Contaminated Land Inspection Strategy

June 2001

City of Westminster

Westminster City Council

CONTAMINATED LAND INSPECTION STRATEGY

Environmental Regulation

Please send all comments by 31 March 2002 to:

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A feedback form is provided at back of this document.

June 2001

CONTENTS **Page**

CONTENTS **Page**

Tables

Figures

Appendices

EXECUTIVE SUMMARY

Under new regulations the Council is required to inspect land in its district for contamination. A strategy has been submitted to the Environment Agency in July 2001 detailing how the Council will take a rational, ordered and efficient approach to this inspection.

The Pollution Team, Environmental Regulation is undertaking a programme to inspect contaminated land that is scheduled to run up to July 2006. An overview of the objectives for each stage is presented overleaf.

An inspection programme based initially on urban residential areas is proposed. Sites close to historic locations, controlled waters and protected areas of the environment will also be examined and a final prioritisation exercise undertaken to establish the order in which any problem sites should be cleared up.

We recognise that some sites may be identified outside this general approach that will require urgent attention. These sites will be dealt with as they arise. We will support parties wishing to undertake voluntary remediation.

The management of Council-owned land has been presented as a separate strategy in the final section of this document as this will be managed by the Housing Department and Corporate Property not Environmental Regulation. This maintains the appropriate separation between the enforcement and land-owning functions of the Council.

Westminster City Council is the lead regulator on contaminated land but wherever necessary the Council will work in partnership with other organisations particularly the Environment Agency. Consultation on this Inspection Strategy has been undertaken within the Council and with the Environment Agency.

The regulations set clear criteria that must be met before land can be formally designated as statutory contaminated land. The Council must also maintain a public register that must contain only certain information.

Views and contents are sought from readers on the content, style and conclusions of the Inspection Strategy, which will be taken into account in the production of annual reviews of this document which will happen in the first quarter of each year.

Officers of the Pollution Team, Environmental Regulation Service of Westminster City Council, have prepared this report.

	Stage 1 – Contaminated Land Officers Group	***Completion***
1	*CLOG established for the implementation of new contaminated land procedural requirements.*	*By April 2001*
2	*CLOG has provided feedback commented on a consultation draft Inspection Strategy.*	*By May 2001*
3	*Final strategy incorporating CLOG feedback presented to Environment & Leisure Committee and published as a final version.*	*By July 2001*
4	*Develop procedures and protocol for interdepartmental exchange of information on contaminated land*	*By July 2001*
5	*On-going training for nominated Council Officers in contaminated land issues organised by the Pollution Team.*	*From January 2002 (annually)*
6	*Meetings of the CLOG group to be facilitated by the Pollution Team as and when issues arise.*	*From April 2001*
	Stage 2 - Budget Allocation	***Completion***
1	*A Report be prepared for the Cabinet for Capital Spend with an estimate of budget requirements to undertake the next stages of the Inspection Strategy (2001-02)*	*By October 2001*
2	*Purchase of resources and hiring of trainers/experts for interdepartmental contaminated land training days scheduled to be held at least annually.*	*July 2001 - July 2006*
3	*Purchase of on-going training/expert advice for Pollution Team staff undertaking contaminated land duties.*	*July 2001 - July 2006*
4	*Purchase of up-to-date reference materials on site investigation, remediation and validation for use by contaminated land staff.*	*By January 2002*
5	*Purchase of historical land use information, geological information, and appropriate software to run a GIS Land Information Database with restricted access.*	*By January 2002*
6	*Possibly hire/contract appropriate staff to undertake data entry and GIS mapping as part of information resource collection & prioritisation inspection programme.*	*Jan 2002 - July 2003*
7	*Purchase of risk prioritisation and risk assessment database package linked to GIS System.*	*By April 2002*

8	*Purchase/hire of field equipment/external contractors to undertake detailed site investigations and sample analysis.*	*July 2003 – Jan 2006*
9	*Provisions for costs related to Notification/Declaration of Statutory Contaminated Land (possible appeals/court costs)*	*April 2005 - July 2006*
Stage 3 - Dataset Collection		***Completion***
1	*Report prepared by Pollution Team and presented to the Cabinet on Capital Spend for final decision on methodology and budget.*	*By October 2001*
2	*Arrange to purchase/obtain 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 January 2002*
3	*Dataset Collection Programme Completed – GIS Land Information Database set up and running. Datasets of contamination sources, receptors and pathways in the City collected, purchased, and set up in appropriate software/hardware as a functional tool for desktop land inspections.*	*By January 2002*
Stage 4 - Prioritisation Inspection		***Completion***
1	*To develop a plan and detailed timetable for the Prioritisation Inspection of the City including Council-owned sites.* *This includes selection and adoption of appropriate methodologies for risk prioritisation.*	*January – April 2002*
2	*Complete Prioritisation Inspection - All known potentially contaminative land uses identified in Westminster, including Council owned sites, inspected and given a priority rating.*	*By July 2003*
Stage 5 - Detailed Site Investigation		***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 – Sept 2003.*
2	*Complete Detailed Site Investigations – Detailed risk assessment and site investigation undertaken for all high priority sites.*	*By January 2005*

	Stage 6 – Statutory Contaminated Land	***Completion***
1	*Develop timetable for notification and declaration of statutory Contaminated Land in the City.*	*January - April 2005*
2	*Complete notification/declarations and set up public register of statutory Contaminated Land.*	*By July 2006*
	Stage 7 – Liaison & Reporting	***Completion***
1	*Develop a strategy for Liaison & Reporting with timetable for consultations to Council, Environment Agency, Greater London Authority, neighbouring boroughs & other statutory consultees.*	*July 2001- April 2002*
2	*Liaison and reporting undertaken accordingly*	*April 2002 – July 2006*
	Stage 8 – Review	***Completion***
1	*Develop review mechanisms identifying timetables and occasions for the review of various components of Inspection Strategy*	*July 2001 - April 2002*
2	*Reviews completed according to timetable and Inspection Strategy maintained as a current working document.*	*July 2001 - July 2006*
	WCC Property - Inspection & Management	***Completion***
1	*To develop and implement new in-house procedures for Council-owned property with respect to managing and preventing land contamination.*	*By July 2002*
2	*To implement programme for identification, prioritisation, investigation and remediation of Council-owned property (alongside inspection of privately owned property).*	*Jan 2002 - July 2006*

GLOSSARY OF TERMS

The DETR Circular 02/2000 contains a detailed glossary of terms that provides legal definitions of terms that may be used in this Strategy. This Glossary provides an interpretation of terms used in the Inspection Strategy to aid reading by the lay person.

AONB	Area of Outstanding Natural Beauty
Appropriate Persons	Are categorised as either Class A or Class B persons: Class A - Any person, organisation or company that has caused or knowingly permitted the contaminant, by which the land could be considered as contaminated land, in, on, or under the ground. Class B - Normally the current owner or occupier and will only be responsible for remediation where a Class A person cannot be found.
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: 1. Significant harm is being caused or there is significant possibility of such harm being caused; or 2. Pollution of controlled waters is being caused, or is likely to be caused.
Controlled Waters	These include: 1. Inland waters (rivers, streams, underground streams, canals lakes and reservoirs) 2. Ground waters (any water contained in underground strata, wells or boreholes) 3. Territorial waters (the sea within three miles of a baseline) 4. Coastal waters (the sea within the baseline up to the line of highest tide, and tidal waters up to the fresh water limit)

DEFRA	Department of Environment, Food & Rural Affairs (formerly part of DETR)
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
Orphan Sites	If a contaminated land site has been identified and neither Class A nor Class B appropriate persons can be found, the site may be categorised as an orphan site. The local authority then assumes responsibility for any action including the cost of remediation.
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 substances 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	These are sites that either pose special remediation problems or are subject to legislation under other regulatory regimes, either by the Environment Agency or by some other national statutory body. For any special site, the Environment Agency rather than the Council will be the enforcing authority. Both the Council and the Environment Agency can identify potential special sites but any particular area of land cannot be designated as a special site unless the Council has first determined the land is statutory Contaminated Land. Special sites can include areas of contaminated land affected by the following: • Waste tar acid lagoons. • Oil or petroleum refining operations. • Explosives manufacture. • Nuclear sites. • Sites regulated under Integrated Pollution Control. • Waste management sites where there is a breach of site licence. • Certain sites used for defence purposes and the manufacture storage and disposal of weapons.
SSSI	Site of Special Scientific Interest
WCC	Westminster City Council

1.0 BACKGROUND TO INSPECTION STRATEGY

On 1st April 2000 new regulations came into force and introduced the first comprehensive legal framework for contaminated land. This new framework introduced as Part IIA of the Environmental Protection Act 1990, placed a duty on every local authority to inspect its area for contaminated land.

Westminster City Council is required to undertake this inspection and this strategy is a plan of how this will be carried out.

1.1 Westminster City Council Corporate Aims

The following statement prefaces '*Westminster 2000*', *Westminster City Council (1999):*

'Our vision is to ensure that Westminster continues to be the most attractive and well run City in which to work and live. We believe that we will achieve our vision by developing and adopting policies that focus on our top five Council priorities:

- ***Providing quality services at an affordable cost***
- ***Being the cleanest and greenest borough.***
- ***Waging war on crime and nuisance.***
- ***Being a leader in innovation.***
- ***Responding to our residents.'***

The Inspection Strategy is complementary to this vision and to the following planning aims from the '*Unitary Development Plan - Shaping the Future of Westminster', Westminster City Council (2000):*

'Ensuring a high quality environment:

The quality and character of Westminster's built, landscaped and natural environment will be preserved and enhanced; this applies particularly to its historic fabric, which is one of London's major assets as a World City'.

'Working towards a more sustainable City:

The sustainable development of the City will be achieved by meeting economic, social and environmental needs in a balanced and integrated way'.

Land contamination has significant impacts on both the environment and the economy so these policy areas are important in developing the Inspection Strategy.

In developing this strategy, the Pollution Team has consulted other sections in Westminster City Council. These contacts are listed in Appendix 1.

The Council is committed to consultation with all sections of the community. We have sent a copy of this strategy to the local offices of the organisations listed in Appendix 2. In addition to statutory consultees the Council will consider comments received from other interested parties in the annual reviews of this Inspection Strategy.

This inspection Strategy was submitted to the Environment Agency in July 2001.

1.2 Regulatory Context

Contaminated land regulations have been under development since the early 1990's. Following consultation on a 1993 White Paper entitled *'Paying for our Past'* the Environment Act 1995 inserted a new section (Part IIA) into the Environmental Protection Act 1990.

Another period of detailed consultation followed this enabling legislation. The regulations and the statutory guidance finally came into force in April 2000. This new regime, generally referred to as 'Part IIA', has prompted the production of this Inspection Strategy.

It is intended that the new regulatory framework introduced will improve the transparency and focus of regulatory controls. It is designed to ensure that regulators take a strategic approach providing a more consistent regulatory mechanism that is better able to reflect the complexity and range of circumstance found on individual sites.

1.3 Role of Local Authorities

Local authorities have been given the primary regulatory role under Part IIA as we have historically had responsibility for dealing with any statutory nuisance caused by land contamination and are also the lead authorities on land use planning.

In all 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.
2. Determine whether particular areas of land are contaminated in accordance with the Secretary of States guidance.
3. Decide whether any contaminated land requires designation 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.

1.4 The Role of the Environment Agency

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

The main duties of the Environment Agency 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'.
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.

1.5 Special Sites

These are sites that either pose special remediation problems or are subject to legislation under other regulatory regimes, either by the Environment Agency or by some other national statutory body. The Glossary of Terms contains a description of types of Special Sites.

The Environment Agency is the enforcing authority and local authorities are required to consult with the Agency when potential special sites are identified.

1.6 Definition of Contaminated Land

Guidance produced by DETR requires that local authorities adopt a strategic approach to ensuring that the contaminated land inspection process is rational, ordered, efficient, clear, transparent and open.

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 we are required to act in accordance with guidance issued by the Secretary of State. A more detailed description of what defines significant harm and the types of receptors that must be affected for the land to be defined as contaminated is presented in Appendix 3.

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 where it is written in uppercase **Contaminated Land** will refer to land meeting the statutory definition.

The guidance stipulates a **'suitable for use'** approach in that land will only be considered contaminated if it is **unsuitable for its current use**. Due to past industrial and related activities some land contamination may have been present for a long period of time. Not all of it will be regarded as a threat to human health or the environment in its present use. It may therefore only be necessary to remediate a site when a change of use of the land is proposed.

