

# Former South Bucks district area contaminated land strategy




**SOUTH BUCKS**  
District Council

Contaminated Land Strategy  
Update January 2018

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## **Executive Summary**

The South Bucks Contaminated Land Strategy was originally developed in 2002. The document outlined how South Bucks District Council would carry out its duties in collating and reviewing information on land, which may have contamination issues, that meets the statutory definition.

The purpose of this strategy review is to bring the original document up to date by highlighting the many changes in legislation and guidance and reporting on the progress to date.

Under Part IIA of the Environmental Protection Act 1990 as amended by section 57 of the Environment Act 1995, South Bucks District Council is required to inspect its area for contamination in a rational, ordered and efficient manner. This strategy, originally developed in 2002 had been produced to aid the consideration of potentially contaminated sites in the South Bucks District.

Contaminated land is defined in the legislation as being:

“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”

For contaminated land to be present a relationship must exist where a source, pathway and receptor are all present, and these are defined as follows:

**Source** – A substance or substances in the ground (contaminant) such as heavy metals at concentrations which could affect health or the environment.


**Pathway** – A means of the contamination coming into contact with the receptor.

**Receptor** – People, controlled water or property that could be affected if exposed to the contaminants.

Some sites may be identified outside this general approach to inspection that require urgent attention. These sites are dealt with as and when they arise.

The Council support those wishing to undertake voluntary remediation and will encourage the re-use of Brownfield / previously developed land for development.

South Bucks District Council is the lead regulator for contaminated land although, where necessary, the Council will and has worked in partnership with other organisations particularly the Environment Agency (EA) and Public Health England (PHE).



Fundamentally, the regime aims to render land suitable for its existing or any proposed use, not return land to 'Greenfield' condition. Close liaison with the planning section will be maintained.

This review focuses specifically on updating the adopted strategy to reflect changes in legislation and any new requirements of the regime.

This document also highlights the importance of working together with other sections of the Council to achieve the aims of the strategy, primarily by sharing information, and the contributions other sections of the Council make in managing land contamination matters in the South Bucks District.

In addition, it is envisaged that most contaminated land remediation will continue to be dealt with through the use of 'land quality' planning conditions and informatives. All planning applications are scrutinised using extensive scientific information and industry profiles held by Health & Housing against 'Land Quality Datasets' and where appropriate, a condition requirement notified to Planning. The developer or owner must then undertake a phased contaminated land survey and assessment which is then reviewed by Health & Housing. A site walkover and / or further information may be requested. Health & Housing then advise the Planning section upon completion of an assessment and/or remediation by the developer. The planning condition may then be discharged. Further information is contained in the Appendices. The glossary of terms (Appendix G) will assist those new to the subject. It also explains the abbreviations used.

#### Update of Progress

At the time of updating the strategy, there are approximately 900 potentially contaminated sites in the South Bucks District. This number is however dynamic and new information often comes to light as a result of dialogue with land owners or submitted information. This results in the addition of new potentially contaminated sites.

Significant work has been undertaken on contaminated land including:

- GIS plotting of potential sites;
- Assessment of high risk sites: 25;
- Development of new Contaminated Land conditions;
- Revisions of 'Developer Guidance' to help the public understand the best way to tackle contaminated land: [http://www.southbucks.gov.uk/information\\_for\\_developers](http://www.southbucks.gov.uk/information_for_developers);
- Development of online payment and request for environmental searches;
- Development of land quality website;
- Development of "Uniform" Contaminated Land module.

## 2 THE PURPOSE OF THIS STRATEGY

### Introduction

2.1 The Council published an initial Contaminated Land Strategy in 2002. This strategy detailed the procedures South Bucks District Council (SBDC) proposed in order to **identify contaminated land** within the District. The Strategy was the initial stage in a process to ensure that any associated unacceptable risks to human health or to the wider environment are addressed in an appropriate and cost-effective manner.

The strategy was updated in 2006 and 2010. This 2018 version incorporates recent changes in contaminated land guidance and provides an update on progress made to date.

2.2 The contaminated land regime and the corresponding duties on local authorities are described in Section 2. **SBDC is committed to the effective implementation** of the contaminated land regime through the implementation of our Contaminated Land Strategy, ensuring proper protection of human health and the environment.

2.3 Land contamination is not a new issue and has been dealt with for a number of years through planning controls. Planning Policy Statement 23 (Office of The Deputy Prime Minister) provided detailed guidance to local planning authorities on development control and contaminated land. Through the use of policies derived from PPS 23 the Council ensures that developers address contamination issues as part of the development process. For example, if former industrial land is to be redeveloped for housing, the developer needs to satisfy SBDC, as the planning authority, that land contamination has been properly identified and will be dealt with appropriately (making the land suitable for the proposed use and addressing any wider environmental risks).

In 2012, the National Planning Policy Framework was introduced; PPS 23, along with the other planning policy statements were withdrawn. PPS23 has been replaced by planning practice guidance, which can be found at <https://www.gov.uk/guidance/land-affected-by-contamination>.

2.4 The Contaminated Land regime complements the planning system. It represents a **more pro-active and strategic approach** to identifying contaminated land and a risk-based approach to securing remedial action that may be needed to return the land to a condition such that unacceptable risks to human health and the environment no longer arise. The first stage is to identify contaminated land. This update provides information about the Council's progress in identifying Contaminated Land.

### 3 SUMMARY OF LOCAL AUTHORITY DUTIES

#### Overview of Duties

- 3.1 Part IIA of the Environmental Protection Act 1990 (inserted by Section 57 of the Environment Act 1995) introduced a new statutory regime for the identification and remediation of contaminated land. This became effective from 1 April 2000 with the introduction of the Contaminated Land (England) Regulations 2000.

Central Government has issued Statutory Guidance that explains how the contaminated land regime should be implemented and to provide procedures for determining whether land is contaminated in the legal sense of the term.

The current version of the Statutory Guidance was published in April 2012 by the Department for Environment, Food and Rural Affairs (DEFRA) and is entitled *Environmental Protection Act 1990: Part 2A – Contaminated Land Statutory Guidance*. Separate guidance specifically for radioactive contaminated land was published in April 2012 by the Department of Energy and Climate Change and is entitled *Environmental Protection Act 1990: Part IIA – Radioactive Contaminated Land Statutory Guidance*.

Under the contaminated land regime, the starting point will always be that land is not contaminated unless there is a reason to consider otherwise. Only land where unacceptable risks are clearly identified, after a risk assessment has been undertaken in accordance with this strategy and the Statutory Guidance, will be considered to meet the Part 2A definition of contaminated land.

- 3.2 The lead role in operating this regime is assigned to local authorities who are responsible for the identification of contaminated land and, for most sites, for establishing the appropriate person(s) to bear responsibility for any remediation required, deciding the nature of that remediation and recording regulatory actions. Box 1 below summarises these responsibilities. For certain classes of sites, identified by the local authority as Special Sites (generally those with more serious contamination potential) the regulatory role is to be fulfilled by the Environment Agency following identification. There are also requirements for SBDC to liaise with other bodies such as the Environment Agency (especially where controlled waters may be at risk of pollution or where a site is a candidate Special Site) and with English Nature, English Heritage and the Department of the Environment Food and Rural Affairs (DEFRA). Also neighbouring authorities for adjoining pieces of land.



### **Box 1 Key Statutory Duties on Local Authorities Under Part IIA**

- Prepare a strategy to identify contaminated land
- Implement the strategy
- Consult various other parties
- Identify potential special sites (for regulation by the Environment Agency)
- Prepare and serve notifications of contaminated land (which effectively starts the consultation process on what remediation is necessary)
- Serve a remediation notices where appropriate (remediation by voluntary agreed action being preferred)
- Determine exclusion from, and apportionment of, liability for remediation and address cost recovery
- Compile and maintain registers

### **Duty to Identify Contaminated Land**

3.3 The duty to identify contaminated land is established in Section 78B of the Environmental Protection Act 1990 as follows:

*78B (1) Every local authority shall cause its area to be inspected from time to time for the purpose-*

*(a) of identifying contaminated land; and*


*(b) of enabling the authority to decide whether any such land is land which is required to be designated as a special site.*

3.4 A statutory definition of contaminated land was also introduced for the first time in s78A(2), based on the likelihood of significant harm or the pollution of controlled waters as follows.

