



CONTAMINATED LAND INSPECTION STRATEGY

November 2001

FOREWORD - TONY DAVIS

South Gloucestershire Council is committed to improving and enhancing the environment.

Under the new contaminated land regime we have to identify and take action to remediate any contaminated land. Action will only be taken where there is an unacceptable actual or potential risk to health or the environment. Every effort will be made to resolve problems by agreement.

The overall approach is based on the principles of 'suitable for use' and 'the polluter pays'.

By following this strategic approach it is intended to initially concentrate resources at areas of most risk. Our inherited legacy of contaminated land can then be sensibly addressed.

The process will also generate a great deal of information which will have the added benefit of informing the development control process.

By publishing this document it is hoped for wider distribution, we recognise the value of local information and hope all those with relevant knowledge will contribute to inform the identification process.

**Tony Davis
Executive Councillor for Community Services**

CONTENTS

Executive Summary

CHAPTER ONE	1
<i>INTRODUCTION</i>	<i>2</i>
Regulatory Context	3
Measuring Performance – Central Government	4
Objectives of this Strategy Document.....	5
Development of the Strategy	6
Procedure for developing an inspection strategy	7
Defining Contaminated Land	8
Pollutant Linkage and Risk Assessment.....	8
General Policy of South Gloucestershire Council	9
Environmental Services Enforcement Policy	12
CHAPTER TWO.....	14
<i>CHARACTERISTICS OF SOUTH GLOUCESTERSHIRE'S AREA.....</i>	<i>15</i>
Physical Characteristics – Description of the Area	15
Figure 1 – Map of South Gloucestershire District in relation to South West of England.....	16
Figure 2 – Map of District	17
Population Distribution.....	18
Geological Characteristics	18
The Natural Environment.....	22
Landscape and Nature Conservation Designations.....	22
Key Property Types	23

Conservation Areas	24
Land in Local Authority Ownership	25
Known information on Land Contamination	26
Historical Industries of South Gloucestershire – (1700-1900s)....	26
Modern Industry 1900s-2000s	29

CHAPTER THREE.....34

PRIORITY SYSTEM FOR INSPECTION..... 35

Identification and Prioritisation of Sites with a known contaminated use.....	38
Figure 3 – Receptor Susceptibility	40
Proposed Programme of Actions and Timescales	42

CHAPTER FOUR.....45

PROCEDURES..... 46

Internal Management Arrangements for Inspection and Identification	46
Local Authority Interests in Land.....	46
Information Collection	47
Information Management.....	50
Complaints/Requests for Service.....	51
Confidentiality	52
Environmental Information Regulations 1992 (as amended)	52
Voluntary Provision of Information	53
Anonymously supplied Information	53
Anecdotal Evidence	53
Provision of Information to the Environment Agency	54

Public Register.....	54
Risk Assessment	55
Interaction with other Regulatory Regimes	56
General Liaison and Communication Strategies.....	61
Statutory Consultees	61
Internal Liaison	62
Neighbouring Local Authorities	62
Non-Statutory Consultees.....	62
Determining an Area of Contaminated Land.....	63
Serving a Remediation Notice	64
Urgent Action	64
Powers of Entry	65
Communicating with Owners, Occupiers and Other Interested Parties	65
Risk Communication.....	66
Nature Conservation considerations.....	68
CHAPTER FIVE	69
<i>INSPECTION OF SITES AT STAGES 2 AND 3</i>	<i>70</i>
CHAPTER SIX	78
<i>REVIEW MECHANISMS</i>	<i>79</i>
Review of Inspection Strategy	79
Triggers for Review of Inspection Process	80
Timetable and Review	81
Figure 4 Inspection Strategy and Inspection Timetable.....	82

GLOSSARY

LIST OF APPENDICES

Appendix 1	Geology and Mineral Resources	88
Appendix 2	Special Sites	94
Appendix 3	Categories of Significant Harm	97
Appendix 4	Sites of Nature Conservation Importance	99
Appendix 5	Historic Parks, Gardens and Battlefields in South Gloucestershire	113
Appendix 6	Scheduled Ancient Monuments in South Gloucestershire	116
Appendix 7	Risk Based Classification of Land Uses	118
Appendix 8	Statutory Consultees	120
Appendix 9	Internal Liaison Consultees	121
Appendix 10	Nature Conservation considerations	122

CONTAMINATED LAND INSPECTION STRATEGY

EXECUTIVE SUMMARY

The Environmental Protection Act 1990 Part IIA introduces a regulatory framework for contaminated land identification and remediation in England. The aim is to create a countrywide regulatory mechanism for contaminated land. In addition, the act encourages a strategic approach allowing issues associated with contaminated land to be dealt with using a single regulatory process.

The Act requires that land within South Gloucestershire's boundary is inspected according to a published strategy which will be reviewed periodically. It also provides statutory guidance and regulations on procedures for various aspects of the framework such as a definition of Contaminated Land, identification, remediation, apportioning liability and procedures for appeals.

The South Gloucestershire Deposit Structure Plan, recognises the need to increase the use of "brownfield sites" for residential and commercial development. The implementation of this strategy which identifies and characterises the degree of land contamination will help inform the process that makes derelict land (brownfield sites) suitable for re-use

The primary regulator of the new regime is South Gloucestershire Council, and will be enforced by the Environmental Services Department within the Community Services Directorate.

The strategy contains background information on the legislation, brief details on the wider characteristics of the Authority, and procedures for identifying and dealing with contaminated land.

Contaminated Land is defined 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:

“Significant harm is being caused or there is a significant possibility of such harm being caused,” or

“Pollution of controlled waters is being, or is likely to be caused.”

What constitutes significant harm is described in the Appendices of the Inspection Strategy.

The Council must search its' area for land which has both sources of potential contamination and sensitive receptors. Where there is good reason to believe both exist, the site must undergo a formal risk assessment detailed in the Inspection Strategy.

The Risk Assessment will identify if the site is likely to harbour a potential pollutant linkage between the source and a susceptible receptor and whether harm or pollution of controlled waters is likely.

Where a Risk Assessment identifies that significant harm is occurring, or there is a significant possibility of such harm, or pollution of controlled waters, then the Council shall declare that a SIGNIFICANT POLLUTANT LINKAGE exists and declare the land contaminated land by definition. In every case where the land does not form a special site the Council will act as the primary enforcing authority.

Special Sites are specified in the Appendices of this Inspection Strategy and are enforced by the Environment Agency. Special Sites are those where serious river pollution has occurred and sites which are particularly dangerous and require particular expertise, e.g. Nuclear Sites and explosives sites.

Regulatory action takes the form of formal notification, consultation, declaration, agreements on voluntary remediation or formal remediation notices. The Act also contains sections on assigning liability, with the liability resting on the “polluter pays principle” or, if they cannot be found the landowner or occupier.

Preliminary estimates of historical maps and land use indicate the presence of approximately 600 potentially contaminated land sites, within the boundaries of South Gloucestershire, although not all sites will comply with the formal

definition of contaminated land. A priority system for inspection will be undertaken, identifying high, medium and low risk sites. Site inspection will commence on completion of the Prioritised Inspection Protocol, except sites that require urgent action in that it appears there is an imminent danger of serious harm or serious pollution of controlled waters being caused

The collation of information on contaminated land and their risk assessment will eventually establish a detailed history of all contaminated land within South Gloucestershire.

The preparation of the strategy began in March 2001 and will be adopted and published in October 2001. Its implementation will be a staged approach and will be reviewed annually to assess both its effectiveness and future implications for the Council and the wider community.

CHAPTER ONE

1. INTRODUCTION - PART IIA

- 1.1 The Contaminated Land Regulations brought in on the 1 April 2000, were enacted by virtue of Part IIA of the Environmental Protection Act 1990. This places a statutory duty on local authorities in England to inspect their areas for contaminated land. This contaminated Land Inspection Strategy provides a framework to which South Gloucestershire Council can identify areas of contamination to ensure that identified areas do not place at risk, people or the wider environment.

South Gloucestershire as with many local authorities has a legacy of land contamination, that has resulted in over 200 years of industrial development. In addition to historically contaminated sites, pollution incidents such as spillages and accidents have given rise to contamination of land on a smaller scale.

The legislation has appeared at a time when the Government has set a target of 60% of new housing to be built on brownfield sites, underlying the commitment to sustainable development and the preservation of the countryside.

- 1.2 The 'suitable for use' approach is one of the main features of the new regime and is a principle already applied by the planning process. It is intended to ensure land is remediated to an appropriate standard, rather than all land being measured by a single standard.
- 1.3 A main principle of the Contaminated Land regime is the "polluter pays" principle. Wherever possible the person who caused or knowingly permitted the contamination will be liable for remediation. However, determining the liability for remediation is likely to prove one of the most taxing parts of the regime.

The enactment of the Contaminated Land Regulations (2000) placed a statutory duty on Local Authorities to prepare, adopt, publish and implement a formal Inspection Strategy of contaminated land within their boundaries.

1.4 Regulatory Context

1.4.1 Regulatory Role of the Local Authority

Part IIA of the Environmental Protection Act 1990, inserted into the Act by Section 57 of the Environment Act 1995, details the responsibilities of Local Authorities with respect to issues relating to contaminated land. This reflects their existing functions under the statutory nuisance regime, (Environmental Protection Act 1990 Part III) and their role as a Planning Authority.

The primary roles of Local Authorities under Part IIA legislation are:

- ◆ to cause their areas to be inspected to identify contaminated land;
- ◆ to determine whether any particular site is contaminated land;
- ◆ to act as enforcing authority for sites not designated as a “Special Site”, for which the Environment Agency is the enforcing authority.

The enforcing authorities have four main tasks:

- ◆ establish who should bear responsibility for the remediation of land, ie “appropriate persons”;
- ◆ to decide, after consultation, what remediation is required in any individual case and to ensure that such remediation takes place, either through agreement with appropriate person(s), or by serving a Remediation Notice on the

appropriate person(s) if agreement is not possible, or through carrying out the work themselves;

- ◆ where a Remediation Notice is served, or where the Local Authority itself carries out the work; to determine who should bear what proportion of the liability for meeting the costs of the work;
- ◆ to record certain prescribed information about their regulatory actions on a Public Register.

1.4.2 Regulatory Role of the Environment Agency

The Environment Agency will have four specific roles with respect to contaminated land. It will:

- ◆ assist Local Authorities in identifying contaminated land, particularly in cases where pollution of controlled waters has resulted;
- ◆ provide site specific guidance;
- ◆ act as “enforcing authority” for land designated as a “special site” by the Local Authority; (a list of special sites can be found in Appendix 2).
- ◆ require the Local Authority to submit State of Contaminated land forms as and when a contaminated land site is determined by the council.
- ◆ Publish periodic reports on contaminated land (State of Contaminated Land report)

1.5 Measuring Performance – Central Government

1.5.1 The Department of Environment, Food and Rural Affairs, (DEFRA) will be developing performance indicators to assess Local Authorities’ progress in identifying and remediating our inherited

legacy of contaminated land. These indicators will potentially include:

- (a) measures of the scale of regulatory activity;
- (b) indicators of overall progress in the task of identifying and remediating contaminated land.

1.5.2 It is the Government's intention to establish targets of overall progress. However, at this early stage of investigation it is difficult to set meaningful detailed targets as too little is known about the true extent of contaminated land.

1.6 Objectives of this Strategy Document

1.6.1 This strategy is the first stage of South Gloucestershire's commitment to identifying areas of contaminated land throughout the district and applying a risk assessment process to each individual site in order to prioritise site investigation and remediation.

1.6.2 The strategy document is important, as it:

- sets a framework for South Gloucestershire Council to follow in inspecting the district for contaminated land;
- meets the requirements of Chapter B of the Statutory Guidance;
- will be a public document, to inform and involve all relevant stakeholders;
- will be submitted to the Environment Agency in order to meet statutory compliance;
- addresses the inspection aims, set out in detail within Chapter 3.

1.7 Development of the Strategy

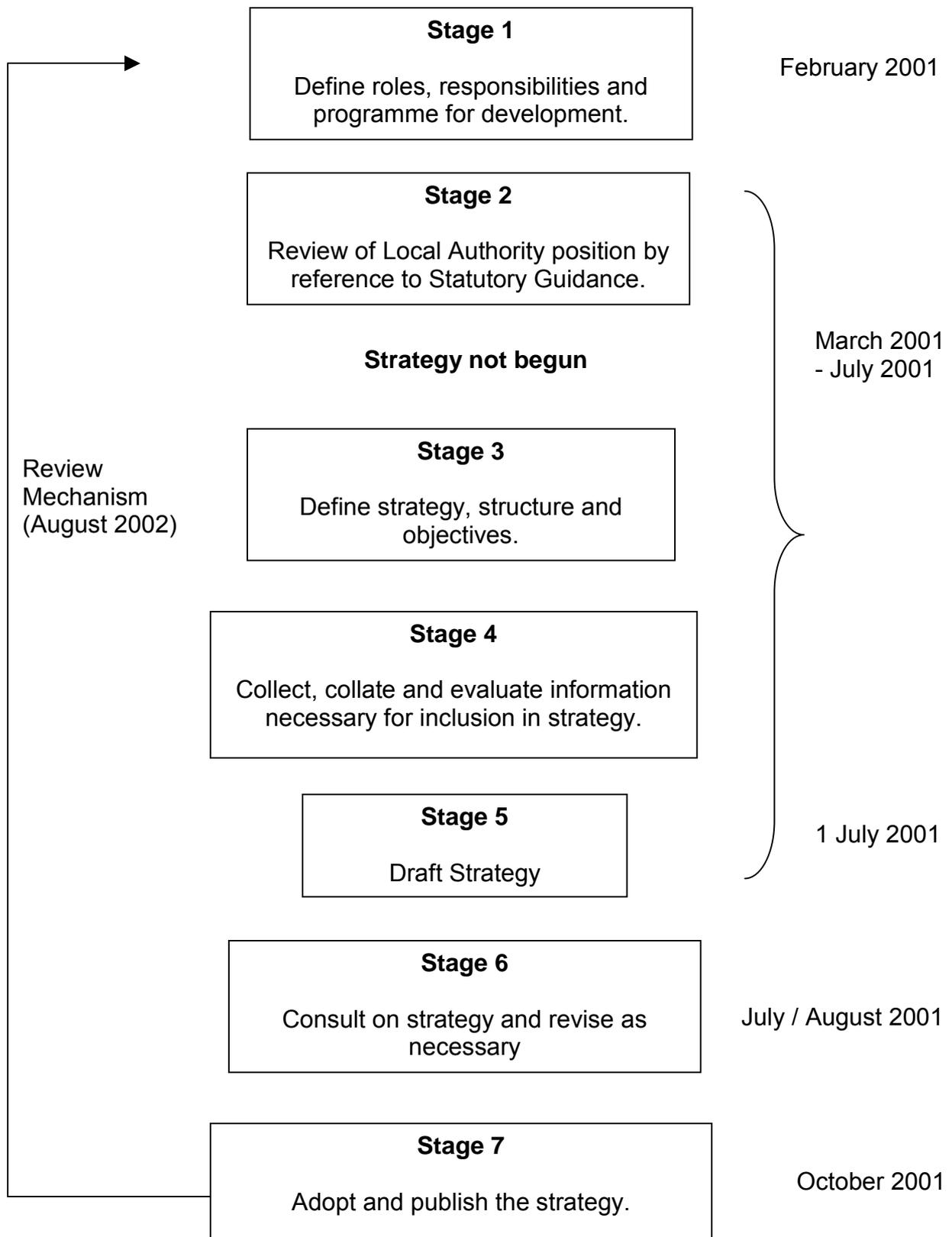
1.7.1 The statutory guidance requires that the Local Authority should take a strategic approach to identification of the land. This approach should be:

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

1.7.2 The strategy has been developed within these overriding principles. Particular reference has been made to DETR Circular 02/2000 and Inspection Strategies Advice Note (May 2001).

