in) the pollution of controlled waters which constitute a receptor.

If either of these is confirmed in this process then the land becomes statutory Contaminated Land and the pollutant linkage becomes a 'significant pollutant linkage' and will be subject to the notification, declaration and enforcement provisions detailed in the next section.

Where there is a reasonable possibility that a significant pollutant linkage exists but there is insufficient information to make a determination from the detailed risk assessment, then intrusive investigations may be undertaken. The scope of these will be limited to that necessary to determine the existence of one significant pollutant linkage per site.

In this Borough intrusive site investigations would need to be undertaken by environmental consultants and managed by the Scientific Officer. Council-owned land will be given priority for intrusive site investigation if warranted by the previous stages and this work managed by Valuers in conjunction with the Scientific Officer.

	Actions	***Completion***
1	*Develop timetable for Detailed Site Investigation of high priority sites identified in the previous stage.* *This will include selection, adoption and possible purchase of expertise into appropriate methodologies for site inspection and risk assessment on a site by site basis.*	*July 2003 – September 2003*
2	*Complete Detailed Site Investigations – Detailed risk assessment and site investigation undertaken for all high priority sites.*	*By January 2005*

Notes

Detailed Risk Assessment

Risk assessments must be based upon a conceptual model and this should be applied during the preliminary desk top study and must be continually updated as the investigation progresses. The conceptual model is a detailed drawing of the site showing the positioning of receptors, contaminant sources and all the sites environmental characteristics (annotated). The potential pathways are then drawn in for each contaminant given its particular characteristics with regard to mobility.

The detailed risk assessment stage involves gaining a greater understanding of a specific site. This will require identifying the full land use and development history and any previous investigations, risk assessments and remediation that may have been undertaken with regard to assessing the suitability, effectiveness and durability. This stage is characterised by fewer sites but greater amounts of data per site. Risks are assessed by comparison to external guideline values and site specific information. It remains largely a desk-based process but will involve site visits.

Much more data will need to be collected from external consultees and internal contacts on specific sites identified and given a high priority in the previous process. There is available on the public record a great deal of information that will be necessary, such as borehole logs from the British Geological Survey and detailed geological/hydrogeological maps drawn to a small scale. Information may also be available from central organisations regarding specific types of sites for example Railtrack holds records of railway land and the Lattice Property Holdings, formerly known as British Gas Property, has records of former gasworks.

The information-gathering element will enhance the dataset held for each site and enable a more informed judgement in terms of the separate elements of source, receptor and pathway. The process is to determine if an actual pollutant linkage exists. It is envisaged that site details would be stored and managed on an Access database and linked to a compatible GIS system that has the capacity to store all relevant information.

As outlined under site prioritisation the risk assessment methodology to be used by this Council has yet to be determined. New guidelines on the Contaminated Land Exposure Assessment (CLEA) are expected from the DETR shortly. The Council will incorporate these into the Inspection Strategy when they become available.

Until these guidelines are available the Council will evaluate all information against the guidelines issued by the Interdepartmental Committee on Redevelopment of Contaminated Land (ICRCL), *'Guidance on the assessment and redevelopment of contaminated land' ICRCL 59/83 (2nd edition, July 1987)*. This guidance gives the most widely used set of trigger and action levels for a range of contaminants and is likely to remain a key reference document even with the introduction of CLEA guidelines. In the absence of CLEA human risk assessment the Council will also use the alternative SNIFFER (Scotland & Northern Ireland Forum For Environmental Research) Framework for Deriving Numeric Targets to Minimise the Adverse Human Health Effects of Long-term Exposure to Contaminants in Soil, to determine human health risk.

Risk assessments may also be required for substances not covered by ICRCL or CLEA guidelines. In these cases reference may be made to occupational exposure levels issued by the Health and Safety Executive or other authoritative sources of information such as guidelines adopted in other countries. If guidelines from other countries are referred to it will be important to bear in mind the significant difference in remediation standards between the UK and these other countries.

Advice will be sought from the Environment Agency (EA) on risk assessment if controlled waters are the receptor in a particular pollutant linkage. It is anticipated that risk assessments and remediation will be carried out in accordance with EA guidance - *'Methodology for the derivation of remedial targets for soil and groundwater to protect water resources', EA R&D Publication 20, (1999).*

Intrusive Site Investigations

The approach to identifying contaminated land means the Council should only need to visit and carry out intrusive site investigations (such as boreholes, trial pits) for only a small proportion of the land within the Borough. This is the land where the earlier stages of study suggest the possibility of statutory Contaminated Land. The scope of the investigation will be limited to that necessary to make the determination.

The investigations will be designed on a site-specific basis taking account of all that is known of the site including the potential or actual contaminants based on site history and previous investigations (if any). Statutory powers of entry are available to the Council if needed.

Careful attention to the DETR guidance will be required to ensure that investigations are really necessary and that best value is obtained. Some notes on site investigations are presented in Appendix 6.

Before using statutory powers of entry the Council will consider whether, if any land were designated as statutory Contaminated Land, it would fall under the definition of 'special site'. If this is the case the Council will consult closely with the EA prior to the arrangements for inspection being made as the EA are responsible for the regulation of special sites. However, the Council is still responsible for the initial determination that the land is statutory Contaminated Land.

At this stage it is going to be necessary to make contacts with landowners, occupiers and 'appropriate persons' as defined by Part IIA. The Council will be seeking co-operation from 'appropriate persons' and ideally voluntary site investigations will be undertaken. These will need to be to the satisfaction of the Scientific Officer.

This approach requires effective communication with owners, occupiers and other interested parties. The Scientific Officer will be the central contact point and will take care to keep all parties informed at each stage of an investigation.

Stage 5 – Statutory Contaminated Land

Overview

This is the enforcement stage of the inspection programme and involves the designation of individual sites as statutory Contaminated Land where a significant pollutant linkage has been determined to the satisfaction of the Council. The next stage is to issue to the appropriate person notifications of Contaminated Land and remediation notices as necessary to ensure there are no unacceptable risks to human health or to the wider environment.