*78A (2) "Contaminated land" is 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*



3.5 As stated in section 2.2, special sites are enforced by the Environment Agency, and will most commonly be determined where the pollution of controlled water is caused by

contaminated land. Special sites may also be declared where contaminated land falls into the following criteria:

- land which is contaminated land by reason of waste acid-tars in, on or under the land.
- land on which any of the following activities have been carried on at any time- the purification (including refining) of crude petroleum or of oil extracted from petroleum, shale or any other bituminous substance except coal.
- the manufacture or processing of explosives.
- land within a nuclear site land owned or occupied by or on behalf of the Ministry of Defence.
- land used for the manufacture, production or disposal of chemical weapons and any biological agent or toxin.
- controlled waters which could be significantly harmed.
- radioactive contaminated land.

3.6 The identification of contaminated land needs to take account of the statutory guidance that incorporates risk assessment considerations. In essence, however, the issue is to identify unacceptable risks to health or to the environment for current land use. Significant harm includes human health effects as defined, specified harm to protected ecological systems, substantial damage to or failure of buildings, and specified damage to, or loss of, crops or livestock.

### **Duty to Prepare and review a Strategy**

3.7 SBDC is required by the statutory guidance to take a strategic approach to the identification of contaminated land that merits detailed individual inspection. This requires a strategy to be documented, adopted, published, implemented and periodically reviewed. Fundamental to the strategic approach required (Para B.9 of the statutory guidance) is that it should:

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

3.8 Local authorities are also required, in developing their strategy, to reflect local circumstances. Factors that should be considered are listed in Box 2 below.

## **Box 2 Local Factors to be Considered in the Strategy**

### **(Para B.10 of statutory guidance)**

- (a) any available evidence that significant harm or pollution of controlled waters is actually being caused;
- (b) the extent to which any receptor (which is either of a type listed in Table A in Chapter A of the statutory guidance or is controlled waters) 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 (as defined in Chapter A), for example as a result of the use of the land or of the geological and hydrogeological features of the area;
- (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 of controlled waters being caused in particular parts of the local authority's area.

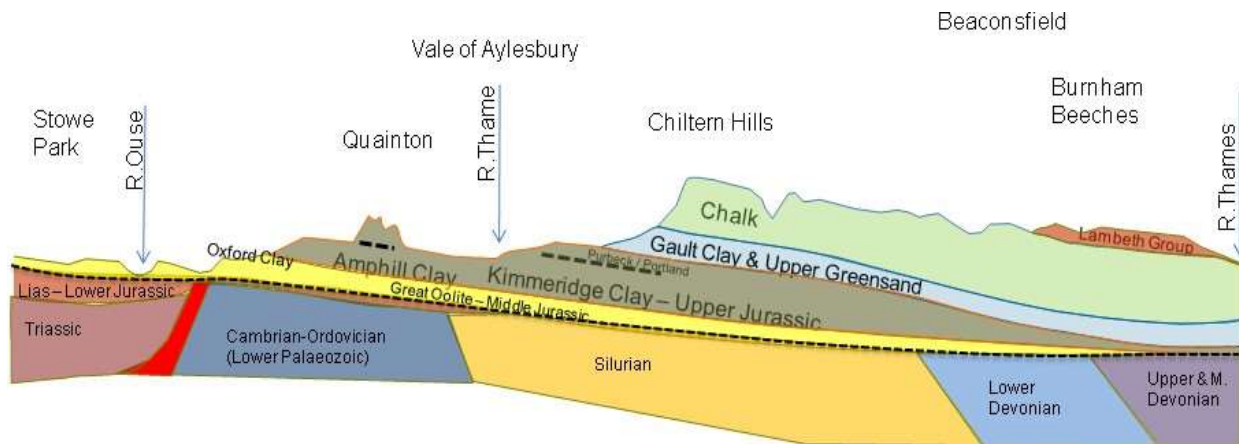
3.9 The required contents of the strategy are also specified and include aspects such as objectives; local characteristics and their bearing on the strategy; approach proposed; timescales and resources; liaison arrangements; handling information received; review and update. These are reflected in this updated strategy.

## 4 CHARACTERISTICS OF THE DISTRICT AND IMPLICATIONS FOR THE STRATEGY

### Characteristics of the District

- 4.1 South Bucks District is bordered by Greater London to the east; Slough to the south, Maidenhead to the west and High Wycombe to the northwest. Principally it is a rural district, wholly within the Metropolitan Green Belt around London. 87% of the district is specifically allocated as green belt. Areas not so designated are the larger settlements, which include Beaconsfield, Burnham, Denham, Gerrards Cross, Farnham Common, Iver and Stoke Poges. Other settlements are smaller and more rural. There are a number of industrial and business areas in South Bucks including The Ridgeway, Bison and Court Lane industrial estates in Iver, Broadwater Park in Denham and Sefton Park in Stoke Poges.
- 4.2 The district has a population of 62,700. Of the resident population, 31,049 are economically active. South Bucks is within an area which has one of the lowest unemployment rates in England. In 2001 (Census 2001), when unemployment in England was 4.8%, the rate in South Bucks was 2.7%.
- 4.3 Major employers in South Bucks include the following:
- Martin Baker Aircraft, an aerospace engineering company in Denham;
  - Pinewood Studios and associated companies involved in film production in Iver;
  - Wyeth Europa, a pharmaceutical company in Burnham;
  - Robert Bosch, an electrical goods importer/distributor in Denham;
  - Hitachi Data Systems, and Tivoli Systems UK Ltd, electronic and IT companies in Stoke Poges.
- 4.4 The planning strategy for South Bucks is one of restraining development, with local needs being largely met by the efficient and sensitive use of land within the built up areas. Key features reflected in policies include:
- maintaining the green belt and protecting it from inappropriate development as being of paramount importance;
  - restraining development and directing it to appropriate locations whilst at the same time protecting the District's highly valued countryside;
  - focusing development in existing built up areas whilst avoiding town cramming;
  - minimising the need to travel;
  - maintaining a stock of employment sites in the District whilst not adding to them;
  - continuing to provide for the community needs within town and village centres;
  - protecting the environment and conserving and improving its quality.

## Regional Geology



(Bucks Geology Group, 2017).

Chalk forms the central backbone of Buckinghamshire, running from east to west and forming the scarp and face of the Chiltern Hills. The oldest deposits of the Lambeth Group are preserved above the Chalk in south Buckinghamshire. The base of the Gault Clay often directly overlies the eroded, unconformable surface of older sediments. The Upper Greensand in Buckinghamshire shows a thinning from the Oxfordshire border to Ivinghoe, although a further occurrence is present at the Bedfordshire boundary, near Eaton Bray.

## Regional Hydrology and Hydrogeology – Surface and Groundwater

Two rivers cross the District, the Thames at Dorney and the Colne at Iver.

The bedrock and superficial deposits of the District are designated as Principal and Secondary A aquifers.


Principal aquifers are layers of rock or drift deposits that have high intergranular and/or fracture permeability – meaning they usually provide a high level of water storage.

Secondary aquifers include a wide range of rock layers or drift deposits with an equally wide range of water permeability and storage.

## Water Resource / Protection Issues

The Environment Agency document 'The Policy and Practice for the Protection of Groundwater' sets out the EA's approach to the concept of Groundwater vulnerability to pollution. This includes the definition of protection zones around key boreholes, classification of aquifers depending on their vulnerability and describes potentially contaminating activities which require control.

The Environment Agency seeks to protect groundwater resources from which water is abstracted through the use of source protection zones. There are three source protection zones:

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

The classification of an area as falling within a source protection zone is one of travel time of a substance to the point of abstraction. The Environment Agency regards the investigation of potentially contaminated land within a source protection zone as of greatest priority.

Three Valleys Water have pumping stations and boreholes in the district for public supply abstraction, and in addition, there are a number of private drinking water supplies currently in use, which the District Council monitors from time to time. These supplies are spread throughout the district.

### **Implications for the Strategy**

4.5 Despite the fact that there are clearly areas of quite different current characteristics, South Bucks includes former industrial land use relatively widespread across the District and therefore the Council's contaminated land strategy needs to cover the whole of the District.

4.6 Systematic identification of former potentially contaminative land uses will be of value in the context of any new housing that will be required over the next five years, which will be focused in existing built up areas.

4.7 The Council's Contaminated Land Strategy has not split the District into several areas of differing priority in terms of potential risk but, rather, initially to systematically consider the whole District at the same time. This was undertaken during Stage 1 described below. On the basis of a District-wide survey, there is great advantage in the use of a geographic information system, which has facilitated such a systematic coverage.

## 5 APPROACH TO IDENTIFYING CONTAMINATED LAND

### The Risk Assessment Approach

5.1 As discussed in Section 2 above, contaminated land is defined in relation to:

- (a) significant harm or a significant possibility of significant harm; or
- (b) pollution of controlled waters being or likely to be caused.