1.7.3 The Contaminated Land Inspection Strategy has been compiled by Richard Francis an Environmental Health Officer based in South Gloucestershire Council Community Services. The Pollution Team has the responsibility within the Authority with respect to the implementation of the Environmental Protection Act 1990 Part IIA Contaminated Land Provisions.

Procedure for developing an inspection strategy



1.8 Defining Contaminated Land

1.8.1 Section 78A(2) defines contaminated land for the purpose 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.”

1.8.2 Thus land may be in a contaminated state, but unless it presents an unacceptable risk to human health or the wider environment, it may not be deemed as contaminated land as of the Part II A definition.

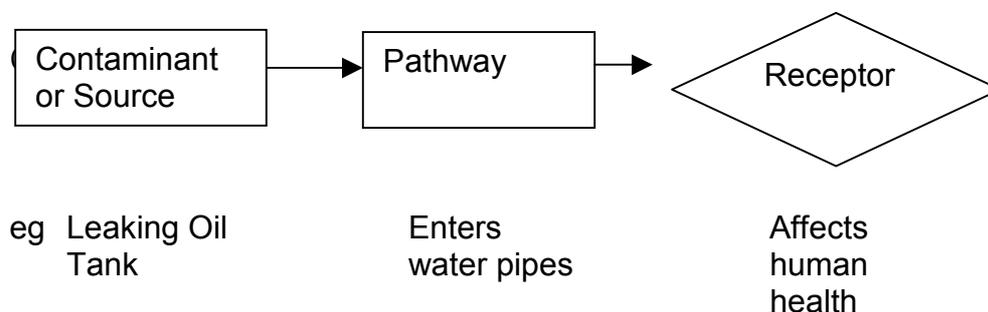
1.9 Pollutant Linkage and Risk Assessment

1.9.1 The definition of contaminated land is underpinned by the existence of a significant “Pollutant Linkage”. In order for there to be significant harm, or a significant possibility of harm, a significant pollutant linkage must be clearly identified.

1.9.2 A pollutant linkage consists of three parts:

- (a) a source of contamination, in on or under the land;
- (b) a pathway – that is the identification of or evidence of one or more routes by which the receptor can be exposed to a pollutant source;
- (c) a receptor that is sensitive to harm; this may be in the form of human being, ecological system, living organism or property

in the form of buildings (A complete list of recognised sensitive receptors and description of harm to that type of receptor can be found in Appendix 3).



1.9.3 If the three components of a pollutant linkage exist, a desk-top risk assessment will have to be undertaken to determine the likelihood of harm being caused, or the nature or extent of the harm being caused. In order to identify harm, the Local Authority can use authoritative and scientifically based guideline values for concentrations of potential pollutants and/or seek appropriate health advice from the Local Health Authority.

1.9.4 Once the risk assessment has confirmed the pollutant linkage exists and there is a significant possibility of harm, the Local Authority can determine the land to be “**Contaminated Land**”. The Local Authority can then pursue the formal procedure as laid down in the Contaminated Land Circular 01/2000.

1.10 Policy Context

1.10.1 General Policy of South Gloucestershire Council

1.10.2 South Gloucestershire Council has placed sustainability at the heart of decision making and agreed the overarching aim:

‘To work with the people of South Gloucestershire go promote the highest sustainable quality of life and environment.’

Within this aim the Council has set out goals and targets for:

- Education and Lifelong Learning

- A Caring Community
- A Safe and Healthy Community
- Making South Gloucestershire a good place to live, work and to enjoy
- Involving the Public and Strengthening Local Democracy

The South Gloucestershire Local Agenda 21 Plan was agreed in December 2000 and sets out:

- The Council's approach to implementing Local Agenda 21.
- A vision for the future, based on an understanding of local needs and aspirations, split into interlinking themes.
- Key targets and examples of action under each theme.
- A set of indicators for measuring progress and a summary of the current situation.
- A summary of relevant plans, which contribute to achieving the vision.

The plan is being used to inform the development of the Community Strategy and protecting and enhancing the environment is likely to be a theme in the Strategy.

Addressing contaminated land issues contributes to achieving a safe and healthy community and to the specific goal to protect people from the effects of environmental pollution and contamination. It also helps achieve the visions in the Local Agenda 21 Plan on maximising use of brownfield sites for development and reducing pollution of land and water.

The Council has set up a representative panel of over 1200 randomly selected residents who are surveyed three times a year. In the summer 2000 survey, 83% of panel members thought it very or fairly important to, protect our greenfield land from development and protect and enhance the local environment.

It is within this framework that a strategy to deal with Part IIA of the Environmental Protection Act 1990 has to be developed. The lead Directorate for the implementation of this strategy will be the Community Services Directorate.

- 1.10.3 Local Plan Deposit Draft - The South Gloucestershire Local plan has been prepared under the Provisions of Town and Country Planning Act 1990. Planning decisions are required to be made in accordance with this development plan, unless material considerations indicate otherwise. The over-arching aim of the plan is to ensure that in future, the development and change of use of land in South Gloucestershire is consistent with the principles of sustainable development. Within this concept, an aim has been developed;

‘To protect both the environment and present and future generations from pollution and harm’

Within this aim an objective has been created that is relevant to the strategy for contaminated land.

To seek to ensure that development does not cause unacceptable environmental pollution and is not itself at risk.

Remediation of contaminated land has a significant contributory role in achieving the council’s sustainable land use objectives by ensuring previously developed and polluted land is made suitable for use

- 1.10.4 South Gloucestershire Council has had to identify land for 16,100 new homes between 1996 and 2011 and as of the first of April 2001, 6,992 homes had been built. Such a rapid increase in housing development will place considerable pressure on both Development Control and Environmental Services in terms of dealing with contaminated land through the development process.

In meeting the housing need, priority will be given to previously developed (brownfield) sites within urban areas and defined settlements. It is important that the inspection strategy, ie identification of contaminated sites, reinforces the aims and objectives of the Structure Plan/Local Plan. (South Gloucestershire Council Deposit Structure Plan, South Gloucestershire Council 2000).

1.11 Environmental Services Enforcement Policy

In order for all employees to work consistently across the department, an enforcement policy was developed for all staff to adhere to during their enforcement duties. Enforcement decisions will be fair, consistent and relate to common standards that make sure that the public are protected.

The Six principles of good enforcement are set out in the Environmental Services Enforcement Policy (September 1998) and have been incorporated into this inspection strategy. They are:

1. Proportionality:- action taken to achieve compliance will be proportionate to any risks to Public Health and to the seriousness of any breach.
2. Consistency:- we will take a similar approach in similar circumstances to achieve similar ends. We will also work closely with other enforcement agencies.
3. Transparency:- we will help duty holders to understand what is expected of them and what they should expect from us, as an enforcing authority.
4. Helpfulness:- to advise on and assist with compliance, by providing a friendly, courteous, easily contactable and efficient service.

5. Standards:- drawn up through consultation with public and business people to set clear levels of standards for service performance.
6. Complaints Procedure:- will be aimed at dealing effectively with complaints. It is publicised and readily accessible to all service users.

Officers will have regard to the enforcement policy and will abide by its principles whilst pursuing formal action under the Part IIA Contaminated Land Provisions.

CHAPTER TWO

2. CHARACTERISTICS OF SOUTH GLOUCESTERSHIRE’S AREA

The following chapter breaks down the individual components of the source → pathway → receptor conceptual model and links them to their associated characteristics.

It briefly summarises the following:

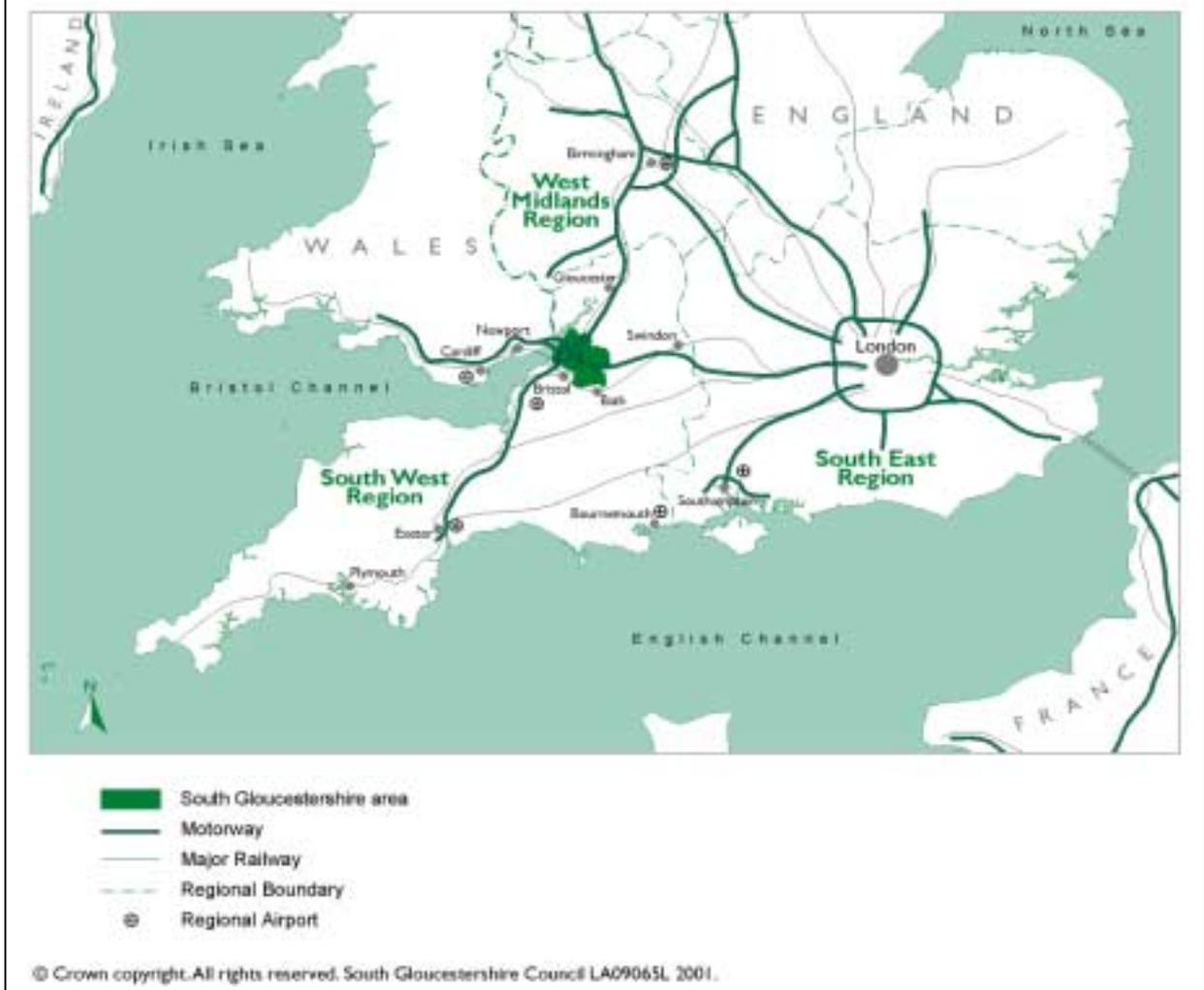
- (1) Description of the district.
- (2) The industries likely to have contributed to contaminated land.
- (3) Media that provide a pathway for pollution to travel.
- (4) Receptor types that are likely to be affected by contamination.

2.1 Physical Characteristics - Description of the Area

- 2.1.1 South Gloucestershire Unitary Authority, as illustrated in Figure 1, is at the centre of the region’s road and rail network, and acts as a gateway for the South West and Wales. The M4 provides links to London and South Wales, and the M5 provides similar access to Birmingham and the Midlands and to Exeter and the South West.