Many methods of remediation can be applied to break the source, pathway, receptor pollutant linkage such as management practices to change the land use to less sensitive receptors. Also civil engineering and building design solutions can be applied such as the construction of clay walls, vent trenches and raised floor foundations with void spaces and placement of impermeable gas High Density Polyethylene membranes. It is sometimes the case that remediation is achieved by a number of methods including removal, treatment, civil engineering, building design and management practices.

A special site can only be designated as such following formal designation as Contaminated Land. However, the Council will seek advice from the Environment Agency prior to the investigation and detailed inspection of any land which it considers has the potential to be designated a special site. The designation of a contaminated land site which has the potential to be designated a special site will only take place under advise from the Environment Agency. If detailed inspection of the land is required by the Environment Agency the Council will authorise persons nominated by the Environment Agency to undertake such inspections under section 108 of the Environment Act 1995.

The Council is required to set up and maintain a public contaminated land register and this will be held by Environmental Health at the Civic Offices, Woking. It will contain details of regulatory action relating to Contaminated Land sites and it is intended there will be a paper-based as well as electronic version that will be accessible on request by members of the public during office hours.

	Actions	***Completion***
1	*Designation of statutory Contaminated Land in the Borough.*	*By 2005*
2	*Complete designation and set up public register of statutory Contaminated Land.*	*On going from November 2001*

Notes

Voluntary Remediation

The Council's approach to its regulatory duties is to seek voluntary action before taking enforcement action. This approach will be adopted for issues of land contamination recognising that in many cases as much or more effective remediation can be achieved by agreement rather than by enforcement. The regulations provide an incentive to undertake voluntary action in that any materials that require disposal as a result of voluntary remediation

will be exempt from landfill taxes. This exemption does not apply to materials generated as a result of a remediation notice having been served.

This approach requires effective communication with owners, occupiers and other interested parties. The Scientific Officer will be the central contact point within the Council on contaminated land issues and as such will take care to keep owners, occupiers and other interested parties informed at each stage of an investigation regardless of whether there is a formal designation of contaminated land.

Designation of Council-Owned Land as Contaminated Land

Elected members will be informed at the earliest opportunity of any plans to designate an area of Council-owned land or land where the Council is the 'appropriate person' and may be eligible for remediation costs.

There may be legal costs incurred as part of this process at this stage which will need to be anticipated. Also the Council may for be responsible for 'orphan sites' where no 'appropriate person' can be determined to take responsibility.

As a result of the designation process sites will be remediated, so that a significant pollutant linkage no longer exists, and the sites will no longer be statutory Contaminated Land.

Public Register

The regulations clearly specify the information that can be recorded on this register. This register will include:

1. Remediation notices.
2. Details of site reports obtained by the authority relating to remediation notices
3. Remediation declarations, remediation statements and notifications of claimed remediation.
4. Designation of sites as 'special sites'.
5. Any appeals lodged against remediation and charging notices.
6. Convictions.

Statutory guidance issued to local authorities makes it clear that the Council must not include any information on its register which relates to the affairs of any individual or business and is commercially confidential to that individual or the person carrying on that business.

The Council will give any person concerned 21 days to make a representation requesting exclusion of information that the Council believes may be commercially confidential. Where information is excluded on the grounds of commercial confidentiality the Council will include on the register a statement indicating that material has been excluded on the grounds of commercial confidentiality.

A right of appeal to the Secretary of State exists where information is included on a public register that the person believes is confidential.

Stage 6 – Liaison & Reporting

Overview

Much of the work proposed in this strategy will be collaborative and require effective networking with other bodies.

Actions		*Completion*
1	*Develop a procedure for Liaison & Reporting with timetable for consultations to Council, Environment Agency, Surrey County, neighbouring boroughs & other statutory consultees.*	*July 2001- April 2002*
2	*Liaisons and reporting undertaken accordingly*	*April 2002 – July 2006*

Notes

Statutory Consultees

Contacts have already been established with officers of the following organisations. Each organisation will be sent a copy and invited to comment on the consultation draft of the Inspection Strategy.

- Environment Agency – Thames Region
- English Nature
- English Heritage
- Department for Environment Food and Rural Affairs
- Food Standards Agency
- Surrey County Council
- South East England Development Agency - SEEDA
- English Partnerships
- Surrey Borough Councils – Surrey Contaminated Land Forum.

Reporting on Water Pollution

The Water Resources Act 1991 gives the Environment Agency (EA) powers to deal with harm to controlled waters being caused by contaminated land. Part IIA legislation does not revoke these powers, as some pollution incidents that occur on land, may require urgent action to prevent contamination migrating to controlled waters. However, most other cases, such as historic contaminated land that has the potential to cause harm to controlled waters, will be dealt with under the new contaminated land regime but the following steps will be taken:

1. The Council will consult with the EA before designating any contaminated land as a result of risk to controlled waters and will take into account any comments made with respect to remediation.
2. If the EA identifies a risk to controlled waters from contaminated land the Council will be notified to enable designation of the land and remedial action will be taken under Part IIA.

Reporting to the Environment Agency

The EA is required to prepare an Annual Report for the Secretary of State on the stare of contaminated land in England and Wales.

This report will include:

- A summary of local authority inspection strategies, including progress against the strategy and its effectiveness.
- The amount of contaminated land and the nature of the contamination.
- Measures taken to remediate land.

As local authorities are the lead regulators on contaminated land with the EA regulating only some categories of sites, the national survey will clearly be reliant on information provided by local authorities. A memorandum of understanding has been drawn up between the EA and the Local Government Association that describes how information will be exchanged between the local authority and the EA. This Council will therefore provide information to the EA following the guidelines agreed through this national forum.

The Council must also provide information to the EA whenever a site is designated as Contaminated Land and whenever a remediation notice, statement or declaration is issued or agreed. The EA has provided standard forms allowing this information to be provided in a consistent format and the Council will adopt these to fulfil its reporting requirements.

