



CONTAMINATED LAND STRATEGY

June 2001

EXECUTIVE SUMMARY

This Strategy has been produced by Rother District Council. The Strategy is **not** a list of contaminated sites. It is intended to explain how and over what timescale the Council will carry out its inspection duties.

The Strategy has drawn upon guidance issued by the Department of Environment, Transport and the Regions (DETR) in particular the 'Statutory Guidance' and the Draft Technical Advice Note prepared by the DETR and the Environment Agency (EA).

Part IIA of the Environmental Protection Act 1990 was introduced by Section 57 of the Environment Act 1995. It came into force on 1st April 2000. It provides an improved system for the identification of land that is posing unacceptable risks to health or the environment and to secure remediation when these risks cannot be controlled by other means. Local Authorities are the primary regulators for Part IIA since they are responsible for the identification and the legal 'determination' of contaminated land and regulation of all land that is **not** a special site.

The identification of contaminated land has at its core the concept of risk assessment and significant pollutant linkages. These linkages which must be documented are direct relationships between a **contaminant**, a **pathway** through which the contamination may migrate and a **receptor** who may ingest or inhale or otherwise come into contact with the contamination and be harmed by it.

Summary of Timescale and Specific Tasks

It is the Council's intention to implement all the specific tasks outlined below. However, it should be noted that these tasks will need to be undertaken in conjunction with other core duties and priorities. Some of the actions also rely upon adequate funding, for example intrusive site investigations. A periodic review of the inspection strategy will therefore provide an opportunity to assess progress and incorporate changing priorities to reflect the Council's Corporate Strategy.

By July 2003

- Identification of Part IIA receptors (paragraphs 3.2 and 5.3.2)
- Identification of sources of potential contamination (paragraphs 3.2 and 5.3.3)

By January 2004

- Identification of key geographical areas, *ie* those areas where receptors and potential sources of contamination coincide (paragraph 5.4.4)

By July 2004

- Within key geographical areas, the determination of plausible pathways between a source and receptor to identify those individual sites where further inspection is necessary (paragraphs 3.2 and 5.4.5)

Beyond July 2004*

- * The timescale will depend upon the number of individual sites identified from the work undertaken earlier.
- Inspection of individual sites where all 3 elements of a pollutant linkage exist in order to determine whether land is "contaminated land" (paragraphs 3.2 and 5.4.6)
- Determination of contaminated land and action to secure remediation by the appropriate person (paragraph 9.5)

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1.0 INTRODUCTION

1.1 General Policy of Rother District Council

1.1.1 Environmental Issues

One of the Council's corporate aims is to protect and enhance the built and natural environment. The objectives of this aim are:

- a) *To use our powers and influence to achieve a more environmentally sustainable future.*
- b) *To protect and enhance the character of the wider environment including air and water quality and the reduction of pollution.*
- c) *To protect the countryside and enhance particularly sensitive areas of high landscape, wildlife and agricultural value.*

The Council has adopted a Local Agenda 21 Strategy which includes the ***Environmental Policy Statement***:

Rother District Council is committed to the long term protection and continuous improvement of the environment, and the quality of life for its local community now and in the future.

In all the Council does, through the management of land, water and buildings and the services it provides and uses, it will use its best endeavours to:

- *Minimise waste and make the best use of resources by reducing, repairing, re-using and recycling.*
- *Prevent and reduce pollution.*
- *Reduce energy use and encourage energy efficiency.*
- *Reduce water consumption.*
- *Reduce the adverse environmental impacts of transport.*
- *Purchase environmentally friendly products and services, which are effective and consistent with our demands for quality at a reasonable price.*
- *Conserve and enhance natural habitats and open spaces.*
- *Provide safe and healthy working and living conditions.*
- *Raise environmental awareness and promote local community action.*
- *Influence decision making on environmental issues.*

The ***draft Local Plan*** states, amongst other things, that:

It is considered that the environment should be a key consideration in all land use planning such as to achieve those forms of development, which not only meet the present day demands but also ensure that the needs of future generations are not compromised. Thus environmental considerations need to be seen as the fundamental basis along with economic and social considerations if sound planning and proposals are to be developed in the local plan.

The new contaminated land regime directly relates to all three of the above contexts.

1.1.2 Enforcement

The Council has adopted the Enforcement Concordat for the Environmental Protection Act 1990. The Council will endeavour to apply Part IIA in accordance with the principles of the Concordat, in particular:

- a) Advice from an officer will be put clearly and simply. It will be confirmed in writing, explain why any remedial action is necessary and allow a reasonable period for compliance.
- b) Before any enforcement action is taken an officer will provide an opportunity for the person(s) responsible to discuss the circumstances of the case and if possible resolve the matter informally.
- c) Enforcement action, including the service of a Remediation Notice, will only be instigated when it has not proved possible to resolve the matter informally.
- d) In the event that a Remediation Notice is not complied with, firm action (including prosecution where appropriate) will be taken against the person(s) who ignores the law or acts irresponsibly.

1.1.3 Land Contamination

The Council's policy in relation to contaminated land is to move towards achieving sustainable development. A priority is to prevent new contamination and there are a number of regimes aimed at achieving this, for example Pollution Prevention and Control (PPC), Integrated Pollution Control (IPC) and Waste Management Licensing. The latter two are not enforced by the Council. The Council is now also required to deal with a legacy of land that may already be contaminated by past uses. This is the purpose of Part IIA. The existence of land contamination also presents its own threats to sustainable development.

The Council's objectives with respect to contaminated land are to:

- a) Identify and remove unacceptable risks to human health and the environment.
- b) Return contaminated land to a beneficial use.
- c) Ensure that the cost burden faced by individuals, companies and society as a whole are proportionate, manageable and economically sustainable.

These objectives underpin the "suitable for use" approach advocated by Central Government.

1.1.4 Public Access to Information

The relevant details of land that has been "determined" as contaminated land will be maintained on a public register. This information will be available for inspection by the public at all reasonable times. Subject to the payment of a reasonable charge, the public may obtain a copy of an entry in the register.

Information collected during an investigation of land that has **not** been determined as contaminated land will be available to every person(s) who requests it in accordance with the Environmental Information Regulations 1992 (as amended). The Council will make reasonable charges for providing this information.

Information held by the Council that is still in the course of preparation, validation or is otherwise incomplete will **not** be available until the Council is satisfied that it is accurate and can be relied upon by the person(s) requesting it.

1.2 Regulatory Context Under Part IIA

1.2.1 General

Part IIA of the Environmental Protection Act 1990 was introduced by Section 57 of the Environment Act 1995 and came into force on 1st April 2000. It contains the long awaited provisions on contaminated land in the United Kingdom and includes a new statutory definition (see paragraph 1.2.5). A new duty is imposed on Local Authorities to inspect their areas for contaminated land and, where contaminated land is identified, to ensure statutory remediation. The Council's roles as primary enforcing authority for the purposes of Part IIA within the District are shown at paragraph 1.2.2. The Environment Agency's roles in achieving the objectives of Part IIA are shown at paragraph 1.2.3.

1.2.2 Regulatory Role of Local Authorities

The primary regulatory duties for Rother District Council will be to:-

- (a) cause the District to be inspected to identify contaminated land;
- (b) determine whether any particular site is contaminated; and
- (c) act as the enforcing authority for all contaminated land which is not designated as forming a 'special site'.

In order to fulfil these duties, the Council is obliged to:-

- (i) prepare and publish an inspection strategy setting out how the Council will inspect its area with the aim of identifying 'contaminated land';
- (ii) consult with the Environment Agency when there is 'pollution of controlled waters';
- (iii) determine if any particular area of land is contaminated land as defined;
- (iv) determine if contaminated land is to be designated a 'special site' and facilitate its transfer to the Environment Agency;
- (v) undertake immediate remediation if there is an immediate danger of serious harm;
- (vi) consider the application of alternative statutory regimes to the site (see paragraph 1.2.4);
- (vii) identify and notify those who may need to take action on the land;
- (viii) determine responsibility for the remediation of the land;
- (viiii) consult with the 'appropriate persons' as to the remediation actions that are to be carried out;
- (x) ensure that works are undertaken voluntarily or by the service of a remediation notice and apportion the costs;
- (xi) monitor the effectiveness of remediation carried out;
- (xii) maintain a public register of details of regulatory action taken under the Act;
- (xiii) report progress made under Part IIA to the Environment Agency.

1.2.3 Regulatory Role of the Environment Agency

The Environment Agency has five principal roles with respect to contaminated land. Briefly, these are:-

- (a) assist Local Authorities with the identification of contaminated land, particularly when there is 'pollution of controlled waters';
- (b) provide site-specific guidance to Local Authorities on the remediation of contaminated land;

- (c) act as the enforcing authority for any land designated as a 'special site;
- (d) prepare and publish a periodic report on the state of contaminated land nationally; and
- (e) maintain a public register of action taken on special sites.

For land that is designated as a special site, the Environment Agency will need to establish who is responsible for remediation and decide what type of works are required. As part of this process, the Environment Agency will consult the appropriate person(s), ensure that works are undertaken voluntarily or by serving a Remediation Notice, apportion the cost of these works and maintain details of the action taken on the public register.

The Environment Agency has provided the Council with a 'baseline package of information' to assist with the development of an inspection strategy.

1.2.4 The Relationship Between Part IIA and Other Controls

The statutory guidance establishes the relationships between Part IIA and existing systems of control:

Planning and Development Control

Part IIA will not normally apply where land is within the normal cycle of redevelopment and regeneration. In such circumstances, the planning and development control regime will continue to be the primary means of control.

Statutory Nuisance (Part III of the EPA 90)

Statutory nuisance no longer applies as the main control for contaminated land, however, it may still apply where land is causing nuisance e.g. by odour, where the statutory definition of contaminated land cannot be fulfilled.

Integrated Pollution Control (IPC) and Pollution Prevention and Control (PPC)

Part IIA will not be applicable where the Environment Agency have the ability to remedy contamination arising from the breach of a process Authorisation under the above legislation.

Waste Management Licensing (Part IIA EPA 90)

Part IIA will not normally apply where contamination is arising from land subject to a waste management licence unless the contamination is unrelated to any breaches of licence conditions.

Water Resources Act 1991

This act gives the Environment Agency powers to control pollution of controlled waters. The application of either regime to any site will need to be determined after consultation between the Local Authority and the Environment Agency.

1.2.5 Definition of Contaminated Land

'Contaminated Land' is defined under 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.***

The definition introduces a number of terms that are specifically referred to in the Statutory Guidance. It is important to appreciate that the interpretation of these terms will influence a decision about whether or not land is contaminated land. The definition does not seek to instigate remedial action against all land where contamination is present. The legislation takes a pragmatic approach by concentrating on land posing unacceptable risks in this current use, by making land suitable for any likely new use when planning permission is granted, and by limiting remediation work to that necessary to prevent unacceptable risks given such current or future users. Remediation requirements must make land suitable for use, not necessarily free from all contamination.

Definitions of 'harm', 'significant harm' and 'controlled waters' can be found in Appendix 1: Glossary of Terms. Further detail on 'Categories of Significant Harm' and 'Significant Possibility of Significant Harm' can be found in Appendix 2, tables A and B respectively.

1.2.6 Principles of Pollutant Linkages

Before the Local Authority can make a determination that land is contaminated land, it must first identify a 'significant pollutant linkage'. The Local Authority must satisfy itself that a 'contaminant', a 'pathway' (or pathways), and a 'receptor' have been identified with respect to that land.



The Local Authority must also satisfy itself that:-

- (i) significant harm is being caused to the receptor; or
- (ii) there is a significant possibility of significant harm being caused to that receptor;
- (iii) pollution of controlled waters is being caused; or
- (iv) pollution of controlled waters is likely to be caused.

The land should **not** be identified as contaminated land unless all three elements of a pollutant linkage have been established. There may be more than one pollutant linkage on any given piece of land.

1.2.7 Principles of Risk Assessment

The definition of contaminated land is also based upon the principles of risk assessment. In order to determine whether a particular possibility is "significant", the "risk" needs to be assessed and this is defined as a combination of:

- a) the probability or frequency of occurrence of a defined hazard, for example exposure to a substance with the potential to cause harm; and
- b) the magnitude including the seriousness of the consequences.

Risk assessment is therefore a scientific process designed to address the informal question "how risky is it?" or "what is the chance of a bad outcome?"

There are established procedures for undertaking a risk assessment and a number of commercial software packages available to assist this process. Each package is based upon the fundamental concept of a contaminant, pathway and receptor forming a pollutant linkage. The output from a risk assessment may be quantitative, semi-quantitative or qualitative. In each case there is a risk evaluation stage. This will address "uncertainty" associated with the data used and assumptions made about the exposure to soil and/or groundwater contaminants on the site.

The following factors also need to be taken into account:

- a) the nature and degree of harm;
- b) the susceptibility of the receptors to which harm might be caused; and
- c) the timescale within which the harm might occur.

It is likely that a quantitative risk assessment will be required to justify enforcement decisions, where risks are considered to be significant or the cost of reducing them is large. Since a risk assessment is a prerequisite to the determination of contaminated land, the Council will ensure that a "robust" risk assessment has been undertaken before proceeding with any enforcement action.

1.2.8 Requirement for a Strategic Approach

The Council is required to adopt a strategic approach to the inspection of its area and this document is intended to provide a framework for undertaking this duty in accordance with Part IIA and the Statutory Guidance.

By adopting a strategic approach, the Council will identify in a rational, ordered and efficient manner, the land that merits detailed individual inspection, identify the most pressing and serious problems first and concentrate resources on the areas where contaminated land is most likely to be found.

1.3 Development of The Strategy

1.3.1 Overall Approach

The Council's overall approach to identifying contaminated land and securing its remediation is intended to ensure that the requirements of Part IIA and the Statutory Guidance are fulfilled. In particular this Strategy will 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 that resources are concentrated on investigating areas where the Council is most likely to identify contaminated land.
- Ensure that the Council efficiently identifies requirements for the detailed inspection of particular areas of land.

The success of this approach will be measured in terms of the efficient use of staff resources and the number of sites that are returned to a beneficial use.

1.3.2 Internal Team

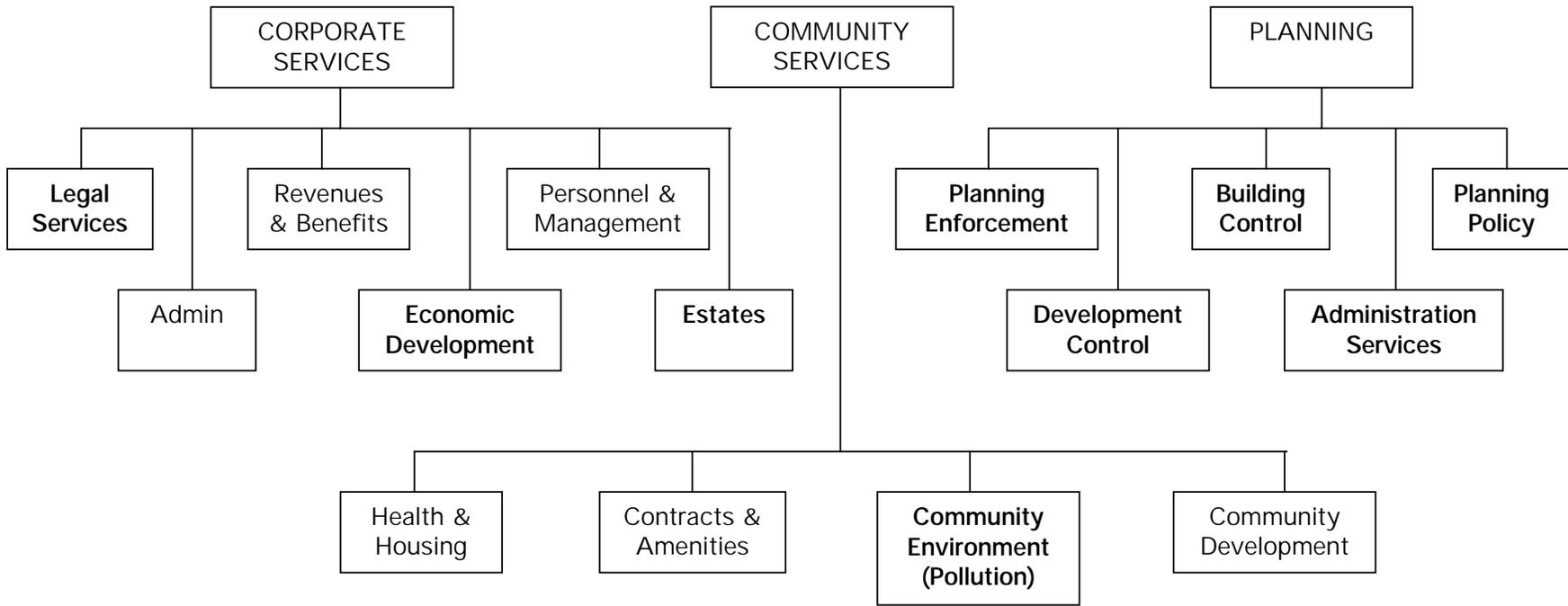
Council Minute E74/12/00 resolved that the Chief Executive be authorised to appoint Inspectors under Section 108 of the Environment Act 1995 and to authorise such officers as he considers appropriate to serve Notices under the Environmental Protection Act 1990 (as amended) on behalf of the Council. The work will be carried out by the Community Environment Division of the Community Services Department. The Council's Lead Officer for contaminated land is Stephen Mills, Senior Environmental Health Officer. Assistance will be provided by Mr Richard Hoyland, Environmental Health Technician. The Community Environment Manager, Mr Richard Parker-Harding, will be responsible for ensuring that Part IIA is given appropriate priority within the Service Delivery Plan and provided with adequate resources to ensure that the targets identified in this Strategy are achieved.