1.7 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 Environment Agency or we are the regulator. There are four main stages to this approach:

- To establish who is the **'appropriate person'** to take responsibility for the remediation (or 'clean-up') of the land.
- 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.
- To determine whom should bear what proportion of liability for meeting the costs of the work.
- To record certain information about regulatory action on a public register.

1.8 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 are presented in Table 1.*

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 contaminant should be capable of harming or, in the case of controlled waters, be capable of polluting that receptor.

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

1.9 Principles of Risk Assessment

The definition of statutory Contaminated Land under Part IIA is based upon the principles of risk assessment. It provides 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. It will also assess 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. Table 3 presents further details about different types of substances that may be present on contaminated land and their associated potential effects.

Table 1- Key Contaminants on Industrial Land

Group	*Contaminant*	*Effects*			
		Human Health	*Plants & Ecosystems*	*Construction Materials*	*Controlled Waters*
Metals	*Cadmium*	*	*		*
	Chromium	*	*		*
	Copper		*		*
	Lead	*	*		*
	Mercury	*	*		*
	Nickel	*	*		*
	Zinc		*		*
	Beryllium	*			*
	Vanadium	*	*		*
	Silver	*	*		*
	Thallium	*			*
Metalloids	*Arsenic*	*			*
	Barium	*	*		*
	Selenium	*	*		*
	Boron		*		
	Cyanide	*	*	*	
	Nitrate				*
	Sulphate		*	*	*
	Sulphide		*	*	*
	Sulphur	*	*	*	*
	Ammonium	*		*	*
	Chloride			*	
Organics	*Fuel/Hydrocarbons*	*	*	*	*
	Poly-aromatic hydrocarbons	*			*
	Phenol	*	*	*	*
	Aromatic hydrocarbons	*	*	*	*
	Aliphatic hydrocarbons	*	*	*	*
	Aromatic halocarbons	*	*	*	*
	Aliphatic halocarbons	*	*	*	*
	Chlorinated phenols	*	*	*	*
	Pesticides/herbicides	*	*		*
	Dioxin/furan	*	*		*
	Organometallics	*	*		*
	Poly-chlorinated biphenols	*	*		*
	Acetone	*	*		*
Others	*Asbestos*	*			
	PH	*	*	*	*
	Carbon dioxide	*	*		
	Methane	*	*		
	Explosives	*	*	*	*
	Radioactivity	*	*		
	Radon	*	*		
	Pathogens	*	*		*

From 'R & D Publication 66', EA (2001)

Table 2 - Potentially Sensitive Receptors

Receptor	***Land Use Types***
Human Beings	*Allotments* *Residential with and without garden* *Residential without gardens* *Schools or Nurseries* *Recreational – parks, playing fields & open space* *Commercial/Industrial*
Ecological systems or living organisms forming part of a system within protected locations	*Sites of Special Scientific Interest (SSIs)* *National Nature Reserves* *Marine Nature Reserves* *Areas of special protection for birds* *Special Areas of Conservation (SACs)* *Special Protection Areas (SPAs)* *Candidate SACs & SPAs* *Ramsar sites,* *European sites* *Nature reserves*
Property in the form of buildings	*Ancient Monuments* *Site of Archaeological Importance* *Listed 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 & Minor Aquifers*

From 'Inspection Strategies Advice Note – DETR & EA (May 2001)

Table 3 – 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.* *Potentially harmful to humans if ingested (either by direct or indirect routes).* *Potential to cause pollution of controlled waters.*
'Safes 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 for instance 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).* *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).* *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.*

2.0 CORPORATE PROCEDURES

2.1 Strategic Approach

We are required to take a strategic approach to inspecting land for contamination. This Inspection Strategy has been developed to meet these requirements. Particular reference has been made to the DETR document *'Contaminated Land Inspection Strategies – Technical Advice for Local Authorities'.*

The statutory guidance requires that our approach:

- Is rational, ordered and efficient.
- Is 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 we are most likely to identify contaminated land.
- Ensure that the local authority efficiently identifies requirements for the detailed inspection of particular areas of land.

Dealing with contaminated land is a corporate issue for Westminster City Council. A Contaminated Land Officer Group comprising the following departments has been established and the members of the group are listed in Appendix 1.

- Environmental Regulation – Pollution Team
- Environmental Regulation – Consultation Team
- Environmental Regulation – Client
- Corporate Property
- Housing Department
- District Surveyors - Building Control
- Planning Policy and Project Development
- Development Planning Services
- Policy – Environment & Leisure
- Information Services
- Legal Services
- Land Charges

The Inspection Strategy addressing the **new** procedural requirements under Part IIA is detailed in the following sections. Within Westminster City Council the Pollution Team, Environmental Regulation Service has taken the lead role for the implementing the Inspection Strategy required by Part IIA Corporate Property and the Housing Department will take the lead role regarding the new requirements for the management of Council-owned land.

2.2 Current Council Procedures

Prior to the implementation of Part IIA contaminated land has been dealt with where it has become apparent through existing legislation including the Town and Country Planning Act 1990, The Building Act 1984 and the statutory nuisance provisions of the Environmental Protection Act 1990.

2.3 Environmental Regulation

2.3.1. Proactive Work

Within Environmental Regulation both the Pollution Team and the Consultation Team have functions with regard to land contamination. The Pollution Team will be undertaking the Inspection Strategy and the Consultation Team have had the responsibility to deal with contaminated land issues which arise through the planning application process. The Pollution Team provides technical support to the Consultation Team.

The Pollution Team provides a land use information service to external clients for a nominal fee. The information includes information provided to the Council by the Environment Agency on locations of certain past and present licensed land uses including waste management sites and the location of groundwater boreholes. In addition some Ordnance Survey historical map information is provided to assist the client in determining what types of land use may have occurred on or close to a particular site in the past.

2.3.2. Reactive Work

In the past Environmental Regulation have had the responsibility to deal with contaminated land issues which arose as a result of a resident's or business service request mainly through the statutory nuisance provisions of the Environmental Protection Act 1990. Any issues of land contamination that may have previously been dealt with under the statutory nuisance regime will now be dealt with through Part IIA.

We will investigate service requests regarding allegations of risk to health or property using the same performance standards found in our Enforcement Policy for dealing with Statutory Nuisances.

All clients will be asked to supply their names and addresses and 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.

Environmental Regulation 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 noted but no determination of statutory Contaminated Land will occur without robust scientific evidence. In all cases the Pollution Team will use knowledge and experience to decide whether further investigation is required following a complaint or a provision of information. Further details of the new procedures for inspection and investigation are detailed in the following sections.

2.4 Development Planning Services

The Consultation Team, in Environmental Regulation works closely with Development Planning Services on all issues relating to pollution and arrangements for inter-departmental consultation are in place.

Westminster's planning policies are outlined in the Unitary Development Plan 2000. There is a policy relating to contaminated land which states:

'Policy Env 7: Contaminated Land

On sites that may be contaminated, the City Council will require a thorough site investigation. If the results show elements of contamination, then handling and disposal procedures must be agreed with the City Council and the Environment Agency before building works begin.'

Contaminated land also 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. We have regard to this advice during the process of development control.

Large developments require Environmental Impact Assessments that would identify contamination issues. Nevertheless the responsibility for providing information rests primarily with the developer. Any remediation agreed as a planning condition will be dealt with under planning controls and not under Part IIA.

We will consult with the Environment Agency on certain types of application. The Environment Agency takes the opportunity to request the inclusion of conditions requiring the investigation and remediation of land where contamination could result or is resulting in the pollution of controlled waters.

However in general, particularly on smaller developments, the planning regime is not well placed to make use of the powers available due to a lack of data including land use history. Implementation of the Contaminated Land Inspection Strategy will better inform the planning process.

Development Planning Services hold records of planning history. Details are held on file of site investigations submitted in support of planning applications. Some records are also held digitally on the Council's GIS system. These will be an information resource related to land use history.

2.5 Building Control

The Building Regulations 2000 requires 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.

Because of the existence of Approved Inspectors, authorised by the Construction Industry Council to undertake enforcement of the Building Regulations, 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 this Council.

If a District Surveyor from this Council supervises building works on contaminated land there may be liaison with Environmental Regulation. In the event that precautions are not considered to be reasonable, enforcement action can be pursued under the Building Act 1984.

2.6 Housing Department & Corporate Property

Details are held of the land that is and has been owned and leased by the Westminster City Council. These records are administered by the Housing Department and Corporate Property and will be examined to identify any land that may have been contaminated by former Council activities.

Where land is identified as being potentially contaminated it will be prioritised for more detailed inspection in co-ordination with the Environmental Regulation. New procedures regarding the management of Council-owned land are presented later in the document.

2.7 Legal Services

In general Legal Services is responsible for providing advice on the Council's duties under Part IIA. More specifically Legal Services will also be instrumental in identifying appropriate persons who may be responsible for the investigation or remediation of land. Legal Services will be required to assist in conducting land/company searches and with the apportionment of liability should it be necessary.

2.8 Data Protection

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

We now have a duty to disclose some information received by it 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.

A Memorandum of Understanding between the DETR, Environment Agency and Local Government Association agreed the EA would provide information it holds to assist local authorities in the development of their inspection strategies. The roles and responsibilities of the authorities in respect to the confidentiality and protection of the data are outlined in the agreement.

The Council and the EA will disclose information to each other regarding potential 'special sites' some of which may not be considered public information. If this is the case any information will be clearly marked 'commercial in confidence'.

The Council also recognises the potential for information gathered during the process of inspection to be misinterpreted. To prevent the possibility of blighting of individual sites we will maintain as confidential non-public information gathered in the investigation stages of this strategy.

2.9 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.

A short guide *'Communicating Understanding of Contaminated Land Risks' Scotland and Northern Ireland Forum for Environmental Research (SNIFFER), (1999),* has recently been published. This outlines risk strategies and will be used by the Council when responding to concerns and expectations of the community that may arise in response to land contamination.

The Council will treat any concerns raised by a member of the public seriously and with respect. In all instances will recognise and try to overcome the critical barriers to effective risk communication, namely:

- Familiarity – increased concern about unfamiliar issues.
- Control – increased concern if the individual is unable to exert any control over events.
- Proximity in Space – increased concern about nearby events.
- Proximity in Time – increased concern about immediate consequences rather than long term effects.
- Scale – particularly in terms of media coverage where one large incident appears to be much worse than several small incidents.
- 'Dread Factor' – lack of understanding can lead to stress and make further explanation more difficult.

These 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.

3.0 DESCRIPTION OF WESTMINSTER

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

Westminster is unique as the location of the British Parliament. It is also the home to a range of national cultural facilities including museums, galleries, halls, theatres, cinemas, clubs and institutes of professional, cultural and political agencies. The financial centre of London continues to be based in City of London although some major financial companies are located in Westminster.

Westminster contains communities and localities of distinctive character and historic heritage. Conservation of these and protection of the environment for the health and benefit of the City's residents and visitors is of vital importance to the Council.

3.1 Geographical Location

Westminster City covers 2,204 hectares (8 square miles). It consists of a parliamentary/government centre, a financial/cultural centre, residential areas and historic parks. It lies at the centre of Greater London and is bordered by the River Thames to the south-east, the Royal Borough of Kensington & Chelsea to the west, London Borough of Brent to the north-west, London Borough of Camden to the north/north-east and City of London to the east. The City contains significant areas of open land with high conservation values – Regent's Park, Hyde Park, Kensington Gardens, St James Park and Green Park.

The City includes the hidden valleys running under the metropolitan area of the Tybourne River and the Westbourne River with its tributaries. The Regent's Canal / Grand Union Canal runs through the north from Camden to Westbourne Grove linking the River Lea Navigation to the upper Thames and the Midlands.

3.2 Population Distribution

Westminster is the heart of the capital city of London, set in Britain's most populated region and is the major retail and entertainment area for Londoners and for British and international visitors. The City has a daytime population of over 1 million workers/visitors and is home to 231,000 residents (mid-year 1999 estimate).