Surrey Contaminated Land Forum

This is a group comprising eleven local authorities in Surrey and has been established to enable networking between Council staff involved in contaminated land and provide training sessions on aspects of the inspection strategies. Many of the issues are similar for each of the authorities and it is useful to exchange ideas and methodologies and as a mechanism for staff training and peer review.

Non-statutory Consultees

Efforts will be made to encourage participation in the process of identifying and investigating contaminated land recognising contributions from the public, businesses and voluntary organisations.

Stage 7 – Review

Overview

This programme outlines the general approach to be taken in inspecting land in the Woking Borough area for contamination which is an ongoing process. This section describes instances when inspections will occur outside this inspection programme, circumstances under which previous inspection decisions should be reviewed and measures to be taken to ensure the strategy remains effective and up-to-date.

Reviewing Inspection Priorities.

Triggers for reviewing priorities will include:

1. Unplanned events e.g. a spillage
2. Introduction of new receptors e.g. designation of a new protected ecosystem or a change of use of a site such as persistent trespass by young people.
3. Supporting voluntary remediation e.g. where a potentially liable party wishes to undertake clean up before their land has been inspected by the local authority.
4. Identification of localised health effects e.g. where people or ecosystems appear to be affected by a particular area of land.
5. Responding to information from other statutory bodies, owners, occupiers or other interested parties.

While these occurrences may trigger a review of priorities, if the strategy is to prove effective they must not be allowed to significantly interfere with the milestones laid down in the general inspection framework. It will be important to consider this issue in all strategy reviews.

Reviewing Inspection Decisions

In addition there may be occasions where the findings of previous inspection decisions should be reviewed. This might occur if there were:

1. Significant changes in legislation
2. Establishment of significant case law or other precedent.
3. Revisions of statutory guidelines on exposure limits, risk prioritisation and risk assessment.

It is important therefore that all decisions are made and recorded in a consistent manner that will allow efficient review.

Reviewing the Strategy

As part of the overall quality management of this work it is important to consider the need to review the strategy from time to time. It will be appropriate to review the strategy on an annual basis at least until all of the stages have been completed.

WOKING BOROUGH COUNCIL OWNED LAND

Overview

This section details in-house procedures for handling contaminated land issues in Council-owned land and properties and supplements the reference to Council land in the relevant stages of the inspection programme. The management of Council-owned land is the primary responsibility of Property Services.

	Actions	***Completion***
1	*Develop and implement new in-house procedures for Council-owned property with respect to managing and preventing land contamination.*	*By March 2002*
2	*Develop and implement programme for identification, prioritisation, investigation and remediation of Council-owned land.*	*July 2001 - July 2006*

Although Environmental Health can advise on matters regarding contaminated land the Councils land holdings sections must take on the responsibility of intrusive investigation to establish the extent of the pollution linkage by using external consultants to undertake such tasks. The investigation and subsequent report will include a risk assessment and remediation strategy/method statement outlining the remedial options available. It will then be the role of Environmental Health to review and assess these reports and make comment on suitability with regard to current or proposed land use and the ability of the proposed remediation to break the pollutant linkages with regard to practicability, durability, effectiveness and cost. Environmental Health as the enforcers of Part IIA must show that it acts independently, treating the Council landowner as any other third party.

Notes

<u>Existing Land Holdings</u>

Where sites are found to have potentially significant levels of contamination a quantified risk assessment will be undertaken to determine if there is a need for remediation for the current land use or any proposed land use. Where the risk assessment indicates remedial works are necessary, or would be prudent, the relevant committee will be advised and appropriate remedial measures agreed.

The programme of site prioritisation, investigation (and where necessary remediation) will continue in accordance with the Council's inspection strategy on contaminated land.

Land Purchases/Acquisitions

Prior to committing the Council to any new land purchases or acquisitions Property Services will ensure that the full site history is known. This will include:

1. A search of all available historical maps.
2. A review of the trades database held by Surrey History Centre including determining historic property details from relevant street sections to enable the trades information to be accurately correlated to the land in question.
3. Detailed enquiries from the vendor as to the former activities at the site, location of storage tanks, details of materials stored (fuels, wastes etc) and information on any spillage.

If there is any suggestion that the land is on or adjacent to land that has the potential to be contaminated consultants shall be appointed to undertake an appropriate site investigation. Only when the full implications of any contamination are known, appropriate consideration has been given to the potential long term cost implications and this has been reflected in the sale price, shall the transaction continue. Advice should be sought from Environmental Health and Legal Services as to the need to address future liabilities that will be dependent on the circumstances of the site.

Where land such as public open space is to pass to the Council as part of a planning agreement (Section 106) the Planning Officer must require the developer to provide:

1. Full site history information on the land to transfer.
2. An appropriate level of site investigation data.

Leasing Property

The commercial tenants to whom we let property or land may undertake potentially contaminating activities that may result in the land becoming contaminated. Under the provisions of Part IIA of the Environmental Pollution Act 1990 if the original polluter cannot be found (for example because the company no longer exists) the landowner becomes the person liable for the contamination and any site remediation required.

If the Council as a landowner does not take steps to prevent the occurrence of further off-site migration of contaminants then the Council can also be found to be liable for the remediation of adjacent land. In order to protect the value of the land holdings and to prevent the Council becoming liable for its tenants' contamination, specific procedures will be developed to ensure that prior to letting/leasing property in the future the Council has information on the condition of the site. If it is a greenfield site with no former potentially contaminative uses this should be documented along with some background soil data to provide a baseline that can form the basis of any future claim. Where possible the onus should be placed on the new tenant to provide this background data.

If the site has had previous uses:

1. Establish where any potentially contaminating uses have taken place (for example, where are or were the fuel tanks and/or chemical storage tanks etc).
2. Ensure this information is documented and provide appropriate background soil data. This is necessary not only to protect the Council's interest but also to comply with our obligation in relation to disclosure to the new tenant whose workers or contractors might come into contact with ground contamination.
3. Where new information becomes available that may require action then the Council must pass the information onto the tenant/lessee in order that they can make appropriate decisions.
4. Ensure there are appropriate conditions in the lease/tenancy agreement requiring the new occupier(s) to comply with all appropriate environmental legislation to minimise the potential for future contamination and to require them to clean up any contamination that may occur during their occupation.