1.3.3 Internal Liaison

Seminars have been held internally and these have been attended by Environmental Health Officers, Planning - Development Control Officers, Planning - Forward Planning, Building Control Officers, and Environment Agency Officers. A series of smaller meetings has taken place with representatives of the Planning and Chief Executive's Departments.

The detail of the Council's structure is shown in Figure 1.

FIGURE 1 : COUNCIL SERVICE STRUCTURE



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Bold = Those sections that have a direct involvement with contaminated land

1.3.4 Consultation with the Environment Agency and other External Organisations

The Environment Agency (EA)

The Council's area lies within the EA Southern Region - Kent and Sussex Areas. Formal contact was established with both EA Areas at the start of the contaminated land regime. Area Contaminated Land Officers have been identified to act as the key points of contacts for this Council. Arrangements for liaison and co-operation have been established in accordance with the Memorandum of Understanding agreed between the EA and the Local Government Association. Liaison already takes place (and will continue to do so) for example on matters such as site specific advice regarding planning applications and advising the Agency of complaints regarding pollution of controlled waters. All site specific advice given by the Agency will be given due consideration. In addition to consultation during the development of this strategy, a copy has also been forwarded to the EA for comment. The draft strategy will be amended in response to the comments received.

Other External Organisations

- East Sussex County Council
- Health and Safety Executive
- Ministry of Agriculture Fisheries and Food
- Food Standards Agency
- English Nature
- English Heritage

Liaison has also occurred between neighbouring local authorities in particular Hastings Borough Council, Wealden District Council, Shepway District Council, Ashford Borough Council and Tunbridge Wells Borough Council. A copy of the draft Strategy has been provided to all these organisations for comment.

1.3.5 Consultation with the Local Community and Businesses

The following groups have been consulted: Parish Councils, Housing Associations, Chamber of Commerce, Estate Agents, major landowners, developers and the National Farmers Union. Comments received have been acknowledged and where appropriate incorporated into this Strategy.

1.3.6 Information/Complaints

Appropriate procedures have also been established to respond to information or complaints received from members of the public, businesses and voluntary organisations. These procedures are outlined below:

- A record of the information or complaint will be entered onto the Environmental Health Complaints System (Uniform) maintained by the Community Environment Manager.
- The information or complaint will be referred to an appropriate officer.
- The officer will be responsible for undertaking any research necessary to respond to the information or complaint and a record of any response will be maintained.
- Depending upon the nature of the information or complaint it may be necessary to create and maintain a site specific case file.

In some cases the information or complaint received may result in a requirement to undertake a further investigation of land in accordance with the procedures outlined in Section 7.

1.4 **Objectives of The Strategy**

The key objectives of this Strategy are to:

- Demonstrate how the Council intends to satisfy the criteria contained in paragraphs B9 (principles of a strategic approach), B10 (key issues) and B15 (minimum content) of the Statutory Guidance. See Appendix 3.
- Establish a framework for undertaking this work in a manner that is regarded by all stakeholders as fair and impartial.
- Provide robust information to the Environment Agency for its report on contaminated land.

These key objectives are regarded as fundamental to the success of this Strategy.

2.0 CHARACTERISTICS OF THE ROTHER DISTRICT COUNCIL AREA

2.1 Location, Geographical Area and Population

Rother District is located in the easternmost part of East Sussex and shares a common border with Kent. It occupies 51,000 hectares. The administration centre is Bexhill on Sea, with a population of approximately 43,000. The historic towns of Battle and Rye have approximate populations of 6,100 and 4,500 respectively. The total population is approximately 92,000 and there are approximately 41,000 dwellings in the District. Map 1 shows the location of the District.

2.2 Current Land Use Characteristics

With the exception of Bexhill with its distinctive town centre and seaside character and the historic towns of Battle and Rye the area is mainly rural. Over 80% of the District falls within the High Weald Area of Outstanding Natural Beauty.

Heritage, and the beauty of the rural and coastal landscape combine to provide the underlying quality environment that attracts both visitors and residents to Rother District.

2.3 Details of Council Ownership of Land

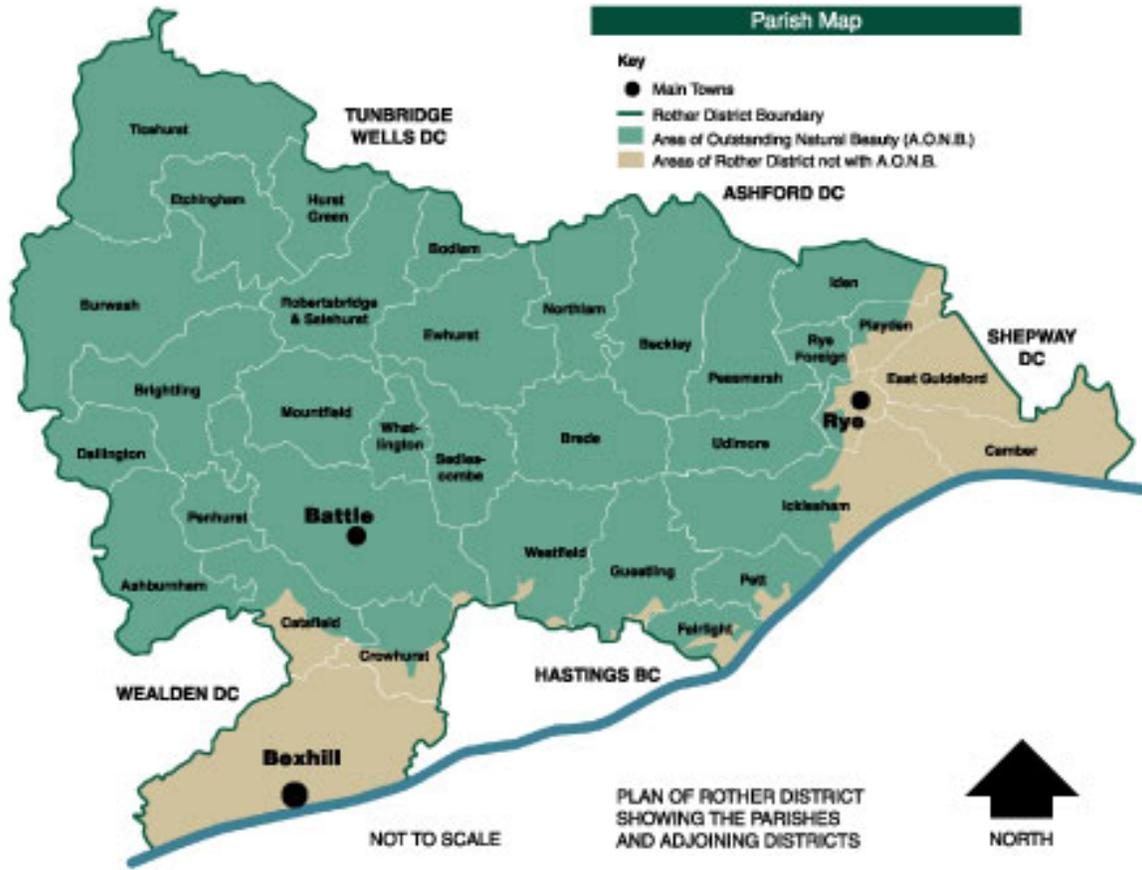
Details of all land owned or leased by the Council are held on the computerised Geographic Information System and associated hard copy records maintained by the Estates and Valuation Officer. A breakdown of the land in Council ownership is as follows:-

	<u>Approximate Areas</u> <u>(Hectares)</u>
Sites of municipal offices and operational properties	0.65
Beeching Road Industrial Estate, Bexhill	9.31
Sites of rural workshops	0.28
Public Car Parks	12.06
Parks and formal open space	43.71
Informal open space	68.80
Allotments	5.34
Surplus land intended for disposal at some time (subject to planning permission and other factors)	19.34

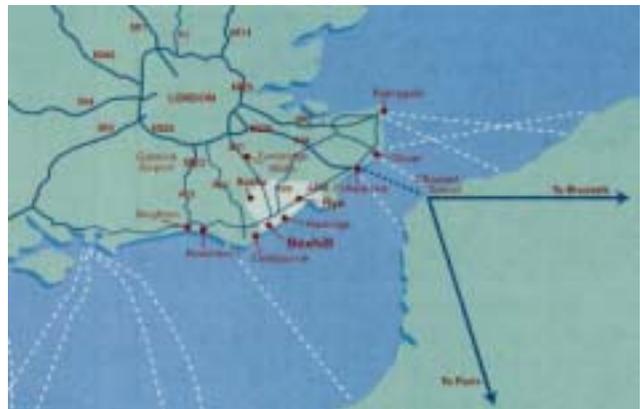
NB

1. Some small allotment areas may be included in the "informal open space" figure.
2. This list is not exhaustive.

MAP 1:
LOCATION OF ROTHER DISTRICT



London	75 miles
Gatwick Airport	57 miles
Dover	52 miles
Channel Tunnel.....	42 miles
Newhaven.....	26 miles
Portsmouth	80 miles
Brighton.....	32 miles
Eastbourne.....	12 miles
Tunbridge Wells.....	35 miles



2.4 Location of Protected Ecological Systems

The District contains 23 Sites of Special Scientific Interest (SSSIs), 1 National Nature Reserve, 1 Local Nature Reserve, 60 Sites of Nature Conservation Importance (SNCIs) and 2 Ramsar Sites - Pevensey Levels and Dungeness to Pett Level. This latter area is a proposed classified Special Protection Area. Part of the Rye Harbour SSSI is a candidate Special Area of Conservation. A significant area of the District comprises Ancient Woodland.

Each site is a potential receptor for the purposes of contaminated land.

Appendix 4(a) and (b) contains some detail on the SSSIs and SNCIs.

2.5 Historic Protected Buildings

The District contains 16 Conservation Areas, over 2100 Listed Buildings and 43 Scheduled Monuments. These are potential receptors for the purposes of contaminated land. Appendix 7(a) and 7(b) gives details of the Scheduled Monuments.

2.6 Key Water Resources/Protection Issues

Two maps showing catchment areas covering the District (and beyond) are shown at Appendix 5. Since 1993, the EA has operated a Groundwater Management Policy incorporating a general presumption against any further authorisation of increased water abstraction from the area's principal aquifers. There is also a commitment to ensure that future development of any new sources of water supply is controlled by reference to clear guidelines for the protection and enhancement of the water environment.

The EA has also developed a groundwater protection policy entitled the Policy and Practice for the Protection of Groundwater. Its aims and objectives include ensuring that potential contamination from point and diffuse sources do not impact vulnerable aquifers. A classification of groundwater vulnerability has been established and source protection zones for public water supply boreholes and large industrial abstractions.

The geology units comprise minor and non-aquifers and there are 10 source protection zones within the District. Due to the geology of the District a significant area is susceptible to flooding.

The District has some 27 kilometres of coastline. Maintenance of bathing water standards is therefore important and such waters must be protected from contamination. As the competent authority for England and Wales, the Environment Agency plays an important part in the implementation of the EC Bathing Water Directive. The Agency is required to sample and analyse bathing waters in accordance with the requirements of the Directive and report the results annually to the DETR. The Agency also has statutory duties and powers under the Water Resources Act 1991 to control discharges to controlled waters with respect to relevant water quality objectives. For bathing waters, water quality objectives were set out in the Bathing Water (Classification) Regulations 1991.

2.7 Known Information on Contamination

In the mid 1990s, East Sussex County Council co-ordinated the collection of historical information about closed landfill sites. A list was produced and it forms a valuable dataset. The information includes a grid reference, the category of waste, geology, type of cover material and local environment. The Community Environment Manager maintains the list and provides advice to any enquiries received from potential developers and the general public. The location of these closed landfills will be entered onto the GIS. In some cases, a report exists - commissioned by the County Council. Locations of former gas works are also known.

It is important to emphasise that the category of waste deposited will influence the potential for landfill gas generation. The existence of a closed landfill site does **not** imply that the land is "contaminated land" for the purposes of Part IIA, since a pathway and receptor must also be identified.

In some cases, site investigation reports are also provided to the Council as part of a Planning or Building Regulation application. The Principal Planning Officer (Development Control) is responsible for maintaining a copy of each report.

2.8 Industrial History

The 18th and 19th centuries brought great industrial change to parts of the British Isles. Initially, it was the textile and iron and steel industries that changed most. In Sussex, textile production had largely ceased by 1700. The iron industry proved more resilient. Ten Wealden furnaces and 13 forges were listed in 1717 but only 3 furnaces were in production in 1787. The last furnace, Ashburnham, closed in 1813, the associated forge closed in 1826.

Even after the country had been opened up by improved roads, canals and river navigations and then railways, many markets were best served by local production. Industries such as brick, tile and pottery manufacture; lime, cement and plaster production (see paragraph 2.9.2 Economic Geology); brewing and malting and the milling of grain were undertaken extensively.

Whilst charcoal production declined for the iron industry, it did continue.

Gunpowder was also produced, the main centre being at Battle, where 5 mills operated at various dates between 1676 and 1874. Other works in the same area were at Sedlescombe, active in the 1760s, and Brede from 1770 to 1825.

The Sussex coast had active ship construction and repair yards including for the fishing fleet at Rye. The town had 3 shipyards and could produce 350 tonne ships.

Another industry reliant on woodland resources was cricket bat manufacture at Robertsbridge.

Both candle and soap manufacture were town-based and in the 19th century factories were located at Rye and other Sussex towns.

Rye Harbour

Currently activities at Rye Harbour are worthy of note. The activities include chemical recovery, waste oil processing, construction related manufacture, storage, general manufacture, retail and utilities. Investigation of this area has been and continues to be carried out.

2.9 Geology and Hydrogeology

2.9.1 Broad Characteristics

The geological sequence is shown in table 1 and relevant geological maps covering the District (and beyond) are shown at Appendix 6.

Rother District Council's area lies within the Wealden District in terms of its geology. The surface rocks are that of a broad dome, or anticline, with an axis running roughly east-south-east to west-north-west. Rother lies across this main structural axis. The anticline is not simple - there are a series of anticlinal and synclinal lines which form ridges and troughs running nearly parallel to each other. There is a well developed fault pattern especially in the central area where the oldest rocks are exposed.

The countryside displays a pleasant variety of scenery. The ground reaches a little over 150m. In the north and west, the higher ground is moderately well dissected and includes the eastern extremity of the High Weald which is made up of much faulted strata of the Hastings Beds. In mark contrast, the southern and eastern portions are characterised by wide expanses of reclaimed coastal marshland with shingle ridges and sand dunes running a few metres above them.

