



# Dover District Council

## Contaminated Land Inspection Strategy

Revised 2001, 2007, 2014 & 2018

Environmental Health  
Dover District Council  
White Cliffs Business Park  
Dover, Kent, CT16 3PQ  
Tel: 01304 872282  
[www.dover.gov.uk](http://www.dover.gov.uk)  
[envhealth@dover.gov.uk](mailto:envhealth@dover.gov.uk)

## **Executive Summary**

Part IIA of the Environmental Protection Act (EPA) 1990 came into force in England in April 2000. The main objective is to provide an improved system for the identification and remediation of land where contamination is causing unacceptable risks to human health or the wider environment given the current circumstances and use of the land.

Under this legislation Dover District Council (the Council) is required to prepare an inspection strategy setting out how the Authority intends to inspect its area for the purpose of identifying contaminated land. This also links in with the Council's Corporate Priorities.

The strategy was initially produced in 2001, reviewed in 2007 and 2014 and has been revised following the DEFRA's Contaminated Land Statutory Guidance produced in April 2012. This revised strategy details how the Council intends to implement the contaminated land regime from 2018 onwards. This takes account of the latest guidance and the resources available to the Council.

The Council recognise a number of factors potentially impact on how contaminated sites are assessed, i.e. decisions are not made on a purely technical basis. There are also a range of regulatory, commercial, financial, legal and societal factors, affecting how particular contaminated land issues should be addressed. The Council also recognises any judgement made needs to be scientifically robust, proportionate and transparent.

This strategy therefore outlines the Council's priorities in relation to contaminated land. It also provides a description of the proposed methods and procedures intended to fulfil this requirement in a rational, ordered and efficient manner.

Initial desktop studies enabled the Council to identify areas of land within its boundaries where potential contaminants and potential receptor exist in the same geographical area. Further investigations / inspections then took place to determine if the criteria specified by the regulations were met, and hence if land is required to be formally designated as 'contaminated land'.

Sites are investigated in a descending order of priority. The Council chose the Geographical Information System (GIS) package 'Groundview' to assist in the prioritisation of sites. A prioritised list of sites according to the risk posed to receptors has been produced. This enables the Council to address sites of greater concern first. However, it is recognised some sites identified outside this general approach will require urgent attention. These sites will be dealt with as they arise.

The Council operates an open approach to dealing with contaminated land. Whilst it is recognised local authorities are the lead regulators on contaminated land, the Council will work in partnership with other organisations, particularly the Environment Agency, wherever necessary.

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## 1.0 Introduction

### 1.1 Dover District Council Corporate Aims

This strategy outlines the steps the Council are taking and have taken to meet the statutory requirements of Part IIA of the Environmental Protection Act 1990 (EPA) and as laid down in DEFRA's Contaminated Land Statutory Guidance of April 2012. The guidance provides the legal and scientific detail behind this strategy so the two documents should be read in conjunction with one another. The aim of the strategy ties in with the Councils Corporate Plan for 2016-2020 which include

- **A Clean, Green and Safe Environment and**
- **Healthier People and Communities**

### 1.2 Regulatory context

Part IIA of the Environmental Protection Act (EPA) 1990 came into force in England in April 2000 (inserted by section 57 of the Environment Act 1995). The main objective of Part IIA is to provide an improved system for the identification and remediation of land where contamination is causing unacceptable risks to human health or the wider environment given the current circumstances and use of the land.

The Government's intention is that Part IIA will;

- Improve transparency and focus of regulatory controls
- Ensure regulators take a strategic approach to land contamination problems
- Allow all contamination problems to be dealt with as part of the same process
- Increase consistency in regulatory approaches
- Provide a more tailored regulatory mechanism, including liability rules, that is better able to reflect the complexity and range of circumstances found on individual sites

The Act is supported by statutory guidance, which contains much of the detailed advice to regulators and others on how Part IIA is to be implemented.

#### 1.2.1 Regulatory role of Local Authorities

The primary regulatory role under Part IIA rests with local authorities. This reflects their existing functions under the statutory nuisance regime, and will also complement their roles as planning authorities.

The key Local Authority Responsibilities are;

1. **Prepare an inspection strategy** – setting out how the Authority intends to inspect its area for the purpose of identifying contaminated land.
2. **Determine whether any particular areas of land are “contaminated land”**

3. **Decide whether “contaminated land” is also required to be designated as a special site**
4. **Act as enforcing authority for all contaminated land which is not designated as a “special site” This will involve ;**
  - Determining who may be liable / responsible for remediation.
  - Consulting with relevant parties on what remediation action is required.
  - Ensuring works are undertaken voluntarily or by serving Remediation Notices.
  - Monitoring the effectiveness of any remediation carried out.
5. **Maintain a public register** – containing details of regulatory action taken under Part IIA and through other means.
6. **Report progress under Part IIA to the Environment Agency (EA)** – to allow preparation of a National Report on Contaminated Land.