During the course of the tenancy the tenant/lessee should provide the Council with:

1. Details of the locations/nature of fuel storage.
2. Plans showing where any sibastances (chemicals or wastes) are stored/used.
3. Plans showing the locations of services (and fuel lines).

Termination of a Tenancy/Lease Agreement

Prior to the termination of a lease/tenancy agreement for whatever reason it is essential that quality information is obtained from the tenant/lessee before they leave the site, while yard managers/supervisors are still available who can provide specific information on the site such as that outlined above.

Where there is any question that there may have been land contamination the tenant/lessee shall be required to provide site investigation data. This is to prove the site remains in the same condition as when the background site investigation was undertaken at the commencement of the lease and not to prove the extent of any contamination present.

Where contamination is present the tenant/lessee shall be required to remediate the site to the standard identified by the background site investigation.

Where the tenant/lessee has constructed or significantly altered a structure on the site a Health and Safety file will have been created in compliance with *the Construction, Design and Management Regulations (CDM Regulations)*. All such files shall be provided to the Council at the end of the lease to be held by Property Services.

Possible Financial Implications

The proposed obligations on the lessee will affect the premium or rental value of sites and this will be influenced by the extent to which such terms become commercially acceptable in leases.

The actual cost implication will vary from lease to lease upon letting/renewal and this cannot be quantified at this stage but it will have no impact on current income levels as the conditions cannot be imposed/negotiated until renewal or at a rent review.

The degree of 'cleaning up' required would need to be determined in advance by a background site investigation report, which identified the level of contamination when the lease period commenced. Where the lease is for a long period it will be reasonable to require the tenant/lessee to provide this background report.

Marketing Sites

Where land owned by the Council is being sold it is essential that the Council provide all relevant information that might affect the value of the site or its future redevelopment to the potential purchaser. This should include where available:

1. Site history information
2. Geotechnical and contamination site investigation report.
3. Desk study reports.
4. Details of the location of fuel tanks, waste disposal areas, soakaways

If the site is suspected of being contaminated then the potential purchasers shall be advised to undertake their own due diligence audit which should include intrusive site investigations to produce their own independent Land Quality Assessment (LQA) to validate any LQA or any other information the Council may submit.

The information on contamination and potential remediation costs for an agreed end use should be taken into account when valuing the land. This process must be fully documented to protect the Council from future legal action/claims by the purchaser or other future owners.

APPENDICES

Appendix 1 – Woking Borough Council Contacts

Service	*Title*
Environmental Health	*Environmental Health Services Manager*
Environmental Health	*Scientific Officer*
Property Services	*Principal Valuer*
Planning - Development Control	*Principal Planning Officer*
Planning - Forward Planning	*Senior Planning Officer*
Building Control	*Principal Building Control Officer*
Legal Services	*Principal Solicitor*
Environmental Services	*Technical Support Manager*
Land Charges	*Principal Land Charges & Projects Officer*

Appendix 2 - External Contacts

Environment Agency

Area Contaminated Land Officer

Frimley Office
Swift House
Frimley Business Park
Camberley
Surrey
GU16 7SQ

Tel: 01276 454300
Fax: 01276 454301

Regional Contaminated Land Officer

Regional Office - Thames Region
King's Meadow House
Kings Meadow Road
Reading
Berkshire
RG1 8DQ

Tel: 01189535704
Fax: 01189535419

English Nature

Local Contact – Clare Kerr, Conservation Officer

Sussex & Surrey Team
8 Phoenix House
32-33 North Street
Lewes
BN7 2NP

Tel: 01273476595
Fax: 01273483063

Clare.kerr@english-nature.org.uk

National – Special Advisory Teams

Environmental Impact Team
English Nature
Roughmoor
Bishops Hill
Taunton
Somerset
TA1 5AA

Tel: 01823283211
Fax: 01823272978

Environmental Impacts & Marine Team
English Nature
Northminster House
Peterborough
Cambridgeshire
PE1 1UA

Tel: 01733 455000
Fax: 01733 568834

English Heritage

Local Contact – Simon Wartnaby

South East Region
Guildford Office
East Gate Court
195-205 High Street
Guildford
GU1 3EH

Tel: 01483252000
Fax: 01483252001

Simon.wartnaby@english-heritage.org.uk

National – Mike Corfield - Chief Scientist

National Centre
23 Saville Row
London
W1X 1AB

Tel: 02079733321
02079733000
Fax: 02097733001

Surrey County Council

Head of Local Plans – David Lamb

Minerals & Wastes Division
Environment Department
County Hall
Kingston-Upon-Thames
KT1 2DY

Tel: 02085419904
Fax: 02085419447

david.lamb@surreycc.gov.uk

Department for Environment, Food and Rural Affairs

Local Contact – Jonathon King

Rural Development Service
Guildford Office
Block C
98 Epsom Road
Guildford
GU1 2LD

Tel: 01483404355
Fax: 01483403646

jja.king@frca.maff.gov.uk

National Policy Advisor – Roger Unwin

Rural Development Service
Room 142
Nobel House
17 Smith Square
London
SW1P 3JR

Tel: 02072386452

Food Standards Agency

Dr. Nigel Harrison
Contaminants Division
Room 703
Aviation House
125, Kingsway
London
WC2B 6NH

Tel: 020 72768708
Fax: 020 72768717

Nigel.harrison@foodstandards.gsi.gov.uk

Health & Safety Executive

Local Contact – Graham Roberts

Thames Water

Environment & Quality Manager - Dr. Peter Spillet
Gainsborough House (RBH2)
Manor Farm Road
Reading
Berkshire
RG2 0JN