The major watershed of the Weald enters the district in the north-west just south of Brightling, and continues east south-east through Battle to meet the sea at Fairlight. The rivers Tillingham and Brede follow the broadly east-west pattern of faulting. The high ground of the watershed ridge is composed mainly of the relatively older Ashdown and Purbeck Beds, whereas the lower areas on its flanks are underlain by Wadhurst Clay and Tunbridge Wells sand. The major valleys, such as those of the Brede and Tillingham, have broad alluvial floodplains up to 1km wide. In contrast, the headwaters of the lateral streams of these rivers tend to have short steep courses, deeply incised into the interfluves. Outcrops of hard sandstones, limestones and ironstones in these streams give rise to miniature gorges and waterfalls. In the east, the rolling ground of the Hastings Beds outcrop is limited abruptly by the old cliff line around the inner edge of the marshland.

Quaternary deposits mainly occur on the low ground east of Winchelsea and Rye, at Bulverhythe and Hooe Level, and in the valleys of the main rivers.

The lithology and stratigraphy, hydrogeological significance and geological classification/main flow mechanism for the strata encountered in the Southern Region of the Environment Agency are shown in Appendix 8. The Southern Region is much larger than the Rother District and not all formations are present - those that are not have been excluded from the Appendix.

TABLE 1 - THE GEOLOGICAL SEQUENCE AROUND HASTINGS AND DUNGENESS

The drift deposits and solid formations exposed at the surface or proved in boreholes and underground workings within the district are tabulated below:-

DRIFT

-)Blown Sand
-)Peat
-)Alluvium
-)River Gravels, first terrace
- Quaternary -**)Marine Beach Deposits and Tidal Flats
-)Marine Alluvium, Sand
-)Marine Alluvium, Clay
-)Storm Gravel Beach Deposits
-)Head

SOLID

			<i>Thickness</i>
			m
Cretaceous -	)	)Weald Clay	Up to 14 proved
	)Wealden)	)Tunbridge Wells Sand	up to 110
	)	)Hastings Beds -)Wadhurst Clay	15 - 60
		)Ashdown Beds	115 - 215
Jurassic -	)Purbeck Beds		55 - 155
	)Portland Beds*		13 - 43
	)Kimmeridge Clay*		420
	)Corallian*		up to 77 proved

* Proved only in boreholes and underground workings

Reference : Lake RD and Shephard-Thorn ER 1987. Geology of the country around Hastings and Dungeness. British Geological Survey Memoir ISBN 0118844113.

2.9.2 Economic Geology

Aggregates

Sand and gravel is primarily used for concreting purposes and is an essential raw material for the construction industry. Building sand is largely used in the production of mortars and asphalt. Both types of material can be used for various fill purposes.

During the 1980s, production of sand and gravel was confined to Rye Harbour and Camber. With the completion of consented operations at Northpoint Beach, Camber in early 1991, there are no operational sites currently in production.

Two large permissions, at Nook Beach and Camber Water, Rye Harbour, have only been partly worked. Extraction ceased at these sites prior to 1983, but some spasmodic working at Fisherman's Walk (part of the Nook Beach permission) occurred in the late 1980s.

Clay

Clay has long been exploited for brick and tile manufacture.

The largest operation is at Ashdown Brickworks, Bexhill. This is a very long established site where the former brick and tile works was replaced by a modern plant, with a capacity of 50 million stock bricks per annum in 1978. Two types of clay are required for the various product lines. The Crowborough clay is dug from a large pit west of the works which has remaining reserved sufficient for 10 - 15 years at anticipated rates of extraction. The Pevensey clay is extracted from a smaller pit north of the works, although permission has been granted for the working of similar clay at Little Standard Hill Farm, Ninfield; this site has resources likely to last for over 50 years and some extraction has already taken place. However, this estimate is currently being re-evaluated in the light of changing techniques employed at the factory.

Hastings Brickworks, at Guestling, was established in 1896 and is a small, but important, producer of hand-made bricks. Until recently, it was producing some 2 million bricks per annum serving an extensive, but specialised, market. The works has now re-opened following a short period of closure. Permission was granted in 1988 for an extension to the existing clay workings to give reserves for about another 25 years.

Finally, a small site operates at Aldershaw Farm, near Battle, where specialised hand-made tiles are produced.

Gypsum

Gypsum and anhydrite are minerals of national importance used for plaster and plasterboard products; in cement production and in many other industrial processes. The resources in East Sussex form the largest deposit within the United Kingdom and the only economic source of these industrial minerals in the South of England making them regionally and nationally important.

Gypsum has been mined and processed at Mountfield since 1876. In the 1960s, a second mine was opened at Brightling with raw material transported to the plant at Mountfield (known as the Robertsbridge Works) by an aerial ropeway which was replaced in 1989 by an overland conveyor. In the 1960s and 1970s a new plaster mill and a plasterboard manufacturing plant were built and subsequently extended. In 1990, the Mountfield mine was abandoned, and all mining is now concentrated at Brightling.

The whole mining and works complex lies within the High Weald AONB. Overall, it has little impact on the environment, the underground workings being accessed by an adit which required little surface development. Subsidence is not a factor as the mine is worked on the 'room and pillar' system which leaves the overlying strata supported. The main works area is contained within undulating, wooded countryside and is not a prominent feature in the landscape.

Mountfield/Brightling is regarded by British Gypsum as a strategically important site with a modern mine and modern plasterboard plant well placed to serve the south-east and parts of the Greater London markets.

In resource terms, Mountfield/Brightling has a long term future. British Gypsum, as a policy, seeks to have some 20 years proven reserves of gypsum available. The modern Brightling mine has a minimum capacity of 1 million tonnes per annum. Although there are no plans to resume production from the Mountfield mine, it is possible that its reserves might be mined from Brightling. There are proposals to enlarge the nearby Darwell reservoir which could lead to substantial sterilisation of gypsum and anhydrite resources but the timing remains to be confirmed.

In recent years, British Gypsum has shown strong commitment to their Mountfield/Brightling operation with major investment in the mine and in plant, including the overland conveyor. The various mineral related operations at Mountfield/Brightling constitute one of the largest industrial enterprises in the District.

Hydrocarbons

Hydrocarbons (oil and gas) are not extracted as a commercial energy mineral in the District, but planning issues associated with exploration were significant during the 1980s and there may be future interest.

In the late 1980s, planning permission had been allowed on appeal for oil exploration in Guestling Parish at Martineau Lane but the borehole was dry.

2.9.3 Use of Geological Maps

The following geological maps show the geology of the Rother District:-

1. 1:50 000 series, Lewes, sheet 319, Solid and Drift
2. 1:50 000 series, Hastings and Dungeness, sheet 320/321, Solid and Drift
3. 1:63 360 series, Tunbridge Wells, sheet 303, Solid and Drift
4. 1:50 000 series, Tenterden, sheet 304, Solid and Drift
5. 1:25 000 series, Hastings - Rye, sheet TQ81 and parts of TQ 70, 71, 72, 80, 82, 91 and 92, Solid and Drift

Also used was the 1:100 000 series - Groundwater Vulnerability maps sheets 47 East Kent and 46 East Sussex. Reference was also made to the EA's Source Protection maps sheets 6 and 7.

2.9.4 Geological Formations/Units

These can act as contaminants, pathways and receptors:

(i) **As contaminants:**

Alluvial deposits)
Peat) Methane
Made ground)

Alluvial deposits)
Peat) Hydrogen sulphide
Made ground)

Purbeck Limestone)
Alluvial deposits) Carbon
Peat) dioxide
Made ground)

Ironstones - Heavy metals

Tunbridge Wells Sand - Oil

Ashdown Beds/Purbeck Beds junction - natural gas, methane, oil seepages

NB : a radon survey was undertaken in 1991 and no concentrations approaching action limits were found to exist.

(ii) **As pathways:**

NB : Major aquifer (highly permeable)

Minor aquifer (variably permeable)

Non aquifer (negligibly permeable - some can yield water in sufficient quantities for domestic use)

The stratigraphic column of the solid geology of the District shows alternate strata of non aquifer - aquifer, if the sequence is uninterrupted, thus:-

Weald clay - non aquifer (but sands and limestones within it are minor aquifers)

Tunbridge Wells sand - minor aquifer

Wadhurst clay - non aquifer (but sand within it is a minor aquifer)

Ashdown Beds - minor aquifer

Purbeck Beds - non aquifer

However, the sequence is not uninterrupted because of many faults and river/stream valleys cutting through the strata.

Certain drift deposits have a potential to be pathways. Their permeability can change over short lateral and vertical distances.

Soils of high, intermediate and low leaching potential for minor aquifers (variably permeable) together with non aquifers (negligibly permeable) exist within the District.

(iii) **As receptors:**

(a) SOLID

- Major aquifers - None
- Minor aquifers - Tunbridge Wells Sand
- Ashdown sands
- Non aquifers - Weald clay (but sand and limestone within it are minor aquifers)
- Wadhurst clay (but sand within it is a minor aquifer)
- Fairlight clay
- Purbeck Beds

(b) DRIFT

- Major aquifer - None
- Minor aquifer - Blown sand
- River alluvium
- Plateau gravels and valley gravels
- Non aquifers - Head

Each site must be looked at carefully on its own merits using site specific data.

2.10 **Specific Local Features**

2.10.1 **General**

The majority of the countryside located within the District lies within the High Weald Area of Outstanding Natural Beauty. Some 70% of the District is in agricultural use including 3,000 hectares of farm woodland. The majority of District potable water supply is obtained from surface water reservoirs.

2.10.2 **Soils**

The following information does **not** relate to soils in urban areas.

There are three main soil types in Rother District Council's area and these are:-

- (a) Stagnogleys : This soil is common on the clay substrates within the Hastings Bed of the High Weald (e.g. the Wadhurst Clay). It is found on steep slopes which are less waterlogged than the Low Weald. The soil shows sub surface mottles of grey and ochre formed by iron, which is reduced to the grey ferrous state and mobilised by anaerobic winter conditions and then partially reoxidised to the more stable ferric state during drier summer months.
- (b) Argillic brown earths : These develop on the more free-draining parent materials of the High Weald (e.g. the silts of the Ashdown Beds). Those under woodland are darker (humus enrichment - annual leaf litter) than those under cultivation. The upper soil is relatively free draining having an open structure of well aggregated soil crumbs. The lower depths are less free draining due to redeposition of clay from higher up.

Typical brown earths (without a clay enriched argillic layer) develop on outcrops of the Hastings Beds, rich in silt and fine sand. On coarser sandier members more acidic brown sands have developed with a lower base status (and lower inherent fertility).

Sand grains within these soils are frequently bleached white due to the mobilisation and removal of iron oxides (this marks the onset of podzolisation - a process of degradation and depletion).

- (c) Alluvial gleys : In their lower courses the rivers flow over low-lying tracts of poorly drained, silt-rich alluvium. Groundwater lies at or close to the surface for much of the year and water stands on the surface in winter producing waterlogged alluvial gleys. Uniformly fine grained in texture, they are greyish brown, becoming grey with abundant ochreous mottles below the surface. In the past, peat formed on poorly drained areas but now it has mostly ceased due to ditching and artificial drainage. Flooding and poor drainage restrict agriculture to pasture (there are some arable crops where artificial drainage has been provided).

2.11 **Redevelopment of Sites Affected by Contamination**

The Rother District Local Plan (initial deposit) January 2001 sets out the Council's Policies to guide development and contains proposals for specific sites. The Local Plan covers the whole District for a period until 2006 and it has been prepared within a wider framework established by the East Sussex Structure Plan. A guiding principle of the Local Plan is to make the best use of land. By implication, the redevelopment of "brown-field" land is regarded as the preferred option. Where "green-field" land is required, the proposed development should be located on the least environmentally constrained sites.

The North Bexhill Strategic Framework 1993 looked at areas of land to develop in phases a new community. This includes Worsham Farm (Comprehensive Development Area - 1500 dwellings and associated facilities), a Business Park (some area as hotel/conference/leisure facilities) and the proposed Pebsham Countryside Park. There are several "large site commitments" at various sites throughout the District. Some of these sites are potentially contaminated.

If a site is known or suspected to be contaminated, the detailed policy refers to a requirement to demonstrate that redevelopment proposals will adequately address that contamination.

2.12 **Action Already Taken to Deal with Contamination**

The Council has secured the remediation of contaminated land by using condition(s) attached to planning permissions. In each case, the developer was responsible for engaging a contractor to provide a report and undertake the remedial work.

3.0 THE ROTHER DISTRICT COUNCIL INSPECTION STRATEGY OVERALL AIMS

3.1 Aims of The Strategy

The statutory definition of contaminated land will require the Council to demonstrate that a "significant pollutant linkage" (SPL) exists. The overall aim of the inspection strategy adopted by the Council is to identify SPLs for all Part IIA receptors. The Council will therefore prioritise land for inspection where both a potential contaminant and a receptor are present within the same geographical area.

When this land has been identified, the most pressing and serious situations will be assigned a high priority in accordance with the scenarios described in paragraph 4.1. The land will then be investigated further to confirm whether or not there is a pathway between a potential contaminant and a receptor.

Thereafter, land where both a potential contaminant pathway and a receptor have been identified will be prioritised according to the receptor at risk, as follows:

- (i) Where there is the potential for significant harm to human health.
- (ii) Where there is the potential for the pollution of controlled waters.
- (iii) Where there is the potential for significant harm to other Part IIA receptors, including protected ecological systems, crops and produce, livestock and domestic animals, wild animals and buildings.

3.2 Objectives and Milestones

To achieve the overall aims outlined in paragraph 3.1 various objectives and milestones have been identified. The milestones will relate to the date referred to in the Statutory Guidance for publication of the Strategy, *ie* 1 July 2001.

- Identify the nature and location of all Part IIA receptors to determine which areas of the District may be a priority on the grounds that the relevant receptors are present. (24 months)
- Identify those sites where industrial and other activities have taken place in the past or are currently taking place (to include information on the history, scale and nature of such activities) to determine which areas of the District may be a priority on the grounds that contaminants may be present. (24 months)
- Based on the information collated from the first two objectives, identify pathways to determine the extent to which the receptors may be exposed to contamination. (36 months)
- Collate and review evidence of actual significant harm or pollution of controlled waters to define priority areas for further investigation. (30 months)
- Identify land for which the Council may be the "appropriate person" to ensure that it is addressed in accordance with paragraphs 3.1 and 4.1. (36 months)
- Identify the nature and timing of past redevelopment to determine whether and to what extent contamination may have been addressed already through past redevelopment activity. (30 months)
- Review the extent to which remedial action has already been taken (or is planned to be taken during redevelopment) to address contamination and determine whether Part IIA or the planning regime is likely to be the most appropriate legislation in relation to different areas of the District. (36 months)

- Communicate and exchange information with relevant stakeholders. (Ongoing)
- Inspect particular areas based upon the priorities identified in paragraphs 3.1 and 4.1. (A milestone cannot be specified at this stage as it is dependant upon the information arising from the above objectives)
- Review assumptions and inspection priorities at appropriate intervals, to include any new information received on possible sources of contamination. (At least annually.) Refer also to paragraph 8.0.
- Ensure the effective output and recording of information. (Ongoing)

3.3 Budgetary Implications

The priority actions and timescales outlined in Section 4 will have significant implications for the allocation of the budget. To appreciate this important issue the following example is provided:

An historical search may reveal one or more potentially contaminated sites that have been redeveloped for residential purposes. Since this is a high priority scenario it may be necessary to undertake an intrusive site investigation (involving the collection of soil, gas and/or groundwater samples) to confirm that there is a potential health risk to the occupier. It may also be necessary to appoint an independent consultant and specialist contractor at short notice. The Council's budget will therefore need to include a contingency to ensure that the investigation can proceed without delay. It may also be necessary to undertake remedial works to remove any immediate health risk.

There will be a need to purchase software (site prioritisation, risk assessment models) and provide specific training.

Council Minute E54/10/00 resolved to provide an additional budget of £10,000 for three years, until 2002/3 for the appointment of a part-time Technical Officer to carry out environmental health work specifically to assist with the food safety and contaminated land functions.