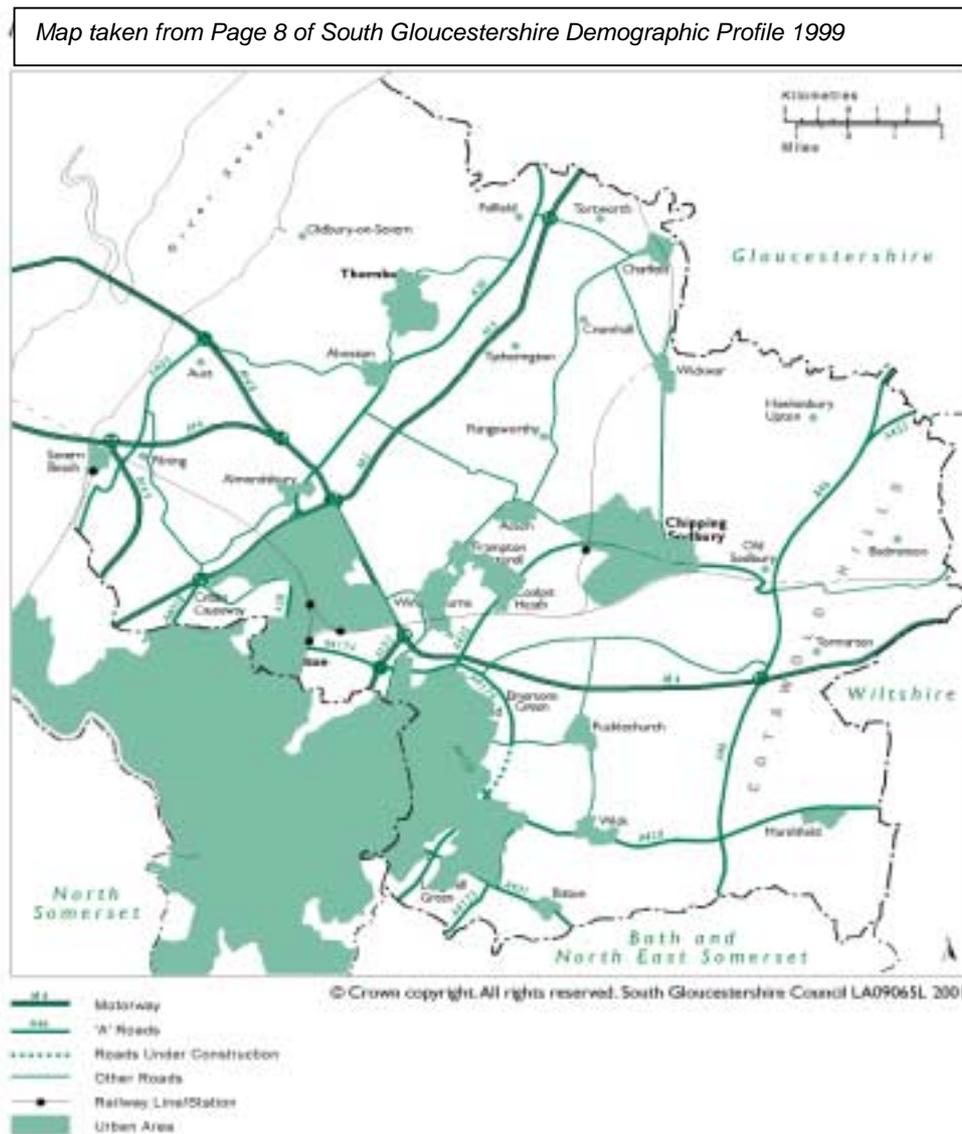
Figure 1 – Map of South Gloucestershire District in relation to South West of England

Map taken from Page 6 of South Gloucestershire Demographic Profile 1999



2.1.2 South Gloucestershire is a diverse area covering approximately 5,000 square kilometres (1,900 square miles). The location of the authority is presented in more detail in Figure 2. The area comprises market towns and villages with major areas of new residential, industrial and commercial development. Traditionally the area has a strong and diverse economy, based on both the physical resources of the area, including mining and quarrying, and on manufacturing. Long-established manufacturing industries include the aerospace and defence industries. In recent years “hi-tech” industries at Aztec West, Cribbs Causeway, Bradley Stoke and Emersons Green have flourished.

Figure 2 – Map of District



2.1.3 Around 250,000 people live in South Gloucestershire and this continues to increase faster than anywhere else in the South West. South Gloucestershire has a responsibility to find at least 16,100 new homes between 1996 and 2011 in order to meet Government requirements. In the next few years the population is expected to rise by approximately 2,500 per year reaching 290,000 in 2021.

2.2 Population Distribution

2.2.1 The resident population of South Gloucestershire at April 1999, estimated on the basis of General Practitioner Data, was 248,766 persons. The major population centres are as follows:

Population Centre	Residents
Frampton Cotterell/Winterbourne	13,349
North Fringe	51,661
Thornbury	12,731
Urban Kingswood	81,413
Yate/Chipping Sodbury	34,686

2.3 Geological Characteristics

2.3.1 South Gloucestershire is a region of geological contrast, having representations of nearly every geological system exposed at the surface. Information about the underlying geology is important in determining whether potentially contaminated sites are likely to have any impact on the groundwater or adjacent sites. Sites which are underlain by low permeability clays are likely to pose less of a risk to groundwater or adjacent areas than sites underlain by more permeable sandstones, gravels or limestone. A detailed description of South Gloucestershire geology and mineral resources can be found in Appendix 1.

2.3.2 Areas of Naturally Metal Enriched Soils

South Gloucestershire Council will purchase digital soil geochemistry data sets from the British Geological Survey (BGS). The data sets will indicate where naturally high levels of PTEs (Potentially Toxic Elements) exist in association with the underlying geology.

2.3.3 Hydrology

Controlled waters are defined in Section 104 of the Water Resources Act 1991 and encompass all rivers and their tributaries, ponds, lakes and groundwater.

Public water supplies to South Gloucestershire are supplied by either the Bristol Water Company or SevernTrent. They, in turn, pump the supply from the Littleton and Purton treatment works, abstracting water from the Sharpness Canal located outside the district.

Private water supplies exist throughout the district with extraction being undertaken by borehole, spring and well. Thirty eight private water supplies exist supplying single or small groups of dwellings or farms. The natural water resource of the Cotswold aquifer also provides water for Dodington Spring, which is bottled by the Cotswold Spring Water Company.

The river Avon skirts the southern boundary of the district, at Hanham. Draining into the Avon are the water courses of the River Boyd, Warmley and Siston Brook. The main river running through the district is the River Frome. This has its origin in the southern part of the Cotswold hills near Tormarton. The Frome meanders down the hillside through Chipping Sodbury, Yate, Frampton Cotterell, Hambrook and Frenchay and eventually joins the Avon within Bristol City. Draining into the River Frome are the water courses of Bradley Brook and Ladden Brook.

Other surface water features include an extensive network of drains, rhines, ponds and lakes, such as the Bradley Stoke Boating Lake.

2.3.4 Hydro-Geology

This is the study of water beneath the ground. Geological strata which contain groundwater in exploitable quantities are termed aquifers, whereas rocks which are largely impermeable and do not readily transmit water are termed non-aquifers.

Abstractions from aquifers provide water for potable water supplies and varied industrial and agricultural uses. Some aquifers are highly productive and are of regional importance as sources for public water supply while lower yielding aquifers are important on a local basis. It is important to protect vulnerable aquifers from contamination as they can supply large areas of population.

All groundwaters are classed as controlled waters, but it is convenient to subdivide permeable strata into two types: highly permeable (major aquifers) and variably permeable (minor aquifers).

Once pollution of an aquifer occurs, clean up can be both prolonged and expensive. In addition depending on the type of pollution, it can be difficult, if not impossible to restore the aquifer to its pre-contamination condition.

The National Rivers Authority Groundwater Vulnerability Map provides information of water beneath the land in the district. This indicates that western areas, mostly the Severn basin, are non aquifers. Running from Almondsbury through to Alveston, Thornbury and Tytherington are numerous isolated pockets of major aquifers, although not utilised. Moving across the district towards Chipping Sodbury, the underlying strata comprise a mixture of minor aquifers of variable permeability.

The Cotswold hills to the south east of the district are made up of Jurassic Limestone, and are deemed as major aquifers with a high vulnerability.

Although major and minor aquifers exist across the district, they only supply a relatively small number of private water supplies.

2.3.5 Source Protection Zones (SPZ)

SPZ have been defined by the Environment Agency for groundwater sources (wells, boreholes and springs) used for major abstractions.

Generally the closer a potentially polluting activity is to a source, the greater the risk. Three protection zones have been defined around groundwater sources used for public supply. They vary in size and shape according to local conditions. Three zones (an inner, outer and total catchment) are usually defined.

Zone I (Inner Protection Zone). This zone is defined by the distance a particle of water travels through the saturated zone in 50 days. Additionally, the zone has as a minimum a 50 metre radius. The 50 day time limit is principally based on the time it takes any bacteria in the saturated zone to die.

Zone II (Outer Protection Zone). This zone is defined by the 400 day travel time, or 25% for the catchment area, whichever is the larger. The travel time is based on the minimum time required for the dilution and attenuation of slowly degrading pollutants.

Zone III (Total Catchment). This zone is defined as the total area from which a source derives its supply.

NB: Caution should be applied when using the above criteria, as flows that are faster than the assumed average are probable. This is a result of fractures that have developed in the rock through ageing.

South Gloucestershire has three Source Protection Zones, each of which lie in the Cotswold Hills.

Zone I (red) - Land area around Cold Ashton, Marshfield and southerly running alongside the A46.

Zone II and Zone III (green and blue) – Land area running north and east from where A46 bisects the B4040 (traffic lights east of Old Sodbury).

Each of the source protection zones (defined by colours) can be found on the Environment Agency web page (www.environment-agency.gov.uk) ‘What’s in your Backyard – Maps’.

2.4 The Natural Environment

2.4.1 The Council area encompasses diverse landscapes, from the sweeping expanse of the estuary with its extensive tidal mud flats and areas of salt marsh, across the low lying Levels with its rectilinear hedged fields and associated tidal rhyne system to the more undulating and often well treed landscapes of ridges and vales extending down through the central areas, and including the often wooded scarp slopes and more open plateau of the Cotswold ridge in the east.

2.5 Landscape and Nature Conservation Designations

2.5.1 The Cotswold Hills extend through from Hawkesbury Upton in the north east to Bitton and Marshfield in the south east and fall within the wider area of the Cotswolds an Area of Outstanding Natural Beauty (AONB). The primary purpose of the AONB is to conserve and enhance the natural beauty of the landscape. South Gloucestershire has a statutory responsibility for AONB management and management planning.

2.5.2 The Severn estuary has been designated both internationally and nationally. The designations are as follows: RAMSAR site under

the Convention on Wetlands of International Importance, a Special Protection Area (SPA) under the EC Directive on the Conservation of Wild Birds, a potential Area of Conservation (pSAC) and a Site of Special Scientific Interest (SSSI) under national legislation.

- 2.5.3 Sites of Special Scientific Interest (SSSIs) are the best examples of our national heritage of wildlife habitats, geological features and landforms. South Gloucestershire has 22 SSSI’s in addition to the estuary and over 400 Sites of Nature Conservation Interest (SNCI’s).
- 2.5.4 Sites of regional and local Nature Conservation have been identified as having substantive value for nature conservation. These sites were established through consultation with English Nature the Wildlife Trust and the Environment Agency and have been adopted by South Gloucestershire.
- 2.5.5 All these sites and land areas are currently listed within the South Gloucestershire Local Plan (Deposit Draft) and are listed within Appendix 4. It should be noted that, while an indicative list of SNCI’s is included in the Local Plan, they are constantly under review via a rolling programme of annual survey. This can include addition, modification or deletion of sites. For definitive information about all nature conservation designations contact shall be made with the Nature Conservation Officer in Environment and Conservation.

2.6 Key Property Types

- 2.6.1 Within the categories of significant harm, scheduled ancient monuments are identified receptors. In the case of ancient monuments, harm is regarded as any damage that significantly impairs the historic, architectural, traditional, artistic or archaeological interest by reason of which the monument was scheduled. It must be remembered that contaminants present may constitute a significant element of the archaeological interest.

Where sites are identified as having significant contamination and remediation is necessary the council will consult with our own archaeological section and English Heritage at an early stage to agree an appropriate remediation strategy.

- 2.6.2 As well as its natural environment, the District has a rich number of Historic Parks, Gardens and Battlefields. English Heritage has compiled a “*Register of Parks and Gardens of Special Historic Interest in England*” and a “*Register of Historic Battlefields*”. Within South Gloucestershire there are seven parks and gardens currently entered on English Heritage’s register and listed in Appendix 5, and one registered Historic Battlefield Site at Lansdown.
- 2.6.3 In addition to nationally important parks and gardens, there are 62 other parks or gardens of local importance to South Gloucestershire. These make a valuable contribution to the heritage, environment and local distinctiveness of the District. These have been registered on the Sites and Monuments Records and are subject to procedures outlined for archaeological sites. In addition to these records there are also over 2000 listed buildings within the district.
- 2.6.4 The Council maintains a Sites and Monuments Record (SMR), which includes maps and written information for the whole of the District.
- 2.6.5 There are 29 Scheduled Ancient Monuments within South Gloucestershire and these are listed in Appendix 6. Schedule ancient monument consent is dealt with by English Heritage.

2.7 Conservation Areas

- 2.7.1 Section 69 of the Planning (Listed Buildings and Conservation Areas) Act 1990 requires the Local Authority to determine which parts of the areas are of special architectural and historic interest.

2.7.2 The Conservation Areas in South Gloucestershire are listed in Appendix 4.

2.8 Land in Local Authority Ownership

2.8.1 South Gloucestershire Council owns an impressive property portfolio. The following list is extensive, although not exhaustive:

- 362 non-housing establishments which have buildings
- 8466 council houses
- 122 establishments or sites with incidental buildings (such as pavilion on playing field, barn, shed, garage)
- 91 establishments or sites with structures on them (such as mast, aerial, playground equipment, sign board)
- 44,000 pieces of land under maintenance by Street Care Section, ie adopted highway within 40mph areas and pieces of public open space.

2.8.2 The following information is held in “Terrier” database format (list of all Council land and property interests) and comprises of:

- 5,545 “Freehold” records
- 1,826 “Leasehold” records
- 440 “Lease In” records
- 8,703 “Sales” records.

2.8.3 In addition, 20,000 polygons have been drawn on “Terrier” plans (these are records associated with Ordnance Survey maps which have all Council interests plotted on them) and are due to be transferred into a GIS format.

2.8.4 Considering the extensive South Gloucestershire Council portfolio of property and land, it is important that close links are established

between Property Services, other property holding Directorates and Environmental Services. It is important that the Local Authority instigates a Corporate inspection strategy for Council-owned land; such an approach demonstrates responsible leadership to all the Council’s stakeholders.