#### 1.2.2 Regulatory role of the Environment Agency

The Environment Agency has four principal roles under Part IIA. These are;

1. Assisting LA with the identification of contaminated land, particularly in cases where water pollution is involved
2. Providing site-specific guidance to LA on contaminated land
3. Acting as enforcing authority for any land designated as a “Special Site”
4. Publishing periodic National Reports on Contaminated Land.

#### 1.2.3 Legal definition of contaminated land for the purposes of Part IIA of the Environmental Protection Act 1990

“Contaminated Land” is defined under Part IIA as:

*Any land that 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.*

This definition introduces a number of specific terms, some of which may differ from those commonly used outside of Part IIA. A glossary of terms used, as defined by the EPA, statutory guidance, the Regulations and other texts relevant to Part IIA are included in Appendix E.

#### 1.2.4 Radioactively Contaminated Land

The 2012 guidance does not apply to radioactive contamination of land. There is separate guidance (Radioactive Contaminated Land Statutory Guidance – April 2012) produced by the Department of Energy & Climate Change. If land is determined as radioactive contaminated land it becomes a special site and the Environment Agency takes over as the regulator.

### 1.3 **Principles of Pollutant Linkages and Risk Assessment.**

In order for 'Significant Harm' to be established, the concept of a 'Pollutant Linkage' must be introduced. A pollutant linkage consists of three parts;

1. a **SOURCE** of contamination in, on or under the ground.
2. a **PATHWAY** by which the contaminant is causing significant harm (or which presents a significant possibility of such harm being caused).
3. a **RECEPTOR** (target) of a type specified in the regulations.

Land cannot be identified as "Contaminated Land", under Part IIA, unless all three elements of a pollution linkage have been established. It should be noted that there may be more than one pollutant linkage on any given piece of land.

In addition to pollutant linkages, the definition of contaminated land is also based upon the principles of risk assessment.

The LA must satisfy itself that;

- a) Significant harm is being caused to the receptor, or
- b) There is a significant possibility of harm being caused to that receptor.
- c) Pollution of controlled waters is being caused, or
- d) Pollution of controlled waters is likely to be caused.

In order to determine whether a particular possibility is "significant", the RISK needs to be assessed and this is defined as the product of;

- a) The probability or frequency of an occurrence (i.e. the likelihood of harm being caused), and,
- b) The magnitude including the seriousness of the consequence (i.e. the likely nature and extent of the harm caused if the event occurred).



## **2.0 Development of the Strategy**

### **2.1 Overall approach - Statutory Guidance**

Part IIA of the Environmental Protection Act 1990 required all local authorities to set out their approach in a written Inspection Strategy by July 2001. The original strategy was duly produced in July 2001 and outlined the practical steps the District Council intended to take to implement its inspection duties. It also demonstrated the approach taken in developing the strategy was aimed to ensure that all those affected by, and involved in, inspection had the same clear understanding of the rationale for inspection, how this would be carried out and over what time scale

This approach followed guidelines which stated the strategy 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.

The Policy and Services Committee agreed that the final version of the initial strategy be placed before three Cabinet Portfolio Holders for adoption. Once adopted this was submitted to the Environment Agency who then forward it to the appropriate Government Department as part of their State of Contaminated Land report. The strategy was also made more widely available, for example to Parish Councils, major landowners and professionals working in land management, local business and members of the public.

## **3.0 Characteristics of the Dover District**

A map of the Dover District Council Area is shown in Appendix A

### **3.1 Introduction**

Dover is “the Gateway to England” and its location at the narrowest crossing point in the Channel has always given it great significance for both trade and military activities. The district is of national landscape, wildlife and historical importance, with a world-renowned port complex. It is part of a chalk coastline, where the North Downs meet the sea in spectacular vertical cliffs, their characteristic whiteness a result of constant erosion of the soft chalk. It takes about 100,000 years and many billions of microscopic marine animals to form 3 metres of rock. The deposits in the Dover district are between 200 and 350 metres thick.

The chalk aquifers of the North Downs have been highly developed for public water supply and abstraction. As the coastline proceeds north to Deal and Sandwich the low lying ground of the Stour Estuary is encountered based on younger rocks of brickearth and Thanet Beds. This includes the last valley fen in South England, with 280 kilometres of dykes and ditches. Coal deposits have been exploited here as part of the East Kent Coalfield (see below, geological characteristics for further detail).