Figure 1

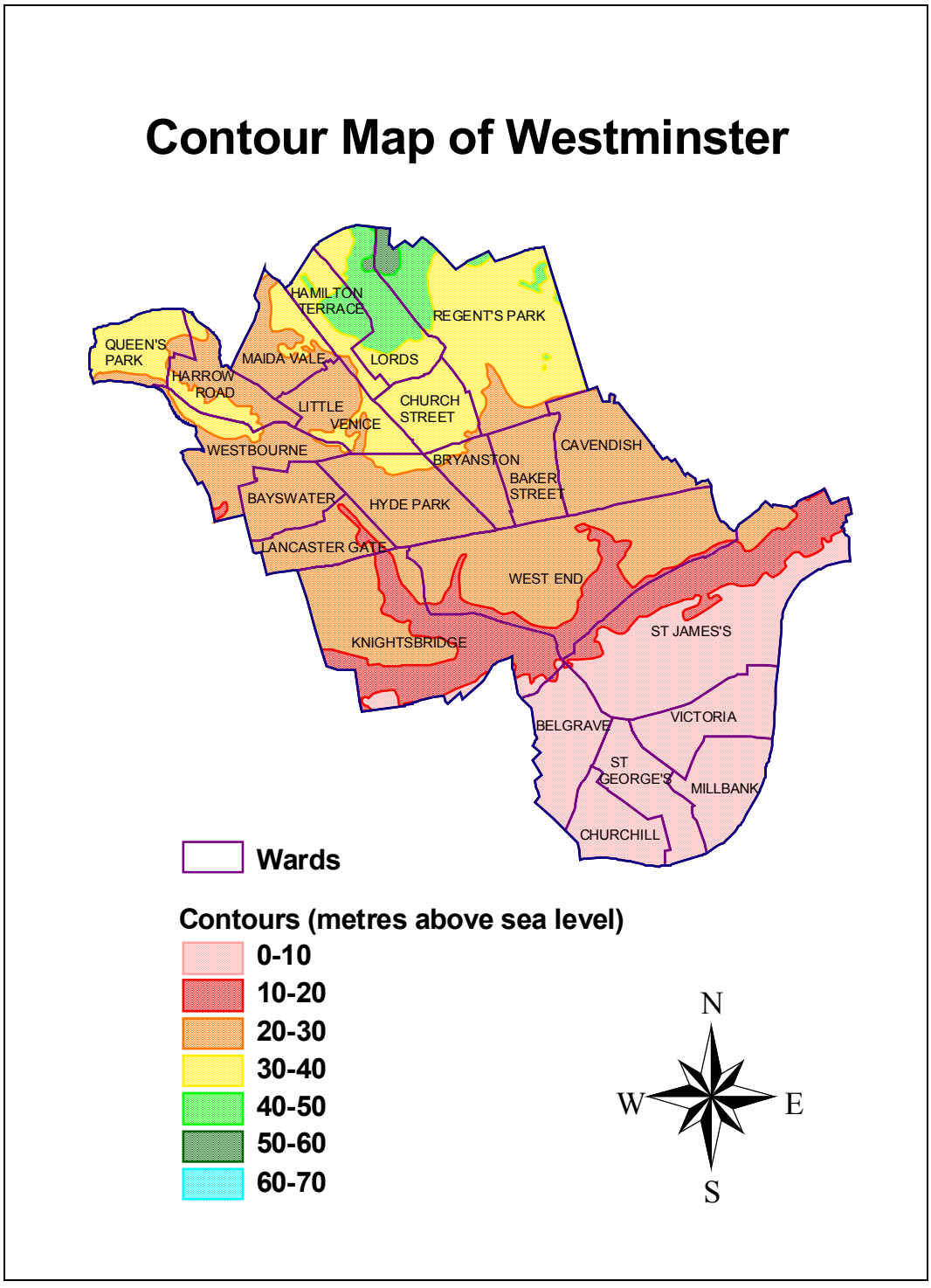

Contour Map of Westminster
HAMILTON TERRACE
REGENT'S PARK
QUEEN'S PARK
MAIDA VALE
LORDS
HARROW ROAD
LITTLE VENICE
CHURCH STREET
WESTBOURNE
BRYANSTON
CAVENDISH
BAKER STREET
BAYSWATER
HYDE PARK
LANCASTER GATE
WEST END
ST JAMES'S
KNIGHTSBRIDGE
BELGRAVE
VICTORIA
ST GEORGE'S
MILLBANK
CHURCHILL
Wards
Contours (metres above sea level)
0-10
10-20
20-30
30-40
40-50
50-60
60-70
N
W
E
S

Table 4 - Demographic Information for Westminster

Name of Ward	*Resident Population*	*Name of Ward*	*Resident Population*
Baker Street	*4475*	***Little Venice***	*8908*
Bayswater	*9330*	***Lords***	*6337*
Belgrave	*5868*	***Maida Vale***	*8308*
Bryanston	*4958*	***Millbank***	*7085*
Cavendish	*6676*	***Queens Park***	*10097*
Churchill	*8677*	***Regent's Park***	*9515*
Church Street	*10016*	***St George's***	*9247*
Hamilton Tce	*5616*	***St James***	*3861*
Harrow Road	*11374*	***Victoria***	*4585*
Hyde Park	*8611*	***Westend***	*5922*
Knightsbridge	*4912*	***Westbourne***	*10193*
Lancaster Gate	*10251*		

From National Statistics 2000

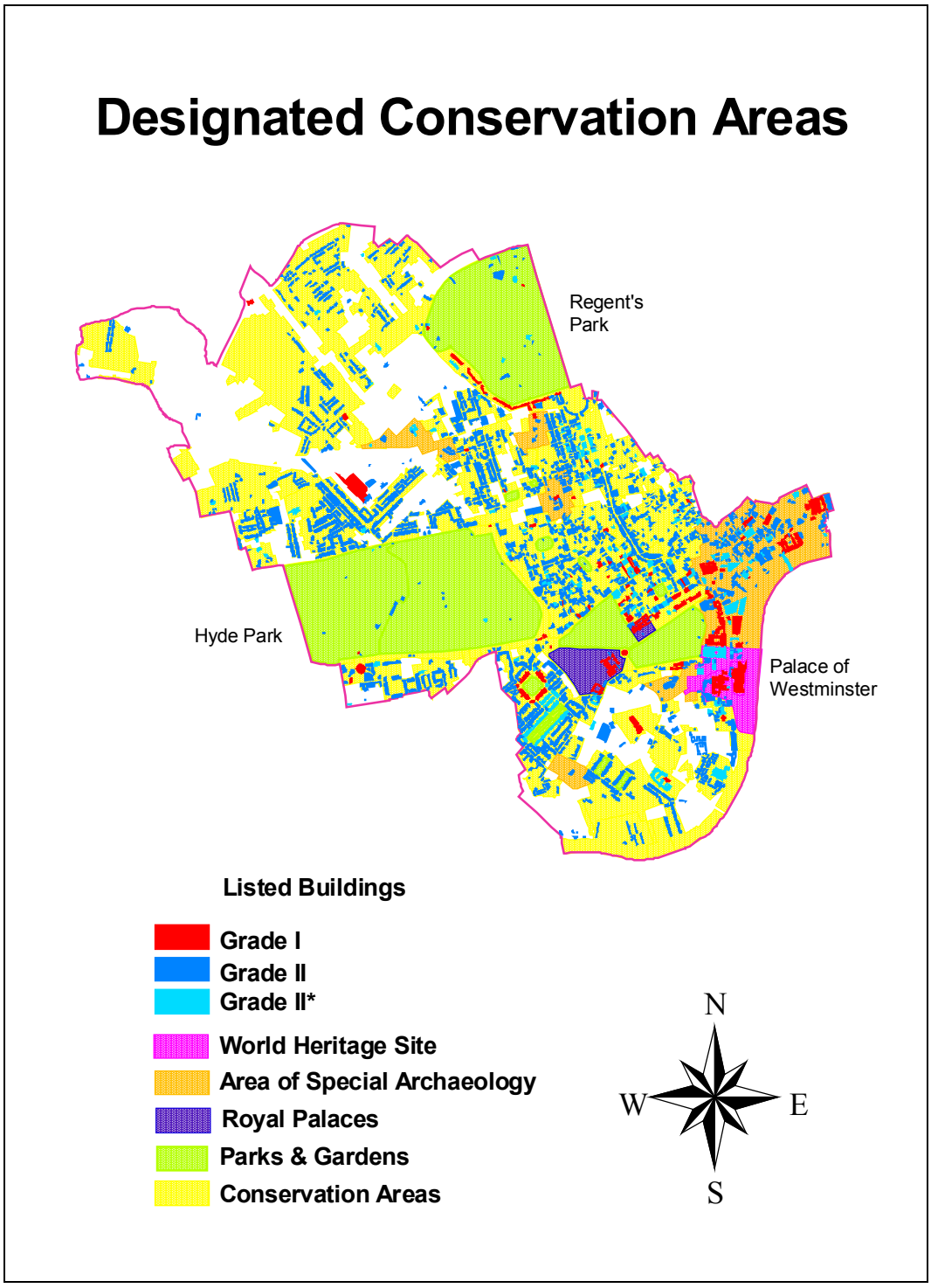
3.3 Protected Locations

Westminster has a heritage that reflects over 1000 years of continuous growth and development. Throughout this period the City has been the centre of Parliamentary and Court life. This has resulted in areas of great townscape, architectural and historical interest. The Designated Conservation Areas found in the Unitary Development Plan are shown in Figure 2.

Westminster has over 11,000 listed buildings, 5.6 km of river frontage, 6.4 km of canal frontage, 250 hectares of historic Royal Parks and a World Heritage Site encompassing Westminster Abbey and the Houses of Parliament. Conservation Areas, many of which reflect the distinctive historic localities, cover over 76% of the land area and include 19 historic squares and gardens listed by English Heritage.

The City contains valuable archaeological remains which are fragile resources and susceptible to damage by contamination. These areas are Lundenwic & Thorney Island, Ebury Village, Tyburn Settlement, Paddington & Lillestone Villages and Marylebone Village.

Figure 2



Data Source – Unitary Development Plan 2000.

Westminster also contains nature conservation sites, which comprise the Royal Parks, Grand Union/Regent's Canal, the River Thames and 27 other sites. We promote green corridors to provide opportunities for connecting wildlife habitats and has prepared a Biodiversity Action Plan which identifies areas that are particularly valuable for the conservation of species of plants, insects, birds and animals which need special protection.

3.4 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. Thames Water supplies Westminster City's drinking water.

3.5 Groundwater

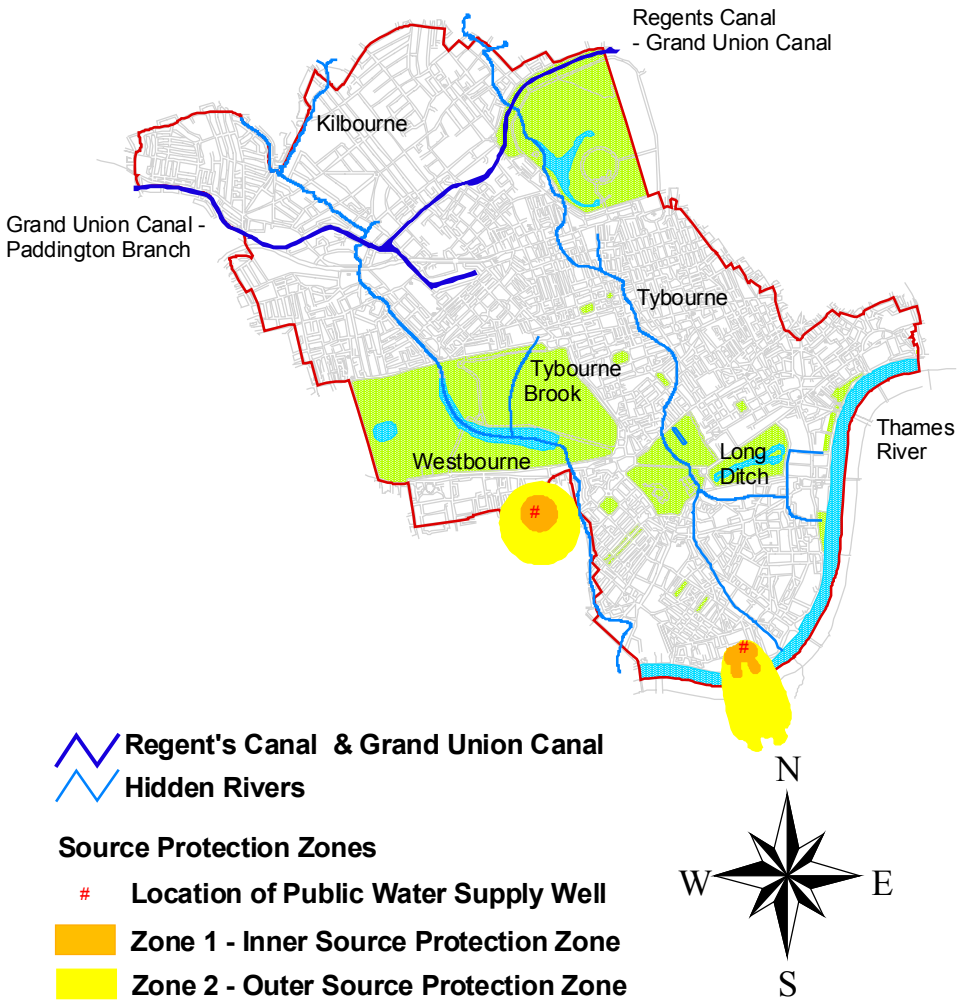
Controlled groundwater is normally afforded greater protection from pollution than surface waters such as rivers and streams. Aquifers are water-bearing layers in the ground and aquicludes are confining layers that do not bear water (such as clays layers). The vulnerability of groundwater towards pollutants 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 or quarrying, the vulnerability of the aquifer to pollution is increased.