- 2.8.5 The existing information held by Property Services will need to be transferable to the proposed GIS contaminated land use database, thus preventing undue duplication and misuse of resources between directorates.

2.9 Known Information on Land Contamination

- 2.9.1 There are currently 52 sites as having an identified significant relevant historic land use. These have been logged with a brief history of the site and its details. This preliminary work will be expanded upon in the prioritisation system.
- 2.9.2 In addition to this a record of 28 landfill sites containing inert waste has been compiled from information made available by Minerals & Waste recorded archives, and is attached to the above document.
- 2.9.3 There are files containing information from a number of detailed site investigations, that have been prepared for the planning process and have subsequently been refused or not acted upon.

2.10 Historical Industries of South Gloucestershire – (1700-1900s)

- 2.10.1 Industry throughout South Gloucestershire has been both varied and diverse in nature. A list of the kinds of works and the items manufactured in the past, makes interesting reading nowadays, as they have not survived the test of time for a number of reasons.
- 2.10.2 Such work as coal mining, quarrying, iron ore mining and corn milling were prominent industries with the manufacturer of iron tools, hats, soap, candles and pins occurring widely across the district.

- 2.10.3 It must be remembered that **farming** has been in existence since the earliest days and has outlived a majority of the early heavy industries. It still occupies the largest land use within South Gloucestershire today and is important in sustaining many of the small villages and hamlets throughout the district.
- 2.10.4 The **corn milling industry** relied on the farms in order to grind the wheat, barley and oats into flour. These mills made much use of the natural water resources of the river Frome, using the power of the water to drive the mill wheels. In later years these mills were put to different use, during the 1700s the two mills at Frenchay were owned by the Frenchay Iron Company and were used in the manufacture of various iron tools for the following eighty years.
- 2.10.5 The smaller **pin making industry** came to this region during the 17th Century and was an industry that could be carried out in people’s homes, although ‘pin factories’ existed in Downend, Soundwell, Mangotsfield and Staple Hill. Pin making was a laborious job with the pins being made from either iron or steel and coated in zinc to obtain the shiny finish.
- 2.10.6 **Iron ore mining** occurred at Frampton Cotterell where many thousands of tons of the ore were dug out between 1862 and 1874. After 1874 the pits became waterlogged and mining stopped. One of the mines was owned by the Bristol Waterworks Company who used to pump water from it.
- 2.10.7 **Quarrying for stone** has always been important to this area, with the Pennant Stone being used for building houses. A number of small quarries existed throughout the district and are either evident as an overgrown hole or have been infilled. The quarries that exist today are large in comparison to earlier ones. The stone quarried today is used within the construction industry with the majority of stone being used for road coating. The quarries in existence

today are discussed briefly in section 2.3 ‘Geology and Mineral Resources’ and later on within this summary.

2.10.8 **Hatting** – Approximately 200 years ago, Frampton Cotterell was dominated by the hat industry, the work was either home-based or at small purpose-built factories. The industry grew up within this region for a very specific reason. Felt hats were made up of a mixture of beaver and rabbit fur, the beaver fur was imported into the Port of Bristol from Canada and Russia and the rabbits were local to the surrounding countryside. The process also required, due to the nature of felting, a good supply of clean water (river Frome) and a supply of sulphuric acid that was readily available as a by-product of Bristol’s heavier industries.

2.10.9 **Coal Mining** - The Bristol coalfield had a long history stretching back to the 13th Century. The Kingswood Chase coalfield and Coalpit Heath fields had coal close to the surface. The early mining was either ‘open cast’ or from shallow bell pits. These bell pits are a common occurrence across both Kingswood and the surrounding area, with many new housing developments coming across these historical infilled workings. Kingswood coal was used in Bristol’s industry, such as brassworks, brickworks and blacksmiths.

The main expansion of the Bristol coalfield took place in the 19th Century. The development of the steam powered winding gear during the mid 1850s was a revelation. This allowed the coal mines to expand in size, resulting in deeper pits due to the capacity of the engines to pump out excessive water. At this time, mining was seen as the major industry within the outskirts of Bristol.

The coal mining industry started a rapid decline from 1880 through to the early 1900s. A number of factors contributed to this decline. The mines became deeper, containing greater amounts of water,

resulting in what little coal was left being difficult and expensive to mine. Also the completion of the Severn Railway Tunnel introduced cheap coal into the Bristol market from the South Wales coalfields.

However, two mines remained open until the mid 1900s, with Coalpit Heath working until 1949 and Harry Stoke until 1963.

Locations of South Gloucestershire’s significant coal mines:

Bitton
Coalpit Heath
Hanham
Kingswood
Warmley
Mangotsfield

Yate
Winterbourne
Westerleigh
Harry Stoke

2.11 Modern Industry 1900s-2000s

2.11.1 The following description is not an exhaustive list of all the industries situated within South Gloucestershire. It is aimed at the main industrial areas of the district, where heavy industry or potentially large scale polluting operations have existed.

2.11.2 The collation exercise in identifying all the potentially contaminated land uses will highlight businesses and industries in outlying villages of the district.

2.11.3 It is realised that other smaller industries, eg smelting workings, scrap melting, and ‘cottage’ based works operated throughout the district.

2.11.4 Aircraft Industry

As early as 1910 an aircraft factory has existed at Filton, initially consisting of two sheds and a field. This small works was the seedbed of a tradition associated with Bristol. The airfield through time has expanded and is a vast complex of factories, offices, laboratories, hangars, testbeds, airfield and other factory facilities. At its peak some 20,000 people earned their living either with British Aircraft Corporation or Rolls Royce.

Aircraft built by the Filton factories played an important part in the First World War and the Company grew rapidly. During the inter war years the Company diversified into engine building, which enhanced the reputation of Bristol as the centre of British aero-engine industry. At the beginning of the Second World War BAC could claim to have at Filton the largest single aviation manufacturing unit in the world. The north side of the Filton complex was also used as an aerodrome during World War II, in order to provide both fighter protection to the vulnerable industries of Bristol and its inhabitants. In addition, Yate was the home of two aircraft manufacturing factories, which was important in the development of gun turrets for the Lancaster bomber throughout World War II.

Due to this strong engineering base and renowned reputation, the industry grew in Bristol after the war years. The most significant achievement of the Bristol works was the building and launch of Concorde.

Currently today the site goes from strength to strength with the development of the new double decker airbus. The wings for this huge aircraft are to be manufactured in Bristol. Across the road Rolls Royce continues to play an important part in the development of aircraft engines for both civil and military aircraft, with the latter being their speciality.

Due to the advances in technology, the industry has slimmed down its operations and this has resulted in a considerable amount of land at the Filton site being sold for housing developments, although both Rolls Royce and BAC continue to be important industries and employers with South Gloucestershire.

2.11.5 Sevenside

The Sevenside area has developed rapidly after the war, in that it is situated in an excellent position with both good road links with the M4 and M5, and sea links due to the expansion of the Avonmouth docks. The industries also make use of the natural resource of the river for their processes.

Both the chemical and petrochemical industries have had long-established sites at Sevenside. A number of industries exist presently, with all of them falling under the regulation of the Environment Agency through IPPC. These are as follows:

Terra (Nitro Fertiliser Works)

Astrazeneca – formerly ICI (Pharmaceutical Company)

British Gas (Storage Tanks of Ammonia)

Seabank (Gas Combined Heat and Power Station)

Historically these sites have had similar processes operated from them, although the company names have changed.

Across the Council border in Bristol City Council’s controlled area, various processes can be found and may have consequences in trans-boundary pollution. Two of these are former brickworks and Sevalco (responsible for making carbon black). These will be looked at once the strategy is acted upon.

2.11.6 Oldbury on Severn

At Oldbury a Magnox Nuclear Power Station can be found, and occupies extensive land adjacent to the river Severn, where it makes use of the water in the cooling and generating of electricity.

2.11.7 Quarrying

The quarrying industry has always been associated with this area, due to the rich deposits of minerals. Historically old and redundant quarries have now been abandoned and have either been left to let nature take its course, or infilled and the land put to use. A majority of the larger holes have had an important role in solving the district’s waste disposal problems and have been used as landfill sites.

The quarries in existence today are predominantly limestone quarries and are large in size. Quarries can be found at Tytherington, Chipping Sodbury, Wick and Wickwar. A quartzite quarry and a (mothballed) limestone quarry are at Cromhall, although both still have working mineral rights. Each of the other quarries has a life expectancy of 30 to 40 years.

The stone obtained from each of the quarries is used in both the construction industry and now predominantly in the roadstone process.

2.11.8 British Rail Depots

The railway junction at Stoke Gifford is important in that it provides a connection between the London-Wales line and the South West of England. This area has historically been used for train holdings and storage of materials associated with the railways. This area of land is substantial in size and has been progressively undergoing a clean-up.

2.11.9 Modern Technology

The areas of Aztec West, Cribbs Causeway and Bradley Stoke are occupied by modern industries, such as computer companies, banking houses, insurance companies and distribution centres. All these companies have located in these areas to make use of the good motorway links to the rest of the country.

2.11.10 Brickworks

Two worked clay pits currently exist at Cattybrook and Shortwood, although the only surviving brickworks is Cattybrook Works in Almondsbury. A former brickworks used to occupy the now Motorcycle Test Centre off Old Gloucester Road at Hambrook.

CHAPTER THREE

3. PRIORITY SYSTEM FOR INSPECTION

This chapter concentrates primarily on the methodology that will be followed in order to obtain a Prioritised Inspection Protocol and not the collection of site specific information and site inspection

The collation exercise will commence from 1 August 2001 with an aim of obtaining site specific information to be input into the risk assessment model detailed within this chapter.

Site inspection will commence on completion of the Prioritised Inspection Protocol. An exception to this will be sites that are brought to the Council's attention and require urgent action in that they pose a health risk to a class of receptor.

Risk Assessment Process

- 3.1.1 Dealing with contaminated land is often a complex and drawn out process, and can have a significant impact, be it through health grounds or disruption to the people it directly affects. Therefore it is important that inspection of the district targets sites that are likely to affect vulnerable receptors and that subsequently any action results in these sites being dealt with as a priority.
- 3.1.2 Guidance is being developed by the Environment Agency, DETR and other organisations, to assist in the effective implementation of Part IIA and promote best practice. All Local Authorities are awaiting the release of the important guidance "*Model Procedures for the Management of Contaminated Land*" (DETR Contaminated Land Report, CLR 11) and the Local Authority guide to Part IIA. In the absence of these, the Council has derived a risk assessment approach in order to prioritise site investigation.
- 3.1.3 It is important to identify pieces of land that contain contamination in, on or under it and is likely to give rise to one or more significant pollutant linkages. In order to identify areas of land that require

detailed inspection and investigation it is important to follow this identification process:

- (1) Desk Top Inspection of District
- (2) Detailed Site Inspection
- (3) Determination of Contaminated Land

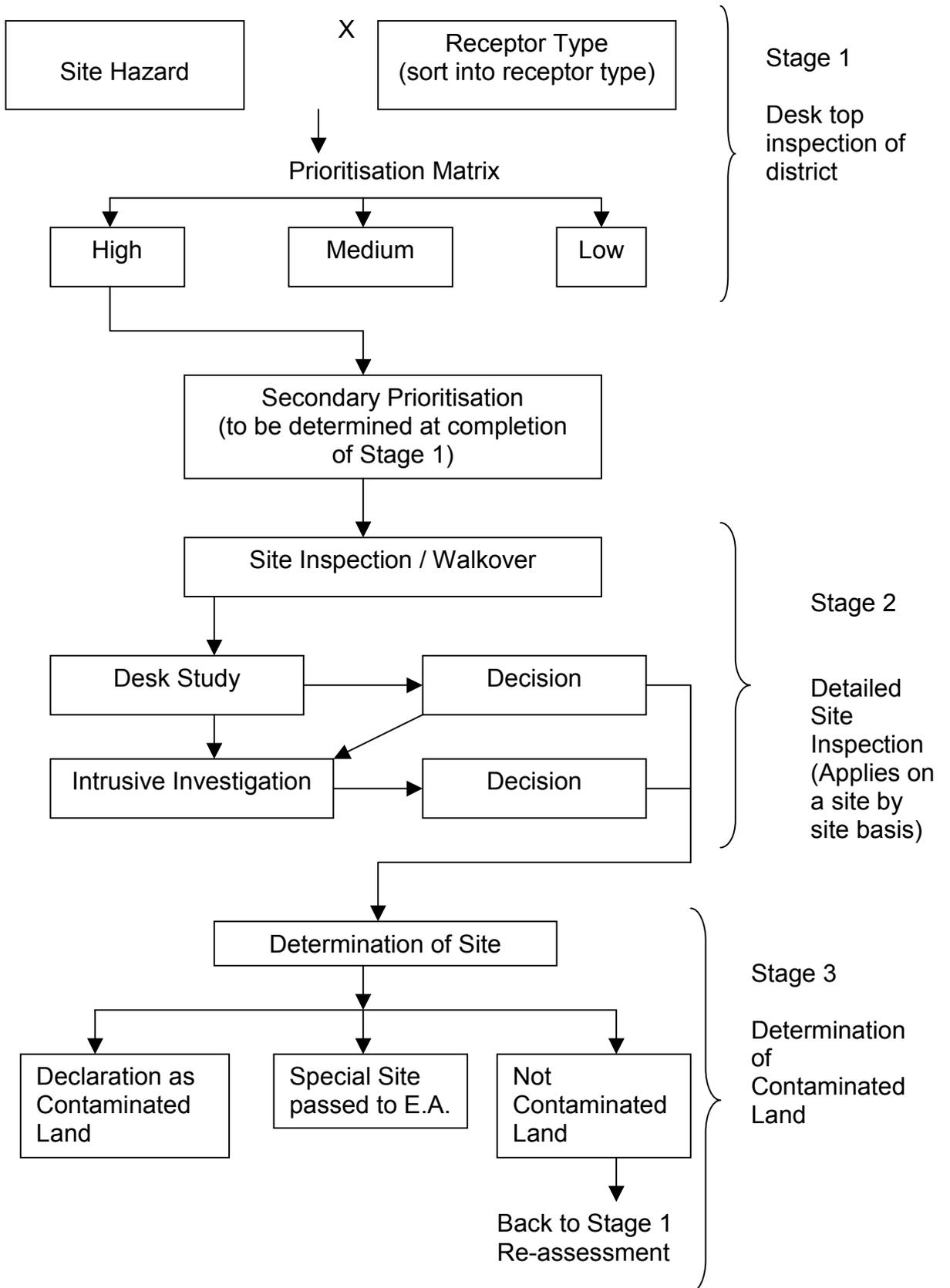
The procedure to be followed in order to identify areas of land that require detailed inspection and investigation is illustrated by the flow chart on the following page.