The mere presence of contamination is not a sufficient condition for land to be identified as contaminated. Therefore, before SBDC determines that any land appears to it to be contaminated land, it should be satisfied as a first step that a "contaminant", a "pathway or pathways" and a "receptor" have been identified with respect to that land. In the statutory guidance, these terms have explicit definitions as given in Box 3 below. Quoting from the statutory guidance: *"the relationship between a contaminant, a pathway and a receptor is termed a "contaminant linkage" and the contaminant in a contaminant linkage is referred to as a "contaminant". Without the identification of all three elements of a contaminant linkage, land should not be identified as contaminated land"*.

#### **Box 3 Definitions from Statutory Guidance for Sources, Pathways and Receptors**

A contaminant is 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.

A receptor is either:

- (a) a living organism, a group of living organisms, an ecological system or a piece of property which
  - (i) is one of the types of receptor listed in Table A of the statutory guidance and
  - (ii) is being, or could be, harmed by a contaminant; or
- (b) controlled waters which are being, or could be, polluted by a contaminant.

A pathway is one or more routes or means by or through which a receptor:

- (a) is being, or could be, exposed to, or affected by, a contaminant; or
- (b) could be so exposed or affected.

It is possible for a pathway to be identified for this purpose on the basis of a reasonable assessment of the general scientific knowledge of the nature of the contaminant and the circumstances of the land in question. Direct observation of the pathway is not necessary.

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

receptor.

*[Taken from Environmental Protection Act 1990: Part IIA Contaminated Land Statutory Guidance April 2012]*

- 5.2 The identification process is necessarily 'probabilistic' in the sense that the objective of the new regime is not to 'prove' the status of each plot of land. Instead, in accordance with statutory guidance, it is to adopt an approach that is rational, ordered and efficient while achieving proportionality between the local authority's approach and the potential threat being addressed.
- 5.3 A series of stages, represent 'sieving' processes, can allow progress in a manner that is cost effective and, most importantly, provides a *resourcing tool* so that clear priorities can be defined and effort can be allocated to best effect. This is also consistent with best value considerations in a context where resources will always be finite.
- 5.4 The model described and implemented by the Council has allowed a fast tracking of the more serious cases through early ranking, consistent with the requirement that attention should be focused on where contaminated land is most likely to be identified so that the most pressing problems can be dealt with first. In this way, resources have been focused on areas where significant harm or a significant possibility of significant harm is more likely to be evident on the basis of a detailed risk assessment of identified sites.
- 5.5 Furthermore, receptor classes have been kept separate in the Council's contaminated land identification model. This makes it straightforward, for example, to see where human health is the issue and to give this priority. This is consistent with the suggested focus on housing in the DETR Circular. Clearly, the definition of contaminated land encompasses a wider range of receptors and the Council has been mindful of these but has given risks to human health the highest priority. However, in these other areas (potential pollution of groundwater, for example), there are other agencies (in this example, the Environment Agency) with existing lead responsibilities and experience with whom close liaison is essential.

### **The Three-Stage Conceptual Model**

- 5.6 The model comprises three stages:
- *Stage 1:* Identify potential contaminant linkages. Potential contaminant linkages will be defined as those that have not been validated. Although this term is not used explicitly in the statutory guidance it is implicit and is considered useful to reflect the status of findings from a 'first sieve';
  - *Stage 2:* Establish actual contaminant linkages (or a reasonable possibility of their existence); and



- *Stage 3:* Establish significant contaminant linkages.

A description of each of the three stages and the Council's progression through these stages to date is discussed below.

## **STAGE 1 – IDENTIFICATION OF POTENTIAL CONTAMINANT LINKAGES AND RISK MODELLING**

5.6 Stage 1 involved the investigation of the spatial relationships (correlation) between potential contaminants (i.e. potential sources) and receptors. The presence of a contaminant and a receptor is a necessary, but not a sufficient, condition in identifying contaminated land. Thus, the issue is whether a contaminant linkage *may* exist. The correlation may be coincidence (receptor directly overlying the source) or influence (receptor lying within a defined zone of influence). An example of application of the latter would be where houses are close to a closed landfill and where there could be a potential landfill gas risk; this could be flagged by an assumed zone of influence around the landfill.

5.7 Through the implementation of Stage 1 the Council has sought to provide an understanding of the spatial correlation between a source and receptor. This stage which was undertaken during 2002 utilised readily available and relatively low cost data sources. This allowed the identification of potential contaminant linkages. In all 831 sites of potential land contamination were identified across the District. It is, however, only in the subsequent Stages that the actual presence of a contaminant linkage can be established. Stage 1 was undertaken by combining various sources of existing information, termed datasets, which were obtained from a number of different sources (e.g. the Environment Agency) explicitly for this purpose.

### **The Use of GIS**

5.8 The whole process of identifying contaminant linkages was one of spatial analysis. Sources and receptors are all areal features for which the extents of each can be represented on a map, and the spatial correlation between the features examined; such correlation, in the case of contaminated land, being of the type:

- coincidence - where source and receptor occupying the same space;
- influence - where there is an assumed or known zone of influence associated with source and receptor.

5.9 Where any data that can be represented on a map or referenced to a location on a map, Geographical Information Systems (GIS) store this information in an electronic (digital) format, and

in doing so provide very efficient means of managing and analysing such data. This is achieved through the ability to deal with large amounts of data in a systematic and consistent manner.

5.10 ArcView was adopted as the tool for the implementation of the Stage 1 identification process, since Arcview has a proven record in this application.

5.11 The key datasets required for the Stage 1 identification process were:

- Sources
- Receptors

### Source Datasets

5.12 The strategy involved bringing a number of datasets together into a GIS Arcview package named Section 57.

5.13 The source datasets represent areas of past or present activity that may contain contaminative substances. The Council utilised the datasets that could be acquired at reasonable cost, listed below.

Dataset	Stage of use	Origin	Format
EA Landfill sites	Stage 1 Pass 1	EA	(previously single co-ordinate)
EA Scrapyards	Stage 1 Pass 1	EA	Digital
EA Waste Transfer Stations	Stage 1 Pass 1	EA	Digital
Historical mapping	Stage 1 Pass 1	Landmark	Digital
Historical land use	Stage 1 Pass 1	Landmark	Digital
Planning Applications - industrial use	Stage 1 Pass 2	Landmark	Digital
SBDC GIS features, incl. landfill	Stage 1 Pass 1	SBDC	Digital
SBDC records (paper files) – constraints maps*	Stage 1 Evaluation	SBDC	Paper
Trade Directories	Stage 1 Pass 2	Local Library	Paper

\* Familiarisation with scope and form

## Receptor Datasets

5.14 The receptor datasets represent areas occupied by human, controlled water or ecological receptors. The human receptor dataset is primarily presented by current land use from which the interface with the human population can be inferred. Additional information was obtained from aerial photography. The controlled water dataset consists of rivers, open water features and groundwater aquifers, which were obtained mainly from the Environment Agency. The ecological dataset represents areas designated for nature conservation. These primary datasets used are listed below showing their stage of use:

Dataset	Stage of use	Origin	Format
<b>Human receptors</b>			
OS Topographic mapping	Stage 1	SBDC	Digital
SBDC UDP zones	Stage 1	SBDC	Digital
SBDC Open space	Stage 1	SBDC	Digital
UK Perspectives Air photos	Stage 1	SBDC	Digital
<b>Controlled waters</b>			
Aquifers	Stage 1	EA	Digital
Surface water	Stage 1	EA	Digital
Boreholes	Stage 1	EA	Digital
Water Abstraction Points	Stage 1	EA	Digital
Groundwater Vulnerability	Stage 1	EA	Digital
Drift Geology	Stage 2	EA	Digital
Surface Geology	Stage 2	EA	Digital
<b>Ecological receptors</b>			
SSSI/NMR/NNR	Stage 1	English Nature	Digital
SSSI/Site of Nature Conservation	Stage 1	SBDC	Digital
Conservation Areas	Stage 1	SBDC	Paper

## Classification of the Source/Receptor Datasets

5.15 The list of contaminative uses provided within the Landmark dataset was divided into hazard classes (misleadingly referred to in the Landmark tables as 'risk class') based on the contaminative potential. Some former uses have an inherently high probability of contamination (e.g. chemicals or petroleum manufacture, recovery or refining) whereas others have a lower such probability (e.g. food manufacture). Four hazard categories were utilised. The approach was based on group consensus,

with several senior contaminated land professionals from WS Atkins (consultants assigned to this stage of the Council’s Contaminated Land Strategy) meeting to assign potentially contaminative uses to hazard classes. As necessary, basic information was sought on the nature of the industry to feed into the decision-making process.