Tel: 0118 959 3720/3302
Fax: 0118 959 3492

SEEDA- South East England Development Agency

Senior Regeneration Manager – Ken Glendinning

Barclay House
Cross Lanes
Guildford
GU1 1YA

Tel: 01483484267
Fax: 01483484249

Ken.glendinning@seeda.co.uk

English Partnerships

National Policy Co-ordinator – Emyr Poole

Head Office
110 Buckingham Palace Road
London
SW1W 9SB

Tel: 02078811600
Fax: 02078811678

Emyrpoole@englishpartnerships.co.uk

Senior Projects Manager - Jon Navaratnam

Arpley House
110 Birchwood Boulevard
Birchwood
Warrington
WA 7QH

Tel: 01925651144
Fax: 01925644657

Surrey Contaminated Land Forum	
Elmbridge Borough Council	*Tel: 01372474474* *Fax: 01372474972*
Epsom & Ewell Borough Council	*Tel: 01372732000* *Fax: 01372732109*
Guildford Borough Council	*Tel: 01483505050* *Fax: 01483444444*
Mole Valley District Council	*Tel: 01306885001* *Fax: 01306876821*
Reigate & Banstead Borough Council	*Tel: 01737242477* *Fax: 01737222135*
Runnymede Borough Council	*Tel: 01932838383* *Fax: 01932855135*
Spelthorne Borough Council	*Tel: 01784451499* *Fax: 01784446437*
Surrey Heath Borough Council	*Tel: 01276686252* *Fax: 01276707177*
Tandridge District Council	*Tel: 01883722000* *Fax: 01883722015*
Waverley Borough Council	*Tel: 01483861111* *Fax: 01483426337*

Appendix 3 – Potentially Contaminative Land Uses
(See also list of DOE Industry profiles in the following table)

Industry	***Process***
Energy Industry	*Combustion Activities*
	Gasification, liquefaction and refining activities
Metal Processing Industry	*Ferrous metals*
	Non-ferrous metals
	Surface treating metals and plastic materials
Mineral Industry	*Production of lime & cement*
	Production of other mineral fibres
	Manufacturing glass & glass fibre
	Ceramic production
	Activities involving asbestos
	Other minerals activities e.g. crushing & grinding
Chemical Industry	*Organic chemicals (see Table 1)*
	Inorganic chemicals (see Table 1)
	Explosives production
	Chemical fertiliser production
	Plant health products & biocides
	Pharmaceutical production
	Manufacturing activities involving carbon disulphide or ammonia
	Storage of chemicals in bulk
Waste Management Industry	*Disposal of waste by incineration*
	Disposal of waste by landfill
	Production of fuel from waste
	Disposal of waste other than by incineration or landfill
	Recovery of waste
Paper Industry	*Activities associated with making paper, paper pulp or board from wood, grass, straw and similar materials*
Textiles, Printing & Dyeing Industry	*Applying or removing a coating material*
	Treating or dyeing fibres and textiles
	Manufacture of dyestuffs, printing ink & coating materials
Timber Processing Industry	*Curing or chemically treating timber or wood*
	Manufacturing products made wholly or mainly of wood
Food & Animal Processing Industry	*Tanning of hides & skins*
	Slaughtering of animals
	Processing, storing & drying animal or vegetable matter
	Treating & processing materials for production of food
Other	*Agriculture*
	Forestry
	Construction
	Transport
	Wholesale & retail distribution
	Rubber processing
	Carbon production
	Tar & bitumen production & processing

List of DOE Industry Profiles

Airport
Animal & animal products processing works
Asbestos manufacturing works
Ceramics, cement & asphalt manufacturing works
Charcoal works - coating (paints & printing inks) manufacturing works
Chemical works - cosmetics & toiletries manufacturing works
Chemical works - disinfectants manufacturing works
Chemical works - explosives, propellants & pyrotechnics manufacturing works
Chemical works - fertiliser manufacturing works
Chemical works - fine chemicals manufacturing works
Chemical works - inorganic chemicals manufacturing works
Chemical works - linoleum, vinyl & bitumen-based floor covering manufacturing works
Chemical works - mastics, sealants, adhesives & roofing felt manufacturing works
Chemical works - organic chemicals manufacturing works
Chemical works - pesticides manufacturing works
Chemical works - pharmaceuticals manufacturing works
Chemical works - rubber processing works (including manufacturing tyres or other products)
Chemical works - soap & detergent manufacturing works
Dockyards & dockland
Dry cleaners
Engineering works - aircraft manufacturing works
Engineering works - electrical & electronic manufacturing works (including manufacture of products containing PCBs)
Engineering works - mechanical engineering and ordnance works
Engineering works - railway engineering works
Engineering Works - shipbuilding, repair & shipbreaking (including naval shipyards)
Engineering works - vehicle manufacturing works
Fibreglass & fibreglass resins manufacturing works
Glass manufacturing works
Gas works, coke works and other coal carbonisation plants
Metal manufacturing , refining and finishing works - electroplating & metal finishing works
Metal manufacturing , refining and finishing works - iron & steelworks
Metal manufacturing , refining and finishing works - lead works
Metal manufacturing , refining and finishing works - non-ferrous metal works
Metal manufacturing , refining and finishing works - precious metal recovery works
Oil refineries & bulk storage of crude oil & petroleum products
Photographic processing industry
Power stations (excluding nuclear power stations)
Printing & bookbinding works
Pulp & paper manufacturing works
Railway land
Road vehicle fuelling service & repair - garages & filling stations
Road vehicle fuelling service & repair - transport & road haulage
Sewage Treatment works
Textile works & dye works
Timber treatment products manufacturing works
Timber treatment works
Waste recycling, treatment & disposal sites – drum & tank cleaning & recycling plants
Waste recycling, treatment & disposal sites – hazardous wastes treatment plants
Waste recycling, treatment & disposal sites - landfills & other waste treatment/disposal sites
Waste recycling, treatment & disposal sites - metal recycling sites
Waste recycling, treatment & disposal sites - solvent recovery works

Appendix 4 – Available Data Resources.