At all stages, decisions will be based on either quantitative or qualitative risk assessment, or a combination of both. By taking this approach, the inspection process should proceed in a structured and efficient manner.

- 3.1.4 Identification and prioritisation of sites will ensure that resources are concentrated at contaminated sites that are affecting high priority groupings.

Priority System for Inspection

Primary Prioritisation



3.2 Identification and Prioritisation of Sites with a Known Contaminated Use

(1) Desk Top Inspection of District

At this preliminary stage it is deemed important to identify and prioritise sites for the likelihood of a contaminated use. It is important to prioritise sites before proceeding to the site investigation stage in order to assess the likely existence of a pollutant linkage. A site may be grossly polluted, although after proceeding to subsequent stages, it may not warrant any more additional investigation than a desk top risk assessment, as no significant pollutant linkages exist.

A simple, though effective, risk assessment process has been adopted to prioritise receptor susceptibility against the perceived risk represented by likely contaminative land use.

In the case of perceived risk from a contaminative use, a list of 39 land use categories has been used, the categories have been identified as the ones that are most likely to result in contamination of the ground or controlled waters at, or adjacent to, the location of the activity.

The list of contaminative uses can be found in Appendix 7. The list represents a perceived hierarchy of likelihood of finding contamination on a site.

However, a degree of caution should be used when looking at different sites as contamination will, almost inevitably, be present on all old industrial sites, although the quantity, concentrations and types of contaminants will vary.

Categories of perceived risk have been quantified and a simple scoring system allocated to each process, ie

	<u>Score Rating</u>
High	3
Medium	2
Low	1

The following lists the different types of receptors that are likely to come to significant harm when in contact with a pollutant. When assessing a site, the prioritisation of vulnerable receptors will be in line with the following hierarchy.

Hierarchy of Vulnerable Receptors

- | | | |
|--|---|--------|
| 1. Human beings. | } | HIGH |
| 2. To protect controlled waters. | | |
| 3. Designated ecosystems. | } | MEDIUM |
| 4. Property in the form of crops, produce grown domestically, livestock, other, owned or domesticated animals and, wild animals subject of shooting or fishing rights. | | |
| 5. Property in the form of buildings. | | |

(A detailed list of the statutory receptors and the description of harm to that type of receptor that is to be classed as significant, can be found in Appendix 3.)

The categories of receptor susceptibility have been produced and a simple scoring matrix assigned:

High	5
	4
Medium	3
	2
Low	1

Having assigned scores for both the perceived risk from the site and for the receptor susceptibility, the two category scores can be multiplied together to give a Priority Grouping (High/Medium/Low), therefore giving each site a prioritisation ranking based on the actual harm a pollutant poses to the receptor.

Figure 3

		Receptor Susceptibility				
		High		Medium		Low
		5	4	3	2	1
Site Hazard	High 3	15	12	9	6	3
	Medium 2	10	8	6	4	2
	Low 1	5	4	3	2	1

Score (15-12) = High Priority Site likelihood of a significant pollutant linkage existing is high, progresses to Stage 2

Score (10-6) = Medium Priority Site – significant pollutant linkage likely to exist, although requires additional site specific investigation to identify linkages

Score (5-1) = Low Priority Site - no significant pollutant linkage. No additional site investigation required.

The scoring matrix provides a preliminary desktop risk rating score ranging from 1 (low priority sites) up to 15 (high priority sites). The highest scores can then progress to Stage 2. In this way it is possible for this Authority to ensure that its investigations are proportionate to the seriousness of the potential risk and the most pressing and serious problems are located and investigated as a matter of priority.

Secondary Prioritisation

This secondary stage of the risk assessment process will be refined following stage 1, where it is considered appropriate depending on the size of high risk category grouping.

(2) Detailed Site Inspection

Following Stage 1 it is important to focus investigations on high priority sites, where there is a likelihood of a significant pollutant linkage existing. It is important at this stage to establish whether an actual pollutant linkage is present. This will require detailed site inspection and validation to ensure that both a pollutant and receptor exist, with there being an actual pollutant linkage. An arrangement for site inspection is discussed briefly in Chapter 5.

At the conclusion of this stage, it should be possible to decide whether sufficient information is available to determine that an actual pollutant linkage exists. Then and only then can the Authority progress to the final stage of the identification process i.e. determination.

(3) Determination of Contaminated Land

Once an actual pollutant linkage has been established, it is necessary to determine whether that linkage is deemed “SIGNIFICANT” as defined in the Statutory Guidance. Such a determination will be carried out through the use of a site specific risk assessment. It may be sufficient to determine the existence of a significant pollutant linkage from

information collated from the desk top study, site visits and non-intrusive sampling.

If no determination is possible from desk studies, it may be necessary to undertake intrusive investigations of the site to obtain additional information. However, an intrusive investigation needs justification. Any such investigation shall be limited to where there is a reasonable possibility of a pollutant linkage and where there is a likelihood of a source and receptor, **BUT** where there is still insufficient information to make the determination.

The nature and extent of intrusive investigations shall be limited to the extent of the information required to make a determination.

Once a significant pollutant linkage is determined, the Authority shall pursue formal action in line with the statutory agreement/enforcement regime, or alternatively pass it onto the Environment Agency as a potential Special Site.

In addition to the identification route of all possibly contaminated sites, it is deemed important for all land in South Gloucestershire Council ownership to be investigated as part of the risk assessment process. The Council as a landowner must act responsibly and must be accountable and open in its actions, therefore sites identified as high risk will be investigated as a priority. Brief details of land in Council ownership can be found in Chapter 2 of this strategy.

For such an approach to succeed, it is fundamental that this strategy is endorsed by all Directorates of the Council and a corporate project group is established.

3.3 Proposed Programme of Actions and Timescales

The inspection process has been broken down into the following stages.

It should be noted that it is not the intention of South Gloucestershire Council to set a timescale for detailed inspection at this stage. It is our view that to set such a timetable in advance of the data capture exercise would not be a worthwhile exercise and could tie the Council to unrealistic and arbitrary targets. One of the basic elements of this strategy is the review stage, set for August 2002 (one year on from the date of Contaminated Land Officer in post). Then and only then will we have an idea of the size of the task and the potential resources/implications.

However, it must be recognised that, if a site is identified as having a significant pollutant linkage in existence, it will be investigated as a priority.

	Actions	Timescale
1.	Internal Draft Strategy for Consultation.	July 2001
2.	External Draft Strategy for Consultation.	August 2001
3.	Appoint Contaminated Land Officer to implement the strategy.	August 2001
4.	Publish and Adopt Strategy.	October 2001
5.	Purchase Landmark Historical Data Sets and Historical Ordnance Survey Maps, 4 Epochs from Landmark, for use with GIS (MapInfo).	September 2001
6.	Create an Access database to store all site collated information.	September 2001 August 2002
7.	Risk Assessment of Contaminated Site use against receptor vulnerability. Apply Scoring Matrix.	September 2001 August 2002
8.	Create a Priority Site list for inspection.	September 2001 August 2002

CHAPTER THREE – PRIORITY SYSTEM FOR INSPECTION

	Actions	Timescale
9.	Establish a Corporate Working Group to identify and clarify responsibilities under Part IIA regime and prompt investigation and remediation of suspected sites.	November 2001
10.	Present Contaminated Land Strategy and begin public consultation for collection of local knowledge through either Parish Councils or Area Forum.	November 2001
11.	Contaminated Land Officer to train Pollution Team Members in the use of the established database.	December 2001 August 2002
12.	Sites identified, as requiring urgent action shall be investigated as a priority.	August 2001 - ongoing
13.	Secondary prioritisation of high risk grouping.	August 2002
14.	Detailed site inspection of High Risk sites. (Implementation of stage 2)	August 2002 - August 2003
15.	Review progress of contaminated land strategy.	August 2002

CHAPTER FOUR

4. PROCEDURES

Procedures have been drawn up to describe how contaminated land issues will be handled within the Council. This section also details the level of service that the business community and members of the public can expect from the Council in dealing with these issues.

4.1 Internal Management Arrangements for Inspection and Identification

4.1.1 Within the Council, the Environmental Services Division has responsibility for the implementation of Part IIA of the Environmental Protection Act 1990. The Pollution Team Leader is the overall co-ordinator of the strategy, with a mixture of Environmental Health Officers and Technicians carrying out the inspection and identification of suspected contaminated land sites. The Team Leader reports to both the Assistant Director and Environmental Protection Manager.

4.1.2 The Contaminated Land Technician/Scientific Officer will be responsible for the day to day implementation of the strategy. All Environmental Health Officers within the Pollution Team will be authorised to serve remediation notices, subject to consultation with the Team Leader/Environmental Protection Manager and the Council's Legal Services. (All notices and the circumstances leading to the issue of such will be subject to South Gloucestershire Council Enforcement Policy.)

4.1.3 Where Council owned land is identified as being contaminated land, or where land contamination liabilities associated with property in the ownership of others rest with the Council, the responsible Departmental Directors will be informed at the earliest opportunity.

4.2 Local Authority Interests in Land

4.2.1 It is a stated aim to deal with our own land commitments at an early stage in the regime – 'setting our own house in order'.

4.2.2 Land for which South Gloucestershire Council may be the “appropriate person” has been identified as a priority investigation area as indicated in section 2.7 and 3 of this strategy, and will be subject to the Priority risk assessment procedure detailed in Chapter 3.

4.2.3 Once identified, the Property Services Department/other South Gloucestershire Council Directorate land owners will continue to have the lead role in identifying and handling such sites, with input from other departments. Actual site investigations, risk assessments and remediation, if required, will be carried out in consultation with Environmental Services.

4.3 Information Collection

4.3.1 Many sources of information will be required to identify potential sources of contamination and potential receptors. Some of the resources are detailed below.

Resource	District Specification	Use
Historic Maps	GIS digital maps purchased from Ordnance Survey (through Landmark).	To identify sources.
Historic Land Use Database	Database with link to GIS, identifying potentially contaminated land use.	To identify sources.
Geological Maps	1:50,000 solid and drift geology maps will have to be purchased from British Geological Society.	To characterise sources and pathways.
Hydrogeological Maps	The Groundwater Vulnerability Maps produced by the National Rivers Authority will be used to assess the potential for contamination of groundwater. Sheet 37 Southern Cotswolds (1:100,000).	To identify receptors (controlled waters).

Resource	District Specification	Use
Soil Maps	A soil map of the south west region will be purchased from the Soil Survey and Land Research Centre.	To characterise sources and pathways.
Source Protection Zones	Areas of vulnerable groundwater that are protected by the Environment Agency, available on EA's CD "South West Environment Agency Data". Alternatively it is available upon the Environment Agency's website.	To characterise receptors (controlled waters).
Environmental Services Records	Flare Database planning applications dealt with by officer involving contamination issues. Preliminary contaminated land use records. Waste Management Records	To identify known information on contamination.
Planning Records	Development Control hold detailed archived planning records of development in the district, including information on ground conditions presented in survey and building use. (Historic records available on microfiche, held at Kingswood offices.)	To identify known information on contamination.
South Gloucestershire Local Plan	A Deposit Draft was issued for consultation in September 2000 and is a valuable source of up-to-date information.	To identify receptors (particularly historic monuments and protected areas of the environment).
South Gloucestershire Minerals & Waste Local Plan	Adoption of Plan expected early Spring 2002.	To identify sources of contamination.

Resource	District Specification	Use
LAPC and IPPC Prescribed Processes Public Register	Environmental Services has maintained a public register containing details of authorised industrial processes in the District since 1990.	To identify sources of contamination.
Waste Management Licences	The Environment Agency maintains a public register of sites licensed for waste management activities and have provided relevant information relating to sites in the District - CD "South West Environment Agency Data"	To identify sources of contamination.
Register of Closed Landfill Sites	The Environment Agency have provided a register of closed landfill - CD "South West Environment Agency Data"	To identify sources of contamination.
The County Archive (held in Gloucester)	The County Archivist has identified a number of sources describing land use in the District essential for researching site histories prior to the end of the Second World War when the Town & Country Planning legislation came into force.	To identify sources of contamination.
Health & Safety Executive	Maps and addresses of current licensed hazardous substances consent sites.	To identify sources of contamination.
Anecdotal Evidence	This can be obtained via consultation with the parishes and through the Local Area Forum. Also approach the local Historical Society (details via Thornbury Library).	To identify sources of contamination.

Resource	District Specification	Use
Ward/Kelly's Directories	Directories detail names, addresses and types of commercial and industrial enterprises which were in operation within the District in any particular year. These directories are available through the SG Library and The County Archive (1849 to 1972). Recommended to review in 5 or 10 year intervals.	To identify sources of contamination.
Avon Fire Brigade	Hold information of the location of current and historic petroleum storage tanks.	To identify sources of contamination.

4.4 Information Management

- 4.4.1 The Council's Geographical Information System (GIS) will be the primary tool used to manage contaminated land information. The Council is currently looking at combining this system with an Access database on either Flare (current Environmental Services database system) or the adoption of the "MVM" system as a corporate system. Both these systems have their merits and can be linked to the current GIS package "MapInfo", although both will require IT support.
- 4.4.2 The system will be used to correlate all information and determine the proximity of receptors (eg humans, controlled waters) to sources of contamination.
- 4.4.3 In order to run a dedicated workstation for the running of such a package, a new terminal will be purchased. In addition, an A3 colour scanner/printer will be made available for reproducing coloured maps for either internal or external customers.