5.16 The receptor dataset was then divided into three components: human, controlled waters, and ecological. This enabled the analysis of each to be undertaken independently of the others. Hence the Council was able to prioritise risks of harm to human health in accordance with the statutory guidance.

### **Building and Applying the Risk Model**


5.17 A model was developed assigning different categories of source to specific hazard classes and receptor features to specific susceptibility classes. WS Atkins (consultants assigned to this stage of the Council’s Contaminated Land Strategy) then classified all the features held in the database.

5.18 A matrix was then constructed for each receptor type (human health, controlled waters and ecological) that attributed a preliminary rating (‘score’) of the probability of a significant contaminant linkage being present, i.e. where there is an overlap between a source, (e.g. a former industrial site), and a receptor, (e.g. new housing development). For example, a high source hazard combined with high receptor susceptibility equates to the highest likelihood of a significant contaminant linkage. This is illustrated below. Values in the matrix cells are the scores.

### **Matrix of Likelihood of a Significant Contaminant Linkage Being Present**

		<i>Receptor susceptibility</i>			
		High	Upper Medium	Lower Medium	Low
<i>Source Hazard</i>	High	1	2	3	4
	Upper Medium	2	3	4	5
	Lower Medium	3	4	5	6
	Low	4	5	6	7

5.19 This model has been applied within the GIS to classify each source and receptor according to the appropriate risk class based on spatial coincidence (i.e. where there is an overlap (or proximity) between a source (e.g. a former industrial site) and a receptor site (e.g. a housing development). The results were then analysed statistically with regard to the distribution of classes. In essence, this means giving a ‘score’ to each site reflecting the likelihood of a significant contaminant linkage from which the most potentially significant (i.e. the highest scores) were prioritised for taking on to Stage 2. From the schedule, the higher risk sites were passed forward to the Stage 2 analysis. The approach thus allows sites to be subsequently processed according to a risk-based priority that




matches available resources. Further information about those sites which were fed into Stage 2 is discussed below. Information collected as part of the later stages of analysis (see below) will be fed back into the model (again using the GIS) so that the model reflects the risk characterisation based on the most up-to-date information.

- 5.20 In principle, we have a three-dimensional matrix in which we include a rating for the pathway. However, at this stage, the model does not include detailed information on the pathway. Instead, therefore, we infer the likelihood of a significant contaminant linkage solely from information available on the source hazard and the receptor susceptibility at Stage 1. Further information will be fed into the model following our progress in the further stages of assessment.
- 5.21 The above approach necessarily included a substantial element of professional judgement. However, the approach is broadly similar to that used in other contexts. An example would be environmental management systems, which require the identification of significant environmental effects and often apply a matrix of severity versus likelihood. The important points in both contexts are that assumptions should be clearly stated. Given the subjective dimension to the judgements, an overly complex approach is best avoided as this can raise “degree of belief” issues.

## **STAGE 2 – IDENTIFICATION OF ACTUAL CONTAMINANT LINKAGES AND DESK STUDIES**

- 5.22 Stage 1 allowed the Council to identify 25 ‘top priority’ sites for further analysis’ based on the risk-based assessment of Stage 1. The next part of the Council’s Contaminated Land Strategy, Stage 2, involves seeking to establish whether there is an actual contaminant linkage (ACL) present. The Council have currently passed 25 sites forward to Stage 2 on the basis of priority set at Stage 1 and the available resources.
- 5.23 The Stage 2 process involves the Council in satisfying itself that:
- (a) such a contaminant linkage exists. This requires validation of the Stage 1 assumptions, for example, by site inspection (this could reveal, for example, that there are no receptors).
  - (b) that the contaminant linkage either:
    - (i) is resulting in significant harm to the receptor (as defined in Table A of the statutory guidance) or presents a significant possibility of significant harm to the receptor (as defined in Table B of the statutory guidance), or
    - (ii) is resulting in the pollution of the controlled waters that constitute the receptor, or is likely to result in such pollution.

- 5.24 A contaminant linkage satisfying (b) above is termed a “significant contaminant linkage” and the contaminant(s) forming part of it as “significant contaminant(s)” **A significant contaminant**



**linkage forms the basis for the determination that land appears to the local authority to be contaminated land.** The objectives of Stage 2 desk studies and, where necessary, Stage 3 intrusive investigations, discussed below, are to establish the presence of significant contaminant linkages.

5.25 Sites filtered by the Stage 1 process are thus passed onto Stage 2. This Stage 2 process which has been undertaken for the 25 highest risk sites involves desk-based studies and a site visit to validate the information and classifications of the higher risk sites identified during Stage 1. Stage 2 involves an information-gathering element to enhance the datasets for these sites and to enable a more informed judgement in respect of the separate elements of source, pathway and receptor.

5.26 It is useful to view Stage 2 at two levels:

- Stage 2A: site visit and completion of simple pro forma sheet that serves to validate the basic data and interpretation that has come from Stage 1. In particular, the visit should be able to confirm whether a receptor appears to exist and also to verify boundaries or whether sub-division into more appropriate units is required. If it is concluded that there is not a contaminant linkage (or not a reasonable possibility of such a linkage), then this information will be fed back into the GIS and the land in question will not be determined as contaminated land. If it is concluded that there may be a contaminant linkage, further consideration will be required at Stage 2B;
- Stage 2B: a formal desk study that will involve liaising with external bodies such as the Environment Agency, examination of geological records and borehole logs from the British Geological Survey and supplementary information on site history (where relevant) to provide a desk-based risk assessment. Where the site owner or occupier (or others) provide information (e.g. a ground investigation), then this will also be assessed. The objective of Stage 2B is to consider further whether land can be determined as contaminated land or not on the basis of available information. Where there is a reasonable possibility that a significant contaminant linkage exists but there is insufficient information to make a determination, intrusive investigations may be required, termed Stage 3.

5.27 At each stage in the process, the issue is whether there is sufficient information to determine whether the land is contaminated.

5.28 25 highest risk sites-Stages 2A & 2B

In 2004 (report published June 2004) Entec UK Limited (consultants assigned to this stage of the Council's Contaminated Land Strategy) undertook a Site Assessment in accordance with the Council's Contaminated Land Strategy Stages 2A & 2B.



The following sites were assessed:

1. Coalmans Way, Taplow
2. Maypole Road, Taplow
3. Aldbourne Road, Burnham
4. Oxford Road, New Denham
5. Chalk Pit Lane, Burnham
6. Briar Close, Burnham
7. Dorney Wood Scout Camp, Burnham
8. Marish Wharf, Langley
9. Brickfield Lane, Burnham
10. Lent Rise Road, Burnham
11. Dropmore Road, Burnham
12. Hitcham Road, Taplow
13. Institute Road, Taplow
14. Cavendish Close, Taplow
15. Southlands Road, Denham
16. Top Park, Gerrards Cross
17. Rixon Close, George Green
18. Missenden Gardens, Burnham
19. 138 – 146 Lent Rise Road, Burnham
20. Ledborough Lane, Beaconsfield
21. Old Mill Road, Denham
22. Fern Drive, Burnham
23. Iver Grove Pond, Iver
24. Valley Way, Gerrards Cross
25. Gregories Road, Beaconsfield

A standardised assessment procedure was adopted for each site that comprised the following elements:

- A detailed investigation into the site's history involving planning, environmental health and local records;
- Site reconnaissance;
- Qualitative risk assessment

- A site-specific recommendation based on the findings of the qualitative risk assessment.


5.29 Site-specific Source Receptor Pathway relationships were identified and the risks posed by each of these contaminant linkages to principle receptors in the context of Part IIA were assessed using a generic qualitative risk assessment model.

<b>Qualitative Risk Assessment</b>	<b>Description</b>	<b>Action</b>
High Risk	Site Probably or certainly not suitable for present use and environmental setting. Contaminants probably or certainly present and likely to have an unacceptable impact on key targets	Urgent action needed in the short term
Medium Risk	Site may not be suitable for present use and environmental setting. Contaminants probably or certainly likely to have an unacceptable risk on key targets	Action may be needed in the short term
Low Risk	Site considered suitable for present use and environmental setting. Contaminants may be present but unlikely to have unacceptable impacts on key targets	Action unlikely to be needed whilst site remains in present use or otherwise remains undisturbed
Negligible Risk	Site considered suitable for present use and environmental setting. Contaminants may be present but very unlikely to have an unacceptable impact on key targets	No action needed while site remains in present use and remains undisturbed.