The Dover District was formed in 1974 and covers 319 square kilometres, bounded by Folkestone & Hythe in the south, Canterbury to the west, Thanet to the north and France 34 kilometres to the east, with London being about 120 kilometres distant.

Two-thirds of the district’s estimated 114,200 (2016 estimate) residents live in the coastal towns of Dover and Deal, with the remainder living in Sandwich and other smaller settlements.

### **3.2 Current and Past Industrial and Military History**

The beautifully preserved 3500 year old Bronze Age boat in Dover’s Museum and many local Roman, Saxon and Norman remains serve to remind us that the area has always been important for trade, military strategy and associated industries. Numerous ancient monuments and areas of archaeological importance have been recorded and significant new finds are still discovered during construction activities. Evidence of Napoleonic period fortifications may be seen along the coastline today. During the Second World War this whole corner of Kent earned the tag “Frontline Britain” in recognition of its unique defensive role. Less evident, but of greater significance in contaminated land terms, are the more recent military supply sites at Port Richborough (which operated during World War 1 as a major supply depot), the Royal Marine Barracks and ranges at Deal, together with exercise grounds over wide areas of the district.

Historically, clay, sand/gravel deposits and chalk have been quarried on a large scale within the district. Upon examination of historical maps, it becomes evident how widespread this activity was, with a veritable pepper-pot of small quarries throughout the district. Quarrying itself, generally isn’t an

industry with contamination issues, however – following closure of activities at a site, the ‘pit’ would often be in-filled. Only very sparse records would be kept of the materials used to infill the pits (particularly those associated with activities prior to the 1974 Control of Pollution Act); it is these materials that have the potential for land contamination.

The London Clay has been used for bricks, pottery and was a major constituent of Roman cement. Lime was obtained from the Chalk (in addition to its use as ship ballast) and Greensand formations and had many uses. Ironstone, found in the Wadhurst Clay, a subdivision of the Hastings beds (see geology, section 3.9), and calcareous ironstone in the Ashdown sand was mined as a source of iron.

Exploitation of the Kent Coalfield took place within the district from 1912 to 1989; this is discussed in greater detail in section 3.8.

Dover is a centre for port related activities and has historically had great military importance. Many of the former barracks in both Dover and Deal have now been redeveloped, or have plans for redevelopment. Dover Port, old town and harbour surrounds have been redeveloped many times by reason of changing industrial need and military action. Tailings from the construction of the Channel Tunnel were utilised for the creation of “new land” at Samphire Hoe.

Before the discovery of North Sea gas in the mid 1970’s, towns and cities relied on ‘town gas’ as their primary source of gas. Town gas was produced by the gasification of coal; whereby coal was heated in an oxygen free retort, the liberated gasses were quenched in water before being passed through iron oxide purifiers and ultimately stored in a gasometer. This process produced a whole host of substances with the potential to contaminate the subsurface (most notably Polycyclic Aromatic Hydrocarbons (PAHs), Heavy Metals, Phenols, Ammoniacal Liquor, Cyanides and Coal Tar Residues). Several former gasworks are present within the district, the largest being found in Dover and Deal. However, examples of smaller works are located in Ash, Sandwich and outside Eythorne.

### **3.3 Protected Landscapes**

The Council recognises that the countryside is a valuable natural resource of outstanding quality, international importance and protected by many designations. These areas can be seen on the Councils website at <https://www.dover.gov.uk/Planning/Planning-Policy-and-Regeneration/PDF/Dover-District-Landscape-Character-Assessment.pdf> .

A Countryside Strategy has been adopted in the Local Plan (which is available on the Dover District Council website – <http://dover.devplan.org.uk/document.aspx?document=26&display=chapter&i d=228>

the main points of which are:

- Protect and enhance the character of the local landscape;
- Protect all ecosystems and maintain biodiversity;
- Create new sites for nature conservation;

- Maintain regenerative and productive capacity of the land;
- Restore areas which are degraded or polluted.

The Local Plan shows all protected locations, the most notable features are:

Landscape designations of local importance

- Ash Levels Area of Local Landscape Significance (ALLS)

Landscape Designation of Countywide / National Importance

- Special Landscape Areas (SLA's) North Downs and Sandwich Bay/Pegwell Bay and the Kent Downs Area of Outstanding Natural Beauty (AONB) which are of Countrywide importance.

Heritage Coasts

- South Foreland, Dover to Folkestone

### **3.4 Nature Conservation**

Sites of Nature Conservation Interest (SNCI)

- There are several SNCI sites in the district. These may be added to at any time and the Council will consult the Kent Wildlife Trust when drawing up lists of land for investigation as to possible contaminants.