Resource	***District Specific***	***Use***
Historic maps	*Digital maps purchased from Ordnance Survey (through Landmark).*	*To identify sources of contamination.*
Historic land use database	*Landmark digital format working with GIS identifying potentially contaminative use.*	*To identify sources of contamination.*
Geological Maps	*Solid and drift geology maps purchased in digital form from British Geological Survey.*	*To characterise pathways.*
Hydrogeological Maps	*Groundwater vulnerability maps produced by National Rivers Authority purchased in digital format from British Geological Survey.*	*To characterise pathways and receptors.*
Soil Maps	*A soil map of the Southwest region will be purchased from the Cranfield University Soil Survey and Research Centre in digital format.*	*To identify sources of contamination.*
Geological Borehole Data	*A map of positions and a database of core results from British Geological Survey Records.*	*To characterise pathways.*
Source Protection Zones	*A map of areas of groundwater that receive special protection by the Environment Agency has been obtained in digital format.*	*To identify receptors and pathways.*
Water Supply Borehole Data	*A map of private drinking water boreholes has been obtained from the EA in digital format.*	*To identify receptors and pathways.*
Flood Plain Data	*A map of showing areas at risk of flooding has been obtained from the EA in digital format.*	*To identify receptors and pathways.*
Environmental Health Records	*The Council maintains records of complaints and investigations.*	*To identify known information on contamination.*
Planning Records	*The Council holds detailed planning records of development in the area including information on ground condition presented in surveys.*	*To identify known information on contamination.*
IPPC Registers	*The Council maintains a public register containing details of authorised industrial processes in the area since 1990.*	*To identify sources of contamination.*
Waste Management Licences	*The EA maintain public register of sites licensed for waste management activities and have provided relevant information relating to sites in the area.*	*To identify sources of contamination.*
Register of Closed Landfills	*The EA have provided relevant information relating to sites in the area.*	*To identify sources of contamination.*
The Surrey History Centre	*Holds records on historical land use including maps and trade directories essential for researching site histories prior to the end of the Second World War when the Town & Country Planning legislation came into force.*	*To identify sources of contamination.*
Surrey County Council	*Hold records of hydrocarbon storage facilities – Petroleum Officer*	*To identify sources of contamination.*

Appendix 5 – Information on the use of GIS Databases

Extracts from 'Some Guidance on the Use of Digital Environmental Data, BGS Technical Report WE/99/14', British Geological Survey & Environment Agency (1999).

Nature of GIS

A Geographical Information System is a digital system for the storage, manipulation and visualisation of spatial data. At the heart of a GIS is a database that allows the spatial data to be linked to attribute data. Spatial data is anything for which a grid reference can be given i.e. where something is. Attribute data is information about what is at a particular point. Maps are the most well known types of spatial data.

Stand-alone databases are full of attribute information and may contain postcode information or grid references. The spatial information can only be visualised if it is plotted onto a paper map. A GIS is a digital system that integrates both databases and maps to reproduce a powerful tool for analysing the environment.

*The **general benefits** of using GIS are several:*

- *Provides a digital system for systematic data entry and storage; providing quality control, forms part of the process of imputing information, is a highly efficient way of storing huge amounts of data.*
- *Provides an integrated data layers for easier management; different layers of information can be superimposed simultaneously on a given area.*
- *GIS is a system that allows data to be translated easily into information, such as multi-layered maps and reports, which can support policy making or planning decisions; if digital 3-D geology were represented in the GIS, it can provide a sound basis for making decisions on underground development plans.*
- *Provides an updateable knowledge store; if a key person leaves the organisation, the information is left behind in the GIS and not lost.*
- *GIS is dynamic, versatile and can be interactive with modular IT environmental packages.*
- *GIS can be made to be address linked; the facility to click on a point or a single address to bring up a whole series of different databases is a powerful method to help answer enquiries for that address point.*
- *GIS can be customised for automatic report generation; a programme language can be used to co-ordinate selected information that is spatially related to a given area or point on the map; the output to the printer can be programmed as a series of maps, tables, or diagrams with text.*
- *GIS offers an accessible system for answering customer enquiries; a report writing facility may be required for this function, but once in place, a non-GIS expert can operate the GIS in order to respond to enquiries.*
- *GIS makes it easier to export and import information to or from internal and external bodies; GIS is a way of increasing the efficiency of information transfer.*
- *The GIS databases may have other departmental uses.*
- *GIS is useful when interpreting complex data e.g. spatial relationships between land use and any soil contaminants present can be explored in GIS making the identification of pollutant linkages easier.*

- *Provides sound basis for site risk assessments e.g. the GIS databases can be adapted as input files for modelling in LANDSIM, CONSIM and other model codes.*
- *GIS offers a good visualisation facility for presentations to contractors or to agency staff and the public.*
- *GIS could be used in training new LA staff; it as possible to draw up a variety of different maps of the area illustrating land use, geology, problem sites etc., for discussion with the newcomer.*
- *GIS can provide overall cost savings for a local authority; more efficient management of environmental information will give long-term advantages as less time and therefore fewer staff are required to prepare information for regulatory and enquiry purposes.*

*The **specific benefits** of GIS are based on the ability to generate easily and quickly a variety of customised thematic maps by interpretations of several individual datasets for instance:*

- *Gas susceptibility*
- *Air quality maps*
- *Radon potential maps*
- *Rising groundwater maps*
- *Flood potential maps*
- *Unstable ground maps*
- *Historic land use*
- *Pollution incidents*

Quality Issues

It is important not to assume that any dataset is error free. Where possible it is essential to document the quality and reliability of all data by providing appropriate Metadata – or information that describes a dataset.