Of these sites, a total of 12 were recommended for further assessment:

- 1 Marish Wharf, Langley
- 2 Maypole Road, Taplow
- 3 138-146 Lent Rise Road, Burnham
- 4 Dropmore Road, Burnham
- 5 Missenden Gardens, Burnham
- 6 Aldbourne Road, Burnham
- 7 Cavendish Close, Taplow
- 8 Chalk Pit Lane. Burnham
- 9 Southlands Road, Denham
- 10 Briar Close, Burnham
- 11 Dorney Wood Scout Camp, Burnham
- 12 Rixon Close, George Green





The other 13 sites were considered not to be contaminated land and this information will be entered into the GIS database.

### **STAGE 3 – IDENTIFICATION OF SIGNIFICANT CONTAMINANT LINKAGES AND GROUND INVESTIGATIONS**

5.30 This stage is concerned with establishing whether there is a significant contaminant linkage present. This may require intrusive investigations (trial pits or boreholes, for example); particularly if there are no previous ground investigation reports available. However, in accordance with the DETR Circular, an intrusive investigation will only be carried out where three conditions are met. These are where there is (i) insufficient information to make a determination without such investigations; (ii) a reasonable possibility of a contaminant linkage being present; and (iii) a likelihood that both a contaminant and receptor are present. Moreover, the scope of any intrusive investigations will be limited to that necessary to make the determination. This is because, if land is identified as contaminated land, subsequent investigations may be sought by the Council under remediation notice powers in order for the characterisation to be carried out more fully by the appropriate person(s) as part of remediation works (an “assessment action”). The investigations will be designed on a site-specific basis taking account of all that is known of the site including the potential or actual contaminants based on the site history and previous investigations (if any). Statutory powers of entry are available to the Council if needed. Careful attention to the DETR Circular is required both to ensure that investigations are really necessary and that best value is obtained.


5.31 Before authorising or carrying out an inspection using statutory powers of entry, the Council will consider whether, if the land in question were to be found to be contaminated land, it would fall under the definition of a special site. If this is the case, the Council will seek to make arrangements for the Environment Agency to carry out the inspection on behalf of the Council. This is because the Environment Agency is responsible for the regulation of special sites, although the Council is still responsible for the initial determination that the land is contaminated land and, if so, whether or not the site is a special site.

5.32 In 2005, Entec UK Limited (consultants assigned to this stage of the Council’s Contaminated Land Strategy) undertook intrusive site investigations at the following 3 locations:

- 136-146 Lent Rise Road, Burnham
- Dropmore Road
- Aldbourne Road/Stomping Ground, Burnham

In 2006 (May) intrusive investigations were undertaken at the following two properties:

- Maypole Road, Taplow
- Missenden Gardens, Burnham.



In 2008-09 the land associated with 136-146 Lent Rise Road, was remediated as part of a redevelopment. The houses have been demolished, and a remediation method statement submitted by the developers was approved by SBDC before the work was undertaken. The remediation is now complete and there are 12 new properties on the site.

The Stomping Ground, for which South Bucks District Council is the freeholder, was remediated in 2009, and has now been returned to use as a children's' play area. Dropmore Road does not have any significant contaminant linkages and will not be designated as contaminated land. The results of the assessment at Maypole Road and Missenden Gardens have not been reported to the Council. The reports should be available in July 2006.

Other sites which have been remediated through the planning process include

Phoenix Garage – Oxford Road, Tatling End  
Candlemas Lane, Beaconsfield  
One Pin – One Pin Lane, Hedgerley  
Former EWS Railway siding, Thorney Mill Road

### **Summary of Stages 1 to 3**

5.33 In summary, a conceptual model involving a three-stage identification process using GIS to manage the spatial data throughout was used to identify sequentially *potential* contaminant linkage, *actual* contaminant linkage and *significant* contaminant linkage (still to be determined for 4 sites for which intrusive investigation has been undertaken). The model allows iteration at each stage, as additional information becomes available. In this way, the local authority can establish priorities based on the degree of risk of significant harm and to begin by investigating further the highest priority cases first. Then, lessons learned from practical experience, including resource implications, can be taken into account in re-assessing the way forward.

## 6 TIMESCALES


6.1 The statutory guidance requires local authorities to prepare, formally adopt and publish a strategy to identify contaminated land within 15 months of the implementation of the contaminated land regulations (i.e. by end June 2001). This Strategy is an update of the initial strategy published in 2001 by the Council.

The table below details the proposed timeframe set in the initial strategy and an indication as to when certain aspects of the strategy were achieved and provides a future timeframe:

Year	Activity	
00-01(1 <sup>st</sup> quarter)	Prepare draft strategy	MET
00-01	Consult on, publish and adopt strategy Carry out <b>Stage 1</b> assessment: <ul style="list-style-type: none"> <li>• Derive source and receptor datasets</li> <li>• Build risk model</li> <li>• Classify datasets</li> <li>• Run risk model to identify the priorities in terms of likelihood of a significant contaminant linkage, with sensitivity analysis</li> </ul>	MET
01-02	Carry out <b>Stage 2</b> and <b>Stage 3</b> assessments (on-going) to identify contaminated land Issue notifications of contaminated land and remediation notices as necessary to ensure no unacceptable risks to human health or to the wider environment	ONGOING Stage 2 undertaken for 25 sites (2004). Stage 3 for 5 sites but still under work.
06-08	Issue notifications of contaminated land and remediation notices as necessary for the 4 sites for which intrusive site investigation has been undertaken but no decision has been made as to presence of significant contaminant linkages. Carry out Stage 3 assessments for the 7 sites identified for further assessment by Stage 2 work undertaken by Entec UK Limited in 2004.	ONGOING
08-2010	Identify next 25 sites for which Stage 2 assessments should be undertaken	ONGOING

*Note: Details in red are amendments from the initial Strategy. Concerns will be followed through as they arise and any enforcement action which becomes necessary will be taken when the need for such action arises.*

In 2005 and 2006, Entec UK Limited undertook intrusive investigations on behalf of the Council at five sites. In 2008-09 the land associated with 136-146 Lent Rise Road, was remediated as part of a redevelopment. The Stomping Ground, for which South Bucks District Council is the freeholder, was



remediated in 2009, and has now been returned to use as a children's' play area. It was decided that Dropmore Road did not have any significant contaminant linkages and could not be designated as contaminated land. The results of the assessment at Maypole Road and Missenden Gardens were due to be reported to the Council in July 2006. These reports may have been received at the time; however the Council does not possess hard or electronic copies of these reports.

Phase 2 investigations are expensive (often costing tens of thousands of pounds) and time consuming. Unfortunately, the Contaminated Land Capital Grants Programme was withdrawn in April 2014 and the Council has had insufficient funds to undertake any investigations since this date.

Progress in carrying out detailed inspections is reliant upon resources and service priorities. No budget is available at present, so it is not possible to set an accurate timescale for the implementation of this strategy.

Within the South Bucks District, land which requires consideration under the Part IIA Contaminated Land Strategy is likely to be done on an informal basis or, alternatively, triggered through the planning system by redevelopment of a site.

Contaminated land is a material planning consideration; the Council's Development Management Team consults the Strategic Environment Team on all planning applications and associated contaminated land reports. We are responsible for reviewing all investigation and remediation work undertaken by developers, to ensure that it is completed to a satisfactory standard and that the site is suitable for its proposed use.

## **6.2 Priorities**

Our current priorities are to:

- Carryout detailed inspections of potentially contaminated sites in priority order as resources and service priorities allow. However, no budget is available at present for this.
- Assess planning applications and associated contaminated land reports to ensure that land is investigated and remediated appropriately by developers, so it does not pose a risk to health or the environment.
- Deal with urgent cases as and when they arise.

## 7 LIAISON WITH OWNERS AND OCCUPIERS OF LAND

7.1 The approach to identifying contaminated land means that the Council or its agents will need to visit and carry out detailed inspection for only a small proportion of the land within the District. This is land where the earlier stages of study suggest the possibility of contaminated land (as defined). The further investigations will be prioritised according to a probability score (see above) and may include: collation and assessment of documentary information; a visit to the particular area; and sampling of the land.