Nature Reserves

- Local - 1 site : Western Heights
- National - 2 sites ; Sandwich and Pegwell Bay,  
Lydden and Temple Ewell

Sites of Special Scientific Interest (SSSI) -

- Alkham, Lydden and Swingfield Woods, Dover to Kingsdown Cliffs, Folkestone Warren (Part), Lydden and Temple Ewell Downs, Preston Marshes (Part), Sandwich Bay and Hacklinge marshes

Special Areas of Conservation (SAC) - 3

- Lydden and Temple Ewell, Sandwich Bay, Thanet Coast SAC

Thanet Coast SAC comprises the intertidal parts of the Sandwich Bay and Pegwell Bay Special Protection Area which are contiguous with the similarly protected area within Thanet.

Special Protection Area (SPA) -

- Sandwich Bay and Pegwell Bay

Ramsar Site -

- Thanet Coast and Sandwich Bay

### **3.5 Water Environment**

The district has an extensive and varied water environment consisting of:

1. Major chalk aquifers, which provide most of the district's water supply;
2. Lakes and ponds;

3. The River Dour and lower reaches of the River Stour, together with their tributaries;
4. A network of dykes and drainage ditches in the North of the district;
5. The English Channel, for a distance of 20 miles.

A groundwater vulnerability map is produced by the British Geographical Society (BGS) - see section 3.9 for further details.

The River Dour is one, of the highest water quality (Class 1A) and supports an abundance of wildlife, including trout.

The quality of local bathing water is good to excellent due to the introduction of domestic sewage treatment works at Dover and Weatherlea, together with an industrial waste works at Richborough. Extensive re-sewering of the town areas and first time sewerage in the countryside has reduced pollution. In the rural areas, particularly the Ash Levels, private treatment and cesspools of varying quality are the norm.

### **3.6 Key Property Types**

The quality of the District's historic environment is extremely high. The District has three major towns, Dover, Deal and Sandwich with the remainder of the population living in smaller settlements. Dover is dominated by Dover Castle, numerous historic buildings, archaeological sites and an extensive network of fortifications dating from the Napoleonic era onwards. Deal is a town of historic importance with some 466 listed buildings and is noted for its Tudor castles, Georgian and early Victorian buildings and the former Royal Marines School of Music. The Cinque Port of Sandwich is one of the most complete medieval towns in England and has the highest ratio of listed buildings to householders in the country. In total there are almost 3000 listed buildings and over 50 conservation areas in the District. The District also has protected shipwreck sites along its coastline and offshore at Goodwin Sands.

### **3.7 Archaeology and Ancient Monuments**

The district contains a wealth of archaeological remains and new discoveries continue. The commissioning of archaeological assessments prior to the development of sites is now common practice and the National Planning Policy Framework has a section on conserving and enhancing the historic environment. Where possible, finds will be preserved in situ and where this is not possible proper record taking and procedures must be followed.

### **3.8 Coal Mining**

Both iron ore and coal were found at Shakespeare Cliff, Dover in 1890, but it took 16 years before commercial coal was raised to the surface. The delay was due to the depth of the coal seam and the water holding chalk and greensand, which was encountered in sinking the shaft and necessitated the introduction and operation of pumps and specialised shaft linings. Nine collieries worked an area of coal stretching two miles out to sea. Kent's biggest market became the steel industry when the local coal was blended with other coals for coking. The high cost of mining Kent coal and the decline

of the steel industry destroyed established markets and the Kent Coalfield was closed down.

All of the former shafts have now been filled and capped and several of the former collieries have either been redeveloped (e.g. Tilmanstone) or are awaiting development (e.g. Snowdown). Many of the buildings of the unsuccessful collieries still remain and have often been utilised by farms.

Details of the former collieries are given in the table below.

Colliery	Shaft Commenced	Coal Raised	Closed	Depth of Shaft/s <sup>1</sup>
Shakespeare	1896	1912	1914	-
Tilmanstone	1906	1913	1987	No.1 - 1,590ft No.2 - 3,168ft No.3 - 3,139ft
Snowdown	1907	1912	1987	No.1 - 262ft No.2 - 3,083ft No.3 - 2,994ft
Guildford	1906	-	1912	No.1 - 306ft No.2 - 1,272ft No.3 - 1,272ft
Wingham	1912	-	1912	East – 50ft West – 150ft
Stonehall (French owned)	1914	-	1914	East – 273ft West – 273ft North – 75ft
Chislet (Anglo Saxon)	1914	1918	1969	North – 1,470ft South – 1467ft
Betteshanger	1924	1928	1989	No.1 – 2,162ft No.2 – 2,426ft
Woodnesborough	1910	-	1911	-

<sup>1</sup> Source <http://www.kurg.org.uk/coal-mines/>

Only five collieries ever produced coal – Shakespeare, Tilmanstone, Snowdown, Chislet and Betteshanger. The exploitation of the coalfield lasted less than a century, with Betteshanger the last of the collieries closing in 1989.