4.5 Complaints/Request for Service

4.5.1 A complaint or request for service concerning an issue relating to contaminated land will be handled in line with the current Environmental Services procedure for dealing with requests for service.

4.5.2 All service users may expect:

- (1) their request to be logged and recorded;
- (2) to be contacted by an Officer, within 5 working days of receipt;
- (3) to be kept informed of progress to resolution of the matter.

4.5.3 Where there is an imminent danger of serious harm or serious pollution of controlled waters, urgent remediation is required. The Environmental Protection Section will (during office hours) respond immediately, or as soon as reasonably practicable.

4.5.4 Every effort will be made to resolve complaints quickly and efficiently. However, the legislative framework does present a number of obstacles to a speedy resolution of problems. Currently the Department aims to complete 95% of investigations within 12 weeks of receipt and has achieved this target since April 1999. In the case of contaminated land, this closure deadline will have to be extended to accommodate certain aspects of the legislation namely:

- (i) proof of a significant pollutant linkage before any formal determination as contaminated land is permissible, which may only result from a detailed investigation;
- (ii) prior consultation with interested parties before designation as contaminated land;
- (iii) a minimum of a three month period between designation and serving of a Remediation Notice;

- (iv) the requirement for the Enforcing Authority to make every effort to identify the original polluter of the land (or “Class A” person).

The Regulations do allow conditions (ii) and (iii) to be waived in extreme cases, but not conditions (i) and (iv).

4.6 Confidentiality

- 4.6.1 All service users will be asked to supply their names and addresses and the address giving rise to the complaint. The identity of the complainant will remain confidential. The only circumstances in which this information might be made public would be in the case of a Remediation Notice being appealed in a court of law and an adverse effect on the complainant’s health was an important reason for the original contaminated land designation.

4.7 Environmental Information Regulations 1992 (as amended)

- 4.7.1 Information and reports relating to contaminated sites for the purpose of Part IIA will fall within the scope of the Environmental Information Regulations. The Council may be under an obligation to make information available to ‘any person who requests it’. The only information that will fall outside these Regulations is matters that will affect national security and confidential information prescribed by Part IIA that is not required to be disclosed to enquirers.
- 4.7.2 The Council will look at each individual enquiry for information in line with the Environmental Information Regulations 1992 (as amended), although the decision to disclose information is dependent upon individual circumstances. All requests for information must be made in writing, to the Service Manager of Environmental Protection.

4.8 Voluntary Provision of Information

4.8.1 If a person or organisation provides information relating to contaminated land that is not directly affecting their own health, the health of their families or property, this will not be treated as a complaint.

4.8.2 Voluntary information will be logged and recorded, although the Council will be under no obligation to act upon the information. Additionally, the Council will be under no obligation to keep the organisation or person informed of its actions and progress towards resolution. The Council, however, may choose to do so as general good practice.

4.9 Anonymously Supplied Information

4.9.1 The Council does not normally undertake any investigations or actions based on anonymously supplied information, and this general policy will be adopted for contaminated land issues.

4.9.2 However, this general policy does not preclude investigation of an anonymous complaint in exceptional circumstances.

4.10 Anecdotal Evidence

4.10.1 The Council recognises that anecdotal evidence relating to historic land contamination issues may be very useful supplementary information. The Council may seek such evidence through the Area Forum groups, Parish Councils and local historians, with a view to this evidence aiding site reconnaissance and intrusive investigations into specific land. However, no formal designation of contaminated land will be confirmed without robust scientific evidence.

4.10.2 In all cases, the Council's Contaminated Land Officer will record anecdotal evidence and will make a decision as to what actions should arise from such information.

4.11 Provision of Information to the Environment Agency

4.11.1 The Environment Agency is required to prepare periodic report for the Government on the state of contaminated land in England and Wales. To ensure that the Environment Agency are fully aware of the extent of contaminated land and the amount of regulatory activity within their region, the Council will provide the following information to the Agency when required:-

- A copy of the Contaminated Land Inspection Strategy.
- Written site determination information (SOCL/LA/FORM1), each time a site is determined.
- Site remediation information (SOCL/LA/FORM2), each time a remediation notice or declaration is issued, or a remediation statement is agreed.
- Regulatory activity information (SOCL/LA/FORM3) in April on an annual basis for the previous financial year.

In addition the Pollution team will collate the above listed information annually in order for the department to measure its own progress against the Inspection Strategy.

4.12 Public Register

4.12.1 Enforcing Authorities have a duty to maintain a Public Register. The Public Register will be paper-based and held in the Environmental Health Section of South Gloucestershire Council at Thornbury Council Offices. It will be available on request for inspection by members of the public between the hours of 9.00am and 4.00pm on Monday to Friday. The Public Register will include details of Remediation Notices served and other information prescribed in Regulation 15 of, and Schedule 3 to, the Contaminated Land (England) Regulations, 2000.

NB: The Public Register is not a record of potentially contaminated sites, it is a register of sites that comply with the legal definition of Contaminated Land and have been remediated, or are about to undergo the remediation process.

4.13 Risk Assessment

4.13.1 All information obtained and reviewed on substances in, on or under the ground that may result in significant harm or pollution of controlled waters will be evaluated against the Government guidelines available at the time.

4.13.2 CLEA and ICRCL Guidelines

A new set of guidelines known as the Contaminated Land Exposure Assessment or CLEA guidelines are expected from the DEFRA by Autumn 2001. These will cover seven metals, cyanide, phenols and PAHs. In addition to this, the Institute of Petroleum is devising a standard for TPH, to stand alongside the CLEA standards. Until these guidelines are available the Council will continue to evaluate all information against the guidelines issued by the Interdepartmental Committee on Redevelopment of Contaminated Land (ICRCL) and other site specific risk assessments.

ICRCL 59/83 (2nd Edition, July 1987) "*Guidance on the assessment and redevelopment of contaminated land*" provides local authorities with the only UK guidance relating to set values for both trigger and action levels for a range of contaminants and is likely to remain a key reference document, even with the introduction of CLEA.

The aim is to deal with sites through specific site risk assessments.

4.13.3 Risk Assessment for Controlled Waters

Where controlled waters form the receptor in a pollutant linkage, then advice will be obtained from the Environment Agency with regard to risk

assessment. It is anticipated that risk assessments and remediation will be carried out in accordance with Environment Agency guidance as laid down in “*Methodology for the Derivation of Remedial Targets for Soil and Groundwater to Protect Water Resources*”.

4.14 Interaction with Other Regulatory Regimes

4.14.1 It is important to recognise that the contaminated land regime is not a ‘stand alone’ piece of legislation and that there are other regulatory actions that can be used to deal with contamination of the land. There are overlaps with planning, water pollution and IPPC legislation and these are addressed below.

4.14.2 **It must be remembered that any issues of land contamination that may have previously been dealt with under the Statutory Nuisance regime will now be dealt with through the Part IIA process (except where deposits on land give rise to offence to human senses (such as stench)).**

4.14.3 Waste Management Licensing

Where there is significant harm or pollution of controlled waters arising from land for which a Waste Management Licence is in force under Part II of the Environmental Protection Act 1990, the enforcement route will be dependent on the source of the contamination.

Where the harm or pollution is attributable to either a breach of the site licence, or the carrying on of an activity authorised by the licence in accordance with its terms and conditions, then this will be enforced through conditions attached to the site licence. However, where the harm or pollution is attributable to another cause, then the Part IIA regime will apply.

Additionally, under section 78YB(3) of the Environmental Protection Act 1990, an enforcing authority acting under the Part IIA regime cannot

serve a Remediation Notice in any case where contamination results from an illegal deposit of controlled waste. In such circumstances the Environment Agency have powers to remove the waste and to deal with the consequences of its having been present.

4.14.4 Planning and Development Control

The vast majority of contaminated land issues are currently addressed through the planning regime, where contamination issues are a material planning consideration, to be taken into account during the normal course of development. While the introduction of Part IIA will undoubtedly lead to the identification of sites missed during and before the planning process was formulated, it is anticipated that redevelopment of brownfield sites and the associated planning controls, will remain the primary mechanism for dealing with contaminated land. Any remediation agreed as a planning condition will be dealt with under planning controls and not under Part IIA.

It is recognised that Environmental Services and Development Control will need to work closely together to develop good liaison and a consistent approach in dealing with developments that involve contamination issues.

As a result of the new regime a draft Contaminated Land Concordat was issued for consultation to all Council directorates whose day-to-day operations would be affected by the new regime, with a view to:

- (1) making them aware of their responsibilities under the Part IIA regime; and
- (2) ensuring that joint working exists between departments in order for a consistent approach across all Council departments.

It was believed that Planning Policy Guidance Note 23 (PPG23) was to be revised to include more detail about contamination issues. This has

been shelved and will be addressed in a new publication (PPG26), which is likely to be some way off completion.

4.14.5 Redevelopment Controls

It is the responsibility of the developer to ensure that a thorough investigation of the site is carried out: to determine the type and extent of contamination; to identify and assess the risk that the contamination poses to the environment and health; and to satisfy the Authority that appropriate remedial action can and will be taken to ensure that a previously contaminated site will be made safe for the proposed use.

The best way of minimising any associated risks is to ensure that areas of potentially contaminated sites are identified early, preferably at the pre-application stage. In circumstances where there are reasonable grounds for suspecting contamination, ie in the case of most previously used or brown field sites, the Council will require the developer to undertake a detailed site survey and analysis which should identify the type, amount and location of the contamination present and submit the findings to the Authority together with proposals for mitigation. The cost of the survey to be borne by the developer.

If there are insufficient grounds at the application stage to require a site survey, the Authority may impose a condition on planning consents. This will require the developer to draw to the attention of the Planning Authority the presence of significant unsuspected contamination encountered during redevelopment and submit a plan for remediation to be agreed by the Authority which must then be implemented during the course of development (PPG23) (*South Gloucestershire Local Plan (Deposit Draft) September 2000*).

4.14.6 Building Control

The Building Regulations 2000 give the Building Control Officers authority to address contamination and landfill issues within a building

footprint. Where a site is known to be on or adjacent to a gassing landfill, Building Control approval will only be granted subject to the design of the building(s) incorporating adequate gas control measures.

Although the Building Control process is fundamental to the safe redevelopment of brownfield sites, it is not sufficient to have a policy which relies on remediation controlled by Building Control alone. Consequently, a multi-disciplinary approach to approval of remediation schemes is required involving Building Control, Development Control and Environmental Services.

4.14.7 Water Pollution

The Water Resources Act 1991 gives the Environment Agency powers to prevent or remedy the pollution of controlled waters. Whilst Part IIA does not revoke these powers there is obviously some overlap.

- ❑ A Local Authority acting under Part IIA should consult the Environment Agency before determining that land is contaminated land in respect of controlled waters.
- ❑ Where a local authority has identified contaminated land which is potentially affecting controlled waters, that authority should consult the Environment Agency and take into account its comments with respect to remediation requirements.
- ❑ Where the Environment Agency identifies any case where actual or potential controlled water pollution is arising from land affected by contamination, the Agency should notify the relevant local authority to enable it to formally identify the land as contaminated land for the purposes of the Part IIA regime.
- ❑ In any case where land has been identified as contaminated land under the Part IIA regime, then the Part IIA mechanisms would normally be used.

4.14.8 Integrated Pollution Prevention and Control (IPPC) and Pollution Prevention Control (PPC)

Both IPPC and PPC regulations were introduced as a new regulatory regime in 2000 for controlling pollution from industrial processes.

Prior to receiving a licence, operators must undertake a site condition survey. If the site is in such a condition that areas of land meet the definition of contaminated land, then submission of a site survey may trigger action under Part IIA. PPC legislation is being introduced over a period of seven years, although it will apply to any new processes or any changes that constitute a substantial change to an existing process.

The PPC Regulations 2000 ensure that Part A installations should be operated in a way that:

- (i) all appropriate preventative measures are taken against pollution incorporating the best available technique application;
- (ii) no significant pollution is caused.

The Regulations also ensure that any waste produced is recovered or disposed of while avoiding or reducing any impact on the environment. Upon the definitive cessation of activities, necessary measures shall be taken to avoid any pollution risk and to return the site of the installation to a satisfactory state.

In case of a breach of PPC, the Pollution Prevention Control Regulations 2000, gives both the Environment Agency and Local Authority power to take action to remedy harm resulting from a breach of permit conditions.

4.14.9 Radioactivity

Under Section 78YC of the Environmental Protection Act 1990, the Part IIA regime does not apply with respect to harm, or water pollution, which is attributable to any radioactivity possessed by any substance.

4.15 General Liaison and Communication Strategies

- 4.15.1 The identification of contaminated land and its subsequent remediation will require the collection of significant quantities of information from a variety of sources and this information will require updating on a regular basis.
- 4.15.2 Furthermore it is anticipated that the presence of contaminated land will have an impact upon and involve many stakeholders and neighbours in the locality of the designated site, and will inevitably bring enquiries and concerns from many diverse parties
- 4.15.3 Hence, the implementation of these Regulations will require effective liaison and communication with all stakeholders and is deemed an important part of the Council's duties. The issues surrounding contaminated land can be very contentious and can have serious implications for people's health and may result in significant property blight. Therefore, it is essential that Officers are aware of the sensitive nature and implications of their actions in applying this legislation and ensure that all regulatory action initiated must be supported with clear and concise risk communication, based on the four step approach, detailed in paragraph 4.24.

4.16 Statutory Consultees

- 4.16.1 The contact details of the statutory consultees can be found in Appendix 7. The statutory consultees are:

Environment Agency (North Wessex Area)
English Nature
English Heritage
Ministry of Agriculture, Fisheries & Food (now DEFRA)
Food Standards Agency
South West Regional Development Agency

4.16.2 Each organisation was invited to comment on the consultation draft of this strategy.

4.17 Internal Liaison

4.17.1 Internal liaison contacts within South Gloucestershire Council are listed in Appendix 9 of the strategy. It is deemed important that after comments are received at the consultation draft stage, that a Corporate Working Group shall be set up with each relevant Directorate being represented. This shall be initiated and run by an Environmental Health Officer of the Pollution Team.