7.2 The reasons why the Council may need to liaise with owners and occupiers of land are as follows:

- to carry out a walk-over survey. This will allow a check of current receptors and, in some cases, may be sufficient for the Council to decide that land should not be identified as contaminated land (and, in some circumstances may be sufficient to decide that land *should* be identified as contaminated land). In some cases the walk-over might include limited sampling (for example of surface deposits). Liaison would normally be with the occupier;
- to request information that the owner or occupier may have relevant to the Council's further assessment. This could be historical information or previous studies (desk studies or ground investigations, for example) and its availability may avoid the need for the Council to undertake independent ground investigations. Alternatively, the owner may offer to provide information on the condition of the land within a reasonable and specified timescale;
- agree access and timing for the Council or its agents to carry out a ground investigation or taking samples where considered necessary. In some circumstances an authorised person can ask other persons questions, which they are obliged to answer, and make copies of written or electronic records;
- in response to enquiries from interested parties.

7.3 The Council in obtaining sufficient information to make a determination on whether land appears to the Council to be contaminated land (as defined). The Council has, under Section 108 of the Environment Act 1995, the power to authorise a person to exercise specific powers of entry subject (in some situations) to seven days' notice except in an emergency. In practice, the Council will in normal circumstances give advance written notice of a visit and seek to agree a mutually convenient time (except where there is deemed to be an emergency situation).

7.4 The Council will also liaise with the owner and occupier in the following circumstances:

- where land has been identified as contaminated land, a written record of the determination will be provided (setting out the reasoning) to the owner, the occupier and those who appear to be appropriate person(s) to bear responsibility for remediation action that might be necessary (including



the capacity in which notified) in accordance with statutory guidance. Details will also be included on the availability of site investigation reports and on other persons notified at the same time. The Council will also provide information on the tests for exclusion from liability and apportionment of liability. This will enable those persons to know what information they may wish to provide to the Council in order to make a case for their exclusion from liability or for a particular apportionment of liability;

- The Council will allow at least three months for consultation (except where remediation is urgently needed) with the above parties on what is required by way of remediation, and over what timescale, before a remediation notice is served.

7.5 The Council's general approach will be to seek to reach voluntary agreement in preference to serving a remediation notice. However, where negotiations are not successful and warning letters have not resulted in agreement, the Council will where appropriate issue remediation notices in accordance with its statutory duty, taking account of statutory guidance on the liability apportionment and cost recovery issues.

## 8 LIAISON WITH OTHER AGENCIES

### Environment Agency

- 8.1 The Council will provide a copy of this strategy in draft to the Environment Agency for comment and will issue a copy of the finalised strategy to the Environment Agency as is required. The Council is also required to provide notifications of the identification of contaminated land and of remediation notices to the Environment Agency.
- 8.2 The Council will take account of any general guidance that may be issued by the Environment Agency. The Council will also seek to establish effective liaison with the Area Contact within the Environment Agency. In particular, the Council will need to consult with the Environment Agency if land which may be contaminated land would (i) be so classified by virtue of any pollution of controlled waters; or (ii) would be a special site.
- 8.3 Specific information available from the Environment Agency on CD-ROM will be incorporated within the identification process (see also Chapter 4, where datasets are discussed in more detail):
- aquifer locations and characteristics and source protection zones;
  - surface and groundwater quality, surface and groundwater resources, pollution incidents, abstraction licenses,;
  - information on location of closed landfills and currently licensed waste management licensed sites;
  - details of sites of a type that, if contaminated land, would be categorised as Special Sites (IPC authorised sites, nuclear licensed sites) as well as sites where radioactive substances are licensed.

### English Nature

- 8.4 English Nature will also be contacted to take account of relevant information that it may hold. This includes the acquisition of datasets relating to ecological receptors of relevance in considering significant harm.

### English Heritage

- 8.5 As remedial works can potentially have an effect on our archaeological and architectural heritage, English Heritage's advice would be sought at Stage 2 (desk study).



## **The Department of Environment Food and Rural Affairs (DEFRA)**

8.6 DEFRA will be contacted to take account of relevant information that it may hold.



## **9 HANDLING INFORMATION FROM THE PUBLIC, BUSINESSES and voluntary organisations**

9.1 The Council is seeking to adopt a systematic approach to the identification of contaminated land as discussed above. However, this will take time to complete (around 2-3 years) and the Council view it as important to be able to respond to and investigate specific concerns that are raised, for example by members of the public, businesses and voluntary organisations, in the meantime.


9.2 Information may be provided which is sufficient to identify land as contaminated land directly or to suggest that detailed inspection and possibly intrusive investigations are merited. Alternatively, following assessment, the Council may consider that no action is merited ahead of the systematic analysis as the concern does not appear to be well-founded or that consideration of the presence of receptors is sufficient to determine that land is not contaminated.

9.3 The Council's approach in assessing this information and deciding how to proceed will include taking account of the following factors:

- the strength of the evidence already available to suggest that the land is contaminated land (for example visual evidence, previous investigations, anecdotal information that is considered likely to be well-founded);
- the apparent urgency (for example, priority will be given to concerns about human health in accordance with the Council's primary duty);
- whether the information is provided anonymously or not (in the former case, it would not be possible to ask further questions, for example and thus to test the information further);
- whether the information appears to be driven specifically by commercial considerations. For example, a prospective purchaser may seek to be assured that land they are seeking to acquire will not be identified as contaminated land. In this context, the Council will encourage the enquirer to employ his own advisers to make a judgement prior to the Council completing its own identification process except where the request is consistent with fulfilling the Council's strategy. Where the Council has information available on former uses of land, this may be available to be consulted.
- the apparent motivation of the person supplying information where there are grounds to suspect that information may not be well founded.

9.4 When information is received, the following steps will be taken to keep various parties informed:

- receipt will be acknowledged;

- 
- the anonymity of the originator of the information will be preserved, where appropriate (normally until such time as legal action may be necessary);
  - owners and occupiers of land to which the information relates, or potential appropriate persons, will be advised that it has been received and how it will be dealt with, with an indication of timescale;
  - other regulatory authorities will be informed where the information provided relates to matters relevant to other regulatory regimes (e.g. the Environment Agency, where powers under the Water Resources Act 1991 (Amendment) (England and Wales) Regulations 2009 may be more appropriately applied);
  - advising the person(s) who provided the information and owners/occupiers/appropriate persons previously contacted of the final outcome of the Council's investigations.

9.4 For land identified as contaminated land, details will be held on its register. However, the Council may be asked for information about land that has not been identified as contaminated land, whether as part of a "local search" or for other reasons. The Environmental Information Regulations 2004 (2004 No.3391) may apply to any information about land contamination such that there may be a duty to disclose information. However, these regulations contain provisions related to confidentiality, national defence and public security. Where information collection and assessment is underway but incomplete, the Council will take account of its own legal advice.



## **10 LAND FOR WHICH THE COUNCIL IS DIRECTLY RESPONSIBLE**

- 10.1 There is land for which, if identified as contaminated land, the Council may have direct responsibilities by virtue of its current or former ownership or occupation. The principal category is likely to be Council-owned land which has had former industrial use and for which the “original polluter” (Class A person as defined in the statutory guidance) may no longer be identifiable. Such land, if contaminated land, may fall to the Council to address. The Council may also be the current or former owner of (closed) landfill sites and may have responsibilities in this regard.
- 10.2 The Council is committed to applying to contaminated land in its current or former ownership the same principles that will be applied to other contaminated land. In particular, the staged approach to identification described in Chapter 4 is equally relevant to land in Council ownership. Should the Council, as landowner, become aware of specific concerns, these will be progressed on a similar basis of priority and risk assessment as for land in other ownership.

## 11 REVIEW AND UPDATING PROCEDURES


11.1 The Council recognises that its strategy for the identification of contaminated land is in essence a probabilistic approach. Although the ultimate aim is to identify all contaminated land, in practice the identification process is necessarily governed by the principle of “diminishing returns”. Thus the aim is not to *prove* the status of every piece of land within the District but rather to adopt a logical, robust and defensible approach in which effort is proportional to risk and priorities are set appropriately.

11.2 Periodic review of the strategy is therefore appropriate. The following types of review and update are likely to occur:

- review of the benefit versus cost of increasing the range of datasets used in the Stage 1 identification process. Additional datasets for possible inclusion are historical directories of trades (“trade directories”); and larger-scale historical maps. Such additional datasets can be added to the GIS system at a later stage. Similarly, the costs versus benefits of carrying out additional desk studies will be reviewed;
- review of the scientific assumptions made in later stages of the assessment process. Such a review may be triggered by significant changes in the understanding of the behaviour of potential contaminants (e.g. new authoritative guideline values or modelling parameters may be published);
- re-assessment of the inspection findings in relation to particular land. This may be, for example, because there has been a change in the land use (the receptor), because there is new evidence of land use (e.g. persistent trespassing on industrial land by children) or because of reported health effects apparently associated with the land;
- update of the GIS system to reflect additional relevant information that arises (e.g. from the Environment Agency in relation to groundwater or surface water abstractions and information from development-related site investigations).