4.0 PRIORITY ACTIONS AND TIMESCALES

4.1 Priorities

The Council will focus upon sensitive exposure scenarios. These will be high priority and are as follows:-

<u>Receptor</u>	<u>Scenario</u>
All	Land occupied by or relevant to Part IIA receptors where there is already evidence of significant harm or pollution of controlled waters.
Humans	Land developed for residential or other sensitive uses (including allotments and public open spaces) prior to 1970 (before any systematic consideration of potential land contamination was likely). Land developed for residential or other sensitive uses since 1970 where there is concern about the standard or site investigation and/or remedial works.
Controlled Waters	Land close to particularly sensitive receptors (e.g. land within a source protection zone for a major potable water supply). Land associated with a large number of sensitive receptors (e.g. water abstraction points), SSSIs etc.

As part of this process, the Council will also use a robust method to prioritise key geographical areas for detailed inspection. It may be necessary to use a computer based system(s) because of the complexity of the various relationships that need to be considered.

When the above areas of land have been investigated, the remaining land will be considered in terms of the receptor at risk in accordance with paragraph 3.1.

4.2 Timescales

For high priority scenarios in paragraph 4.1, the Council will endeavour to ensure that a detailed investigation begins within three months. When all these land areas have been investigated, the remaining land will be prioritised and a further appropriate investigation will begin within twelve months.

5.0 PROCEDURES

5.1 Internal Management Arrangements for Identification and Inspection of Sites

The Director of Community Services will undertake the following tasks using delegated powers:-

- Prepare an inspection strategy
- Identify potentially contaminated land
- Determine land as contaminated land in accordance with the Statutory Guidance
- Communicate with the EA and seek advice from the Area Contaminated Land Officers with particular reference to "pollution of controlled waters" and "special sites"
- Carry out appropriate site investigations including intrusive works
- Appoint independent consultants and specialist contractors
- Prepare schedules of work for the remediation of contaminated land
- Ensure appropriate remediation is undertaken and validated
- Maintain the public register of information
- Serve Remediation Notices
- Review Inspection Strategy

5.2 Identifying, Inspecting and Assessing Local Authority Owned/Leased Land (including former LA land and other areas where the LA may be regarded as the "appropriate person")

When a potential contaminant and Part IIA receptor is identified on land owned or formerly owned by the Council, the records will be checked and an investigation undertaken to establish whether the Council caused or permitted the contaminants to be in, on or under, the land. When the Council is satisfied that it is the "appropriate person", the land will be prioritised in accordance with paragraphs 3.0 and 4.0. The inspection procedures described in paragraph 7.0 will be observed.

A similar approach will be taken if pollution of controlled waters is being, or is likely to be, caused.

5.3 Information Collection

5.3.1 Information relevant to "Potential Harm" or "Pollution of Controlled Waters"

The Council will attempt to collect the information outlined below from the relevant organisation identified in brackets. In some cases, the information may already be available to the Council from its archives:-

- River catchment plans indicating the location of watercourses and settlements (EA).
- Location of flood defence works, sewage treatment plants and landfill sites including licensed and unlicensed. (EA and Council archive records).
- Surface and groundwater quality data including failure of surface water quality objectives and river ecosystem classifications thought to be due to contaminated land (EA).
- Groundwater vulnerability maps (British Geological Survey).
- Location of water abstraction points (EA).

- Information on compliance with river quality objectives (EA).
- Location on discharge consents (EA).
- Location of sites with waste management licences (EA).
- Location of sites with IPC authorisations (EA).
- Location of nuclear installations and sites where radioactive substances are regulated by the Environment Agency (EA).
- Location of source protection zones (EA).
- Records of pollution incidents, spills, accidents and fires (EA, HSE and Council archive records).
- Location of past industrial activities and their impact upon controlled waters. (Council archive records and historical maps)
- Ecological data and conservation interest (EA, EN, Sussex Wildlife Trust etc)

5.3.2 Information on Receptors

The Council will attempt to collect information from the following sources:-

<u>Information</u>	<u>Source</u>
Human beings occupying or using:	
<ul style="list-style-type: none"> • Residential land (with gardens) • Residential land (without gardens) • Allotments • Schools and nurseries • Recreational land (parks, playing fields and open spaces) • Commercial/industrial premises • Hotel/leisure facilities 	Development control records
Protected ecological areas:	
<ul style="list-style-type: none"> • Sites of Specific Scientific Interest (SSSIs) • National Nature Reserves (NNRs) • Candidate Special Areas of Conservation (SACs) • Local Nature Reserves • Sites of Nature Conservation Importance (SNICs) • Ancient Woodland 	English Nature Environment Agency
Property in the form of buildings:	
<ul style="list-style-type: none"> • Scheduled Ancient Monuments • Sites of archaeological significance • Other buildings (e.g. buildings that may be at risk from landfill gas migration) 	English Heritage Council records and local knowledge
Other forms of property:	
<ul style="list-style-type: none"> • Crops (including timber) • Produce grown for human consumption (domestic or on allotments) • Livestock • Other owned or domesticated animals • Wild animals (subject to shooting or fishing rights) 	MAFF

Controlled waters:

- Surface waters (e.g. rivers, streams, lakes, ponds and estuarine waters) Environment Agency
- Ground waters (including vulnerability) British Geological Survey
- Water abstractions (including major public and smaller private sources) Council records on private water supplies
- Source Protection Zones
- Surface and groundwater quality data

5.3.3 Information on the Possible Presence of Contaminants

The Council will attempt to collect the information from the following sources:-

<u>Information</u>	<u>Source</u>
Historical maps for information on past industrial and waste management activities	Council archives, local studies centres, OS Maps and British Map Library
Development control records and site investigation reports	Council archives
Part A (IPC) prescribed processes	EA Part A Register
Location of consents to discharge	EA Consent Register
Part B (LAPC) prescribed processes Landfill and other sites subject to waste management licensing	Council Part B Register EA Register (for operational sites) and Council archives
Records of incidents, spills, accidents and fires	Council archives (for nuisance, pollution incidents and complaints) HSE (accidents), Local knowledge , EA (water related pollution incidents)
Farm tips	ESCC, EA, local knowledge, Council archives
Location of "industrial cases" and "defence cases" as defined by the Contaminated Land (England) Regulations 2000	Council archives
Hazardous installations (i.e. chemical storage and manufacturing sites)	HSE, Planning (Hazardous Substances) Register
Industrial premises (past and present)	Trade Directories, Council archives

5.4 Information Evaluation

5.4.1 Evaluation of Information on "Actual Harm"

The Council will evaluate information on "actual harm" using the criteria outlined below. In each case, the Council will need to determine whether or not:-

- It has evidence that all three elements of the pollutant linkage are present, taking account of the current use and setting of the land.
- The evidence has been collected using reliable and scientifically defensible techniques and methods.
- Observed effect(s) fall within one or more of the definitions of "significant harm" listed in Table A of Chapter A of the Statutory Guidance (Appendix 2, Table A).
- Existing scientific knowledge indicates that the observed effect is one that can be expected given the harmful properties of the contaminant, the characteristics of the pathway, and the nature and behaviour of the receptor.
- The assessment has taken into account the requirements set out in paragraphs A24 to A26 of Chapter A of the Statutory Guidance.

When the Council is satisfied that it has adequately evaluated the information on actual harm it will maintain a proper record of its decision in a site-specific case file.

5.4.2 Evaluation of Information on "Pollution of Controlled Waters"

The Council will evaluate information on "pollution of controlled waters" using the criteria outlined below. In each case the Council will need to determine whether or not:-

- It has evidence that all three elements of the pollutant linkage are present, taking into account the current use and setting of the land.
- The evidence has been collected using reliable and scientifically defensible techniques and methods.
- The characteristics of the contaminant are such that it constitutes poisonous, noxious or polluting matter or solid waste matter.
- There is evidence that the contaminant is entering controlled waters or is likely to enter controlled waters.
- The assessment has taken into account the requirements set out in paragraph A37 and A38 of Chapter A of the Statutory Guidance.

In making any decision on whether or not pollution of controlled waters is or is likely to be occurring the Council will have regard to any advice provided by the Environment Agency.

When the Council is satisfied that it has adequately evaluated the information on pollution of controlled waters it will maintain a proper record of its decision in a site specific case file.

5.4.3 Effectiveness of Previous Actions or other Regimes in Preventing or Dealing with Land Contamination

Within the key geographical areas identified in accordance with paragraph 5.4.4, the Council will consider what remedial action has already been taken to address land contamination. The remedial action may have been taken by an existing/former landowner or proactively by the Council or by a third party.

The nature and timing of past redevelopments will be relevant since it will influence the extent to which contamination was understood and addressed. This in turn will enable an appropriate degree of confidence to be assigned to the remedial works that were undertaken. Reference will also be made to the current Planning Policy Guidance Note (PPG23) on contaminated land, as some sites would have been assessed in the light of this guidance. Having considered all this information, the Council will be in a position to determine the extent to which appropriate precautions were taken during an earlier redevelopment scheme.

Enquiries will also be made to determine whether or not any of the following regimes have applied to sites within the key geographical areas:-

- Part A (IPC) provisions
- Waste Management Licensing
- Part B (LAPC) provisions
- Water Resources Act 1991 in relation to the prevention of pollution and the remediation of controlled waters
- Health and Safety Legislation

The nature and timing of actions taken will again be relevant since it will influence the extent to which contamination was understood and addressed.

5.4.4 Identification of Key Geographical Areas

The Council will identify key geographical areas during an initial review of the information referred to in paragraphs 5.3.2 and 5.3.3. These areas will include land containing potential contamination and Part IIA receptors. The geographical coincidence of these two elements of a potential pollutant linkage will therefore enable the Council to focus upon establishing whether or not there is a pathway.

To assist this process, the Council's hard copy historical maps will be scrutinised (as will other sources of maps such as the County Archives) for use with the Council's geographical information system (GIS) described in paragraph 9.1.

5.4.5 Identification of Specific Potential Pollutant Linkages

Having identified the land where potential contamination and Part IIA receptors coincide, the Council will then determine whether there is a pathway by considering the nature of the contaminant and the characteristics of the land. To assist this process, the following characteristics will be considered:-

- Geology, to determine the potential for sub-surface migration of liquids, gases and vapours.
- Hydrogeology, to determine the potential for sub-surface migration of liquids, gases, vapours and the distribution of contaminated material by other transport mechanisms such as flooding or rising groundwater.

- Topography, to determine the direction of the above ground flow and possible direction of sub-surface flow.
- Current land use including children/play areas, gardens, hard surfacing and growing vegetables.

5.4.6 Identification of Individual Sites

Individual sites will normally be identified after the key geographical areas have been established and when all three elements of the pollutant linkage are known to be present.

5.4.7 Identification of Gaps in Information (and how these are to be addressed)

The Council will establish a database of land identified as potentially contaminated. This information will then be compared with the available historical data to identify any gaps in the information. The Council may also become aware of further information from a third party for example, during consultation with the local community.

The Pollution Prevention and Control (England and Wales) Regulations 2000 will also require an applicant seeking to operate a Part A1 installation to prepare a site report as part of the permit application. The purpose of the report is to confirm the "baseline" conditions at the site including any soil, gas and/or groundwater contamination present prior to operation of the installation. This will establish an effective reference point to compare site conditions at the cessation of operations.

The Environment Agency will supply the site report along with the rest of the permit application when consulting the Council. It will, therefore, be possible to use this information when carrying out other statutory duties in particular Part IIA. It may also provide an opportunity to improve the database and address any previous shortcomings.

The original source of any information obtained during this process will be acknowledged and fed into the procedures that are described throughout this strategy.

The general liaison and risk communication strategy will be designed to ensure that all stakeholders are aware of the implications of potentially contaminated land from the outset. The draft strategy will be circulated amongst those organisations that have a particular interest in this issue. For the purposes of "spreading the general message about contaminated land", all stakeholders will be considered in the broadest possible context and may include those with professional expertise and financial interests, alongside those with local knowledge or community status.

Paragraph 1.3.5 includes examples of specific local community and business groups.

With respect to key geographical areas and individual sites, risk communication will begin at the earliest possible stage. When potential contamination and a Part IIA receptor has been identified the Council will contact the appropriate stakeholders and seek their co-operation and assistance. The process of identifying stakeholders will depend upon:

- Technical factors such as scale, degree and nature of the land contamination.
- Socio-economic factors, for example issues of local "blight" or "stigma."
- Historical interest/use of the site by stakeholders.

Having identified the stakeholders, the Council's next objective will be to share an understanding of the risk assessment process. This will enable the stakeholders to raise concerns and hopefully participate in the process. To achieve this objective the Council accepts that it is a two way process and the views of stakeholders will need to be carefully assessed. When an individual site is being considered, it will be essential to establish a majority view supporting the scientific evaluation underlying the risk assessment. If necessary the Council will arrange an independent review by a body acceptable to all the stakeholders involved.

In some cases the stakeholders may require confidentiality to be maintained throughout the initial site investigation. In these cases the Council will maintain confidentiality until the point when there is sufficient information to confirm that the site (in whole or in part) is contaminated land. It will also be necessary to address "uncertainty" that is inherent to all risk assessments. Uncertainties will be grouped according to those that can be realistically addressed (and explained) and those that cannot be resolved.

In summary, the Council will endeavour to ensure that, through its risk communication strategy, all stakeholders understand and support the risk assessment process, the results obtained and how they will affect decisions about any remedial works required.

A range of different communication techniques will be used depending upon whether the Council is:

- gathering information and views from interested parties;
- considering informal ways of sharing information; or
- looking for a more formal means of generating public participation.

The form of risk communication will also depend upon resource and budget implications.

Finally the risk communication strategy will be:

- A two way process.
- Transparent and accessible to create trust in the Council's role.
- Open, to enhance the legitimacy of the overall process to the individual stakeholders.

Refer to Appendix 9 containing a list of contact points.

7.0 PROGRAMME FOR INSPECTION

7.1 General Issues for Inspection

7.1.1 Local Issues

Historically polluted land not being the subject of a current planning application will be dealt with as described in Section 5.0.

When potentially contaminated land is identified at a planning application stage, it will be the responsibility of the developer to carry out an appropriate site investigation and risk assessment. In most cases the remedial works will be secured using conditions attached to a planning consent rather than by a Remediation Notice issued under Part IIA.

7.1.2 Criteria for Selecting Areas and Individual Sites

The criteria for identifying key geographical areas and individual sites are detailed in paragraphs 5.4.4 and 5.4.6. The selection of sub-areas and individual sites within these areas may be carried out in accordance with the procedures contained in CLR Report No 6.

7.1.3 Activities

A detailed inspection may involve a range of activities including further analysis of documentary records on the land and its setting; a review of any existing information on ground conditions (*eg* information from the EA, landowner or occupier), a visual inspection of the land and intrusive works. The stages at which these individual activities are carried out are identified in paragraph 7.2.

7.1.4 Timetable

A timetable is described in paragraphs 3.2 and 4.2. The Council will review the timetable as further information becomes available during the implementation of this Strategy.

7.2 Arrangements for Carrying Out a Detailed Inspection

7.2.1 General Procedure

The arrangements for carrying out a detailed inspection are outlined below and encompass the requirements of paragraphs B19 to B25 of the Statutory Guidance.

The approach taken will follow the published guidance contained in BS10175:2001 "Investigation of Potentially Contaminated Sites - Code of Practice" and will involve the following stages:

- a) A **desk study** to collect information about:
 - Site history (location, surroundings and topography)
 - Site use and potential contamination (including adjacent areas)
 - Geology, hydrogeology and hydrology
 - Ecology and archaeology

At this point the Council will check whether there is any detailed information on the condition of the land that may avoid the necessity to carry out an intrusive site investigation.

- b) A site **"walkover"** to undertake:
- A detailed visual inspection
 - Interviews with existing occupiers
 - Limited "ad hoc" sampling (if appropriate)
- c) Interpretation of initial data and the development of a **Conceptual Site Model** that will include the potential pollutant linkages.
- d) The **design** of a detailed site investigation to confirm whether or not the potential pollutant linkages are present.

The Council will not conduct an inspection by means of intrusive investigation if:

- it has already been provided with adequate and satisfactory detailed information on the condition of the land on which to base determination of whether the land is contaminated for the purposes of Part IIA; or
- a person offers to provide such information within a reasonable and specified time, and this information is provided within that time.