### 3.8.1 The Origin of Coal

Following the prediction by Godwin Austen (1856) that coal would be found beneath the Mesozoic rocks of the Weald, the existence of coal was finally proved in 1890 in a borehole near Shakespeare Cliff (Wood et al – 2000).

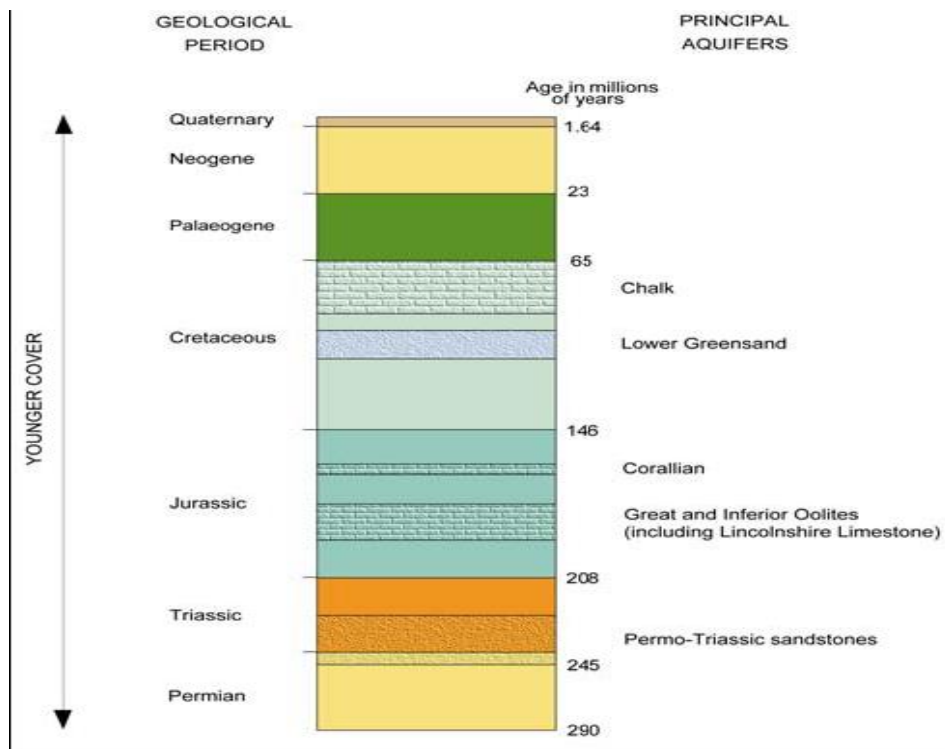
Coal is deposited in predictable units called cyclothem, where coal is observed within cyclically bedded sandstone, siltstone and shale units. The coal seams are thought to have been formed by the accumulation of vegetation, grown more or less in-situ, in forest swamps (Smart et al - 1966) during the Carboniferous period, between 300 and 360 million years ago.

### 3.9 Geological Characteristics

Steep dry chalk valleys of the Dover area descend to alluvium beds at Deal to meet the Thanet Beds. Brickearth is found in the middle of the district. Diagrams prepared by H G Dines from colliery shafts show Mesozoic and tertiary strata to 1,000 feet, upper or sandstone (with intermittent thin coal seams) to 750 feet, and coal seams, shale and Palaeozoic rocks which are older than the carboniferous.

The most dominant rock formation of Kent (and Southern England) is that of the Cretaceous Chalk. 70 million years ago, much of the UK was located at the bottom of a shallow sub-tropical sea; the sea floor was made up of a soft calcareous mud made of the shells of millions of tiny creatures called coccolithophores. Over time, the mud was compacted and eventually hardened to become the chalk we know today.

The chalk is inherently porous, but also highly fractured; these properties have lead to the viability of the rock as a major groundwater aquifer. It is from the chalk and underlying associated greensand deposits which Kent draws most of its potable water (The UK groundwater forum show Southern England to obtain 72% of its potable water from groundwater sources, with a total annual abstraction of 326 million cubic metres).