11.3 Information systems related to the identification of contaminated land are to be viewed as essentially ‘live’ systems. Although updates are expected to be made periodically for reasons of efficiency (say every 3 months), where any new information is expected to have potential implications for human health this will be “fast-tracked” and the implications examined as a priority.

11.4 This strategy will be reviewed within [two] years following adoption and then at intervals of not less than [five] years, as recommended in the Statutory Guidance. The objective of the review will be to ensure that the strategy is efficient and effective in the application of resources to the identification of contaminated land. The timing of reviews will be influenced by any revision of statutory guidance



issued under Part IIA of the Environmental Protection Act 1990. Review of the strategy will seek to ensure that the approach taken remains consistent with current best practice.



## 12 INFORMATION MANAGEMENT

- 12.1 Access to information by members of the public is discussed in Chapter 8 and provision of information to the Environment Agency is discussed in Chapter 7.
- 12.2 As discussed in Chapter 4, the GIS system will form the hub of information management for the identification of contaminated land. Initial risk modelling and scoring of identified sites will be carried out within the GIS. When further information becomes available through Stage 2 and 3 studies, the GIS can be updated accordingly.
- 12.3 It is proposed that the GIS will also store supplementary data, such as text summaries of site investigation reports, legal opinions, etc which can be cross-referenced to their existing file system locations. The entire body of information associated with Part IIA could, of course, be stored electronically in a single purpose-built database. However, it currently appears that the sieving system will mean that relatively few sites will be subject to detailed study (such as ground investigation). Hence, it would be a disproportionate use of resources to build a fully comprehensive database system. Instead, it is considered more appropriate to store key data electronically with clear cross-referencing to hard copy as necessary and appropriate, utilising standard file referencing structures. However, the electronic system can be expanded further in the future as is considered appropriate at the time.



## REFERENCES

Department for Communities and Local Government (2012). National Planning Policy Framework. DCLG, London.

Department for Environment, Food and Rural Affairs (2012). Environmental Protection Act 1990: Part 2A Contaminated Land – Contaminated Land Statutory Guidance. The Stationery Office, London.

Department of Energy and Climate Change (2012). Environmental Protection Act 1990: Part 2A Contaminated Land – Radioactive Contaminated Land Statutory Guidance. The Stationery Office, London.

Environment Agency (2004). CLR11: Model Procedures for the Management of Land Contamination. Environment Agency, Bristol.

Environmental Protection Act 1990, Part 2A: inserted by the Environment Act 1995, Section 57. See Environment Act 1995 for text for Part 2A.

The Contaminated Land (England) (Amendment) Regulations 2012. Statutory Instrument (SI 2012/263).

The Contaminated Land (England) Regulations 2006. Statutory Instrument (SI 2006/1380).

Water Resources Act 1991 (Amendment) (England and Wales) Regulations 2009. Statutory Instrument (SI 2009/3104).

### Web addresses

Bucks Geology, (2017). Bucks Geology Group. [online] Available at: <http://www.bucksgeology.org.uk/index.html>. [Accessed: 12<sup>th</sup> January 2018].

## **APPENDIX A: Potentially Contaminative Industrial Land Uses**

Animal and animal products processing works.

Asbestos manufacturing works.

Ceramics, cement and asphalt manufacturing works.

Chemical works: coatings (paints and printing inks) manufacturing works.

Chemical works: cosmetics and toiletries manufacturing works.

Chemical works: disinfectants manufacturing works.

Chemical works: explosives, propellants and pyrotechnics manufacturing works.

Chemical works: fertiliser manufacturing works.

Chemical works: fine chemicals manufacturing works.

Chemical works: inorganic chemicals manufacturing works.

Chemical works: linoleum, vinyl and bitumen-based floor covering manufacturing works.

Chemical works: mastics, sealant, adhesive and roofing felt manufacturing works.

Chemical works: organic chemicals manufacturing works.

Chemical works: pesticides manufacturing works.

Chemical works: pharmaceuticals manufacturing works.

Chemical works: rubber processing works (including works manufacturing tyres or other rubber products).

Chemical works: soap and detergent manufacturing works.

Engineering works: aircraft manufacturing works.

Engineering works: electrical and electronic equipment manufacturing works (including works manufacturing equipment containing PCBs).

Engineering works: mechanical engineering and ordnance works.

Engineering works: railway engineering works.

Engineering works: vehicle manufacturing works.

Gasworks, coke works and other coal carbonisation plants.

Metal manufacturing, refining and finishing works: electroplating and other metal finishing works.

Metal manufacturing, refining and finishing works: iron and steelworks.

Metal manufacturing, refining and finishing works: lead works.

Metal manufacturing, refining and finishing works: non-ferrous metal works (excluding lead works).

Metal manufacturing, refining and finishing works: precious metal recovery works.

Oil refineries and bulk storage of crude oil and petroleum products.

Power stations (excluding nuclear power stations).

Pulp and paper manufacturing works.

Railway land.


Road vehicle fuelling, service and repair: garages and filling stations.

Road vehicle fuelling, service and repair: transport and haulage centres.

Sewage works and sewage farms.

Textile works and dye works.





Timber products manufacturing works.

Timber treatment works.

Waste recycling, treatment and disposal sites: drum and tank cleaning and recycling plants.

Waste recycling, treatment and disposal sites: hazardous waste treatment plants.

Waste recycling, treatment and disposal sites: landfills and other waste treatment or waste disposal sites.

Waste recycling, treatment and disposal sites: metal recycling sites incl. scrap metal.

Waste recycling, treatment and disposal sites: solvent recovery works.

Miscellaneous industries, incorporating:


- Charcoal works, Dry-cleaners

- Fibreglass and fibreglass resins manufacturing works

- Glass manufacturing works

- Photographic processing industry

- Printing and bookbinding works



## **APPENDIX B: PATHWAYS**

The following pathways may create linkages between contaminants in the ground and relevant receptors. Please note that this list is for guidance only and is not exhaustive.

- Ingestion of soil and dust;
- Ingestion of vegetables & soil attached to vegetables;
- Inhalation of indoor & outdoor dust;
- Inhalation of indoor & outdoor vapours;
- Dermal contact with soils and dusts;
- Risk of fire / explosion;
- Migration of soluble or mobile contaminants into groundwater;
- Migration of soluble or mobile contaminants into surface water bodies;
- Surface run-off into surface water bodies;
- Permeation through water pipes;
- Impact on areas of ecological importance;
- Impact on crops or domestically grown produce;
- Impact on livestock and wild animals subject to shooting / fishing rights;
- Impact on buildings and / or foundations.

## APPENDIX C: RECEPTORS

The following receptors are covered by Part 2A. Please refer to the Statutory Guidance for further details and information on what constitutes significant harm to each receptor.

- Human beings
- Any ecological system, or living organism forming part of such system, within a location which is:
  - i) A site of special scientific interest
  - ii) A national nature reserve
  - iii) A marine nature reserve
  - iv) An area of special protection for birds
  - v) Any European site within the meaning of regulation 10 of the Conservation Regulations 1994 e.g. special areas of conservation and special protection areas.
  - vi) Any candidate special areas of conservation or special protection areas
  - vii) Any habitat afforded protection under paragraph 6 of planning policy statement 9 (PPS9) e.g. RAMSAR sites
  - viii) Any nature reserve under section 21 of the National Parks and Access to the Countryside Act 1949
- Property in the form of;
  - i) Crops, including timber
  - ii) Produce grown domestically, or on allotments for consumption
  - iii) Livestock
  - iv) Other owned or domesticated animals
  - v) Wild animals which are the subject of shooting or fishing rightsProperty in the form of buildings. For this purpose "building" means any structure or erection, and any part of a building including any part below ground level, does not include plant/machinery within a building.
- Controlled waters, as defined by the Water Resources Act 1991. Including relevant territorial waters, coastal waters, inland freshwaters and ground waters. For the purposes of Part 2A, ground waters does not include waters contained in underground strata but above the saturation zone.

## APPENDIX D: SPECIAL SITES


A special site is a contaminated land site that is regulated by the Environment Agency instead of the local authority. The definition of a special site is given in the

Contaminated Land (England) (Amendment) Regulations 2006 and is reproduced below for information. Reference should be made to the full text of the legislation and

Statutory Guidance for a full legal definition and for details of references where quoted.