Groundwater source protection zones are designated zones around public water supply abstractions (boreholes). The Environment Agency has recently released guidance that 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)

Figure 3

Locations of Canals, Rivers & Source Protection Zones in Westminster



Two source protection zones related to public drinking water supply abstraction points are located within Westminster. The 'perched' groundwater located in the gravels and alluvium above the London Clay layers are classified as minor aquifers of high vulnerability. There is however high quality artesian groundwater located below the London Clay. This water source was used to a large extent in the past however some private deep wells remain and are used as a drinking water source. These are registered with the Council and the Environment Agency.

The decline in volume of groundwater abstracted has now led to rising water tables. In many areas groundwater has to be constantly pumped away from underground services. The impact of changing groundwater levels and the implications for receptors and pathways will need to be assessed across Westminster. We will obtain further detailed information as part of the Dataset Collection detailed further in this document.

The source protection zones and the locations of public water supply wells are shown in Figure 3. We will obtain further detailed information from the British Geological Survey and the Environment Agency.

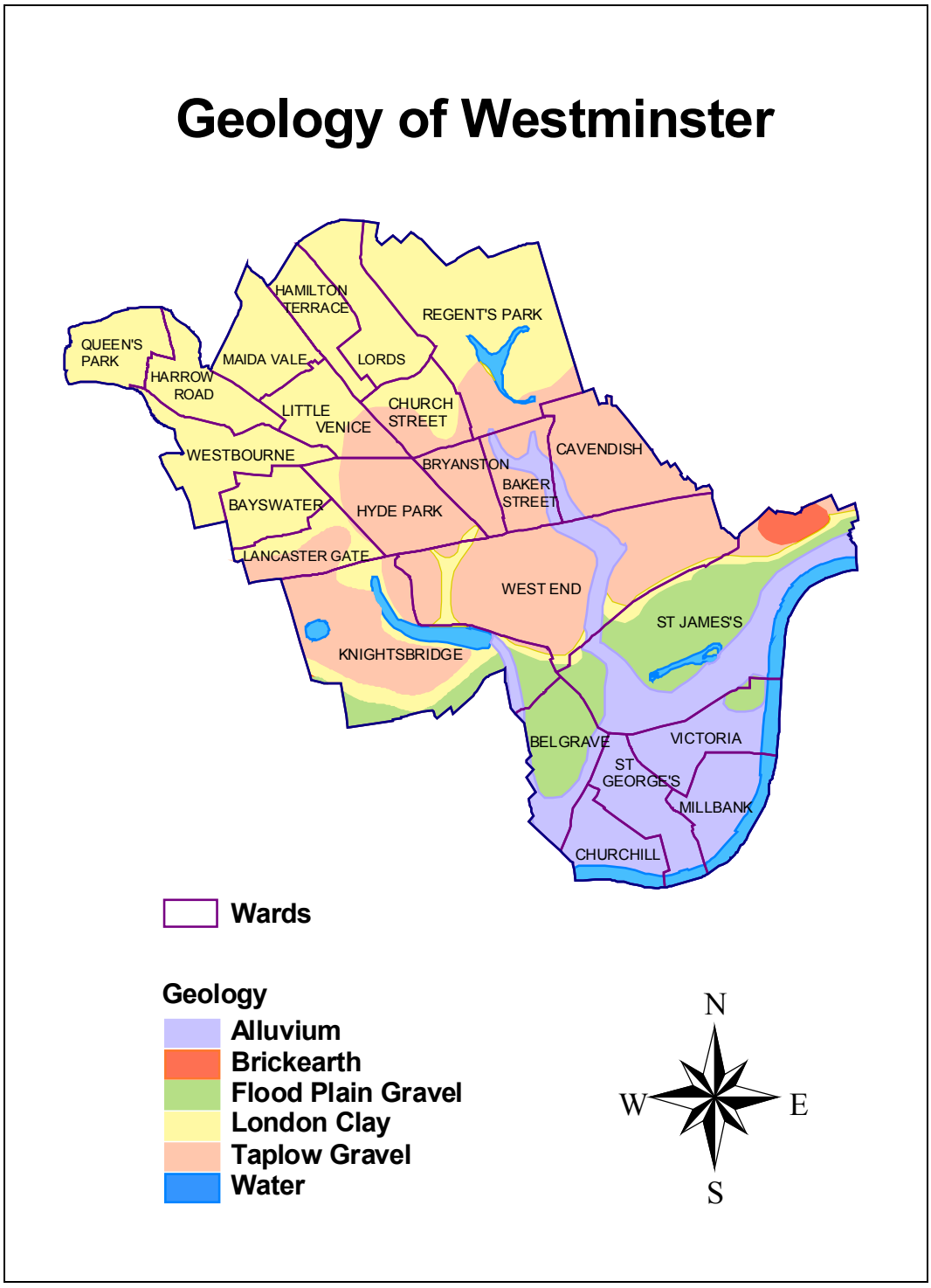
3.6 Surface Waters

Westminster falls within the surface water catchment area of the Thames River and controlled surface waters include the Tyburn River, Westbourne River, Regent's Canal and the Grand Union Canal. Surface waters are in some ways more susceptible to contaminants than groundwater because of the direct influence of surface run-off. In general surfacewater are ecologically sensitive in that they support wildlife and ecosystems. In this case surface water from Westminster does drain into the downstream tidal ecosystems of the Thames River.

From sampling carried out by the Environment Agency the river quality of the Grand Union Canal is predominately categorised as 'poor' to 'fair'. Protection and improvement of the standards of surface water quality from contamination is important to this Inspection Strategy.

Westminster does contain Areas at Risk of Flooding as defined by the Environment Agency along the banks of the Thames. This is despite the protection of the Thames Barrier. Flooding is an important pathway by which soluble contaminants can enter into Controlled Waters.

Figure 4


Geology of Westminster
HAMILTON TERRACE
REGENT'S PARK
QUEEN'S PARK
MAIDA VALE
LORDS
HARROW ROAD
LITTLE VENICE
CHURCH STREET
CAVENDISH
WESTBOURNE
BRYANSTON
BAKER STREET
BAYSWATER
HYDE PARK
LANCASTER GATE
WEST END
ST JAMES'S
KNIGHTSBRIDGE
BELGRAVE
VICTORIA
ST GEORGE'S
MILLBANK
CHURCHILL
Wards
Geology
Alluvium
Brickearth
Flood Plain Gravel
London Clay
Taplow Gravel
Water
N
W
E
S

3.7 Geological Characteristics

The geology and soil types present in Westminster are important elements in determining if significant contaminant pathways are present on individual sites. The Council has obtained a digitised map of the drift geology of the City that is reproduced in Figure 4.

Much of the Thames Valley is covered by drift geology - river gravel, sands and alluvial deposits underlain by London Clay. There is also an area of brickearth located in the south-east of the City. The remainder of Westminster is built directly on London Clay that gives rise to heavy poorly drained soils.

Further detailed maps of the solid and drift geology may need to be obtained from British Geological Survey as part of the Dataset Collection detailed further in this document.

3.8 Areas of Naturally Metal Enriched Soils

The soils within Westminster may well have naturally elevated levels of some metals. 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 further in this document.

4.0 HISTORICAL LAND USE IN WESTMINSTER

This section gives the background information on Westminster mainly in relation to the types of potential contamination sources that are present. It explains how this influences the Council's approach to inspection for contaminated land.

Current industrial activity is minimal and is restricted to a number of small to medium size industries located close to railways and waterways. There are no operating earth extraction industries such as brick earth pits, gravel pits or landfills.

Although Westminster could not be described as industrialised there have been in the past a number of land uses which may have resulted in land contamination. Some of these are described in the following sections.

4.1 Industrial History

The earliest forms of industrial activity in the City were focussed in the areas around the navigable waterways of the Thames River and Grand Union / Regent's Canal. They included coalyards, timberyards, breweries and brickworks. The Grosvenor Canal was a small waterway that ran from the Thames River to near the present location of Victoria Station.

Cottage industries such as hatters, clothing dyers, printers and small to medium scale tanneries/leatherworks were important service industries in the past. These industries were associated with the use of toxic chemicals for instance mercury in the case of hatters.

There is reference made to a carpet manufacturing factory in the Paddington area in the 1750s which was originally established by the Huguenot refugees from France. It is likely that fibre treatment and dying activities would have been associated with this industry.

4.2 Sand/Brick Earth Extraction

Gravel and brick earth were important mineral resources in the City especially given the growth that has occurred over the last two centuries. Some of the land area would have been subject to extraction activities close to major roads and waterways. Worked out gravel and brick earth pits often became points for poorly controlled waste disposal activities.

4.3 Barracks & Ministry of Defence.

A military presence has been associated with Westminster since the development of Westminster Palace as a centre of government. Support industries such as uniform manufacturers, foundries, blacksmiths and harness-makers would have been an important presence in the City for over 900 years. These types of processes have traditionally used various potentially polluting substances and deposits may still remain in the ground on some of these sites.

4.4 Gasworks

In 1812 the Gas-Light and Coke Company became the first gas company to receive a charter of incorporation to provide light to the City of Westminster. Soon afterwards several other gas companies were established and in competition with each other.

Gasworks sites are well known for producing potentially harmful coal tars, phenols and cyanides. Before municipal gas was supplied gasworks were also often associated with individual institutions such as hospitals and prisons.

Eventually London gas supply was focussed in several major sites located close to the Thames and the necessary coal supply for the gas making process. In Westminster there are at least two sites.

4.5 Railway

Westminster's main railway termini – Paddington, Charing Cross and Victoria were built between 1836 to 1874 and Marylebone was built 1889. The construction of the railways was an important stage in the land use history of Westminster and affected the whole way of life of Victorian London. Railway stations and tracks were planned and built in a relatively short period of time. Many bridges, viaducts and tunnels were constructed at this time.

The coming of the railway caused an increase in development activity and the density of residential activity increased. In a short period virtually the entire area of Westminster became urbanised.

Railway engineering operations were located on railway land adjacent to the railway stations. The railway sheds and shunting areas occupied a greater land area than is now the case. As a result areas of ex-railway land have now been redeveloped. The railway was often also a focus for small to medium industrial and transportation activities.

4.6 Petrol, Diesel & Oil Storage

Heavy fuel oil, diesel and coal powered many of the early factories and works. Boilers with associated in-ground and/or above ground hydrocarbon tanks would have been located in many premises. In Westminster multi-storey office and accommodation buildings also had oil-fired boilers.

The London Fire and Civil Defence Authority holds records of past and present hydrocarbon stores in the City including the present-day petrol stations. There are currently 18 petrol service stations in Westminster authorised by the Council under Part I of the Environmental Protection Act 1990.

Because oil, petrol & diesel tanks have been known to leak into the ground and because these materials are slow to degrade some contamination can remain on site even after the tanks themselves have been removed.

4.7 Landfill

Controlled landfills did occur in Westminster and records show there were two small landfills that have both now been closed. Prior to the current waste management licensing provisions worked-out gravel pits and other natural hollows in the ground such as streambeds often became uncontrolled waste disposal sites.

Westminster has at least one area where a former canal between Victoria and Grosvenor Dock has been in-filled and the site redeveloped.