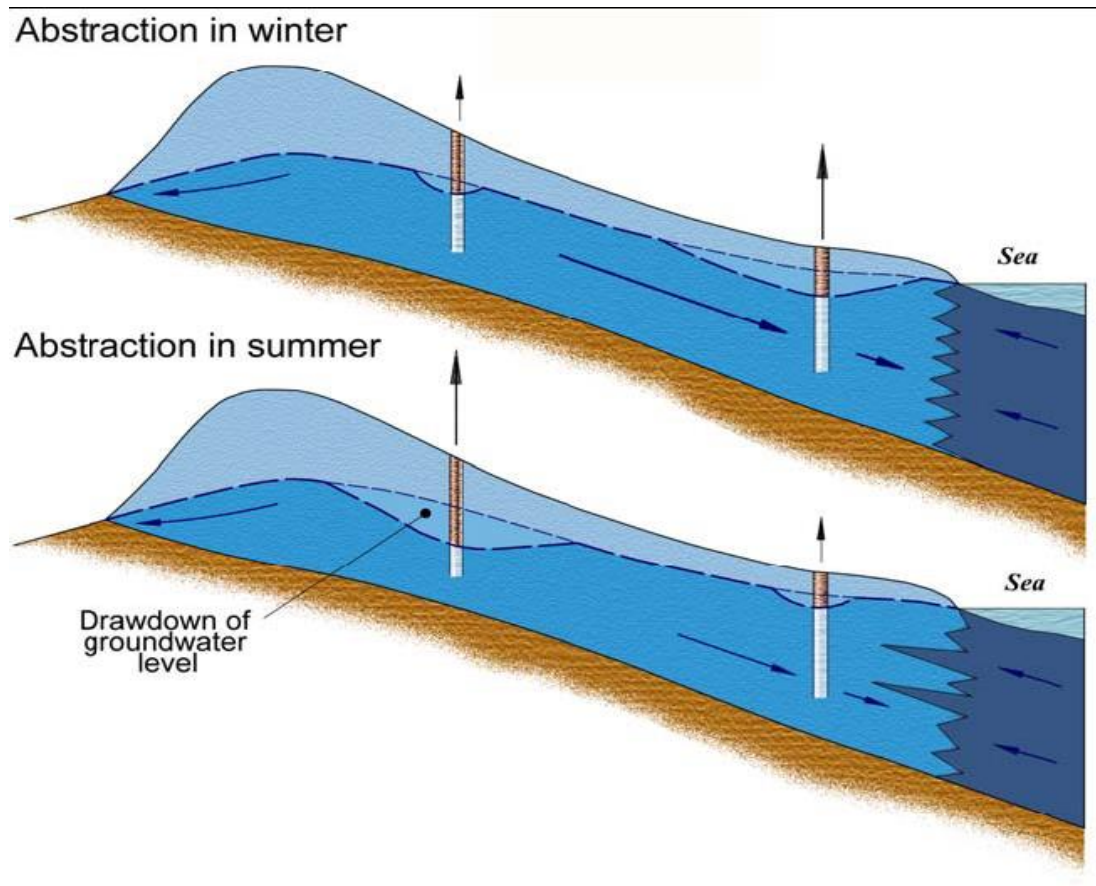


The diagram above shows the major water bearing rock units of the UK, from BGS (2004a).

### 3.9.1 Saline Intrusion

Saline intrusion is a problem associated with coastal aquifers, it is caused by the over abstraction of fresh water. This leads to saline water being drawn inland, with the ultimate effect of contaminating an aquifer rendering the water within it non-potable.

The figure below from BGS (2004b) illustrates the process of saline intrusion, in the top diagram, it can be seen how winter rainfall replenishes the aquifer and a steady flow of water to the sea prevents the ingress of saline water. The bottom diagram shows how a reduced rate of precipitation in the summer leads to greater draw down in the vicinity of abstraction wells and the reduced flow towards the sea leads to saline water being drawn inwards.



The existence of the aquifers presented a major problem during the construction and operation of the East Kent Coalfield. The hydrogeological nature of the chalk and greensand are such that there is a particularly high water pressure at the depths of the coal mines. If water yielding strata were breached, water could enter the shaft at rates of a million gallons per day (quite capable of filling a mine shaft within a few minutes) – reports indicate that many miners were tragically killed when this occurred.

### 3.9.2 Hydrogeological characteristics of the principal formations within the district (from Day et al [1970])

The below details have been included because water yielding rock units are permeable/semi-permeable and as such have both the potential to transmit



contaminants (potential pathway) and act as receptors (as all groundwater is regarded as controlled water). For further details regarding the geological and hydrogeological nature of the district, see BGS maps relevant to the district.

### Alluvium

Much is commonly saturated, but groundwaters may be saline near the coast and polluted in developed areas.

### Gravels

May yield limited amounts of water to shallow wells, but supplies are liable to pollution (or may have been polluted in developed areas) and may diminish during prolonged droughts.

### Bagshot Beds (up to 40ft)

Comprise fine sands with a pebble bed; the beds may yield small quantities of groundwater to shallow wells.

### Claygate beds

They consist of fine sands, silts and clays unlikely to yield much groundwater.

### London Clay

Comprises stiff, dark impermeable clays with layers of limestone concretions. Sandy layers may occur in the lower half, the clay may confine groundwater under pressure in lower strata.