*„Contaminated land of the following descriptions is prescribed for the purposes of section 78C(8) as land required to be designated as a special site:*

- a) land affecting controlled waters in the circumstances specified in regulation 3;*
- b) land which is contaminated land by reason of waste acid tars in, on or under the land;*
- c) land on which any of the following activities have been carried on at any time;*
  - i) the purification (including refining) of crude petroleum or of oil extracted from petroleum, shale or any other bituminous substance except coal; or*
  - ii) the manufacture or processing of explosives;*
  - d) land on which a prescribed process designated for central control has been or is being carried on under an authorisation, where the process does not solely consist of things being done which are required by way of remediation;*
  - e) land on which an activity has been or is being carried on in a Part A(1) installation or by means of Part A(1) mobile plant under a permit, where the activity does not solely consist of things being done which are required by way of remediation;*
  - f) land within a nuclear site;*
  - g) land owned or occupied by or on behalf of -*
    - i) the Secretary of State for defence;*
    - ii) the defence council,*
    - iii) an international headquarters or defence organisation, or*
    - iv) the service authority of a visiting force, being land used for naval, military or air force purposes;*
  - h) land on which the manufacture, production or disposal of -*
    - i) chemical weapons,*
    - ii) any biological agent or toxin which falls within section 1(1)(a) of the Biological Weapons Act 1974 (restriction on development of biological agents and toxins), or*
    - iii) any weapon, equipment or means of delivery which falls within section 1(1)(b) of that Act (restriction on development of biological weapons) has been carried on at any time;*
  - i) land comprising premises which are or were designated by the Secretary of State by an order made under section 1(1) of the Atomic Weapons Establishment Act 1991 (arrangements for development etc of nuclear devices);*
  - j) land to which section 30 of the Armed Forces Act 1996 (land held for the benefit of Greenwich hospital) applies;*
  - k) land which is contaminated land wholly or partly by virtue of any radioactivity possessed by any substance in, on or under that land; and*
  - l) land which –*

- 
- i) is adjoining or adjacent to land of a description specified in any of sub- paragraphs (b) to (k); and*
  - ii) is contaminated land by virtue of substances which appear to have escaped from land of such a description."*

## APPENDIX E: Categories of Significant Harm

	<b>Type of Receptor</b>	<b>Description of harm to that type of receptor that is to be regarded as significant harm</b>
1	Human beings	<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 any abnormal healthy condition of the body or a part of it and can include, for example, cancer, liver dysfunction or extensive mental ailments. Mental dysfunction is included only insofar as it is attributable to the effects of a contaminant 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>
2	<p>Any ecological system, or living organism forming part of such a system, within a location which is:</p> <ul style="list-style-type: none"> <li>* an area notified as an area of special scientific interest under section 28 of the Wildlife and Countryside Act 1981;</li> <li>* any land declared a national nature reserve under section 35 of that Act;</li> <li>* any area designated as a marine nature reserve under section 36 of that Act;</li> <li>* an Area of Special Protection for Birds, established under section 3 of that Act;</li> <li>* 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);</li> <li>* any habitat or site afforded policy protection (i.e. candidate Special Areas of Conservation, potential Special Protection Areas and listed Ramsar sites); or</li> <li>* any nature reserve established under section 21 of the National Parks and Access to the Countryside Act 1949.</li> </ul>	<p>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.</p> <p>In determining what constitutes such harm, the local authority should have regard to the advice of Scottish Natural Heritage 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>
3	Property in the form of:	For crops, a substantial diminution in yield or other

	<ul style="list-style-type: none"> <li>* crops, including timber;</li> <li>* produce grown domestically, or on allotments, for consumption;</li> <li>* livestock;</li> <li>* other owned or domesticated animals;</li> <li>* wild animals which are the subject of shooting or fishing rights.</li> </ul>	<p>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 contaminant 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>
4	<p>Property in the form of buildings. For this purpose, "building" has the meaning given in section 277 of the Town and Country Planning (Scotland) Act 1997 (i.e. it includes "any structure or erection, and any part of a building... 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 F: Significant Possibility of Significant Harm

	<b>Descriptions Of Significant Harm (As Defined In Table A)</b>	<b>Conditions For There Being A Significant Possibility Of Significant Harm</b>
1	<p>Human health effects arising from</p> <ul style="list-style-type: none"> <li>* the intake of a contaminant, or</li> <li>* other direct bodily contact with a contaminant.</li> </ul>	<p>If the amount of the contaminant in the contaminant linkage in question:</p> <ul style="list-style-type: none"> <li>* which a human receptor in that linkage might take in, or</li> <li>* to which such a human might otherwise be exposed,</li> </ul> <p>as a result of the pathway in that linkage, would represent an unacceptable medical risk, assessed on the basis of relevant information on the toxicological properties of that contaminant.</p> <p>Such an assessment should take into account:</p> <ul style="list-style-type: none"> <li>* the likely total intake of, or exposure to, the substance or substances which form the contaminant, from all sources including that from the contaminant linkage in question;</li> <li>* the relative contribution of the contaminant linkage in question to the likely aggregate intake of, or exposure to, the relevant substance or substances; and</li> <li>* The duration of intake or exposure resulting from the contaminant linkage in question.</li> </ul> <p>Toxicological properties should be taken to include carcinogenic, mutagenic, teratogenic, pathogenic, endocrine-disrupting and other similar properties.</p>
2	<p>All other human health effects (particularly by way of explosion or 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"> <li>* that type of contaminant linkage, or</li> <li>* that type of significant harm arising from other causes.</li> </ul> <p>Such an assessment should take into account the levels of risk, which have been judged unacceptable in other similar contexts.</p>
3	<p>All ecological system effects.</p>	<p>If significant harm of that description is more likely than not to result from the contaminant linkage in question, taking into account relevant information for that type of contaminant linkage, particularly in relation to the ecotoxicological effects of the contaminant.</p>



4	All animal and crop effects.	If significant harm of that description is more likely than not to result from the contaminant linkage in question, taking into account relevant information for that type of contaminant linkage, particularly in relation to the ecotoxicological effects of the contaminant.
5	All building effects	If significant harm of that description is more likely than not to result from the contaminant 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 contaminant linkage.

## APPENDIX G: Glossary of Terms

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

**AONB** Area of Outstanding Natural Beauty

**Brownfield site** A site that has been generally abandoned or underused where redevelopment is complicated by actual or perceived environmental contamination. Only a small proportion of Brownfield sites will meet the definition of contaminated land.

**CLEA** Contaminated Land Exposure Assessment, a methodology for carrying out a risk assessment

**Contaminated land** Any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances, in, on or under the land that:

- 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

**Contaminant linkage** The relationship between a contaminant, a pathway and a receptor

### **Controlled waters**

These include

- a) inland waters (river, streams, underground streams, canals, lakes and reservoirs)
- b) groundwater (any water contained in underground strata, wells or boreholes)
- c) territorial waters (the sea within three miles of a baseline)
- d) coastal waters (the sea within the baseline up to the line of highest tide, and tidal waters up to the fresh water limit)

**DEFRA** Department for Environment, Food and Rural Affairs


**Drinking water abstraction** The taking of water from a source (in this case, primarily an underground source) for drinking water

**EA** Environment Agency

**Eco-system** A biological system of interacting organisms and their physical Environment

**GIS** Geographical Information System.

**Groundwater** Any water contained in underground strata, wells or boreholes



**ICRCL** Interdepartmental Committee on Remediation of Contaminated Land

**Part IIA** Refers to the Environmental Protection Act 1990 – Part IIA

**Pathway** One or more routes by which a receptor can be exposed to a contaminant

**Receptor** Sometimes referred to as “a target” – the health of a person, waters, ecosystem or property type that could be affected by contamination

**Remediation** Generally accepted as being the carrying out of works to prevent or minimise effects of contamination. In the case of this legislation the term also encompasses assessment of the condition of land, and subsequent monitoring of the land

**Risk assessment** The study of

- a) the probability, or frequency, of a hazard occurring; and
- b) the magnitude of the consequences

**Source** A substance in, on or under the ground with the ability to cause harm

**Source protection zone** Protection zones around certain sources of groundwater used for public water supply. Within these zones, certain activities and processes are prohibited or restricted.

**Special site** Any contaminated land designated due to the presence of:

- Waste acid tar lagoons
- Oil refining
- Explosives
- Integrated pollution control sites
- Nuclear sites

**SSSI** Site of Special Scientific Interest.