4.8 The Blitz

The Blitz or heavy bombing of London occurred during the Second World War. During this time many buildings in Westminster were destroyed and the post-war historical maps show many sites as ruins. There are maps and aerial photographs of London available which show where bombs and rockets fell.

These sites were subsequently filled and redeveloped. Again unregulated waste disposal activities may have occurred when these sites were filled.

4.9 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 site history, including measures to remediate existing sites and control new activities.

4.10 Known Information on Contaminated Land

The Council holds some information on contamination primarily submitted as part of the development control process. If development is proposed on a site where past use may have resulted in contamination we may request a site investigation as part of a planning condition. If development proceeds on these sites remedial works will often have been carried out to improve site conditions.

4.11 Records of Land Use

We have records of industrial land uses in Westminster that date back over 100 years. The most accessible form of records is the digital Ordnance Survey historical map series that has been purchased by the Council. There are separate maps for most of the area for six pre-war and post war epochs which equate roughly to the following decades - 1870, 1890, 1910, 1930, 1950 and 1970.

The Planning Department also holds a Land Use Survey that contains information for the following periods: 1971-1974, 1980-1986 & 1987-1996.

Trade Directories, held at the Westminster Archives, are a more detailed data source however the data held has not yet been captured in a digital form. The directories detail the names of, addresses and types of commercial and industrial enterprises that were in Westminster in any particular year. However street names and street addresses have changed and in some cases streets no longer exist, for this reason careful verifications of actual locations will need to occur.

5.0 INSPECTION STRATEGY 2001 - 2006

The reasons for writing this strategy have been described in previous sections. This section gives a detailed breakdown of how the Council will prioritise actions to meet its objectives.

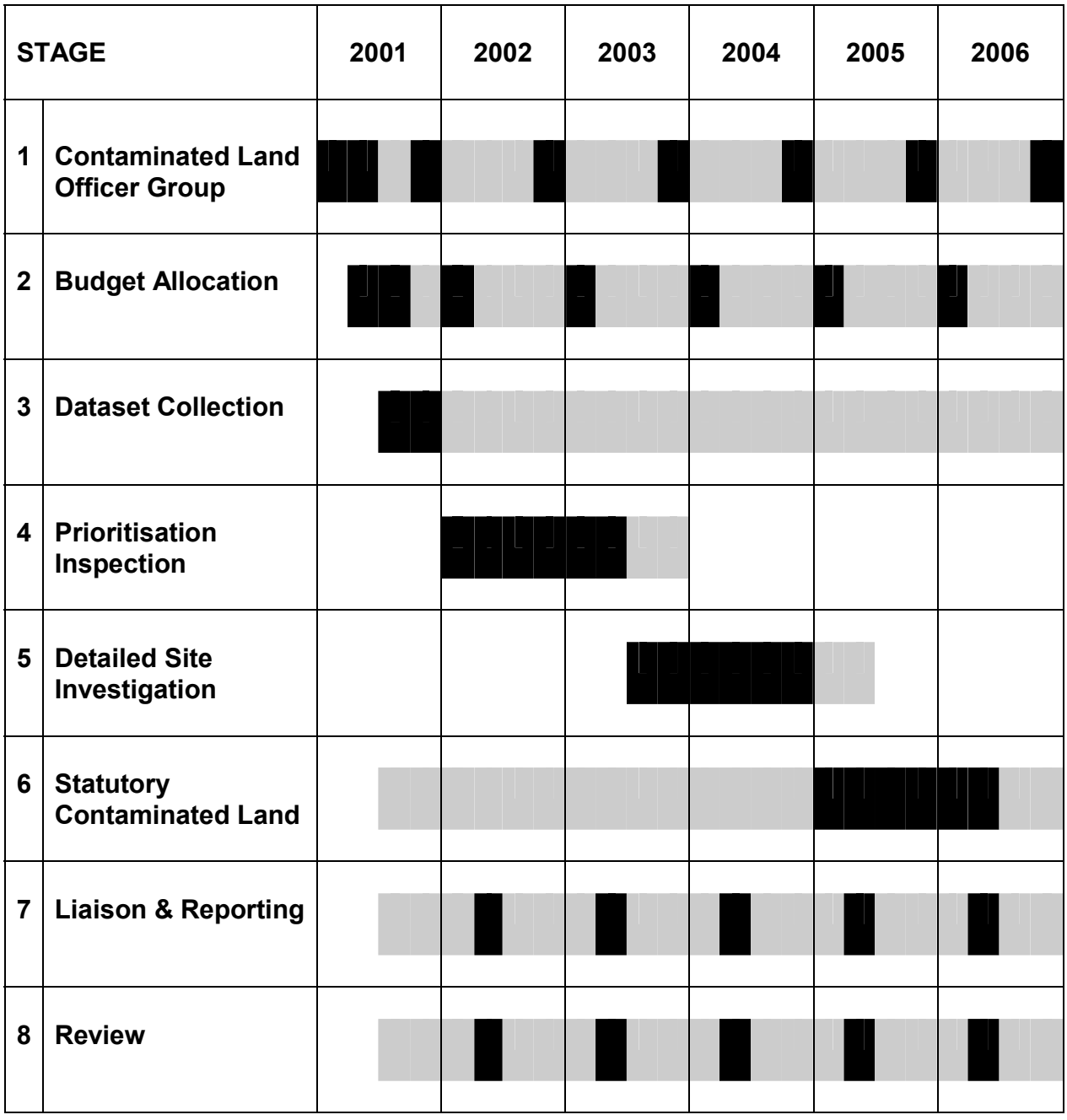
Aims

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 enforce remediation of statutory contaminated land where voluntary remediation fails
7	To encourage re-use of brownfield land.

Objectives

1	To undertake an inspection programme of the City of Westminster 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 City and thus promote the recycling of former industrial land.
4	To address the 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 City of Westminster that the process deals effectively with any land contamination.

Figure 5 – Gantt Chart of Strategy Timetable



Timetable Overview

This strategy document is based on a preliminary investigation into the history and characteristics of Westminster City undertaken by the Pollution Team, Environmental Regulation.

At this stage it is not possible to prioritise any particular area or areas to be concentrated on first. It is proposed that investigation of Council–owned land will occur with equal priority to privately owned land.

The initial objective to inspect the City for potentially contaminated land will require the completion of three preliminary steps to establish the infrastructure for the inspection programme.

1. Officers Group – a means of inter-departmental liaison established for information exchange and production of the Inspection Strategy.
2. Budget Allocation - sufficient to procure additional informational data requirements and staff training.
3. Informational Resources - procured and functional database linked with GIS established.

The inspection programme itself is broken down into three stages:

1. Prioritisation Inspection – initial screening of all sites in the City.
2. Detailed Site Investigation – including intrusive site investigations.
3. Statutory Contaminated Land – notification, declaration and enforcement.

Two sub-strategies dealing with Part IIA requirements for reporting to external organisations and review mechanisms are separately presented. These will be undertaken throughout the course of the inspection programme.

Finally the issue of Council-owned land has been presented as a separate strategy in the final section of this document as this will be managed by Corporate Property and the Housing Department not Environmental Regulation. This maintains the appropriate separation between the enforcement and land-owning functions of Westminster City Council.

5.1 Stage 1 – Contaminated Land Officers Group (CLOG)

5.1.1 Overview

A Contaminated Land Officers Group comprising has now been established in Westminster and comprises the departments listed in Appendix 1. Environmental Regulation has taken the lead role in establishing the group and completing the Inspection Strategy document.

The process of internal consultation has identified a need for developing procedures for inter-departmental communication and information exchange. Also regular meetings and training sessions for Council Officers with involvement in land contamination issues is required.

The Pollution Team will continue to facilitate the CLOG meetings and training briefings. It is envisaged that at least one training day will be held annually with meetings at more regular intervals.

	Objectives	***Completion***
1	*CLOG established for the implementation of new contaminated land procedural requirements.*	*By April 2001*
2	*CLOG has provided feedback commented on a consultation draft Inspection Strategy.*	*By May 2001*
3	*Final strategy incorporating CLOG feedback presented to Environment & Leisure Committee and published as a final version.*	*By July 2001*
4	*Develop procedures and protocol for interdepartmental exchanging information on contaminated land*	*By July 2001*
5	*On-going training for nominated Council Officers in contaminated land issues organised by the Pollution Team.*	*By Jan 2002* *(initial training then annually)*
6	*Meetings of the CLOG group to be facilitated by the Pollution Team as and when issues arise.*	*From April 2001*

5.2 Stage 2 - Budget Allocation

5.2.1 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 software to complete the GIS Land Quality Database will be the major capital investment necessary to undertake the Inspection Strategy.

	Objectives	***Completion***
1	*Report be prepared for the Cabinet for Capital Spend with an estimate of budget requirements to undertake the next stages of the Inspection Strategy (2001-02)*	*By October 2001*
2	*Purchase of resources and hiring of trainers/experts for interdepartmental contaminated land training days scheduled to be held at least annually.*	*July 2001 - July 2006*
3	*Purchase of on-going training/expert advice for Pollution Team staff undertaking contaminated land inspection duties.*	*July 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).*	*By January 2002*
5	*Purchase of historical land use information, geological information, and appropriate software to run a GIS Land Information Database with restricted access.*	*By January 2002*
6	*Possibly hire/contract appropriate staff to undertake dataentry and GIS mapping as part of information resource collection & prioritisation inspection programme.*	*Jan 2002 – July 2003*
7	*Purchase of risk prioritisation and risk assessment database package linked to GIS System.*	*By April 2002*
8	*Purchase/hire of field equipment/external contractors to undertake detailed site investigations and sample analysis.*	*July 2003 - January 2006*
9	*Provisions for costs related to Notification/Declaration of Statutory Contaminated Land (possible appeals/court costs)*	*April 2005 - July 2006*

5.3 Stage 3 - Dataset Collection

5.3.1 Overview

The quality of the information gathered is the significant limiting factor to the 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 Pollution Team will develop this programme with input from the Council's Contaminated Land Officer Group and a report will be put to the Cabinet on Capital Spend for final decisions on funding and direction for this programme.

	Objectives	***Completion***
1	*Report prepared by Pollution Team and presented to the Cabinet on Capital Spend for final decision on methodology and budget.*	*By October 2001*
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 January 2002*
3	*Dataset Collection Programme Completed – GIS Land Information Database set up and running. Datasets of contamination sources, receptors and pathways in the City collected, purchased, and set up in appropriate software/hardware as a functional tool for desktop land inspections.*	*By January 2002 (dependent on budget & method)*

5.3.2 Notes – GIS Land Information Database

The WCC corporate standard for desktop GIS is ArcView. Westminster has a wide range of data on central fileserver that is managed by Information Services at City Hall. The Council has the GIS structure in place to build the GIS Land Information Database.

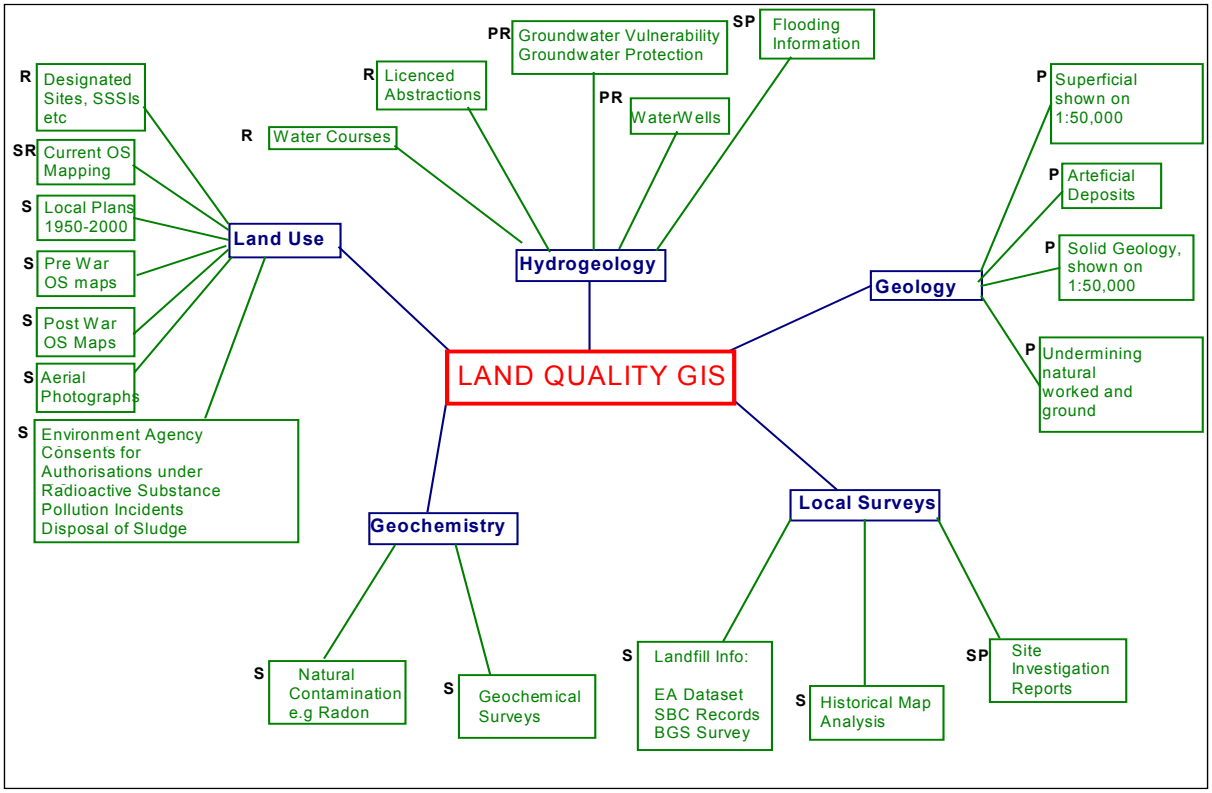
Many sources of information will be required to identify potential sources of contamination and potential receptors. The resources are detailed in the following diagram and presented as a table in Appendix 4.