Any intrusive investigations will be carried out using appropriate technical procedures and taking all reasonable precautions to avoid harm, water pollution or damage to natural resources or features of historical or archaeological interest.

If at any stage the Council considers, on the basis of information from a detailed inspection, that there is no longer a reasonable possibility that a particular pollutant linkage exists, the Council will cease detailed inspection of that linkage.

If a detailed site investigation is required, a contractor will be appointed from a list of "preferred" contractors. The Council may apply selection criteria before a contractor is invited to tender, for example the Association of Geo-technical and Geo-environmental Specialists promotes Guidelines for Good Practice in Site Investigations. A contractor may be requested to demonstrate a commitment to these guidelines to reduce risk and add value to the project.

The Council's Financial Regulations will determine how many contractors will be invited to tender for the work. As part of the tendering exercise the Council will appoint on the basis of value for money, the technical capability of the contractor and quality of work. The Council may elect to accept a tender that is **not** necessarily the lowest.

The tender document will include (as a minimum) the following information:-

- Brief background information on the site.
- Objectives of the investigation.
- A rationale for and a description of the proposed site investigation and related activities (including a scale plan indicating the proposed - sampling strategy).
- The proposed measures for protecting staff engaged in the site works.
- A description of the proposed environmental protection measures to minimise off site impacts.

- A rationale for and a description of the proposed laboratory analysis of soil and/or groundwater samples.
- The intended form and content of the factual and interpretative report of the site investigation.
- A timetable for carrying out the works and submitting the report.
- The terms and conditions under which the contract will be undertaken.
- The basis for quoting including a schedule of hourly rates for professional staff engaged in the site investigation.

The Council will **not** instruct a contractor to proceed with a site investigation until it is satisfied that the criteria outlined below are satisfied.

- Written confirmation has been received from the owner(s) and occupier(s) of the site allowing the contractor to enter the land for the purposes of the site investigation (or alternatively when Section 108 requirements have been met).
 - All necessary planning consents and environmental licences have been obtained.
 - Full details of the existing site services have been received and considered in the design of the sampling strategy.
 - All potential locations for exploratory boreholes and other intrusive works have been identified.
 - The Council's financial and project management procedures have been met.
 - The health and safety procedures identified in the BSCoP for Investigation of Potentially Contaminated Sites will be implemented by the contractor.
 - Appropriate arrangements have been made for environmental protection.
- e) A **site investigation** involving one or more of the following techniques:
- Non-intrusive geophysical investigation
 - Dynamic probes and on site screening
 - Trial pits, augers and boreholes

When the site investigation has been designed to identify whether or not there is a single pollutant linkage, the intrusive works will continue until this has been confirmed. If during the course of the investigation it is clear that the single pollutant linkage does not exist the work will cease as soon as this stage is reached.

In a case where there may be more than one pollutant linkage, the investigation will continue until the existence (or non-existence) of each pollutant linkage has been established.

- f) The collection and analysis of soil, gas and/or groundwater samples.
- g) Interpretation of the data collected, and a review of the CSM (as necessary).
- h) Confirmation of the significant pollutant linkage(s) and therefore whether the site (in whole or part) should be determined as contaminated land. Such land may also fall within the definition of a "special site".

7.2.2 Special Sites

If land is contaminated and it falls within one of the following descriptions (briefly outlined here), then it must be designated a special site:

- water pollution cases (controlled waters)
 - a) when wholesomeness of drinking water affected
 - b) when surface water classification criteria affected
 - c) when major aquifers affected
- industrial cases
 - a) waste acid tar lagoons
 - b) oil refining
 - c) explosives
 - d) IPC sites
 - e) nuclear sites
- defence cases (Ministry of Defence sites)

Procedures for dealing with land which may be a special site will follow paragraphs B.26 to B.30 of the statutory guidance.

If the Council has determined the land to be contaminated and it also falls within one or more of the 'special site' descriptions, then the Council will after due consultation with the Environment Agency designate the land as a special site and notify the Agency accordingly. Enforcement provisions can only be initiated by the Agency after the site has been determined as both contaminated land and a special site, other than voluntary inspection/investigation arrangements.

The Agency will be advised at an early stage as to why the Council considers the site to be potentially special. As much information as possible will be given to the Agency. Assuming the Agency agrees with the determination, the Agency will then become the enforcing authority for that land.

The mechanism for handing sites over to the Agency will involve written notification to the Agency; the landowner; any person who appears to be the occupier of all or part of the land and each person who appears to be an "appropriate person".

The Council will seek to make arrangements with the Environment Agency to carry out an inspection of the land on behalf of the Council. This will apply for example if the Council considers that there is reasonable possibility that a particular pollutant linkage is present, and the presence of a linkage of that kind would require the designation of the land as a special site (where that linkage found to be a significant pollutant linkage). Where the Environment Agency is to carry out an inspection on behalf of the Council, the Council will authorise a person nominated by the Agency to exercise the powers of entry, conferred by Section 108 of the Environment Act 1995. Before the Council gives such authorisation, the Environment Agency will have to satisfy the Council that the conditions for the use of statutory powers of entry set out in Circular 02/2000 Section B paragraphs B.22 to B.25 of Part IIA are met.

In the event that the Council and the Agency cannot agree on designation of a special site, the matter will be referred to the Secretary of State for a decision.

7.2.3 Site Specific Liaison

For each site the Council will contact the following (where appropriate):

- The owner of the land for information about its condition and to obtain permission to enter the site.
- Any person who appears to be the occupier of all or part of the land for information about its condition and to obtain permission to enter the site.
- Each person who appears to be an "appropriate person" for information about the condition of the land.
- The EA for advice about the effect upon controlled waters, potential special site status, conservation etc.
- English Nature for effects upon ecological systems and when an intrusive investigation is to be undertaken within a Site of Special Scientific Interest (SSSI).
- English Heritage, when sensitive archaeological remains or buildings are likely to be present.

The Council may also contact the owner/occupier of adjacent land.

7.2.4 Health and Safety Procedures

The Council will endeavour to ensure that the contractor undertaking the site investigation is aware of the health and safety procedures contained within the BSCoP on Investigation of Potentially Contaminated Sites. The contractor will also have regard to the HSE document on protecting workers and the general public during the redevelopment of contaminated land.

7.2.5 Format of Information Resulting from Inspection

The information gathered during an inspection of the land will generally be in the following format:

- A summary of the desk study, walkover survey and site assessment.
- Analytical results of soil, gas, ground and surface water samples (as appropriate).
- A risk assessment (qualitative/semi-quantitative or quantitative).
- Identification of the significant pollutant linkage(s).
- An indication of how the significant pollutant linkage(s) may be addressed.

8.0 **REVIEW MECHANISMS**

The Council will undertake a periodic review of this inspection strategy to ensure that any assumptions used during the assessment of individual sites are robust and reflect current "best practice". Information received from a third party about the condition of land will also be examined carefully before reliance is placed upon its accuracy and a decision is made about whether or not to apply Part IIA.

8.1 **Review of Assumptions and Information ("triggers" for inspection)**

A review of assumptions made and information held about the condition of individual sites will normally be undertaken at least annually. However an immediate review will be undertaken when one or more of the circumstances identified below are likely to occur:

- Proposed changes to the surrounding land.
- Unplanned changes to the use of the land (for example persistent, unauthorised use of land by children).
- Unplanned events (for example localised flooding, landslides, accidents, fires, spillages and the consequences) cannot be addressed using other relevant environmental protection legislation.
- Reports of localised "health effects" which appear to relate to a particular area of land.
- Verifiable reports of unusual or abnormal site conditions received from business, members of the public or voluntary organisations.

An earlier review may also take place in response to information received from:

- Statutory bodies (for example EA, HSE and MAFF)
- Owners or occupiers of land and other relevant stakeholders

If the information received falls within the circumstances identified, then an immediate review will take place. The nature of any other information will be considered on an individual basis to determine if and when an earlier review is required.

The triggers for inspection are identified in paragraphs 4.1 and 4.2.

8.2 **Review of Strategy Document**

The milestones for the objectives are identified in paragraph 3.2. To ensure that these are met a periodic review of the Strategy (minimum of annually) will be undertaken by the Community Environment Manager. Where it has not been possible to specify a milestone, for example area based inspection, this will be noted and within four weeks of the relevant information becoming available an appropriate milestone will be specified.

8.3 **Audit of Inspection Procedures**

The Council will appoint an independent person who is experienced in the assessment of contaminated land to audit a representative sample of site investigations. This will provide an opportunity to confirm that the inspection procedures are being applied. If there are any shortcomings identified during the audit the Council will review this part of the Strategy.

9.0 **INFORMATION MANAGEMENT**

9.1 **General Principles and Storage Systems**

All information will be held in a structured way to enable the Council to carry out its duties in an efficient and effective manner. The management of information will be assisted by the use of a geographical information system (GIS). This will assist with the subsequent identification of key geographical areas as detailed in paragraphs 5.3 and 5.4.

For individual sites the GIS will initially record the information listed below. As further information becomes available and the system progresses it is anticipated that a land quality dataset will be established for the Council's area. Refer to Appendix 10.

- A unique reference number
- Name and address of the site
- Grid reference
- Date site identified
- Current land use
- Historical land use(s)
- Details of any previous investigation(s), remedial action or any other action, for example development control
- Likely contaminant(s) and potential source
- Pathway(s)
- Part IIA receptor(s)
- Geology and hydrogeology of the site
- Hydrology of the site
- Categorisation rating
- Proposed action

When developing the GIS regard will be had to the advice contained within CLR Report No 5 (1994) and BGS Technical Report WE/99/14 (2000).

9.2 **Use by Other Local Authority Departments**

A GIS is already established within the Council and is available to designated users. The information outlined in paragraph 9.1 will therefore become accessible to GIS users as described in paragraph 9.3.

9.3 **Arrangements for Giving Access to Information**

There will be restricted access to the GIS land contamination information. Different groups of users will be identified and access to particular types of information will be provided. Within these groups some users will have the ability to modify the information whilst others will be restricted to viewing and/or copying information.

9.4 **Confidentiality of Information**

All data will be assessed in terms of its commercial confidentiality. Where appropriate data will be excluded from the public domain whilst still licensing its use. All confidentiality issues will be respected in line with relevant guidelines.

9.5 Content of Register Information

The Council is required to maintain a register in accordance with Regulation 15 and Schedule 3 of the Contaminated Land (England) Regulations 2000 and provide access for inspection by the public at its principal office. The register will therefore be held within the Community Environment Division of the Community Services Department, 14 Beeching Road, Bexhill-on-Sea, East Sussex, TN39 3LG.

The Council will not include any information on its register that in the opinion of the Secretary of State would be against the interests of national security. Information will also be excluded on grounds of commercial confidentiality. Details about the information to be held are as follows:

Information about Remediation

There are specific requirements relating to:

- Remediation notices
- Appeals against remediation notices under Section 78L(1)
- Remediation declarations under Section 78H(6)
- Remediation statements under Section 78H(7) or 78H(9)
- Any notification given to the LA under Section 78R(1), (h) or (j) of "claimed remediation"

Other Information

There are specific requirements relating to:

- Appeals against charging notices under Section 78P(8)
- Other environmental controls that by virtue of Section 78YB(4) preclude action (*eg* remediation cannot be taken because it would interfere with a discharge into controlled waters for which consent has been given under Chapter II of Part III of the Water Resources Act 1991)
- Designation of special sites
- Guidance issued by the EA under Section 78V(1)
- Convictions for offences under Section 78M

9.6 Provision of Information to the Environment Agency

The Environment Agency (EA) is required to prepare and publish a report on the state of contaminated land in England. The aim of the report is to compile information on the nature, extent and distribution of contaminated land, the level of remediation undertaken and regulatory activity under Part IIA. It will enable an assessment to be made of the scale and significance of contaminated land and provide a mechanism to monitor the effectiveness of the measures put in place to address it.

To achieve these objectives the EA will need to collate the information it holds and will also require access to information held by the Council. The Area Contaminated Land Officer of the EA has provided the Council with standard forms to facilitate the collection of this information.

Dealing with Requests for Information

From time to time the Council will receive requests to view the information held on a particular site that may not be included in the register referred to in paragraph 9.5. This may include documents provided by a third party and/or produced by the Council during the course of internal and external consultation. Each request will be considered on its merits taking account of the following issues:

- a) The relationship between the enquirer and the information that they are requesting to view, for example:
 - An enquiry may be received from the original supplier of the information and relate to action taken by the Council since it was received.
 - An enquiry may be received from the owner/occupier of the land in question seeking to review information provided by a third party that may directly affect its value.
 - An enquiry may be received from a solicitor acting on behalf of a prospective purchaser of the land.
- b) Whether or not the information requested, or any part thereof, is protected by commercial interests or national security as a result of the tests contained in Part IIA and/or the Environmental Information Regulations 1992 (as amended).
- c) Whether or not the permission of a third party must be obtained before it is released.

All requests for information on land contamination should preferably be made in writing to the Council. The Community Environment Manager will acknowledge a request within five working days of receipt and where possible the relevant information will be provided within days. If it becomes necessary to carry out further research to provide a full response the enquirer will be advised accordingly and a timescale for supplying the information will be agreed. In any event a response will be provided within two months.

10.0 OTHER SUPPORTING INFORMATION

10.1 Maps and Tables etc

- Figure 1 : Council Service Structure - Page 8
Map 1 : Location of Rother District - Page 12
Table 1 : The Geological Sequence around Hastings and Dungeness - Page 16

10.2 Information Sources and References

- Appendix 1 Glossary of Terms
Appendix 2 Table A : Categories of Significant Harm
Appendix 2 Table B : Significant Possibility of Significant Harm
Appendix 3 Paragraphs B9, B10 and B15 of the Statutory Guidance
Appendix 4(a) Schedule of Protected Sites - SSSIs
Appendix 4(b) Sites of Nature Conservation Importance - SNCIs
Appendix 5(a) Cuckmere and Pevensey Levels Catchment Area
Appendix 5(b) Eastern Rother Catchment Area
Appendix 6(a) Geology of Cuckmere and Pevensey Levels Area
Appendix 6(b) Geology of Eastern Rother Catchment Area
Appendix 7(a) Monuments Scheduled by the Monuments Protection Programme in Rother
Appendix 7(b) Old County Number Scheduled Monuments in Rother
Appendix 8 Details of Strata etc and Hydrogeological Characteristics
Appendix 9 Consultation Contacts
Appendix 10 Mechanism for Building a Land Quality GIS
A : Idealised Steps to Build a Land Quality GIS
B : Layers of Land Quality GIS
Appendix 11 References

APPENDIX 1

GLOSSARY OF TERMS

Ancient Woodland	There are two types of ancient woodland:- (a) semi-natural ancient woodland is that which has been continuously wooded since 1600 and is composed of native tree species which have not obviously been planted; (b) replanted ancient woodland is that which has been continuously wooded since 1600 but where the former tree cover has been replaced with planted trees (often conifers).
Appropriate Person(s)	Any person who is an appropriate person, determined in accordance with Section 78F ..., to bear responsibility for anything which is to be done by way of remediation in any particular case.
Conceptual Model	A textural or graphical representation of the relationship(s) between contaminant(s), pathway(s) and receptor(s) developed on the basis of Phase 1a Risk Assessment findings, and refined during subsequent phases of assessment.
Contaminant	A substance which is in, on or under the land and which has the potential to cause harm or to cause pollution of controlled waters.
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:- (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	This embraces territorial and coastal waters, inland fresh waters and ground waters
Desk Study	Interpretation of historical, archival and current information to establish where previous activities of the land were located, and where areas or zones containing discrete and different types of soil contamination can be expected to occur, and to understand the environmental setting of the site in terms of pathways and receptors.
Detailed Investigation	Main stage of on-site investigation involving sampling and analysis to characterize ground conditions for a specified purpose - may be undertaken on a single or a number (<i>eg</i> Stage 1 and 2) of successive stages.
Harm	Harm to the health of living organisms or other interference with the ecological systems of which they form part, in the case of man, includes harm to his property.
Hectare	10,000 square metres.