Metadata

Metadata is information that describes a dataset. This should include:

- *Where the data came from*
- *How it was collected*
- *How it has been processed*
- *Quality Control procedures for calibration, validation, and verification, quoting relevant standards and procedures or sources as appropriate.*
- *Data dictionary defining each of the attributes (including units), quoting relevant schemes or standards as appropriate.*
- *Accuracy, precision, timeliness, missing data.*
- *Description of dataset including spatial and temporal coverage.*
- *Ownership of copyright and intellectual property rights of dataset.*
- *Access and users rights (e.g. read-only, read/write)*
- *Technical details on how the data should be used.*
- *Scale*

Data Licensing and Copyright

It is essential that all necessary licences are obtained before third party data, equipment and applications are used.

If data are protected by copyright agreements should be reached with the copyright owner about the use of such information. Licence fees may be payable and restrictions applied to the use of information.

Customised maps and reports generated by a report writing facility in the GIS need to be in keeping with relevant copyrights and also any requirements of the Data Protection Act. An individuals privacy rights may be infringed under the Act if the output report and maps contain environmental information on the person's property and the report and maps are sent to a third party without the property owner's permission.

Commercial Confidentiality

Some of the data that is required may be classified by the data owners as commercially confidential and while they may be prepared to licence its use they do not wish data to be publicly available. Such confidentiality may also be applicable to data processed during projects and data suppliers' approval should be sought prior to publication or release of data. All confidentiality issues should be respected in line with relevant guidelines.

Technical Terms

CAD	*Computer Aided Design*
Database	*A database is a logical collection of interrelated information, managed and stored as a unit. A GIS database includes attribute information about the spatial features held in the GIS, such as the name of a river.*
Data layer	*Data layers organise a GIS by subject matter e.g., soils, roads and wells. Layer can be viewed in a GIS individually or in combination.*
Dataset	*A dataset is a digital file of information that can be imported into a GIS to create a layer.*
.DXF file	*Data Exchange Format. A format used for storing vector data in ASCII or binary files. Used by AutoCAD and other CAD software for data exchange.*
Geo-referencing	*The co-ordinate system is the Ordnance Survey British National Grid. Data in postcode address or longitude/latitude can be converted to this system.*

GIS	*A Geographical Information System (GIS) is a software package capable of showing both graphical information (digital maps) and associated attribute information from a database). Typical GIS functionality includes data entry, spatial and textual querying, data analysis, and the production of hardcopy maps.*
MapInfo MIF/MID files	*These are the data format used by MapInfo to import and export layers of information. Most commonly used GIS packages (such as ArcView) can import data in MIF/MID format.*
Metadata	*Is a textual description of a dataset (see above).*
Polygon	*Polygons are used in GIS to represent areas. The arcs that make up its boundary and an associated attribute that describes the geographic feature it represents define a polygon.*
Shape file	*Is the internal format used by ArcView to store a layer of information, Layers can be moved from one ArcView GIS to another via the shape files. A shape file consists of three physical data files (.shp, .shx, .dbf - see below)*
Shape file formats	*.shp - the file that stores the feature geometry e.g. the co-ordinates that make up a river.*
	.shx – the file that stores the index of feature geometry
	.dbf – the database file that stores the attribute information of features e.g. the names of rivers.
Vector data	*A co-ordinate based data structure commonly used to represent linear geographic features. Each feature is represented as an ordered list of vertices.*
www	*World Wide Web i.e. the Internet.*

Appendix 6 - Detailed Site Investigations

From paper 'Contaminated Land Solutions for Local Authorities', Mike Allen, Service Unit Manager, London Borough of Newham (19 May 1999).

Detailed site investigation as required for planning applications and under Part IIA should comply with the new British Standard BS10175: Code of Practice for Site Investigation', British Standards Institute (2001).

The 'Dream Ticket' will contain a series of reports and details:

***Detailed site history** – this will show detail of all previous uses and users. It will highlight all possible sources of contamination, details of materials removed and materials brought on to site (and why).*

*E**xtensive site survey** – This will include:*

- *Validated sampling strategy, based on history, showing details of all other surveys.*
- *Analytical techniques will be explained the results will be from an accredited laboratory (NAMAS).*
- *Principal standards will be used to assess results - ICRCL, Dutch Intervention and EA for controlled waters.*
- *Leaching tests will be qualified by methods and include the Swiss aggressive solution method.*
- *Toxicological assessment will be undertaken.*
- *Geological information will include assessment of the strata for structural engineering and contamination control purposes. The presence of peat and alluvial deposits will suggest gas potential.*
- *Hydrogeological information will show the water table, perched waters, surface waters, giving details of quality/contamination, hydraulic capacity of strata, connections, aquifer status (EA classification), rates and directions of flow, tidal, and other variations, also sensitive receptors in the region, abstraction points, land drainage features etc.*
- *Extensive contamination analysis of mobility risks.*
- *Remediation strategy that addresses all risk factors, demonstrating a stable future outcome.*
- *Gas surveys would be thorough and recognise diurnal/seasonal fluctuations, reflecting concentrations and rates of evolution/flow. The effects of natural gas on contaminants (especially where these contain volatile fractions) must be evaluated.*

*S**ensitive development design -** This will show that every element in the design process is harmonised with the remediation strategy as part of the risk minimisation process, reflecting the construction methodology and the future use of the development. It will be include clear and unambiguous plans, section drawings and detailed exemplifications.*

***Clear and logical remediation strategy** – This will specify all the risks and demonstrate that the chosen methods is the best means of protection. It will justify the method(s) on the basis of the 'source-pathway-receptor' model and in terms of 'best environmental options'. It will describe and define all the elements, with specifications and performance characteristics for all the materials. It will give details of similar applications used elsewhere together with performance data from those applications.*

Environmental impact analysis *– This will look at all aspects of the development (pre-construction, construction phase and long term use of the finished development) and show at least no environment quality loss, and hopefully, environmental gain.*

Maintenance and monitoring strategy *– this will set out a means of ensuring 'single point responsibility' for the future integrity of the scheme (i.e. a holding company) and a long term strategy for measurement and control to verify the integrity of the remediation and mechanism for early detection of any failure or decline. It will identify responsibility for corrective action in the event of adverse performance.*