The system will be used to correlate all information and determine the proximity of potential receptors (humans, controlled waters) to potential sources of contamination. The GIS will 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 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'.* 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.

Figure 6 – 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

5.4 Stage 4 - Prioritisation Inspection

5.4.1 Overview

This is the initial desktop prioritisation inspection of land in Westminster to identify potential pollutant linkages as required by Part IIA. It will be undertaken by Officers of the Pollution Team using the GIS Land Information Database as the primary tool for this process. Required duties and appropriate qualifications for the Officers are presented in Appendix 6.

Prioritisation of all contaminated land sites and this will be undertaken to determine which sites are the first to be 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.

The Council 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 land the Council will maintain information gathered from non-public sources as confidential. Requests for access to the Council's Land Information GIS database and other related databases will be limited to public information whilst work is still in progress.

Under the Memorandum of Understanding (MoU) between the Environment Agency and the Local Government Authority the EA will provide the Council with site specific data upon completion of the prioritisation stage of the Inspection Strategy. Site-specific requests will be made to the Area Contaminated Land Officer (see Appendix 3). Further details of reporting to the EA are covered in Stage7 – Liaison & Reporting.

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

5.4.2 Notes - Risk Prioritisation

The '*pollutant linkage = source + pathway + receptor'* concept is the basis for prioritising the inspections. 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 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 land uses (sources) has been collected. A list of potentially contaminative land uses is given in Appendix 7.

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 the Council. It is important that the Officers be involved with testing and selecting a methodology that will be appropriate for Westminster. Risk prioritisation is a means of ranking a group of sites with potentially contaminative uses and will include a scheme for ranking of sources and receptors. Individual sites will be given a priority ranking based on a matrix of contaminative source score versus sensitive receptor score (and possibly viable pathway score). A possible risk prioritisation methodology is presented in Appendix 8.

The prioritisation process should be a reasonable scientific assessment of the potential of a contaminant to have a defined detrimental effect on the receptors present on or close to a site. It may not be practical at this stage to give a definitive score for the pathway component. It is probably sufficient that a high scoring site will have a close spatial relationship between a high scoring potentially contaminative source and high scoring sensitive receptor. The presence or absence of a viable pathway is one of the core components of the detailed site investigation stage presented in the next section.

A new set of guidelines, the Contaminated Land Exposure Assessment (CLEA) guidelines, is expected from DEFRA before the end of 2001. The Council will incorporate new risk prioritisation and risk assessment guidelines into this Inspection Strategy when they become available.

5.5 Stage 5 - Detailed Site Investigation

5.5.1 Overview

This is the second phase of the inspection programme and follows on directly from the previous desktop inspection and prioritisation exercise. The objective to determine if an actual pollutant linkage exists on a site-by-site basis. Officers of the Pollution Team will undertake this stage.

More detailed investigation must be undertaken at this stage to confirm that the pollutant linkage:

- Is resulting in significant harm (or the significant possibility of such harm) being caused to the 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. 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 then intrusive site investigations may be undertaken. The scope of these will be limited to that necessary to determine the existence of <u>one</u> significant pollutant linkage per site.

In Westminster intrusive site investigations would probably be undertaken by Environmental Consultants and managed by the Pollution Team.

	Objectives	***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 – Sept 2003*
2	*Complete Detailed Site Investigations – Detailed risk assessment and site investigation undertaken for all high priority sites.*	*By January 2005*

5.5.2 Notes - Detailed Risk Assessment

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 as 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 sites.

The enhanced dataset that is held for each site should enable a more informed judgement in terms of source, receptor and pathway. The process is to determine if an actual pollutant linkage exists. It is envisaged that site information would be stored and managed on an Access database and linked to the GIS system ensuring all relevant information related to a site is stored on a linked system.

We have yet to decide the risk assessment methodology to be used. This will be subject to changes as further guidance is published by DEFRA. A potentially contaminative land use may lead to deposition of many different contaminants, each with specific associated risks to different receptors and pathways.

The Detailed Risk Assessment needs to account for all potential pollutant linkages and assign a value of risk to each. It is envisaged that we will also use the Access database to store tables of source, pathway and receptors with scores based on degree of risk for each component. This would allow variables to be changed in the calculations as further information comes to light and as guidance methodologies change. The hardware/software to run a dataset of this magnitude linked to GIS will need to continue to be assessed.

Until these guidelines are available the Council will evaluate all information against *'Guidance on the assessment and redevelopment of contaminated land' ICRCL 59/83 (2nd edition, July 1987)*. This gives trigger and action levels for a range of contaminants and is likely to remain a key reference.

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.

We will get advice from the Environment Agency 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 - *'Methodology for the derivation of remedial targets for soil and groundwater to protect water resources', EA R&D Publication 20, (1999).*

5.5.3 Notes - Intrusive Site Investigations

The approach to identifying contaminated land means the Council will require intrusive site investigations (such as boreholes, trial pits) for a small proportion of sites. This is the land where the earlier stages of study suggest the possibility of statutory Contaminated Land. The scope will be limited to that necessary to make the determination.

At this stage it will be necessary to make contact with landowners, occupiers and 'appropriate persons' as defined by Part IIA. We will be seeking co-operation from 'appropriate persons' and ideally voluntary site investigations will be undertaken. These will need to be to our satisfaction. The Pollution Team will be the central contact point and will take care to keep all parties informed at each stage of an investigation.

In some cases the Council may need to take the lead in undertaking intrusive site investigations on a particular site. 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). Careful attention to the DEFRA 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 9.

Under Section 108(6) of the Environment Act we have 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.

Before using statutory powers of entry we will consider whether if any land were designated it would fall under the definition of 'special site'. If this is the case we will seek to make arrangements with the Environment Agency to carry out the inspection on behalf of the Council. This is because the EA is responsible for the regulation of special sites, although the Council is still responsible for the initial determination that the land is statutory Contaminated Land.

5.6 Stage 6 – Statutory Contaminated Land

5.6.1 Overview

The third phase of the inspection programme is the enforcement stage and follows on directly from the previous stages. It involves the notification/declaration for individual sites and setting up a register of statutory Contaminated Land.

If we identify any significant pollutant linkage for a particular site the next stage is to issue notifications of contaminated land and remediation notices. This is to ensure there are no unacceptable risks to human health or to the wider environment. Notes about remediation methods are presented in Appendix 9.

Under the regulations we are required to maintain a public contaminated land register. The Environmental Regulation Service will hold the register.

	Objectives	***Completion***
1	*Develop timetable for notification and declaration of statutory Contaminated Land in Westminster.*	*January 2005 - April 2005*
2	*Complete notification/declarations and set up public register of statutory Contaminated Land.*	*By July 2006*

5.6.2 Notes - Voluntary Remediation

We will adopt an approach of seeking voluntary remediation of contaminated land before using formal enforcement action. 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 Pollution Team 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.

5.6.3 Notes - Formal Designation of Statutory 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 eligible for remediation costs.

There may be legal and court 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 result of the notification and declaration process many sites may be remediated so that a significant pollutant linkage no longer exists (see the Glossary for definitions).

5.6.4 Notes - Public Register

The regulations clearly specify the information that can be recorded on this register. The public register will not include research assessments/documents or voluntarily submitted information. These documents will not be made available to the public. The register **will** include:

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

Statutory guidance states that we 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.

We will give any person concerned adequate time to make a representation requesting exclusion of information that we believe may be commercially confidential. Where information is excluded on the grounds of commercial confidentiality we 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 the register that the person believes is confidential.

5.7 Stage 7 – Liaison & Reporting

5.7.1 Overview

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

	Objectives	*Completion*
1	*Develop a strategy for Liaison & Reporting with timetable for consultations to Council, Environment Agency, Greater London Authority, neighbouring Boroughs & other statutory consultees.*	*July 2001- April 2002*
2	*Liaison and reporting undertaken accordingly*	*April 2002 – July 2006*

5.7.2 Notes - External Consultation - Statutory Consultees & Others

Contacts have already been established with officers of the following organisations. The organisations will be sent the Inspection Strategy and invited to provide feedback for subsequent reviews (see Appendix 2 for list).

- Environment Agency – Thames Region
- English Nature
- English Heritage
- Greater London Authority
- English Partnerships
- London Development Agency
- Central London Boroughs – Central London Cluster Group

Other land owning, government, business and local organisations will be sent copies of the Inspection Strategy. It is also planned to publish a copy of the strategy on Westminster's corporate web-site.

Efforts will be made to encourage participation in the process of identifying and investigating contaminated land.

5.7.3 Notes - Central London Cluster Group

This is a group comprising eight central London Boroughs and has been established to enable networking between Council staff and as a mechanism for staff training and peer review. Many of the issues are similar for each Borough and it is useful to exchange ideas and methodologies.

5.7.4 Notes - Reporting on Water Pollution

The Water Resources Act 1991 gives the Environment Agency powers to deal with harm to controlled waters being caused by contaminated land. While Part IIA legislation does not revoke these powers the DETR have indicated that such problems should now be dealt with using the Environmental Protection Act.

The following steps will be taken:

- The Council will consult with the Environment Agency 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.
- If the Environment Agency 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.

5.7.5 Notes - Reporting to the Environment Agency

The Environment Agency is required to prepare an Annual Report for the Secretary of State on the state 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 Environment Agency 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 Environment Agency and the Local Government Association that describes how information will be exchanged between the local authority and the Environment Agency. We will therefore provide information to the Environment Agency following the guidelines agreed through this national forum.

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

5.8 Stage 8 – Review

5.8.1 Overview

This document outlines the general approach to be taken in inspecting land in Westminster City Council for contamination. This section will describe instances when inspections will occur outside this general inspection framework and circumstances under which previous inspection decisions should be reviewed. It also describes measures to be taken to ensure the strategy remains effective and up-to-date.

The Environment Agency will be formally consulted on any reviews of the Inspection Strategy.

Objectives		***Completion***
1	*Develop review mechanisms identifying timetables and occasions for the review of various components of Inspection Strategy*	*July 2001 - April 2002*
2	*Reviews completed according to timetable and Inspection Strategy maintained as a current working document.*	*July 2001 - July 2006*

5.8.2 Notes - Reviewing Inspection Priorities.

The strategy has already recognised there may be occasions where inspections may have to be carried out outside of the general inspection framework.

Triggers for undertaking non-routine inspection will include:

1. **Unplanned events** - Where an incident such as a spill has occurred.
2. **Introduction of new receptors** If there are plans for
   - Housing to be built on a potentially contaminated site
   - Designation of a new protected ecosystem
   - Change of use on a site such as persistent trespass.
3. **Supporting voluntary remediation** - 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** – 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 non-routine inspections, if this 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.

5.8.3 Notes - 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.

We will ensure that all decisions are made and recorded in a consistent manner that will allow efficient review.

5.8.4 Notes - Reviewing the Strategy

We will review the strategy each year. The completion date for each review will be 1st July.