4.18 Neighbouring Local Authorities

4.18.1 Through the risk assessment and inspection components outlined in this strategy, the Council may identify potentially contaminated sites and subsequently designate land as formally contaminated which is located along or across its border. Currently South Gloucestershire has regular contact with neighbouring councils and currently chairs the Bristol, Gloucestershire and Somerset Environmental Protection Committee (BGS) and convenes their Land Group. In addition to this, we are a member of the Gloucestershire Contaminated Land Group that is solely responsible for liaison and collaboration covering all contaminated land issues.

4.19 Non-Statutory Consultees

4.19.1 There is great scope for members of the public, businesses and voluntary organisations and local historical and industrial archaeological organisations to make an important contribution towards identifying potentially contaminated land in the district.

4.19.2 Following the adoption of this strategy by South Gloucestershire Council, the Pollution Team will conduct presentations at either Parish Council

meetings or the five Area Forums. Such meetings are seen to have a two-fold benefit, in that:

- (1) the Council are raising public awareness of the contaminated land strategy and the issues that surround it; and
- (2) the public and parish councillors have an opportunity through open participation to provide anecdotal information, seen as important to identifying and investigating contaminated land.

4.20 Determining an Area of Contaminated Land

4.20.1 The Council will write to the owner/occupier or interested party of the land at least five working days prior to determination, explaining in summary the reasons and implications of such a determination. In addition neighbouring properties will be notified of the determination.

4.20.2 The Council will send a Notice of Notification confirming that the land has been determined contaminated land to all parties and the Environment Agency, detailing clearly the evidence for determination. Officers will ensure that a copy of the written risk assessment is attached to the Notice of Notification and a covering letter is included explaining in “layman’s” terms the implications of the Notice. Wherever possible Notices should be delivered by hand, therefore providing an opportunity for clear explanation and dialogue as to the understanding of the Notice and attached information.

4.20.3 Consultation will commence regarding providing a suitable Remediation Scheme, and how and when remediation is to be implemented, ensuring that all actions are timescaled.

4.20.4 Voluntary Action

The person served with the notification may wish to carryout remediation by an alternative scheme, to that which could be required in a remediation notice. The council will consider such a remediation scheme

providing it will achieve at least the same standard of remediation for each significant pollutant linkage identified on the land as would be achieved by the remediation scheme which the authority would otherwise specify in a remediation notice.

4.21 Serving a Remediation Notice

4.21.1 Where required, a Remediation Notice will not be served sooner than three calendar months from the date of Notification of Contaminated Land. All Notices will be served on appropriate person specifying action required.

4.21.2 The provisions of a three month consultation period allows both the Council and the appropriate persons to agree the most appropriate remediation method and ensure that achievable timescales for action are set.

4.21.3 A copy of the Remediation Notice will be sent to neighbouring properties affected by the contaminated land, Environment Agency and a copy placed on the Public Register.

4.21.4 It should be noted that intrusive site investigations can be classed as “Remedial Assessment Action” and may be required by the Council (EA) in pursuance of serving a Remediation Notice subsequent to a contaminated land determination.

4.22 Urgent Action

4.22.1 Where there is a need for a **URGENT REMEDIATION ACTION**, the Council will serve a Remediation Notice on an urgent basis, without necessarily waiting for a three month consultation period. However, if the Council are not satisfied that a Remediation Notice will result in the remediation happening sooner, rather than later, the Council has the power to carry out remediation itself. The Council will seek to recover all

reasonable costs incurred in carrying out the remediation from an appropriate person.

4.23 Powers of Entry

4.23.1 Section 108(6) of the Environment Act 1995 grants the Council statutory powers of entry to carry out investigations. At least seven days notice will be given of proposed entry onto any residential property, unless there is an immediate risk to human health or the environment. Where a site is likely to be designated as a Special site, the council will authorise a person nominated by the Environment Agency.

4.24 Communicating with Owners, Occupiers and Other Interested Parties

4.24.1 Liaison with owners and occupiers of specific sites and other interested parties will be through the Investigating Officer of the Pollution Team. The exception to this will be that all enquiries from the press and media will be conducted in liaison with the Council's Corporate Media Department.

4.24.2 The Council's approach to enforcement will be in line with the statutory guidance and the Council's Enforcement Policy; with both placing an emphasis on seeking voluntary action before formal enforcement action. Such an approach is effective when dealing with contaminated land, in that it recognises that most remediation proposals are achieved by agreement and informal liaison rather than by enforcement. The legislation does 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. Although it must be remembered that this exemption does not apply to materials generated as a result of a Remediation Notice having been served.

4.24.3 This approach requires effective communication with owners, occupiers and other interested parties. The investigating Environmental Health

Officer and/or Contaminated Land Officer will act as the first point of contact in the Council on contaminated land issues and, as such, will ensure that all owners, occupiers and interested parties are informed at each stage of an investigation.

4.24.4 Where a formal determination of contaminated land is required, the following actions will be followed.

4.25 Risk Communication

4.25.1 The identification and management of contaminated land in this inspection strategy uses a risk-based approach. The advantages of this approach are that it is systematic and objective and provides a consistent and defensible basis for considering uncertainties, discussing options and making decisions.

4.25.2 The complex nature of contaminated land issues does not lend itself to easy explanation to the lay person. Development of effective methods of risk communication is therefore essential.

4.25.3 The Council is committed to developing effective communication methods and managing expectations and misconstrued ideas appropriately. In doing so, the publication “Communicating Understanding of Contaminated Land Risks” produced by the Scottish Environment Agency (SEPA) in 1999 provides useful guidance.

4.25.4 The process comprises four stages:

Step1 – When to Communicate

A line of communication shall be started early in an investigation of a site, ensuring that maximum benefit can be gained. At the onset of Identification of a High Risk Site, early dialogue with all appropriate stakeholders will take place, maximising trust and understanding between all.

Risk communication to all stakeholders shall not be a “one-off” occurrence; it will continue through the entire remediation process until the land has been made “suitable for use” eliminating all risks to receptors.

Step 2 – With Whom to Communicate

At the early stages of investigation, it is important to identify all stakeholders who have a valid interest in the land. Although it is important to identify and prioritise stakeholders, it is clear that the focus must be on persons directly affected by contamination i.e. receptors, responsible persons and in some instances the wider community.

Step 3 – What to Communicate

A key objective of the risk communication process will be to share an understanding of the risk assessment process to all stakeholders, allowing them to raise concerns and contribute to the formulation of a successful resolution.

It is important that all stakeholders support the organisation conducting the scientific investigation. All results and investigations shall be from an independent body where results and answers are transparent and accepted by all involved.

Successful risk communication shall ensure that all stakeholders understand and support the process and results of the risk assessment and how they as individuals are affected by decisions and remediation.

Step 4 – How to Communicate

The Local Authority see that effective communication is a two-way process and should seek to engage in open lines of communication with all interested stakeholders through written and verbal means. We have experienced in previous cases that the level of communication should be targeted at the level of understanding of the audience participating in the

process. Providing solely a written risk assessment (technical document) to the man on the street may not be the most efficient means of communication. All risk assessments shall be reinforced with a “one to one” verbal explanation of the assessment. This allows all stakeholders an opportunity to view concerns and ask questions of documents placed before them, and hopefully removes confusion and improves understanding of the process.

Each contaminated site will affect stakeholders in different ways, so at the onset of the process a clear means of disseminating essential information shall be determined by the Authority (e.g. one to one, letter, media, public meeting, etc).

4.26 Nature Conservation considerations

It is recognised that actions carried out under Part IIA, which may affect nature conservation interests including protected species, must be carried out with regard to existing relevant statutory legislation and guidance. Appendix 10 (p 115) lists relevant paragraphs in DETR 02/2000, as well as relevant legislation.

Screening for any coincidence of contamination linkages and protected habitats and sites will be carried out during information collection phase., e.g. Regionally Important Geological Sites (RIGS) and of those types of site listed as ‘ecosystem receptors’ (DETR Circular 02/2000), such as SSSIs, SPAs, (c)SACs, National Nature Reserves (NNRs), Local Nature Reserves (LNRs), etc. The Bristol Regional Environmental Records Centre will also be contacted. Field surveys may be required for some sites.

Further consultation will take place directly with the Somerset team of English Nature.

CHAPTER FIVE

5. INSPECTION OF SITES AT STAGES 2 AND 3

5.1 Having completed the Stage 1 Risk Assessment, the priority sites will have been identified. Site inspection and a site specific desk top study (expanding on information already collated at Stage 1) will commence at Stages 2 and 3 in order to determine actual pollutant linkages and significant pollutant linkages.

NB: Stage 1 will provide the majority of information to enable a desk top study to be undertaken, however, further sources of information may become available and will be sought on a site by site basis.

5.2 Site inspection will have three general components:

- Desk Study
- Site Reconnaissance (walk over study) or Preliminary Inspection; and
- Intrusive Site Investigation and Exposure Assessment.

5.3 Preliminary inspections will be undertaken on all sites identified in the risk assessment as High and Medium Priority Sites, although to different timescales. The requirements for intrusive investigation will be assessed on the outcome of a preliminary inspection and hence will be a site-specific decision.

5.4 Intrusive investigation will be carried out, when there is insufficient information to make a determination (refer to Section 3.2 Stage 3).

5.5 An important part of all preliminary inspections is the “walk over”, this allows comparisons of desk top information with the actual site, the identification of unrecorded land uses and identification of site boundaries.

- 5.6 All site investigations will be inspected in line with principles and practices put forward in DEFRA, Environment Agency or other agency sponsored technical guidance.

General Inspection Methodology

- 5.7 The following guidance documents will be used by the Council to manage and assess its overall approach to the inspection of potentially contaminated land:

- Model Procedures for the Management of Contaminated Land, DETR (CLR 11) (in preparation).
- Model Procedures for the Management of Contaminated Land.
- BS 10175:2001 Code of Practice for the Investigation of Potentially Contaminated Sites.

Preliminary Inspection Methodology

- 5.8 The following key guidance will form the basis of the Council's Methodology:

- Guidance on Preliminary Site Inspection of Contaminated Land, DoE CLR 2 Volumes 1 and 2 1994.
- Industry Profiles, DoE 1994 – 1996.
- Technical Aspects of Site Investigation, Environment Agency, Research & Development Volume I and II.

- 5.9 The DoE Industry Profiles are an extensive list of over 40 industry specific profiles detailing the historical development, specific processes and potential human and environmental impacts of the sector concerned.

Intrusive Site Investigation

- 5.10 It can be expected that intrusive investigations will take some form of site monitoring, surface/sub-surface sampling, analysis and assessment of impacts.
- 5.11 This information will be reviewed and assessed in order to determine whether an actual pollutant linkage exists, and to enable a determination to be made as to whether that linkage is significant.
- 5.12 Intrusive investigations are likely to be carried out by Bristol Scientific Services or contractors/consultants, with each being expected to work in line with key guidance and industry approved methodology.
- 5.13 There is a wide variety of key guidance available or in preparation relating to intrusive investigations and exposure assessments. Some guidance is general to all contaminated land, other guidance is appropriate to specific contaminants and/or receptor types.
- 5.14 An extensive list of key guidance can be found within the Environment Agency Document Technical Aspects of Site Investigation “Research and Development” Volume II, although the following documents are a useful starting point.
- Sampling Strategies for Contaminated Land, former DoE now DETR (CLR4) 1994
 - BS10175:2001 – Investigation of Potentially Contaminated Sites, Code of Practice BS12001
 - Development of Appropriate Soil Sampling Strategies for Land Contamination, EA, Research & Development PS-066/TR
- 5.15 Key guidance relating to the assessment of the impact of contaminants and receptor exposure assessment that will be used or referenced by the Council includes:

- ICRCL 59/83 – Guidance on the Assessment and Redevelopment of Contaminated Land, Interdepartmental Committee on the Redevelopment of Contaminated Land 1987.
- Contaminated Land Exposure Assessment CLEA Guidelines, DEFRA (will cover 7 metals, cyanide, phenols and PAHs). (Awaiting approval by Department of Health.)
- Institute of Petroleum, Standards for Total Petroleum Hydrocarbons (TPH) (due August 2001).
- ICRCL 64/85 – Asbestos on Contaminated Sites, 1987.
- Where substances are not covered by ICRCL or CLEA guidance, EH40 Occupational Exposure Limits, HSE.
- Short term health risk guidance is in preparation (due September 2001).

5.16 The above documentation will be used to guide and advise Officers, interpreting sample results. If any chemical/substance is likely to result in harm to humans, advice will be sought through Avon Health and from Guy's Chemical Incidents Response Unit & Toxicology Centre for specific health advice and resulting actions.

5.17 When undertaking intrusive investigations, all reasonable precautions shall be taken to avoid creating a pathway for the contaminant to cause harm, water pollution or damage to the natural environment. There will be cases where intrusive investigation may have implications on particularly sensitive areas of land. In such cases the following actions shall be taken:

- (a) The Council will consult the Environment Agency prior to site investigations that may have an adverse impact on controlled waters.

- (b) The Council will consult with English Nature if investigations are likely to effect a sensitive ecological system.
- (c) The Council will consult English Heritage if investigations are within an area of archaeological and historical interest.

Choice of Laboratory

- 5.18 When using both sampling and analysis as part of a risk assessment to determine contaminated land, it is important that data produced is from methods which have acceptable and measured performance. The laboratory chosen shall be competent in the analysis to be carried out. Competence can be demonstrated by third party accreditation. **NB:** Accreditation is usually on a method specific basis. Before commissioning or undertaking samples, the Council will be assured that the laboratory receiving the samples is specifically accredited for the test parameters of interest. The onus of checking the Quality Assurance of each laboratory method of analysis will lie solely with the party undertaking the site specific investigation and sampling.
- 5.19 Prior to confirming a sampling regime, the developer/consultant/ scientist will provide the Council with:
- (1) Method statement for each proposed method of analysis.
 - (2) Evidence that the sampling laboratory is accredited in the test parameters of interest.
 - (3) Documentation to demonstrate competency through third party accreditation.

It should be noted that no site sampling data will be accepted as an approved method, unless the above information is submitted to the Council for approval.