Construction code of practice *– this will include the Health & Safety code and full details of site and off site risk control. It will cover clean and dirty area segregation, traffic control, site hygiene, dust an odour control, noise, scientific monitoring etc.*

Public relations strategy *– This will provide a neighbour and contractor interface, with meetings, notifications and single person contact details.*

Hand-over strategy *– This will ensure that future occupiers have full details of all that had happened on the site and a clear map of the location of remaining materials.*

Development Checklist

Site History	*Determine contaminative uses and likely contaminants* *Known geology, water courses and aquifers.* *Physical obstructions (sewers, gas mains etc)*
Site Survey	*Sound sampling strategy & methodology.* *Bores and pits – depths and reuse in future.* *Initial and final analytical activity.* *Logs/results and comparison with 'standards'.* *Design footprint on plan.* *Environmental analysis.*
Consultation & Advice	*Formal contacts - Environment Agency, Water Utility* *Public relations – Neighbours, notices, letters, meetings and 'hot line'.*
Remediation Strategy	*Concise outline of principles and performance prediction.* *Risk assessment/analysis.* *'Hot spot' strategy – to deal with on-site eventualities.* *Systematic description of design elements with materials specification.* *Details of services & service trenches* *Gas protection system.* *Design drawings with details of 'edges' and clear annotation.* *Landscaping and topsoil details (tree pits etc).*
Remediation Completion	*Specific details of remediation undertaken including substantiation statement of durability and effectiveness.*
Monitoring and Management	*Design compliance validation method.* *Monitoring strategy.* *Management and reporting arrangements.* *Remediation indemnity.*
Construction Phase	*Dust, noise and odour control, hours of work, access points.* *Clean and dirty separation, wheel-washing etc (i.e. Code of Practice).* *Healthy and Safety plan.* *Materials and spoil notifications and certification.* *Site responsibilities and contacts.*

(The above table has been modified to include remediation completion and indemnity)

GLOSSARY OF TERMS

This Glossary provides an interpretation of terms and abbreviations used in the Inspection Strategy to aid reading by the lay person.

AONB	Area of Outstanding natural Beauty
Brownfield Site	A site that has been generally abandoned or underused where redevelopment is complicated by actual or perceived environmental contamination. Only a small proportion of brownfield sites will meet the definition of contaminated land.
CLEA	Contaminated Land Exposure Assessment, a methodology for carrying out risk assessment.
Contaminated Land	Any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land such that: a) significant harm is being caused or there is significant possibility of such harm being caused; or b) pollution of controlled waters is being caused, or is likely to be caused.
Controlled Waters	These include: a) Inland waters (rivers, streams, underground streams, canals lakes and reservoirs) b) Ground waters (any water contained in underground strata, wells or boreholes) c) Territorial waters (the sea within three miles of a baseline) d) Coastal waters (the sea within the baseline up to the line of highest tide, and tidal waters up to the fresh water limit)
DETR	Department of the Environment, Transport and the Regions
Drinking water abstraction	The taking of water from a source (in this case, primarily an underground source) for drinking water.
EA	Environment Agency
Eco-system	A biological system of interacting organisms and their physical environment.
GIS	Geographical Information System
Groundwater	Any water contained in underground strata, wells or boreholes
ICRCL	Interdepartmental Committee on Remediation of Contaminated Land
NNR	National Nature Reserve
Pathway	One or more routes by which a receptor can be exposed to a contaminant
Pollutant Linkage	The relationship between a contaminant, a pathway and a receptor
Ramsar Site	A site protected under an international convention on protection of wetlands of international importance especially as habitats for water fowl, named after a city in Iran where the convention was signed
Receptor	Sometimes referred to as 'target' that could be affected by contamination – human health, controlled water, ecosystem or property.

Remediation	Generally accepted as being the carrying out of works to prevent or minimise effects of contamination. In the case of this legislation the term also encompasses assessment of condition of land and the subsequent monitoring of the land.
Risk Assessment	The study of a) the probability, or frequency of a hazard occurring, and b) the magnitude of the consequences
SAC	Special Area of Conservation
Source	A substance in, on, or under the ground with the ability to cause harm
Source Protection Zone	Protection Zones around certain sources of groundwater used for public water supply. Within these zones, certain activities and processes are prohibited or restricted.
SPA	Special Protection Area for birds
Special Site	Any contaminated land sites defined by Section 78A(3) of Part IIA, which includes particularly complex industrial processes that pose special remediation problems. Also those that are controlled by national systems, most cases where contaminated land involves the Ministry of Defence and where controlled water may be affected. Following consultation, the Environment Agency is the enforcing authority for these sites.
SSSI	Site of Special Scientific Interest
WBC	Woking Borough Council

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'Woking Borough Corporate Plan 2001', WBC (2001)

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Contaminated Land Strategies - Legislation & Guidance

'The Environment Act 1995', HMSO (1995)

'SI 2000/227, Environmental Protection, England, The Contaminated Land (England) Regulations 2000', HMSO (2000)

'DETR Circular 02/2000, Environmental Protection Act 1990: Part IIA Contaminated Land', HMSO (2000)

'Contaminated Land Inspection Strategies, Technical Advice for Local Authorities', DETR (May 2001)

Guidance Documents - Contaminated Land Inspections & Investigations

'BS 5930, Code of Practice for Site Investigation', British Standards Institute (1999).

'BS 10175, Code of Practice for Investigation of Potentially Contaminated Sites', British Standards Institute (2001).

'Planning Policy Guidance Document 23: Planning and Pollution Control', DETR (1994).

'DoE Industry Profiles', Department of the Environment (1995).

'DoE CLR No 1 – A framework for assessing the impact of contaminated land on groundwater and surface water, Volume 1 and 2', Department of the Environment (1994).

'DoE CLR No 2 – Guidance on preliminary site inspection of contaminated land, Volume1 and 2', Department of the Environment (1994).

'DoE CLR No 3 –Documentary research on industrial sites', Department of the Environment (1994).

'DoE CLR No 4 – Sampling strategies for contaminated land ', Department of the Environment (1994).
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