6.0 WCC PROPERTY - INSPECTION & MANAGEMENT

6.1 Overview

This programme details in-house procedures for handling contaminated land issues in Council-owned land and properties. The management of Council-owned land is the primary responsibility of the Housing Department in the case of residential properties and Corporate Property in the case of commercial, educational and other properties. For the purposes of this document the term Property Services represents both Corporate Property and the Housing Department.

The prioritisation inspection of Council-owned land will be carried out alongside the regulatory inspection schedule.

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.

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

6.2 Notes - Property Transactions

We must have a strategy that deals with contamination associated with existing land-holdings. This ensures that we do not unwittingly purchase any additional contaminated land without appreciating the long-term implications of such a purchase, with the price of the land reflecting the site's condition. This includes contamination caused by persons/companies who lease Council land.

6.3 Notes - Existing Land Holdings

Where a site is found to have potentially significant levels of contamination we will carry out a quantified risk assessment. This will 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 the relevant committee is advised and appropriate remedial measures agreed.

The programme of site prioritisation, investigation and where necessary remediation will continue in conjunction with the Inspection Strategy.

6.4 Notes - Land Purchases/Acquisitions

Prior to committing the Council to any new land purchases or acquisitions the Property Services (Corporate Property and Housing Department) will ensure that the full site history is known. This must include:

1. A search of all available historical maps.
2. A review of the Trades Directories held by the London Metropolitan Archives and the Westminster Archives 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.

The full implications of any contamination will be identified. When appropriate consideration has been given to the potential long term cost implications and this has been reflected in the sale price, the transaction can continue. Advice should be sought from Environmental Regulation 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.

6.5 Notes - 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 the new Environment Act 1995 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 we as a landowner do not take steps to prevent the occurrence of further off-site migration of contaminants then we 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 our tenants' contamination it is essential that we have a strategy/policy that will protect the Council's interests in the long term.

Property Services will ensure that specific procedures are in place to ensure that prior to letting/leasing property in the future the Council has information on the quality of the site. If it is a 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 previous uses:

1. Establish where potentially contaminating uses have taken place (locations of fuel tanks and/or chemical storage 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 contaminants.
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
   - requirements for the clean up any spills during their occupation.

During the tenancy the tenant/lessee must provide the Council with:

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

6.6 Notes - Termination of a Tenancy/Lease Agreement

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

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

Where contamination is present the tenant/lessee must be required to remediate the site to the standard identified by the background site investigation or provide financial compensation to the Council in order that it may undertake the remedial works.

6.7 Notes - 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 contamination is suspected then the potential purchasers must be given the opportunity to undertake their own site investigation to establish the extent of any problem.

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 – Westminster City Council Contacts

Service	***Name***	***Telephone***	***Title***
Environmental Regulation	*Steve Neville*	*020 7641 1132*	*Pollution Team Leader* *sneville@westminster.gov.uk*
	Kevin Mutimer *Amelia Haskell* *Barry Davis*	*020 76411317*	*Officers – Pollution Team*
Environmental Regulation	*Sara Jones*	*020 76416151*	*Consultation Team Leader*
Environmental Regulation	*Steve Press*	*020 76411006*	*Client Officer*
Housing Department	*Dave Woolmer*	*020 7641 2884*	*Head of Survey & Development*
Corporate Property	*Jerry Mavin* *Alan Wharton*	*020 7641 2759* *020 7641 2911*	
Development Planning Services	*Bill Stewart*	*020 7641 2933*	*Development Planning Advisor* *bstewart@westminster.gov.uk*
Planning Policy & Project Development	*Collette Coffey*	*020 7641 2387*	*Senior Planning Officer* *ccoffey@westminster.gov.uk*
District Surveyors	*Tony Fenton*	*020 7641 7048*	*Assistant District Surveyor*
Land Charges	*Kim Bellengi*	*020 7641 2766*	*Supervisor*
Legal Services	*Peter Nixon*	*020 7641 2715*	*Solicitor*
Finance - Information Services	*Oswin Remedios* *Joanne Lodge*	*020 7641 2081*	*GIS Analysts*
Policy – Environment & Leisure	*Alison Blower*	*020 7641 1883*	

Appendix 2 - External Contacts

Environment Agency

Local Contacts

Alistair Norton

Area Contaminated Land Officer

Hatfield Office
2 Bishop's Square Business park
St Albans Road West
Hatfield
Herts
AL10 9EX

Tel: 01707 6323000
Fax: 01707 6325000

James Potter

Regional Contaminated Land Officer

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

Tel: 01189535740
Fax: 01189535419

English Nature

Local Contact

Alex Machin (Mrs) - Conservation Officer

London Office
Ormond House
26/27 Boswell Street
London
WC1N 3 JZ

Tel: 0207 2696856
Fax: 0207 4043369

English Heritage

Local Contact

Alan Byrne - Regional Planner for London

London Region
23 Saville Row
London
W1S 2ET

Tel: 020 79733736
Fax: 020 79733792

English Partnerships			
Emyr Poole - National Policy Co-ordinator			
Head Office *110 Buckingham Palace Road* *London* *SW1W 9SB*		*Tel:* *Fax:*	*020 78811600* *020 78811678*
London Development Agency			
Katherine Woods - Head of Regeneration – Central London *Romney House* *Marsham Street* *London* *SW1P 3PY*		*Tel:*	*020 79834837*
Greater London Authority			
John Duffy - Mayor's Advisor for the Environment		*Tel:*	*020 79834759*
Simon Bishop - Researcher for Angie Bray, *Assembly Member for Westminster (Room A105).*		*Tel:* *Fax:*	*020 79834949* *020 79834419*
Romney House *43 Marsham Street* *London* *SW1P 3 PY*		*Tel:*	*020 79834000*
Central London Cluster Group			
Corporation of London	*Ruth Calderwood*	*Tel:*	*020 73321162*
London Borough of Camden	*Quentin Given*	*Tel:*	*020 79746122*
London Borough of Hackney		*Tel:*	*020 83564855*
London Borough of Islington		*Tel:*	*020 74773225*
London Borough of Lambeth		*Tel:*	*020 79266138*
London Borough of Southwark	*Ken Andrews*	*Tel:*	*020 75254253*
Royal Borough of Kensington & Chelsea	*Amanda Gudgin*	*Tel:*	*020 73415760*

Appendix 3 – Categories of 'Significant Harm'

From DETR Circular 02/2000.

Table A - Categories of Significant Harm

	Type of receptor	***Description of harm to that type of receptor that is to be regarded as significant harm***
1	*Human beings*	*Death, disease, serious injury, genetic mutation, birth defects or the impairment of reproductive functions.* *For these purposes, disease is to be taken to mean an unhealthy condition of the body or a part of it and can include, for example, cancer, liver dysfunction or extensive skin ailments. Mental dysfunction is included only insofar as it is attributable to the effects of a pollutant on the body of the person concerned.* *The description of significant harm is referred to as a* ***'human health effect'****.*
2	*Any ecological system, or living organism forming part of such a system, within a location which is:* *An area notified as an Area of Special Scientific Interest under section 28 of the Wildlife and Countryside Act 1981.* *Any land declared as a National Nature Reserve under Section 35 of that Act.* *Any area designated as a Marine Nature Reserve under Section 36 of that Act.* *An Area of Special Protection for Birds established under Section 3 of that Act.* *Any European Site within the meaning of Regulation 10 of the Conservation (Natural habitats etc) Regulations 1994 (i.e. Special Areas of Conservation and Special Protection Areas).* *Any candidate Special Areas of Conservation or potential Special Protection Areas given equivalent protection.* *Any habitat or site afforded policy protection under paragraph 13 of the Planning Policy Guidance Note 9 (PPG9) on nature conservation (i.e. candidate Special Areas of Conservation, potential Special Protection Areas and listed Ramsar sites).* *Any nature reserve established under Section 21 of the National Parks and Access to the Countryside Act 1949.*	*For any protected location:* *Harm, which results in an irreversible adverse change, or in some other substantial adverse change, in the functioning of the ecological system within any substantial part of that location.* *Harm which affects any species of special interest within that location and which endangers the long-term maintenance of the population of that species at that location.* *In addition, in the case of a protected location which is a European site (or a candidate Special Area of Conservation or a potential Special Protection Area), harm which is incompatible with the favourable conservation status of natural habitats at that location or species typically found there.* *In determining what constitutes such harm, the local authority should have regard to the advice of English Nature and to the requirements of the Conservation (Natural Habitats etc) Regulations 1994.* *This description of significant harm is referred to as an* ***'ecological system effect'.***

3	*Property in the form of crops, including timber.* *Produce grown domestically, or on allotments, for consumption.* *Livestock.* *Other owned or domesticated animals.* *Wild animals that are the subject of shooting or fishing rights.*	*For crops, a substantial diminution in yield or other substantial loss in their value resulting from death, disease or other physical damage.* *For domestic pets death, serious disease or serious physical damage.* *For other property in this category, a substantial loss in its value resulting from death, disease or other serious physical damage.* *The local authority should regard a substantial loss in value as occurring only when a substantial proportion of the animals or crops are dead or otherwise no longer fit for their intended purpose.* *Food should be regarded as being no longer fit for the purpose when it fails to comply with the provisions of the Food safety Act 1990. Where a diminution in yield or loss in value is caused by a pollutant linkage, a 20% diminution or loss should be regarded as a benchmark for what constitutes a substantial diminution or loss.* *This description of significant harm is referred to as an **'animal or crop effect'**.*
4	*Property in the form of buildings.* *For this purpose 'building' means any structure or erection, and any part of a building including any part below ground level but does not include plant or machinery comprised in a building*	*Structural failure, substantial damage or substantial interference with any right of occupation.* *For this purpose, the local authority should regard substantial damage or substantial interference as occurring when any part of a building ceases to be capable of being used for the purpose for which it is or was intended.* *Additionally, in the case of a scheduled Ancient Monument, substantial damage should be regarded as occurring when the damage significantly impairs the historic, architectural, traditional, artistic or archaeological interest by reason of which the monument was scheduled.* *This description of significant harm is referred to as a **'building effect'**.*

Table B – Significant Possibility of Significant Harm

	Descriptions of Significant Harm (As defined in Table A)	***Conditions for there being a Significant Possibility of Significant Harm***
1	*Human health effects arising from:* *Intake of a contaminant.* *Other direct bodily contact with a contaminant.*	*If the amount of a the pollutant in the pollutant linkage in question:* • *Which a human receptor in that linkage may take in, or,* • *To which such a human might otherwise be exposed, as a result of the pathway in that linkage, would represent an unacceptable intake or direct bodily contact, assessed on the basis of relevant information on the toxicological properties of that pollutant.* *Such an assessment should take into account:* • *The likely total intake of, or exposure to, the substance or substances that form the pollutant, from all sources including that from the pollutant linkage in question.* • *The relative contribution of the pollutant linkage in question to the likely aggregate intake of, or exposure to, the relevant substance or substances.* • *The duration of intake or exposure resulting from the pollutant linkage in question.* *The question of whether an intake or exposure is unacceptable is independent of the number of people who might experience or be affected by that intake or exposure.* *Toxicological properties should be taken to include carcinogenic, mutagenic, teratogenic, pathogenic, endocrine –disrupting and other similar properties.*
2	*All other human health effects (particularly by way of explosion or fire).*	*If the probability, or frequency, of occurrence of significant harm of that description is unacceptable assessed on the basis of relevant information concerning:* • *That type of pollutant linkage, or* • *That type of significant harm arising from other causes.*

		In making such an assessment, the local authority should take into account the levels of risk which have been judged unacceptable in other similar contexts and should give particular weight to cases where the pollutant linkage might cause significant harm which: • *Would be irreversible or incapable of being treated.* • *Would affect a substantial number of people.* • *Would result from a single incident such as fire on an explosion.* • *Would be likely to result from a short-term (that is, less than 24 hour) exposure to the pollutant.*
3	*All ecological system effects.*	*If either:* • *Significant harm of that description is more likely than not to result from the pollutant linkage in question, or* • *There is a reasonable possibility of significant harm of that description being caused, and if that harm were to occur, it would result in such a degree of damage to features of special interest at the location in question that they would be beyond any practicable possibility of restoration.* *Any assessment made for these purposes should take into account relevant information for that type of pollutant linkage, particularly in relation to the ecotoxicological effects of that pollutant.*
4	*All animal and crop effects.*	*If significant harm of that description is more likely than not to result from the pollutant linkage in question, taking into account relevant information for that type of pollutant linkage, particularly in relation to the ecotoxicological effects of the pollutant.*
5	*All building effects.*	*If significant harm of that description is more likely than not to result from the pollutant linkage in question during the expected economic life of the building (or, in the case of a scheduled Ancient Monument, the foreseeable future), taking into account relevant information for that type of pollutant linkage.*

Appendix 4 - Data Resources for Inspection Strategy.