Pathway	The means by which a hazardous substance or agent comes into contact with a or otherwise affects a receptor.
Phase 1a Risk Assessment	A discrete phase of risk assessment which incorporates the conceptual stage of hazard identification.
Phase 1b Risk Assessment	A discrete phase of risk assessment which builds on Phase 1a Risk Assessment findings and incorporates the conceptual stage of hazard assessment.
Phase 2 Risk Assessment	A discrete phase of risk assessment which builds on Phase 1a and Phase 1b Risk Assessment and incorporates the conceptual stages of risk estimation and risk evaluation.
Ramsar Sites	The UK Government signed the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (the Ramsar Convention) in 1973. The Ramsar Convention requires the conservation of wetlands, especially sites "listed" (designated) under the Convention. Ramsar sites are areas which have been formally "listed" (designated) as Wetlands of International Importance by the Secretary of State.
Receptor	The entity (<i>eg</i> human, animal, water, vegetation, building services etc) which is vulnerable to the adverse effect(s) of a hazardous substance or agent.
Remediation	<ul style="list-style-type: none"> (a) the doing of anything for the purpose of assessing the condition of: <ul style="list-style-type: none"> (i) the contaminated land in question; (ii) any controlled waters affected by that land; or (iii) any land adjoining or adjacent to that land; (b) the doing of any works, the carrying out of any operations or the taking of any steps in relation to any such land or waters for the purpose: <ul style="list-style-type: none"> (i) of preventing or minimising, or remedying or mitigating the effects of any significant harm, or any pollution of controlled waters, by reason of which the contaminated land is such land; or (ii) of restoring the land or waters to their former state; or (c) the making of subsequent inspections from time to time for the purpose of keeping under review the condition of the land or waters.
Risk	The probability that an adverse effect will occur under defined conditions.
Risk Assessment	The process of assessing the hazards and risks associated with a particular site or group of sites.
Risk Estimation	A conceptual stage of risk assessment concerned with estimating the likelihood that receptors will suffer adverse effects if they come into contact with, or are otherwise affected by, a hazardous substance or agent under defined conditions.

Risk Evaluation	A conceptual stage of risk assessment concerned with evaluating the acceptability of estimated risks, taking into account the nature and scale of risk estimates, any uncertainties associated with the assessment and the broad costs and benefits of taking action to mitigate risks.
Significant Harm	Any harm which is determined to be significant in accordance with the statutory guidance (that is, it meets one of the descriptions of types of harm in Appendix 2, Table A, second column).
Significant Pollutant Linkage	A pollutant linkage which forms the basis for a determination that a piece of land is contaminated land.
Sites of Nature Conservation Importance - SNCIs	These are locally important sites. "Orders" are made to conserve the nature interests on the land.
Sites of Special Scientific Interest - SSSIs	Sites of Special Scientific Interest (SSSIs) form a nationally important series which contributes to the conservation of our natural heritage of wildlife habitats, geological features and landforms. SSSIs are areas of land that have been notified as being of special interest under the Wildlife and Countryside Act 1981 or the National Parks and Access to the Countryside Act 1949.
Special Areas of Conservation - SACs	Directive 92/43 EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the "Habitats Directive") was adopted on 21 May 1992, requiring Member States to maintain or restore habitats and species at a favourable conservation status in the community.
Special Protection Areas - SPAs	Directive 79/409/EEC on the Conservation of Wild Birds ("the Birds Directive") was adopted on 2 April 1979. The Directive applies to birds, their eggs, nests and habitats. It provides for the protection, management and control of all species of naturally occurring wild birds in the European territory of Member States.
Special Site	<p>Any contaminated land:-</p> <ul style="list-style-type: none"> (a) which has been designated as such a site by virtue of Section 78c(7) or 78D(6) ...; and (b) whose designation as such has not been terminated by the appropriate Agency under Section 78Q(4). <p>The effect of the designation of any contaminated land as a special site is that the Environment Agency, rather than the Local Authority, becomes the enforcing Authority for the land.</p>

APPENDIX 2

TABLE A - CATEGORIES OF SIGNIFICANT HARM

Type of Receptor	Description of harm to that type of receptor that is to be regarded as significant harm
<p>1. Human beings</p>	<p>Death, disease, serious injury, genetic mutation, birth defects or the impairment of reproductive functions.</p> <p>For these purposes, disease is to be taken to mean unhealthy condition of the body or a part of it can include, for example, cancer, liver dysfunction or extensive skin ailments. Mental dysfunction is included only insofar as it is attributable to the effects of a pollutant on the body of the person concerned.</p> <p>In this chapter, this description of significant harm is referred to as a "human health effect".</p>
<p>2. Any ecological system, or living organism forming part of such a system, within a location which is:</p> <ul style="list-style-type: none"> • an area notified as an area of special scientific interest under section 28 of the Wildlife and Countryside Act 1981; • any land declared a national nature reserve under Section 35 of that Act; • any area designated as a marine nature reserve under section 36 of that Act; • an area of special protection for birds, established under Section 3 of that Act; • any European Site within the meaning of Regulation 10 of the Conservation (Natural Habitats etc) Regulations 1994 (i.e. Special Areas of Conservation and Special Protection Areas); • any candidate Special Areas of Conservation or potential Special Protection Areas given equivalent protection; • any habitat or site afforded policy protection under paragraph 13 of Planning Policy Guidance Note (PPG9) on nature conservation (i.e. candidate Special Areas of Conservation, potential Special Protection Areas and listed Ramsar sites); or • any nature reserve established under Section 21 of the National Parks and Access to the Countryside Act 1949. 	<p>For any protected location:</p> <ul style="list-style-type: none"> • harm which results in an irreversible adverse change, or in some other substantial adverse change, in the functioning of the ecological system within any substantial part of that location, or • harm which affects any species of special interest within that location and which endangers the long-term maintenance of the population of that species at that location. <p>In addition, in the case of a protected location which is a European Site (or a candidate Special Area of Conservation or a potential Special Protection Area), harm which is incompatible with the favourable conservation status of natural habitats at that location or species typically found there.</p> <p>In determining what constitutes such harm, the local authority should have regard to the advice of English Nature and to the requirements of the Conservation (Natural Habitats etc) Regulations 1994.</p> <p>In this Chapter, this description of significant harm is referred to as an "ecological system effect".</p>
<p>3. Property in the form of:</p> <ul style="list-style-type: none"> • crops, including timber; • produce grown domestically, or on allotments, for consumption; • livestock; • other owned or domesticated animals; • wild animals which are the subject of shooting or fishing rights. 	<p>For crops, a substantial diminution in yield or other substantial loss in their value resulting from death, disease or other physical damage. For domestic pets, death, serious disease or serious physical damage. For other property in this category, a substantial loss in its value resulting from death, disease or other serious physical damage.</p> <p>The local authority should regard a substantial loss in value as occurring only when a substantial proportion of the animals or crops are dead or otherwise no longer fit for their intended purpose. Food should be regarded as being no longer fit for purpose when it fails to comply with the provisions of the Food Safety Act 1990. Where a diminution in yield or loss in value is caused by a pollutant linkage, a 20% diminution or loss should be regarded as a benchmark for what constitutes a substantial diminution or loss.</p> <p>In this chapter, this description of significant harm is referred to as an "animal or crop effect".</p>
<p>4. Property in the form of buildings.</p> <p>For this purpose, "building" means any structure or erection, and any part of a building including any part below ground level, but does not include plant or machinery comprised in a building.</p>	<p>Structural failure, substantial damage or substantial interference with any right of occupation.</p> <p>For this purpose, the local authority should regard substantial damage or substantial interference as occurring when any part of the building ceases to be capable of being used for the purpose for which it is or was intended.</p> <p>Additionally, in the case of a scheduled Ancient Monument, substantial damage should be regarded as occurring when the damage significantly impairs the historic, architectural, traditional, artistic or archaeological interest by reason of which the monument was scheduled.</p> <p>In this chapter, this description of significant harm is referred to as a "building effect".</p>

APPENDIX 2

TABLE B - SIGNIFICANT POSSIBILITY OF SIGNIFICANT HARM

Descriptions of significant harm (As defined in Table A)	Conditions for there being a significant possibility of significant harm
<p>1. Human health effects arising from</p> <ul style="list-style-type: none"> • the intake of a contaminant, or • other direct bodily contact with a contaminant. 	<p>If the amount of the pollutant in the pollutant linkage in question:</p> <ul style="list-style-type: none"> • which a human receptor in that linkage might take in, or • to which such a human might otherwise be exposed, as a result of the pathway in that linkage, would represent an unacceptable intake or direct bodily contact, assessed on the basis of relevant information on the toxicological properties of that pollutant. <p>Such as assessment should take into account:</p> <ul style="list-style-type: none"> • the likely total intake of, or exposure to, the substances which form the pollutant, from all sources including that from the pollutant linkage in question; • the relative contribution of the pollutant linkage in question to the likely aggregate intake or, or exposure to, the relevant substance or substances, and • the duration of intake or exposure resulting from the pollutant linkage in question. <p>The question of whether an intake or exposure is unacceptable is independent on the number of people who might experience or be affected by that intake or exposure.</p> <p>Toxicological properties should be taken to include carcinogenic, mutagenic, teratogenic, pathogenic, endocrine-disrupting and other similar properties.</p>
<p>2. All other human health effects (particularly by way of explosion of fire)</p>	<p>If the probability, or frequency, of occurrence of significant harm of that description is unacceptable, assessed on the basis of relevant information concerning:</p> <ul style="list-style-type: none"> • that type of pollutant linkage, or • that type of significant harm arising from other causes. <p>In making such an assessment, the local authority should take into account the levels of risk which have been judged unacceptable in other similar contexts and should give particular weight to cases where the pollutant linkage might cause significant harm which:</p> <ul style="list-style-type: none"> • would be irreversible or incapable of being treated; • would affect a substantial number of people; • would result from a single incident such as a fire or an explosion, or • would be likely to result from a short-term (that is, less than 24 hour) exposure to the pollutant.
<p>3. All ecological system effects</p>	<p>If either:</p> <ul style="list-style-type: none"> • significant harm of that description is more likely than not to result from the pollutant linkage in question; or • there is a reasonable possibility of significant harm of that description being caused, and if that harm were to occur, it would result in such a degree of damage to features of special interest at the location in question that they would be beyond any practicable possibility of restoration. <p>Any assessment made for these purposes should take into account relevant information for that type of pollutant linkage, particularly in relation to the ecotoxicological effects of the pollutant.</p>
<p>4. All animal and crop effects</p>	<p>If significant harm of that description is more likely than not to result from the pollutant linkage in question, taking into account relevant information for that type of pollutant linkage, particularly in relation to the ecotoxicological effects of the pollutant.</p>
<p>5. All building effects</p>	<p>If significant harm of that description is more likely than not to result from the pollutant linkage in question during the expected economic life of the building (or, in the case of a scheduled Ancient Monument, the foreseeable future), taking into account relevant information for that type of pollutant linkage.</p>

APPENDIX 3

Paragraph B9 of Statutory Guidance

In carrying out its inspection duty under Section 78B(1), the Local Authority should take a strategic approach to the identification of land which merits detailed individual inspection. The approach should:-

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

Paragraph B10 of Statutory Guidance

In developing this strategic approach the local authority should reflect local circumstances. In particular, it should consider:-

- (a) any available evidence that significant harm or pollution of controlled waters is actually being caused;
- (b) the extent to which any receptor is likely to be found in any of the different parts of the authority's area;
- (c) the extent to which any of those receptors is likely to be exposed to a contaminant;
- (d) the extent to which information on land contamination is already available;
- (e) the history, scale and nature of industrial or other activities which may have contaminated the land in different parts of its area;
- (f) the nature and timing of past redevelopment in different parts of its area;
- (g) the extent to which remedial action has already been taken by the authority or others to deal with land contamination problems or is likely to be taken as part of an impending redevelopment; and
- (h) the extent to which other regulatory authorities are likely to be considering the possibility of harm being caused to particular receptors or the likelihood of any pollution controlled waters being caused in particular parts of the local authority's area.

Paragraph B15 of Statutory Guidance

The local authority should include in its strategy:-

- (a) a description of the particular characteristics of its area and how that influences its approach;
- (b) the authority's particular aims, objectives and priorities;
- (c) appropriate timescales for the inspection of different parts of its area; and
- (d) arrangements for procedures for:-
 - (i) considering land for which it may itself have responsibility by virtue of its current or former ownership or occupation;
 - (ii) obtaining and evaluating information on actual harm, or pollution of controlled waters;
 - (iii) identifying receptors, and assessing the possibility or likelihood that they are being, or could be, exposed to or affected by a contaminant;

- (iv) obtaining and evaluating existing information on the possible presence of contaminants and their effects;
- (v) liaison with, and responding to information from, other statutory bodies, including in particular, the EA, EN and MAFF;
- (vi) liaison with, and responding to information from, the owners or occupiers of land, and other relevant interested parties;
- (vii) responding to information or complaints from members of the public, businesses and voluntary organisations;
- (viii) planning and reviewing a programme for inspecting particular areas of land;
- (ix) carrying out the detailed inspection of particular areas of land;
- (x) reviewing and updating assumptions and information previously used to assess the need for detailed inspection of different areas, and managing new information; and
- (xi) managing information obtained and held in the course of carrying out its inspection duties.

APPENDIX 4(a)

SITES OF SPECIAL SCIENTIFIC INTEREST (SSSIs)

These are nationally important sites which contribute to the conservation of our natural heritage of wildlife habitats, geological features and landforms. They are areas of land that have been notified as being of special interest under the Wildlife and Countryside Act 1981 or the National parks and Access to the Countryside Act 1949.

Each site has a list of 'operations likely to damage the special interest of the site', e.g. dumping, spreading or discharge of any materials, extraction of minerals including topsoil, subsoil.

The site descriptions are only brief and are taken from documents issued by English Nature.

Site	Grid Reference	Area (hectares)
<i>Watergates Wood (Marline Wood)</i> Ancient woodlands on Wadhurst Clay and Lower Tunbridge Wells sandstone are dominated by a nationally uncommon woodland type. A valuable feature of the site is the steep sided stream valley (ghyll) which contains plants that have an 'Atlantic' distribution.	TQ 780122	55.0
<i>Lydd Ranges (Dungeness SSSI)</i> An area of exceptional scientific interest and is one of the few areas in lowland Britain where natural plant communities have been little modified by mans traditional management. The shingle beaches and associated brackish and freshwater pools are of importance both for their physiography and for their flora and fauna.	TQ 010183	3241.69
<i>Walland Marsh</i> Part of this site lies within Rother and Shepway District Council. In includes the majority of the remaining areas of improved and permanent grassland on the reclaimed silt and peat soils of Walland Marsh and The Dowels. There is an extensive dyke system containing rich brackish waters that supports a diverse invertebrate fauna and bird community.	TQ 960240	1946.5
<i>Fore Wood</i> The interest of this particular area is twofold; it includes one of only 5 East Sussex examples of ghyll woodland (a habitat which is otherwise restricted to the Atlantic coast of Britain) and it contains a rich breeding community which includes hawfinch, woodcock and greater woodpecker.	TQ 753128	21.5
<i>Hastings Cliffs to Pett Beach</i> This coastal site is of great geological and biological importance. Its palaeobotanical and vertebrate palaentological fossils are some of the best examples of their type in the world, while two sections of the cliffs show a complex pattern of faults. A number of habitats are represented including woodland (much of it ancient), scrub, maritime grassland and a vegetated shingle beach. These support a number of rare bryophytes (mosses and liverworts), lichens, flowering plants and beetles (Coleoptera).	TQ 872112	299.4
<i>Camber Sands and Rye Saltings</i> This site has the only extensive sand dune system in East Sussex and contains locally important invertebrate and bird communities. A diversity of other habitats are present including areas of saltmarsh, shingle, open water and intertidal sands.	TQ 947190	252.9

The sand dunes have developed in the lee of the shingle bank at Rye Harbour to the west. The dune system at Camber consists of two distinct zones: an unstable yellow dune which runs parallel to the seashore and, behind it, a stabilised dune which is managed as a golf course.