### Blackheath Beds

Loosely cemented sands and pebble beds locally may yield appreciable supplies of soft or slightly hard groundwater to screened wells.

### Woolwich Beds

Where saturated, small yields may be obtainable

### Thanet Beds

Comprise permeable yellowish or greenish-grey poorly cemented sands which become silty downward, with a band of flint rubble at the base resting unconformably upon the chalk. Local clay bands give rise to the existence of perched groundwater. The Thanet beds are in hydraulic continuity with the chalk and where saturated, may yield moderate supplies of potable but hard or very hard groundwater.

### Chalk

Chalk is the principle aquifer of the district: Upper Chalk, a soft whitish microporous fissured limestone with nodular and tabular flint is by far the greater part of the chalk outcrop and catchment giving rise to high ground (locally above 700ft above ordnance datum) particularly near its southern margin where much of it lies in the Vadose zone. The higher parts of the chalk

outcrop are capped extensively by thin, semi permeable clay with flints and are dissected by predominantly northerly trending dry valleys forming part of a relict late-glacial drainage system bottomed by narrow gravelly Head deposits. Middle chalk resembles upper chalk but contains more marl and less flint; it crops out mainly along the southern scarp and in many of the deeper valleys. The hard nodular Melbourne Rock at the base has, together with the immediately overlying beds, a high transmissivity and appears to be commonly well fissured. Lower chalk includes much marl which near the base may be semi permeable locally.

Chalk groundwaters are normally potable and of good chemical quality, but are hard or very hard.

#### Upper Greensand

The formation is commonly in hydraulic continuity with the overlying chalk, but is too thin to yield much groundwater.

#### Gault

Clay, thick and impermeable throughout the district, forms an important aquiclude between groundwaters of the chalk and the underlying aquifers of the lower greensand.

#### Folkestone Beds

Comprise coarse to very fine sands and sandstones with occasional clayey sands and sandy clays form a porous, non fissured aquifer. Groundwater is of good chemical quality, commonly with moderate hardness.

#### Sandgate beds

Comprise silty clays with subordinate fine sands and sandstones. The formation as a whole acts as an aquiclude and separates groundwaters in the Folkestone Beds above from those in the Hythe Beds below.

#### Hythe Beds

Comprise limestones and sandy limestone's, in which fissure flow predominates, interbedded with softer calcareous sands. Springs are common at the base of the formation and have been used for public supply; they also occur at the junction with the overlying Sandgate beds. The beds yield water of good chemical quality throughout the district, except towards Folkestone where saline intrusion has occurred.

#### Atherfield Clay

Forms an impermeable base to the Hythe Beds and consists of clays, locally silty and sandy.

### 3.9.3 Groundwater Vulnerability (from National Rivers Authority - 1994)

The majority of the soils within the District are classed as either Major Aquifer (Highly Permeable) H1 or Major Aquifer (Highly Permeable) I1 on the groundwater vulnerability map of East Kent (Sheet 47).

H1 soils are those which readily transmit liquid discharges because they are either shallow, or susceptible to rapid by-pass flow directly to rock, gravel or groundwater.

I2 soils are those which can possibly transmit non or weakly adsorbed pollutants and liquid discharges but are unlikely to transmit adsorbed pollutants.

The soils towards the North of the district (particularly within the vicinity of Sandwich and Ash) are classed as either Minor Aquifer (Variably Permeable) H2 or Minor Aquifer (Variably Permeable) I1.

H2 soils are deep, permeable and coarse textured; and readily transmit a wide range of pollutants because of their rapid drainage and low attenuation potential.

I1 soils are described as those soils which can possibly transmit a wide range of pollutants.

#### 3.9.4 Water Quality & Resources

Where the abstraction of water from an aquifer or spring takes place, the Environment Agency defines areas called source protection zones (SPZs). SPZs surround water abstraction boreholes, wells, and springs used for public drinking water supply. The maps show three main zones (inner, outer and total catchment) and a fourth zone of special interest, which may occasionally apply to a groundwater source.

- The inner zone is defined by a 50 day travel time for groundwater to reach the source, or a minimum of 50m distance.
- The outer zone is defined by a 400 day travel time or 25% of the catchment zone.
- The total catchment is defined as the area required to support the abstraction or discharge from the aquifer.

Within the zones, activities with the potential to cause contamination are controlled.