“Potential Special Sites”

- 5.20 Potential special sites are likely to be identified at a relatively early stage of assessment and therefore early consultation will be sought with the Environment Agency. However, some potential special sites may not be identified or confirmed until a preliminary or intrusive investigation has been completed. In order to ensure full consultation is made with the Environment Agency with regard to potential ‘special sites’, the Council will:
- (a) seek initial consultation with the Environment Agency prior to inspection of potential ‘special sites’ when possible;
 - (b) make arrangements with the Environment Agency for the Agency to carry out the inspection of the land on behalf of the local authority
 - (c) liaise directly with the Environment Agency with the specification of intrusive investigations where appropriate, and
 - (d) review the outcome of intrusive investigation jointly with the Environment Agency and formally agree the site status.
- 5.21 If the risk assessment and subsequent inspection process identifies a ‘special site’ then the Council will follow the formal procedure for notification and the hand over of enforcement responsibility of the site to the Environment Agency, with their agreement.

External Appointments

- 5.22 As part of the site investigation procedure, the Council may not have the expertise or equipment to undertake site investigations. In such cases the Council may choose to appoint an external agency, ie consultants or contractors, to carry out specified works. Some examples of such appointments could be to:

- (a) carry out detailed studies of sites, design of sampling programmes and interpretation of analytical reports;
 - (b) undertake site-specific assessments in order to determine whether land is contaminated;
 - (c) provide expert witness services in court;
 - (d) carry out and supervise remediation of contaminated land.
- 5.23 Selection of external consultants or contractors will be inevitable and will be vital to the successful outcome of site investigation and remediation of contaminated land.
- 5.24 Such a course of action, however, does have its downfalls in that it is expensive, although Supplementary Credit Approval is available from DEFRA to aid contaminated land remediation. However, the Council must first demonstrate that no liability can be claimed from a third party polluter (Class A person) and that, as a result, the Council is likely to incur all the costs of remediation.
- 5.25 **NB: Identifying Appropriate Persons may be a time consuming exercise and the resource implications will need to be addressed.**
- 5.26 A successful tender for carrying out works on behalf of the Council must demonstrate the following:
- (a) a breadth of suitable skills and experience;
 - (b) familiarity with published guidance and regulations;
 - (c) suitably qualified and experienced staff at a range of levels;
 - (d) adequate volume of resources;
 - (e) operate a quality management system;

- (f) operate a comprehensive health and safety management system and a demonstrable track record;
- (g) independent accreditation for testing procedures (contractors);
- (h) availability of adequate Professional Indemnity Insurance, Public Liability Insurance and other insurances.

CHAPTER SIX

6. REVIEW MECHANISMS

6.1 Review of Inspection Strategy

6.1.1 Routine controls are important to ensure that the strategy implementation is on course and achieving its Aims and Objectives. Therefore staged monthly evaluations and annual audits will be completed at the points identified in the Gantt Chart (Figure 4).

6.1.2 The annual audit will review:

- (a) the effectiveness of the strategy in meeting the requirements of legislation and guidance;
- (b) its accuracy with respect to information used and assumptions made to formulate the strategy;
- (c) its effectiveness with respect to the efficient use of available resources.

6.1.3 The review will be completed by the Team Leader, and will fully evaluate all components of the strategy, resulting in a report being submitted to the Executive Member of Cabinet on the strategy's effectiveness through year one. Subsequent recommendations and comments will be fed back into the strategy, and the strategy revised if necessary.

6.1.4 Once the initial review has been completed the strategy will formally be reviewed every two years to ensure that risk assessment and inspection methodologies are still a valid means of identifying contaminated land under Part IIA.

6.1.5 The delivery of the Part IIA regime will also be subject to the Environmental Services Best Value Process, which commences 2002/2003. Therefore any subsequent review dates should coincide and incorporate the underlying values of Best Value.

6.1.6 Unplanned reviews of the strategy may be triggered if there is a significant revision or addition to statute or guidance.

6.2 Triggers for Review of Inspection Process

6.2.1 The frequency of re-inspection of land previously inspected under the terms of the strategy is not prescribed in Part IIA of the Environmental Protection Act 1990. Re-inspection frequencies are likely to vary significantly and so it is not proposed to set a target frequency for such re-inspection.

6.2.2 However, it is clearly recognised that there are likely to be changes in the condition or circumstances of some assessed land which should prompt the Council to reconsider its previous inspection findings.

6.2.3 The following circumstances have been identified as “triggers” for a prompt review of the inspection findings for specific areas of previously assessed land:

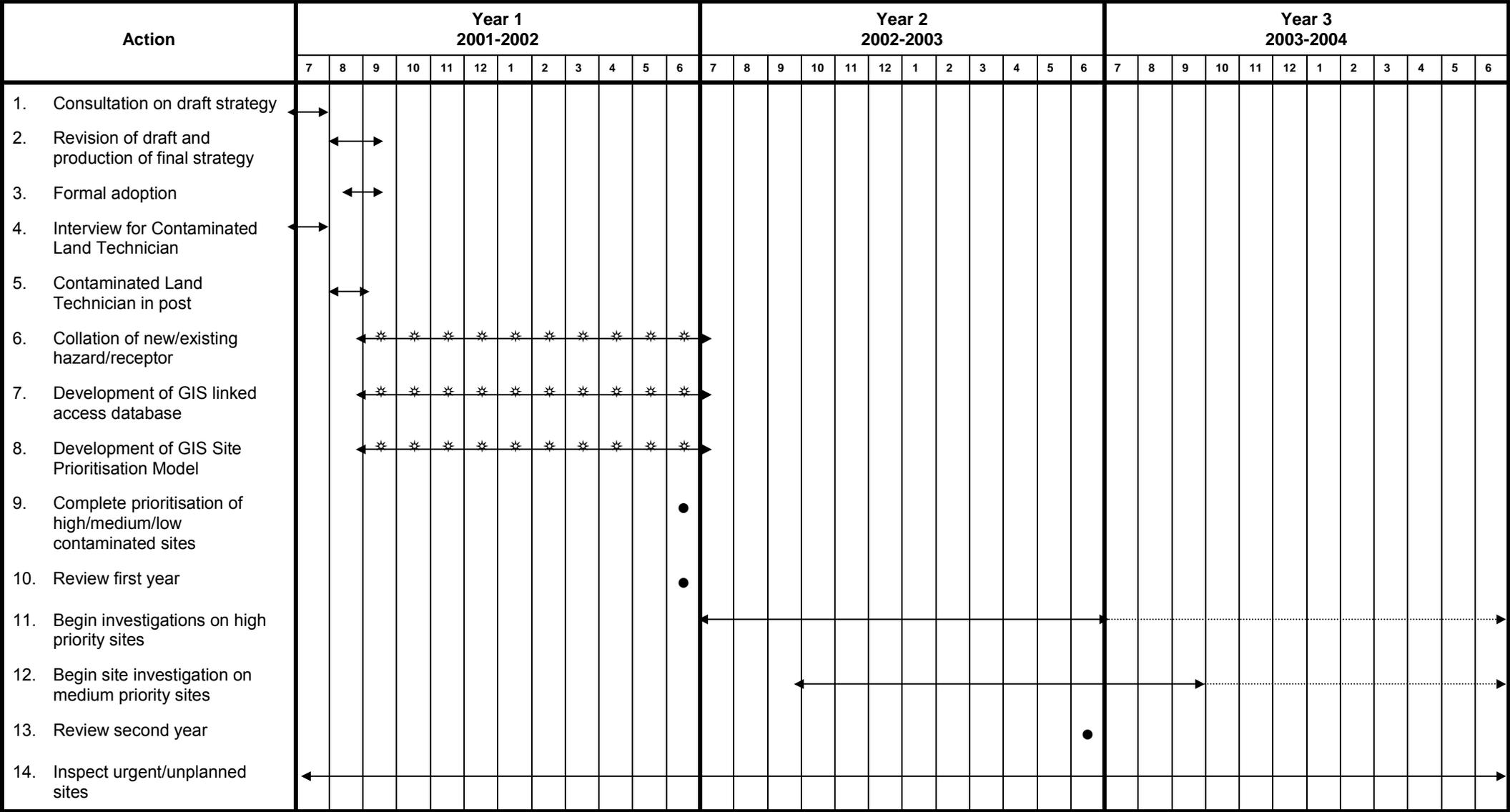
- (a) proposed changes in the use of the land;
- (b) unplanned changes in the use of the land (eg persistent unauthorised use of land by children or travellers);
- (c) unplanned events (eg flooding, accidents, fires, spillages, etc) where the consequences cannot be addressed using other legislation;
- (d) reports of localised health effects which appear to relate to a particular area of land;
- (e) new information received from internal or external sources (eg statutory bodies, agencies, owners or occupiers of land etc);
- (f) significant changes in the legislation;
- (g) establishment of case law or other legal precedent;

(h) revision of guideline values for exposure assessment.

6.3 Timetable and Reviews

6.3.1 The provisional timetable for the implementation of this inspection strategy can be found in the Gantt Chart shown on the next page. The Gantt chart details key objectives and desired timescales for actions.

FIGURE 4 – INSPECTION STRATEGY AND INSPECTION TIMETABLE



KEY: ←→ Planned Action Duration ←→ Possible Action Duration * Monthly Updates ● Project Reviews

GLOSSARY OF TERMS / ABBREVIATIONS

GLOSSARY OF TERMS USE IN PART IIA

AOD:	Above Ordnance Datum
AONB:	Area of Outstanding Natural Beauty
Appropriate Person:	Any person determined to bear responsibility for anything to be done by way of remediation in any particular case.
Aquifer:	A permeable geological stratum or formation that is capable of both storing and transmitting water in significant amounts.
BGS:	British Geological Society
Building:	Any structure or erection, and any part of a building including any part below ground, but not including any plant or machinery comprised in a building.
Class A person:	A person who is an appropriate person because he/she has caused or knowingly permitted a pollutant to be in, on or under the ground.
Class B person:	A person who is an appropriate person because he/she is the owner or occupier of the contaminated land, where no Class A appropriate person can be found with respect to a particular remediation action.
CLEA:	Contaminated Land Exposure Assessment – a methodology for carrying out a 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, that: <ul style="list-style-type: none"> (a) significant harm is being caused or there is a significant possibility of such harm being caused, or; (b) pollution of controlled waters is being, or is likely to be, caused.

Controlled Waters:	Defined in Section 104 of the Water Resources Act, 1991, these include: <ul style="list-style-type: none">(a) inland waters (rivers, streams, underground streams, canals, lakes and reservoirs);(b) groundwater (any water contained in underground strata, wells or boreholes);(c) territorial waters (the sea within 3 miles of a baseline);(d) coastal waters (the sea within the baseline up to the line of highest tide, and tidal waters up to the fresh water limit).
DETR:	Department of the Environment, Transport and the Regions.
Drinking Water Abstraction:	The taking of water from a source for drinking water.
EA:	Environment Agency
Eco-system:	A biological system of interacting organisms and their physical environment.
Enforcing Authority:	defined in section 78A(9) as: <ul style="list-style-type: none">(a) in relation to a special site, the Environment Agency(b) in relation to contaminated land other than a special site, the local authority in whose area the land is situated.
EPA 1990:	The Environmental Protection Act 1990
Exclusion:	Any determination by the enforcing authority that a person is not to be treated as an appropriate person.
GIS:	Geographical Information System.
Groundwater:	Any water contained in underground strata, wells or boreholes.
Harm:	Harm to the health of living organisms or other interference with the ecological systems of which they form part and, in the case of man, includes harm to his property.

ICRCL:	Interdepartmental Committee on Remediation of Contaminated Land.
Intrusive Investigation:	An investigation of land which involves actions going beyond simple visual inspection of the land, limited sampling or assessment of documentary information.
PAHs:	Polycyclic Aromatic Hydrocarbon
Part IIA:	Part IIA of the Environmental Protection Act, 1990.
Pathway:	One or more routes or means by, or through, which a receptor: (a) is being exposed to, or affected by, a contaminant, or (b) could be so exposed or affected.
Pollutant linkage:	The relationship between a contaminant, a pathway and a receptor.
Pollution of controlled waters:	The entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter.
RAMSAR site:	A site protected under an international convention on protection of wetlands of international importance, especially as habitats for waterfowl.
Receptor:	Either: (a) a living organism, a group of living organisms, an ecological system or a piece of property which is being, or could be, harmed by a contaminant; or (b) controlled waters which are being, or could be, polluted by a contaminant.
Remediation:	The carrying out of works to prevent or minimise the effects of contamination. In the context of this regime, the terms also extends to the prior assessment of the condition of land and to the subsequent monitoring of the land.

Remediation Declaration:	A document prepared and published by the enforcing authority recording remediation actions which it would have specified in a Remediation Notice, [but which it is precluded from specifying by virtue of sections 78E(4) or (5)] the reasons why it would have specified those actions and the grounds on which it is satisfied that it is precluded from specifying them in a Notice.
Remediation Notice:	A Notice specifying what an appropriate person is to do by way of remediation and the time periods within which he/she is required to do each of the things specified.
Remediation Statement:	A Statement prepared and published by the responsible person detailing the remediation actions which are being, have been or are expected to be done, as well as the time periods within which these things are being done.
Risk Assessment:	The study of: <ul style="list-style-type: none">(a) the probability, or frequency, of a defined hazard occurring; and(b) the magnitude (including the seriousness) of the consequences.
Significant Harm	See Appendix 3, page 87
Source:	A substance in, on or under the ground with the potential to cause harm.
Substance:	Any natural or artificial substance, whether in solid or liquid form or in the form of a gas or vapour.
SSSIs:	Sites of Special Scientific Interest
TPH:	Total Petroleum Hydrocarbon

LIST OF APPENDICES

Appendix 1	Geology and Mineral Resources.....	88
Appendix 2	Special Sites.....	94
Appendix 3	Categories of Significant Harm	97
Appendix 4	Sites of Nature Conservation Importance	99
Appendix 5	Historic Parks, Gardens and Battlefields in South Gloucestershire	113
Appendix 6	Scheduled Ancient Monuments in South Gloucestershire	116
Appendix 7	Risk Based Classification of Land Uses.....	118
Appendix 8	Statutory Consultees	120
Appendix 9	Internal Liaison Consultees	121
Appendix 10	Nature Conservation considerations	122