Rye Harbour TQ 935180 761.1

This large and ecologically complex site is of considerable biological and geological importance. It has the only extensive tract of shingle in East Sussex; only Dungeness in Kent (a site of international importance) has a larger area of this habitat in Southern Britain. The site also contains areas of alluvial grazing marsh, saltmarsh, and intertidal sands and muds. The diversity and rarity of habitats present at Rye Harbour account for the extremely rich flora, fauna, the site supports nationally important communities of plants, birds and invertebrates.

Leason Heronly Wood TQ 907216 2.2

A small, not long established woodland which contains a nationally important heronry. Birds first began to establish themselves here in 1935 and have been breeding since 1949, showing a distinct preference for ash trees to nest in. The numbers of herons regularly reach fifty pairs which represents 1% of the total British breeding population.

Maplehurst Wood TQ 807134 31.6

An area of ancient woodland on Wadhurst Clay and Ashdown Sand. The wood is the only East Sussex location of one plant species and is valuable for local breeding birds.

Darwell Wood TQ 710202 37.6

This site consists of a relatively large area of broadleaved woodland deeply dissected by a number of streams which drain into Darwell Reservoir to the north. The site probably represents the best example of hornbeam coppice with oak standards in Sussex. A number of other woodland types are also found which are rare in the national context. A wide range of woodland birds also breed on this site.

Darwell Wood has developed over formations of the Ashdown Sands, Purbeck Beds and Wadhurst Clay. The resulting variation in geology has influenced the types of plants which are able to grow in different areas.

Ashburnham Park TQ 695148 106.87

Ashburnham is a former medieval deer park lying on Tunbridge Wells Sandstone and Wadhurst Clay. The ancient woodland is one of the largest remaining areas of its kind in the country and contains many overmature trees with outstanding lichen floras. The site also supports a diverse breeding bird community.

The woodland forms three blocks separated by parkland, and a number of small deciduous and mixed plantations are also present. A stream which flows through the site has been dammed to form three ornamental lakes adding to the habitat-diversity of the site.

Dallington Forest TQ 652208 16.2

This site is an area of ancient woodland which lies on fine grained silts, sandstones, shales and mudstones of the Ashdown Beds. The main feature of the site is the ghyll woodland which contains a number of plants with an 'Atlantic' distribution. This habitat type and its associated flora occur only in The Weald and in the west of Britain.

The steep sided ghyll has been created by the vigorous down cutting of Willingford Stream through the geological strata leaving a range of soil types and occasional outcrops of sandstone. The warm, moist microclimate of the ghyll has allowed the retention of a rich 'Atlantic' flora. A small plateau woodland is present in the north of the site and there is a small meadow adjacent to it.

Pevensey Levels (Hooe Level)

TQ 650070

3501.0

Pevensey Levels is a large area of low-lying grazing meadows intersected by a complex system of ditches which show a wide variety of form and species composition and support important communities of wetland flora and fauna. The site supports one nationally rare and several nationally scarce aquatic plants and many nationally rare invertebrates. Ornithologically, the site is of national importance as the number of wintering lapwings has regularly exceeded 1% of the total British population in recent years.

Geologically, the Levels are located where impervious Weald Clay reaching the coast has been overlain by superficial alluvial deposits. In places, however, the Weald Clay itself forms outcrops, as at Horse Eye, and Tunbridge Wells Sands reach the surface occasionally, as on part of Hooe Level. Once an area of intertidal mud flats, the Levels have developed in turn to salt marsh and fresh water marsh. This process has been aided by the deposition of shingle beach deposits, by the process of longshore drift, along the present coastline. This shingle ridge now protects the Levels from sea water inundation, since most of the site lies below the level of highest tide. Past intersection of the marshes by a series of ditches has created the present-day area of rich grazing meadows.

Combe Haven Valley

TQ 770102

156.1

This extensive site contains a rich diversity of habitat types. Alluvial meadows dominate much of the site and a nationally uncommon grassland type is present. Filsham reed bed is the largest reed bed in East Sussex and carries a rich community of breeding birds. Blocks of ancient woodland add to the site's interest. The range of habitat types is responsible for the wide diversity of plant, invertebrate and bird life at the site.

The alluvial meadows and the drainage ditches which dissect them are the remnants of a once much more extensive marshland which developed on river alluvium over Ashdown Sandstones. Filsham reed bed has colonised poorly drained, ungrazed marsh and a small lagoon is present within the bed. Two areas of mixed tall fen communities are also present within the site. Woodlands have developed on higher ground over Wadhurst Clay and support several unusual plants. The whole site, but particularly the reed bed, is valuable for breeding, wintering and passage birds. The invertebrate fauna includes two notable dragonflies and important butterfly populations.

Highwoods, Bexhill

TQ 715095

33.5

This site is of primary importance for its sessile oak Quercus petraea coppice, a type of woodland not known to occur anywhere else in East Sussex. The woods have developed over Weald Clay and Lower Tunbridge Wells Sandstone and the variation in soils, drainage and management have resulted in a mosaic of woodland types, three of which are becoming rather rare in the national context. Several other semi-natural habitats: ponds, streams and an area of wet heath with acidic grassland are also present, thus increasing the diversity of interest of the site.

Blackhorse Quarry

TQ 769142

0.19

This site marks the position of a former Quarry on Telham Hill, which was worked for stone in the mid-19th Century. Part of the quarry has been lost, having been filled in to create a covered reservoir. The remainder consists of a depression, with much vegetation cover, but some rock exposures on the northern boundary. Despite its appearance, the site provides excellent potential for future research on both the rocks and fossils.

The site is of interest for two reasons. Firstly, it has yielded a rich fauna of fossil animals (bony fish (including their droppings - which are named coprolites), teeth of fish and a variety of reptiles), and bones of a variety of large reptiles (including dinosaurs, flying reptiles and crocodiles) and has the potential of yielding early mammals remains. Secondly, this site represents a portion of the Lower Wadhurst Clay Formation (spanning about 115-125 million years ago) and is an essential part of a network of sites which are found in this part of Britain, and cover this time zone. Pebble beds and adjacent rock types act as markers for this quarry in the time zone.

Pett Level TQ 903157 351.7

Located on the alluvial grazing marshes around Winchelsea, the ponds and ditches support important communities of wetland flora and fauna. The water in the ditches ranges from fresh water to brackish, and this contributes to the diversity of the fauna and flora. There are several scarce aquatic plants and many rare invertebrates, with beetles (coleoptera) and some flies (Diptera) particularly well represented. The wetlands, particularly the Pannel Valley and the Colonel Body Memorial Lakes support important assemblages of wetland birds.

Brede Pit and Cutting TQ 832184 0.54
Detailed geological reasons for notification as a SSSI.

Winchelsea Cutting TQ 902169 0.13

This roadside exposure of the Hastings Beds Group shows 2m of the upper Ashdown Sand Formation and 4m of the lower Wadhurst Clay Formation. Above the Top Ashdown Pebble Bed (with extrabasinal chert and quartz pebbles, and Jurassic glauconite grains), 0.5m of dark basal Wadhurst Clay with ironstone nodules is overlain erosively by 4m of the lower division (pro-fandelta) of the Cliff End Sandstone Member.

Houghton Green Cliff TQ 931224 0.125

The old undercliff here exposes the upper (fluvial top fandelta) division of the Cliff End Sandstone Member of the lowest Wadhurst Clay Formation (lower Hastings Beds Group). This is complementary to the site at Winchelsea which exposes the lower (pro-fandelta) division of the Member. (The member has been mismapped here as upper Ashdown Sand Formation by BGS). This is a key site for the study of the sandstone bodies in the Hastings Group clay formations.

River Line TQ 714190-719192 1.89

This site comprises a section of river just east of Netherfield which cuts through a lithologically varied sequence of Purbeck Beds, including marine horizons.

Northiam TQ 829253 0.30

The disused (and partially flooded) quarry at Northiam displays an excellent section through the Northiam Sandstone Member of the Wadhurst Clay Formation (lower Hastings Beds Group, Wealden Series), for which this is the type locality. The rocks comprise complex channel-fill sandstones (including sedimentary bar-forms and current direction indicators).

Willingford Meadow TQ 655223 11.4

The site consists of a species-rich meadow managed using traditional grazing and mowing regimes. Similar meadows were once common in lowland Britain, but due largely to agricultural improvement are now rare and generally small. The meadow is found on clay-loams at the base of the Ashdown Beds.

Hemmingfold Meadow TQ 777149 4.91

This site consists of two connected lowland meadows on Weald Clay. The meadows are rich in flowering plants and the grassland community present is of a nationally uncommon type.

APPENDIX 4(b)

LOCATION OF LOCAL SITES OF NATURE CONSERVATION IMPORTANCE (SNCIs)

Site Code	Site	Parish
CR1	Woodland Complex, Buckholt Farm, Bexhill	Bexhill
CR2	Collington Wood, Bexhill	Bexhill
CR3	Gillham Wood, Bexhill	Bexhill
CR4	Marsh Grassland, Glyne Gap, Bexhill	Bexhill
CR5	High Peartree, Smiths and High Woods, Bexhill	Bexhill
CR6	Disused Railway, Bexhill	Bexhill
CR7	Hole Farm, Westfield	Westfield
CR8	Kicker Wood, Broad Oak	Brede
CR9	Burgh Wood Complex	Hurst Green
CR10	Wheel Cottage Meadow	Westfield
CR11	Ashburnham Forge Meadows & Malthouse Wood	Penhurst/Ashburnham
CR12	Powdermill Wood and Lakes	Battle/Catsfield
CR13	Hurst Green Meadows & Woodlands	Hurst Green
CR14	Shingle Beach, Normans Bay	Bexhill
CR15	Powdermill Reservoir, Brede High Woods & Hurst Wood Complex	Sedlescombe/ Brede/Ewhurst
CR16	Cripp's Corner Meadows, Cripps Corner	Ewhurst
CR17	Burnt Chimney Farm Meadows, Battle	Battle
CR18	Disused Railway, Crowhurst	Crowhurst
CR19	Battle Cemetery, Battle	Battle
CR20	South Park Pony Stud Meadows, Bodiam	Salehurst
CR21	Reed Wood, Ashburnham	Ashburnham
CR22	Rounden and Great Wood, Brightling	Brightling
CR23	Cooden Cliffs, Cooden, Bexhill	Bexhill
CR24	Greyfriars, Winchelsea	Icklesham
CR25	Boonshill Farm Meadow, Playden	Playden
CR26	Brays Hill Meadow, Brown Bread Street	Ashburnham
CR27	Boarzell Wood, Flimwell	Ticehurst
CR28	Yokeing Close Wood, Burwash Common	Burwash
CR29	Fore Wood, Crowhurst	Crowhurst
CR30	Beauport Park, Battle	Battle/Westfield
CR31	Pasture & Bough Woods, Burwash Weald	Burwash
CR32	Land adjacent to Recreation Ground, Little Common, Bexhill	Bexhill
CR33	Camber Sands, Camber	Camber
CR34	Mountsfield, Rye	Rye
CR35	Knowle Wood, Fairlight	Fairlight
CR36	Ten Acre Gill, Penhurst	Penhurst
CR37	Lankhurst Meadow, Westfield	Westfield
CR38	Darwell Reservoir Complex	Battle/Mountfield/ Brightling
CR39	Dabchick Cottage Meadow and Woodland	Dallington
CR40	Limekiln Wood Complex, Mountfield	Mountfield
CR41	Chantry, Lordine & Watts Hill Wood, Ewhurst Green	Ewhurst
CR42	Park Wood, Burwash	Burwash
CR43	Blackbrooks, Willingford Lane, Burwash	Burwash/Brightling
CR44	Bewl Water Reservoir	Ticehurst
CR45	Mill Wood, Brightling	Brightling

Site Code	Site	Parish
CR46	Glydwish Wood, Burwash	Burwash
CR47	Church Wood, Burwash	Burwash
CR48	Shoyswell Wood, Etchingham	Etchingham
CR49	Halfhouse Wood & Eight Acre & Hulls Wood Ghyll, Three Oaks	Guestling
CR50	Green Wood, Burwash	Burwash
CR51	Henhurst Farm Woodland and Meadows, Burwash Weald	Burwash
CR52	High Lankhurst Farm Meadow, Westfield	Westfield
CR53	Shingle Beach, Dog's Hill, Winchelsea Beach	Icklesham
CR54	Morebread Wood, Peasmarsch	Peasmarsch
CR55	The Haven Meadow, Ticehurst	Ticehurst
CR56	Ringden Wood, Flimwell	Ticehurst
CR57	Brede Valley	Sedlescombe/ Westfield/Brede/ Udimore/Rye/ Guestling and Icklesham
CR58	Brickhurst Wood, Beckley	Beckley
CR59	Silverhill & Trough Woods, Hurst Green	Hurst Green
CR60	Pett Levels, West of Royal Military Canal, Pett Level	Pett

APPENDIX 7(a)**MONUMENTS SCHEDULED BY THE MONUMENTS PROTECTION PROGRAMME IN ROTHER**

Number	Monument Name	Parish	Grid Reference
20018	Bowl barrow in Petley Wood	Battle	TQ76831733
20105	Battle Abbey	Battle	TQ74921569
12739	Medieval moated site, Peters Green	Bodiam	TQ78472642
24405	A quadrangular castle and its landscaped setting, an associated millpond, medieval crofts and cultivation earthworks, and a World War II pillbox at Bodiam	Bodiam	TQ78502560
25454	A medieval pleasance 30m south east of Court Lodge: part of the landscaped setting of Bodiam Castle	Bodiam	TQ78462594
24387	Bowl barrow in Wellhead Wood	Ewhurst	TQ75732319
27067	Artillery castle and associated earthworks at Camber	Icklesham	TQ92121851
12737	Medieval moated site and adjoining fishpond, Moat Farm	Iden	TQ89962392
12740	Medieval moated site, Glottenham Castle	Mountfield	TQ72652211
12733	Medieval moated site, Cooden	Rother	TQ70840723
27067	Artillery castle and associated earthworks at Camber	Rye	TQ92121851
31398	Rye Hill medieval pottery and tilery, 60m south of Spains	Rye	TQ92182111
29247	Old Boarzell moated site 100m north east of Swiftsden Farm, Little Swiftsden	Ticehurst	TQ71662850

APPENDIX 7(b)**OLD COUNTY NUMBER SCHEDULED MONUMENTS IN ROTHER**

Number	Monument Name	Parish	Grid Reference
383	Romano-British iron working site in Beauport Park	Battle	TQ787145
133	Manor house (remains of)	Crowhurst	TQ757123
411	Romano-British site S of Bodiam Bridge	Ewhurst	TQ782251
7	Winchelsea Friary (known as Greyfriars)	Icklesham	TQ906171
18	Strand Gate, Winchelsea	Icklesham	TQ907174
19	Ferry Gate, Winchelsea	Icklesham	TQ903177
20	New Gate, Winchelsea	Icklesham	TQ901164
166	Barn and cellar in Rectory Lane	Icklesham	TQ903173
172	Martello tower No 28 at Rye Harbour	Icklesham	TQ941188
180	Town ditch N of New Gate, Winchelsea	Icklesham	TQ901165
451	Moat at Old Place	Icklesham	TQ882168
488C	Royal Military Canal, Wickham Cliff to Strand Bridge, Winchelsea	Icklesham	TQ895156 TQ909175
488D	Royal Military Canal, Iden Lock	Iden	TQ936244
488E	Royal Military Canal, Iden Lock to Kent Ditch	Iden	TQ936244 TQ940252
386	Panningridge iron furnace site	Penhurst	TQ687175
387	Ashburnham iron furnace site	Penhurst	TQ685171
488A	Royal Military Canal, Cliff End to Coastguard Cottages	Pett	TQ889133 TQ894139
488C	Royal Military Canal, Wickham Cliff to Strand Bridge, Winchelsea	Pett	TQ895156 TQ909175
476	Ring ditch and rectangular enclosure SE of Mockbeggar	Playden	TQ921226
418	Martello tower No 55 W of Normans Bay	Rother	TQ682053
421	Remains of Northeye village	Rother	TQ682071
8	Ypres Tower	Rye	TQ922203
17	The Land Gate	Rye	TQ922206
30	Rye town walls	Rye	TQ920205 TQ921206
147	Austin Friars Chapel	Rye	TQ921204
163	Water tower in churchyard	Rye	TQ921203
171	Martello tower No 30 near level-crossing on Winchelsea Road	Rye	TQ918199
134	Robertsbridge Abbey	Salehurst	TQ755238
472	Late medieval kiln site E of Park Wood	Westfield	TQ819132