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.*	*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 that may in some instances include 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.*
Westminster & London Metropolitan Archives	*Holds records on historical land use including maps and trade directories essential for researching site histories before WW2 when Planning legislation came into force.*	*To identify sources of contamination.*
London Fire & Emergency Planning Authority	*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 located. 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 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 imput 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*

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 and scale)*
- *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.*

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.*
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 – Officer - Duties & Qualifications

Duties

The contaminated land duties of the Environmental Health Enforcement Officer will include:

- *Evaluation of site investigations, risk assessments and remediation strategies for on-going planning applications.*
- *The requirements of Part IIA – assembling/running/updating datasets of contaminant sources, pathways and receptors.*
- *Desktop inspection of entire City to prioritise sites.*
- *Risk assessment evaluations of sites identified in prioritisation stage.*
- *Liaison with Environment Agency and other regulatory bodies*
- *Undertake/contract out site investigations of high-risk sites (and possibly Council-owned sites).*
- *Declaration of statutory Contaminated Land - serving notices and maintaining public register (to undertake statutory enforcement).*
- *Update and review of Inspection Strategy at annual intervals.*

Qualifications & Training

A commitment to the implementing the requirements of Part IIA as presented in this Inspection Strategy will require an investment in providing staff with on-going training especially in GIS and Risk Assessment, provision of equipment, expert advice and an up-to-date library of reference materials.

Importantly, the Officers will be required to undertake detailed risk assessments involving the assessment and interpretation of technical information including analytical and geological data in accordance with DETR Guidance, in particular the 'CLR Report No 6 – Prioritisation and Categorisation for Sites which may be Contaminated', DoE (1995). This document states an appropriately qualified person as having –

'A scientific qualification at degree or equivalent level in a discipline such as geology, chemistry, biology, or biochemistry and should have at least three years experience in the assessment of contaminated sites. They should have access to someone with specialist experience in assessing risks from contamination to human health and to the environment. Where the person carrying out the assessment is not qualified in geology or a related discipline they must consult someone with a geological qualification and experience to assist in the interpretation of some of the data. Similarly if the person carrying out the assessment is not qualified in chemistry they must consult someone with a chemical qualification and experience'.

Appendix 7 – Potentially Contaminative Land Uses

See also list of DOE Industry profiles in the References.

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*

Appendix 8 - Example of Site Prioritisation Methodology

The following tables present some possible scores for potentially contaminative land uses and receptor vulnerability. This is an exercise only designed to give a general idea to readers of this strategy. The methodology has been derived internally using available risk prioritisation methodologies from various sources and personal experience. In particular the list presented for former land use is certainly not complete nor are scores given arbitrary.

There are many commercially available site prioritisation tools that that link in with GIS databases. It is also anticipated that DEFRA will produce some definitive prioritisation methodologies in the near future for use by local authorities when undertaking this type of exercise.

Some prioritisation methodologies will involve scoring source, receptor and pathway however this method is based on a contamination of scores of contaminant source versus sensitive receptor. It could be described as a screening method for desktop evaluations and is based on a simple scoring system. A site will be given the lowest ranking if there is no identified receptor (receptor score = 1) and a low potential contamination score (source score = 1).

The aim is to focus the Council resources on high-risk sites for further detailed site investigation in the short term, with the eventual aim that moderate and (possibly) low-risk sites would also be investigated further in the medium term to long term. The combination of scores is presented in the following table.

Combination of Scores for Source & Receptor

	Contaminant Source Score				
		4	*3*	*2*	*1*
Receptor Vulnerability Score	*4*	***HIGH RISK***	***HIGH RISK***	*MODERATE*	*Low Risk*
	3	***HIGH RISK***	*MODERATE*	*Low Risk*	*Insignificant*
	2	*MODERATE*	*Low Risk*	*Low Risk*	*Insignificant*
	1	*Low Risk*	*Insignificant*	*Insignificant*	*Insignificant*

Contaminant Source Score

Former Land Use	***Score***
Gasworks, coke works, coal carbonisation and similar sites *Chemical plants – large scale* *Pesticide manufacture* *Tanneries & leatherworks* *Wood preservation and timber treatment.* *Drycleaners & laundries – large scale* *Landfills & waste disposal sites* *Asbestos product manufacture – older, not controlled.* *Radioactive materials processing.*	*4*
Sewage treatment works – older sites *Sewage sludge pits* *Electroplating, galvanising, anodising.* *Dry cleaning & laundries modern small scale* *Hydrocarbon storage facilities – large scale* *Petrol Filling Stations – old/poor controls* *Asbestos product manufacture - modern/controlled* *Metal smelting refining including forges & furnaces.* *Heavy engineering and transport depots & associated hydrocarbon storage* *Fertiliser manufacture* *Firing ranges*	*3*
Vehicle manufacture *Railway Yards – modern/controlled* *Transport depots – without hydrocarbon storage.* *Petrol filling Stations – modern/controlled* *Automotive garages without hydrocarbon storage.* *Electricity generating* *Concrete ceramics, cement & plasterworks* *Film & photographic processing* *Glass manufacture* *Nurseries – horticultural large scale with glasshouses and heating.* *Hospitals & Institutions*	*2*
Distilleries *Agriculture/horticulture – small scale not intensive* *Electricity substations* *Food preparation* *Plastic products - moulding & extrusion*	*1*

Relevant additional factors - A score could be modified dependent on:

1. *Length of time a potentially contaminative use existed on a site*
2. *The extent of the use (large or small operation).*
3. *The era of the use - modern industries have better waste management and certain uses are now licensed.*
4. *Building/plumbing materials likely to be used on site e.g. asbestos.*
5. *Drainage – before modern drainage wastes may have been deposited onsite.*

Receptor Vulnerability Score

Receptor Vulnerability – Human	***Score***
Residential with gardens in zone	*4*
School in zone	*4*
Residential (flats) and open space in zone	*3*
Industrial commercial in zone	*2*
Open space with access (including unauthorised) in zone	*2*
Car Park	*1*
Occupied structure within zone for landfill	*2-4**

*<u>Relevant additional factors</u> * - A score should be modified dependent on age of refuse, knowledge regarding gas control mechanisms and geology.*

Receptor Vulnerability – Groundwater	***Score***
Source Protection Zone	*4*
Major Aquifer	*4*
Minor Aquifer - private drinking water supply	4
Minor Aquifer – non-potable water supply.	2
Minor Aquifer	2
Non aquifer	*1*

<u>Relevant additional factors</u> – A score could be modified based on the proximity of private water supply and other abstractions.

Receptor Vulnerability – Surface Waters	***Score***
Water body on site	*4*
Water body 0-50 metres from site boundary	*3*
Water body 50-500 metres from site boundary	2
Water body at greeter than 500 m from site boundary	1

Relevant additional factors - A score could be modified if site is within or close to an area at risk of flooding.

Note - Waters in made-ground or other shallow aquifers are commonly in hydraulic conductivity with surface waters. Small streams/brooks are often supplemented by deeper groundwater. Therefore the hydraulic gradient and hydraulic conductivity of groundwater (site specific) should be considered when assessing surfacewater vulnerability.

Receptor Vulnerability – Nature Conservation Areas & Specified Properties – including ancient monuments, allotments and agricultural land	***Score***
On or within 50 metres of site	*4*
Between 50m – 250m of site	*3*
Between 250m-500m of site	2
Greater than 500 metres	1

Relevant additional factors - A score could be modified if site is within area at risk of flooding, and the degree of sensitivity of the receptors for instance important archaeological sites are known to be very sensitive to contamination.

Appendix 9 - Detailed Site Investigations

From paper 'Contaminated Land Solutions for Local Authorities', Mike Allen, Service Unit Manager, London City 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).*

Extensive 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.*

Sensitive 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 exemplification.*

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). Also 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/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, watercourses 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).*
Monitoring & Management	*Design compliance validation method.* *Monitoring strategy.* *Management and reporting arrangements.*
Construction Phase	*Dust, noise and odour control, hours of work, access points.* *Clean and dirty separation, wheel-washing etc (i.e. Code of Practice).* *Health and Safety plan.* *Materials and spoil notifications and certification.* *Site responsibilities and contacts.*

Appendix 10 – Principles of Remediation

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

Main methods of remediation for contaminated land currently used are:

***Dig and Dump** – Is very expensive and is essentially just transferring contaminated material to another location (is not considered to be very environmentally friendly)*

***Cap and Cover** - Is the preferred system for most developers. It does involve some off-site disposal, but this is normally minimised and carefully controlled relocation of material is acceptable.*

***On-site Processing** – Various methods used – incineration & pyrolisis, biological degradation, solvent washing, dilution (not a sound principle), solidification (cement addition), and vitrification.*

***Off-site processing** - rarely used except for small volumes.*

In line with the principles of the Environment Act 1995, best practice is to evaluate the risks by using a 'source – pathway – receptor' model.

Removing the source, where contamination is present to depths more than two metres can be costly and may involve the transportation and handling of large volumes of hazardous material. Such costs can be prohibitive and the consequences for the wider environment may be undesirable.

The primary risk is the human receptor. Designing a wholly protected building and providing an impenetrable surface barrier is probably impractical and aesthetically undesirable. Such solutions fail to address other environmental risks, such as pollution of groundwater and lateral migration.

The most commonly preferred approach is a pathway break system. Such systems must be designed around a good understanding of the nature and level of contamination and a clear picture of the end use of the site - the remediation and the building/scheme designs have to merge exactly to ensure viability.

There are no national remediation standards, so each site has to be considered individually. Many methodologies exist, over and beyond 'dig & dump', including encapsulation, barrier systems, solvent extraction, bioremediation, thermal remediation, immobilisation, vitrification, stabilisation and solidification. For reasons of cost and time, the most commonly adopted systems used are usually based on the principles of partial removal and ground barriers with the use of imported clean fill to produce final finished levels.

Barriers can present problems where there is natural gas resulting from alluvial deposits in the lower strata and where the water table is relatively close to the surface. Ventilated capillary barriers and impermeable caps can be effective in reducing lateral transfer from groundwater movement and percolation effects from natural precipitation, but can alter the hydrogeological profile of sites, leading to surface water problems and changes in adjoining land or watercourses.

Bioremediation can alter engineering characteristics of soils, especially if biomass is introduced. Such methods are less reliable for multiple contaminant sites and generally cannot be effectively guaranteed to give an exact final quality. Such methods, together with immobilisation technologies can be effective in limiting volumes of exported and imported material.

In addition to the mechanical properties of soils and the control of retained contaminants, careful attention must be given to the provision of final surface. In general, it is recommended that a 'clean' soil layer of not less than 750mm for playing field and open space uses, increasing to 1000mm for domestic gardens and areas where children especially may have unsupervised soil contact.

Landscaped areas need careful consideration to avoid susceptible or deep-rooted trees. The planting of mature trees may require the provision of anchors to resist wind loading and the use of tree pits is essential in many cases to ensure tree survival and to protect barriers and other pathway breaks from incursion and mechanical damage.

Successful remediation schemes need not involve huge expense or stage of the art technology, but they do require careful and detailed research, planning and execution.

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

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

'Communicating Understanding of Contaminated Land Risks', Scotland and Ireland Forum for Environmental Research (SNIFFER) (1999).

Guidance Documents - Contaminated Land Inspections & Investigations

Relevant Guidelines from other countries may also be used e.g. Netherlands or USA.

Standardised methods for chemical testing purposes are issued in the UK by:

- British Standards Institution
- Department of the Environment Standing Committee of Analysts
- Ministry of Agriculture, Fisheries and Food.

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

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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

FEEDBACK FORM

For comments on WCC Contaminated Land Inspection Strategy

Name: …….

Address: …….

Telephone: …….Fax: ……Email: ……..

Organisation or Interest ……...
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Comments: ……

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Your responses to the following will also help us with evaluation:

Did you find all the information you require in the report? Yes/No

What additional information would you seek?

…….

…….

Do you wish to be consulted in future on CL Issues? Yes/No

Do you wish to be consulted in future strategy revisions? Yes/No

Return to:

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By 31 March 2002