FORMATION/PERIOD	LITHOLOGY & STRATIGRAPHY	HYDROGEOLOGICAL SIGNIFICANCE	GEOLOGICAL CLASSIFICATION/ MAIN FLOW MECHANISM
<p>Wealden Series (Lower Cretaceous) (continued)</p>	<p>The Hastings Beds forms the core of the Weald and consist of 4 principal divisions:</p> <p>Tunbridge Wells Sand Wadhurst Clay Ashdown Sands Fairlight Clays</p> <p>The Tunbridge Wells Sand series is deltaic in origin and mainly comprises clean false-bedded yellowish sands with beds of massive sandstone. At Tunbridge Wells the Sands are 55m thick but the formation thickens considerably westwards to reach a maximum thickness of 122m near Cuckfield, Sussex. Here the Lower Tunbridge Wells Sands (20-30m) is separated from the Upper Tunbridge Wells Sands (60-100m) by the Grinstead Clay, which itself comprises the Upper and Lower Grinstead Clay, these formations separated by the Cuckfield Stone. The whole Grinstead Clay succession is 15-25m thick. The Grinstead Clay is a hard grey clay and the Cuckfield Stone is a 8m band of tough brown sandstone. The whole of this Series is broken up into isolated blocks by strike and dip faults.</p> <p>The Wadhurst Clay consists of shallow water rhythmic alternations of grey clays and shales with beds of siltstone and sandstone. It provided the bulk of the iron ore smelted in the old ironworks of East Sussex and Kent and is further distinguished for its remains of dinosaurs and reptiles. It is 45m thick on average but ranges from 30m at Rye, on the Sussex coast, up to 70m at Cuckfield. At many locations in the Weald the Wadhurst Clay is faulted out, in its contact with the Tunbridge Wells Sand, by the underlying Ashdown Sands.</p>	<p>Due to the fine-grained nature of the Sands and the fragmented outcrops borehole yields are variable and uncertain. Water obtained is generally soft but may have high iron and manganese content, it is also known to be occasionally corrosive due to the presence of free carbon dioxide. Few sources are located in the formation since under the best conditions borehole yields rarely exceed 20 litres/second.</p> <p>Of no major hydrogeological significance except in throwing out springs arising in the Tunbridge Wells Sands, and providing small local supplies for agricultural purposes where boreholes tap the more sandy and silty horizons.</p>	<p>Minor Aquifer/ Intergranular (and Fracture)</p> <p>Non aquifer</p>

FORMATION/PERIOD	LITHOLOGY & STRATIGRAPHY	HYDROGEOLOGICAL SIGNIFICANCE	GEOLOGICAL CLASSIFICATION/ MAIN FLOW MECHANISM
Wealden Series (Lower Cretaceous)	<p>The Ashdown Sands form the heart of the Weald. The bulk of the formation is made up of soft buff-coloured quartzose sandstone with subordinate silt and clay layers. At the top is a widespread pebble bed. It is 49m thick at Hastings and although its known maximum is 152m at Heathfield, it is thought it could reach 215m in places.</p> <p>The Fairlight Clay is the lowest of the Cretaceous deposits, and has a very limited outcrop near Hastings. The Beds mainly comprise clays, shales, silts and siltstones and much iron is present in the form of nodules and spherules of siderite. The maximum thickness at Fairlight is 121m but it rapidly thins out northwards and westwards.</p>	<p>The Ashdown Sands have been quite extensively developed for water supply and yields of 63 litres/second have been recorded. Block faulting of the formation means that boreholes need careful siting. The groundwater from the Ashdown Sands is similar to that of the Tunbridge Wells Sands, but boreholes are prone to silting up and they require careful construction to obviate this and quality problems.</p> <p>Of no significance.</p>	<p>Minor aquifer/ Fracture (and Intergranular)</p> <p>Non aquifer</p>
Pre-Cretaceous Rocks	<p>The oldest rocks outcropping in the Weald are the Purbeck beds, the topmost division of the Jurassic succession. They comprise beds of clays, shale, sand, limestone and gypsum. Jurassic strata underlie the whole of Hampshire and Sussex at considerable depth, but in Kent boreholes sunk in connection with the Kent Coalfield show that northwards the Cretaceous strata successively oversteps Jurassic strata of increasing age, which strikes approximately WNW to ESE, so that along North Kent and in the area around Deal, the Cretaceous strata lies directly on Palaeozoic rocks, and which comprise the Coal Measures.</p>	<p>Strata older than the Cretaceous do not have any potential for water supply since they lack recharge, and at great depth the groundwater is likely to be saline. The Purbeck Beds in East Sussex are hydrogeologically significant only because of the high sulphate content of the water discharged from the gypsum mines into surface stream. The Coal Measures in the Kent Coalfield present a similar problem to chalk groundwater and surface streams because of the high chloride content of the mine drainage.</p>	<p>Non aquifer</p>

APPENDIX 9

CONSULTATION CONTACTS

Rother District Council

Mr Stephen Mills
Senior Environmental Health Officer
Community Services Department
14 Beeching Road
Bexhill on Sea
East Sussex, TN39 3LG

Tel: 01424 787560
Fax: 01424 787520
Email:steve.mills@rother.gov.uk

Mr Richard Hoyland
Environmental Health Technician
Community Services Department
14 Beeching Road
Bexhill on Sea
East Sussex, TN39 3LG

Tel: 01424 787553
Fax: 01424 787520
Email:richard.hoyland@rother.gov.uk

Environment Agency

Kent Area

Miss Julie Mossom
Area Contaminated Land Officer
Environment Agency
Orchard House
Endeavour Park, London Road
Addington, West Malling
Kent, ME19 5SH

Tel: 01732 223191
Fax: 01732 223190
Email:julie.mossom@environment-
agency.gov.uk

Mr Jonathan Atkinson
(Planning)
Environment Agency
Orchard House
Endeavour Park, London Road
Addington, West Malling
Kent, ME19 5SH

Tel: 01732 223280
Fax: 01732 875057
Email:jonathan.atkinson@environment-
agency.gov.uk

Sussex Area

Mr Simon Deacon
Area Contaminated Land Officer
Environment Agency
Saxon House
Little High Street
Worthing
West Sussex, BN11 1DH

Tel: 01903 703916
Fax: 01903 215884
Email:simon.deacon@environment-
agency.gov.uk

Miss Cath Tomlin
Environment Agency
Saxon House
Little High Street
Worthing
West Sussex, BN11 1DH

Tel: 01903 703916
Fax: 01903 215884
Email:cath.tomlin@environment-
agency.gov.uk

English Nature

Mr John Patmore
Sussex and Surrey Team
Phoenix House
32 - 33 North Street
Lewes
East Sussex, BN7 2PH

Tel: 01273 476595
Fax: 01273 483063
Email:sussex.surrey@english-nature.org.uk

English Heritage

Mr Paul Roberts
English Heritage SE Region
4th Floor
Berkley House
London Square
Guildford, GU1 1XL

Tel: 01483 304869

East Sussex County Council

Mr Bob Beatty
Transport & Environment Group Manager
Development, Minerals and Waste
East Sussex County Council
County Hall, Lewes
East Sussex, BN7 1UE

Tel: 01273 481000

HSE

HSE
No. 3 East Grinstead House
London Road
East Grinstead
RH19 1RR

Tel: 01342 334200
Fax: 01342 334222

Ministry of Agriculture Fisheries & Food

Fiona Reynolds
MAFF
Rural and Marine Environment Division
Sustainable Agriculture Branch
Room 311
16 Palace Street
London, SW1E 5FF

Tel: 020 7963 5620

Food Standards Agency

Dr Patrick Maller
Contaminants Division
FSA
Room 238 Ergon House
17 Smith Square
P O Box 31037
London, SW1P 3UG

Tel: 020 7238 5751
Fax: 020 7238 5331
Email:patrick.miller@foodstandards.
gsi.gov.uk

South East Regional Development Agency

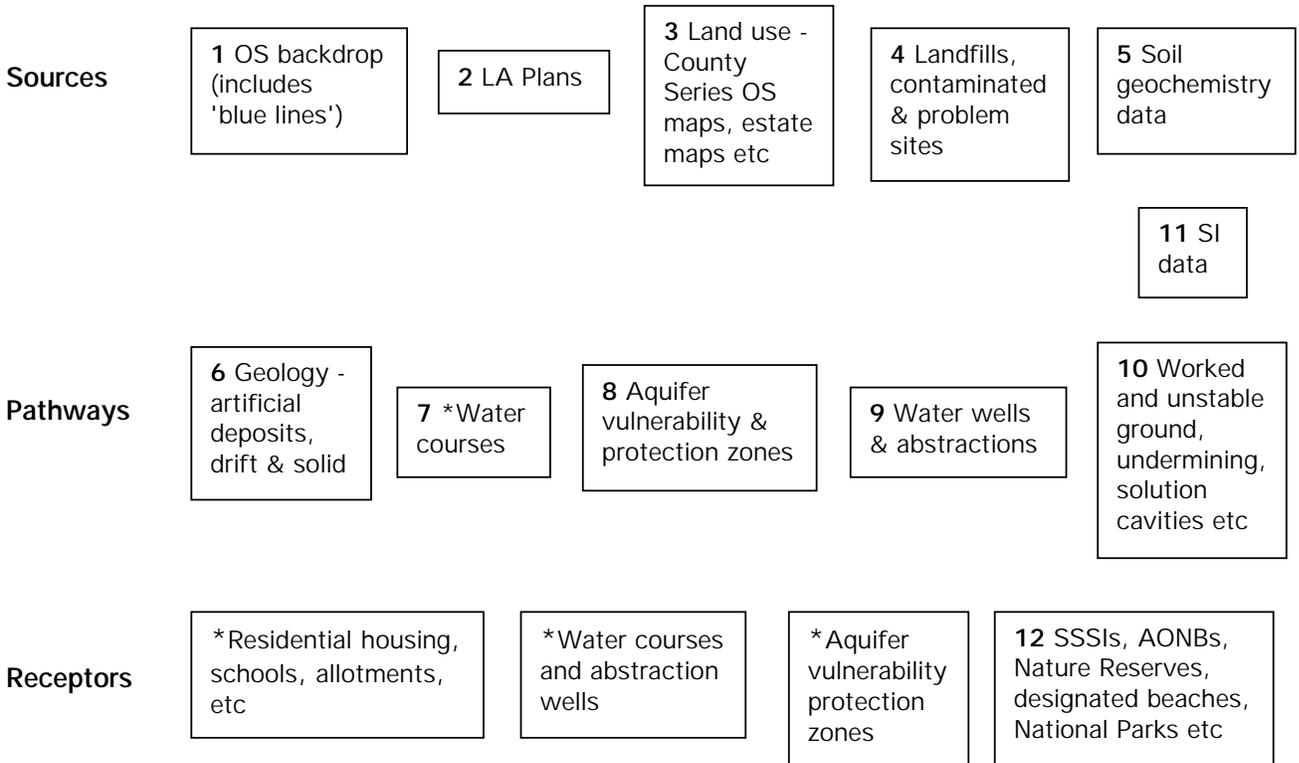
Mr Kenneth Glendinning
Senior Regeneration Manager
SEEDA Headquarters
Cross Lanes
Guildford
Surrey, GU1 1YA

Tel: 01483 484200
Fax: 01483 484247

APPENDIX 10

MECHANISM FOR BUILDING A LAND QUALITY GIS

Figure A : Idealised steps to build a Land Quality GIS

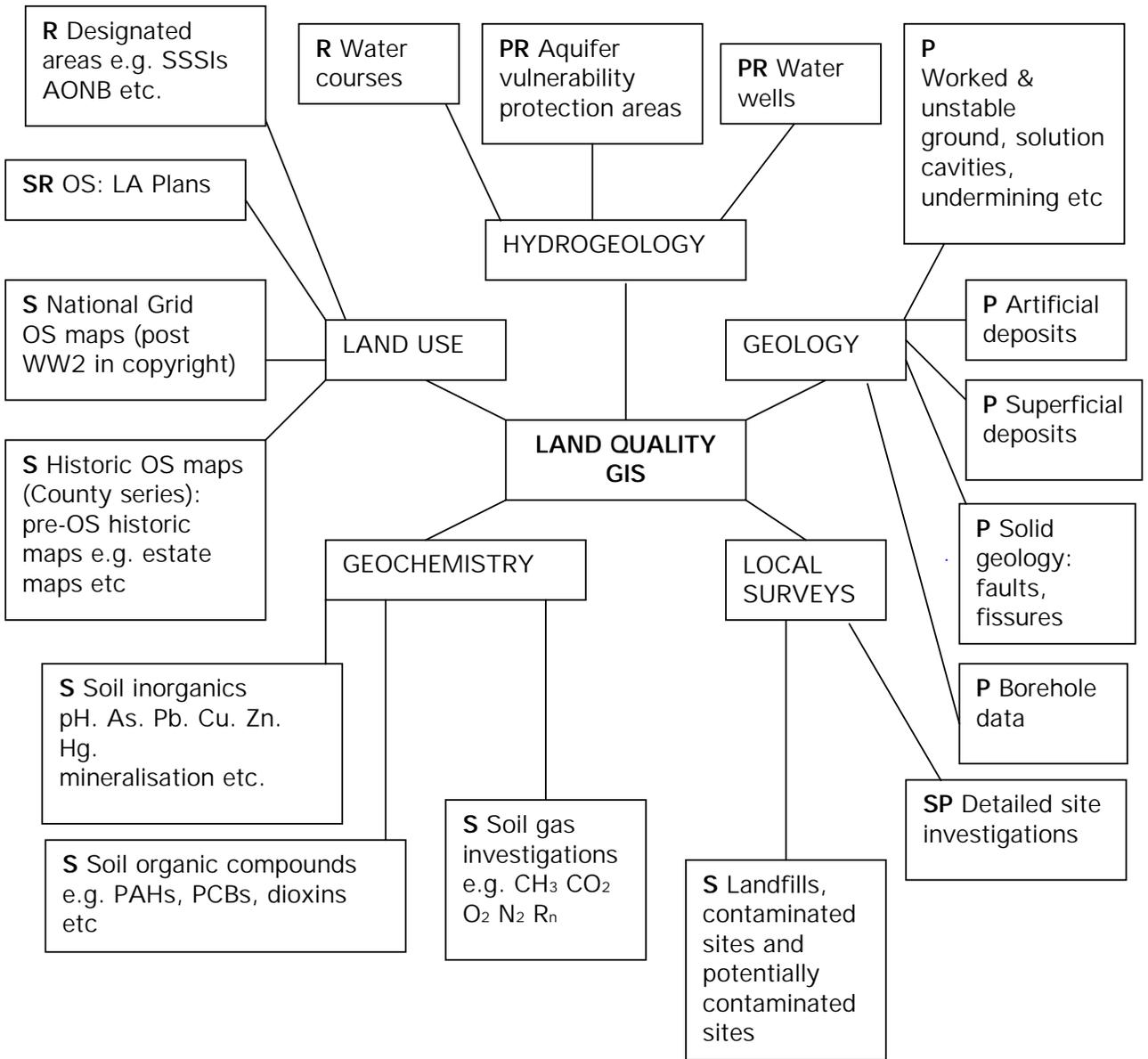


* Layer already present in source or pathway sector

APPENDIX 10

MECHANISM FOR BUILDING A LAND QUALITY GIS

Figure B : Layers of a Land Quality GIS



KEY:

S	Source	PCBs	Polychlorinated biphenyls
P	Pathway	dioxins	Polychlorinated dibenzodioxins
R	Receptor	CH₄	Methane
pH	Acidity	CO₂	Carbon dioxide
As	Arsenic	O₂	Oxygen
Pb	Lead	N₂	Nitrogen
Cu	Copper	Rn	Radon
Zn	Zinc	SSSIs	Site of Special Scientific Interests
Hg	Mercury	AONB	Area of Outstanding Natural Beauty
PAHs	Polycyclic Aromatic Hydrocarbons		

APPENDIX 11

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