Other defined areas include Nitrate Vulnerable Zones (NVZ). The Nitrates Directive (91/676/EC) requires all known areas of land which drain into polluted waters to be designated as NVZs. Polluted waters are defined as:

- (a) Surface freshwaters which contain or could contain, if preventative action is not taken, nitrate concentrations greater than 50 milligram's per litre (mg/l).
- (b) Groundwaters which contain or could contain, if preventative action is not taken, nitrate concentrations greater than 50mg/l.
- (c) Natural freshwater lakes, or other freshwater bodies, estuaries, coastal waters and marine waters which are eutrophic or may become so in the near future if preventative action is not taken.

More detail of NVZ's in the UK can be seen at <http://magic.defra.gov.uk/>

Water quality within the district is generally of an excellent standard, with bathing waters often exceeding the most stringent guideline values.

### 3.9.5 Stratigraphic Sequence

The complete Stratigraphic Sequence of the District (from the BGS Solid and Drift Geological Map – Sheet 290, 1977) is given below:

#### Drift Deposits

Pleistocene and Recent	Blown Sand, Present day
	Marine Beach Deposits and Tidal Flats
	Marine and Estuarine Alluvium Sand and Gravel Clay
	Gravel Beach Deposits
	Alluvium
	Dry Valley and Nailbourne Deposits
	Head
	Head Brickearth
	Head Gravel
	Clay-with-flints

#### Solid

Palaeocene and Eocene	Oldhaven beds (up to 1.5m)
	Woolwich beds (up to 9m)
	Thanet beds (31m)
	Bullhead Bed
<i>Unconformity</i>	
Cretaceous	Upper Chalk (up to c. 116m)
	Middle Chalk (c. 70m)
	Lower Chalk (c. 64m)
	Gault (30-48m)
	Lower Greensand (10-26m)
	Wealden (0.5 to 18m)
<i>Unconformity</i>	
Jurassic	Corallian (0-34m)
	Oxford Clay (0-41m)
	Kellaways Beds (0-16m)
	Cornbrash (0-8m)
	Forest Marble (0-6m)
	Great Oolite (0-31m)
	Lias (0-6m)
<i>Unconformity</i>	
Carboniferous  Upper Coal Measures (up to 732m)	Sandstone
	<i>Kent No. 1 Seam (Beresford)</i>
	Sandstone
	Kent No. 2 Seam
	Sandstone
	<i>Kent No.3 Seam (Snowdown Hard)</i>
	Sandstone

		<i>Kent No. 4 Seam</i>
		Sandstone
		<i>Kent No. 5 Seam</i>
		Sandstone
		<i>Kent No. 6 Seam (Millyard)</i>
		Sandstone
	Middle Coal Measures (110-152m)	<i>Upper Tilmanstone Marine Band</i>
		<i>Lower Tilmanstone Marine Band</i>
		<i>Snowdown Marine Band</i>
		Sandstone
		<i>Kent No. 7 Seam (Betteshanger 'H')</i>
		<i>Kent No. 8 Seam</i>
		<i>Kent No. 9 Seam (Chislet No. 5)</i>
		<i>Kent No. 10 Seam</i>
Carboniferous Lower Coal Measures (110-152m)	<i>Kent No. 11 Seam</i>	
	Sandstone	
	<i>Ripple Marine Band</i>	
	<i>Kent No. 12 Seam</i>	
	<i>Kent No. 13 Seam</i>	
	Sandstone	
Carboniferous		<i>Kent No. 14 Seam</i>
		Sandstone
		<i>Unconformity</i>
Carboniferous		Limestone (up to 48m)

For further details on the geology of the district, see the BGS geological memoir for sheets 289, 305, 306 – Geology of the Country around Canterbury and Folkestone (1966)

## **4.0 The Local Authority Strategy – Aims, objectives and priorities**

### **4.1 Aims**

The aim of this strategy is to outline how the Council intends to meet its statutory duty to investigate potentially contaminated land within its area as specified in the [2012 DEFRA guidance – the statutory guidance](#).

### **4.2 Objectives**

The key objectives of this strategy are to; demonstrate how the Council intends to satisfy criteria contained in the statutory guidance, i.e.

- To take a proportionate approach to any risk from contamination whilst ensuring steps are taken to remove any unacceptable risk to human health or the wider environment
- Site specific, scientifically robust investigations and risk assessments to ensure only land posing a genuinely unacceptable risk is determined as contaminated.
- Consideration of the benefit and cost of taking action, with a view to ensuring corporate priorities and statutory requirements are met in a balanced and proportionate manner.
- To maximise the net benefits to residents taking full account of local circumstances.
- To assist and enable residents living on potentially contaminated sites to gather further information when that site is not scheduled for investigation by the council in the short term

### **4.3 Priorities**

The Council has adopted a systematic approach to inspection that is proportionate to the risk and focussed on those parts where contaminated land (and the most pressing problems) is most likely to be found.

Only a small proportion of the total area is potentially contaminated land as defined by the legislation.

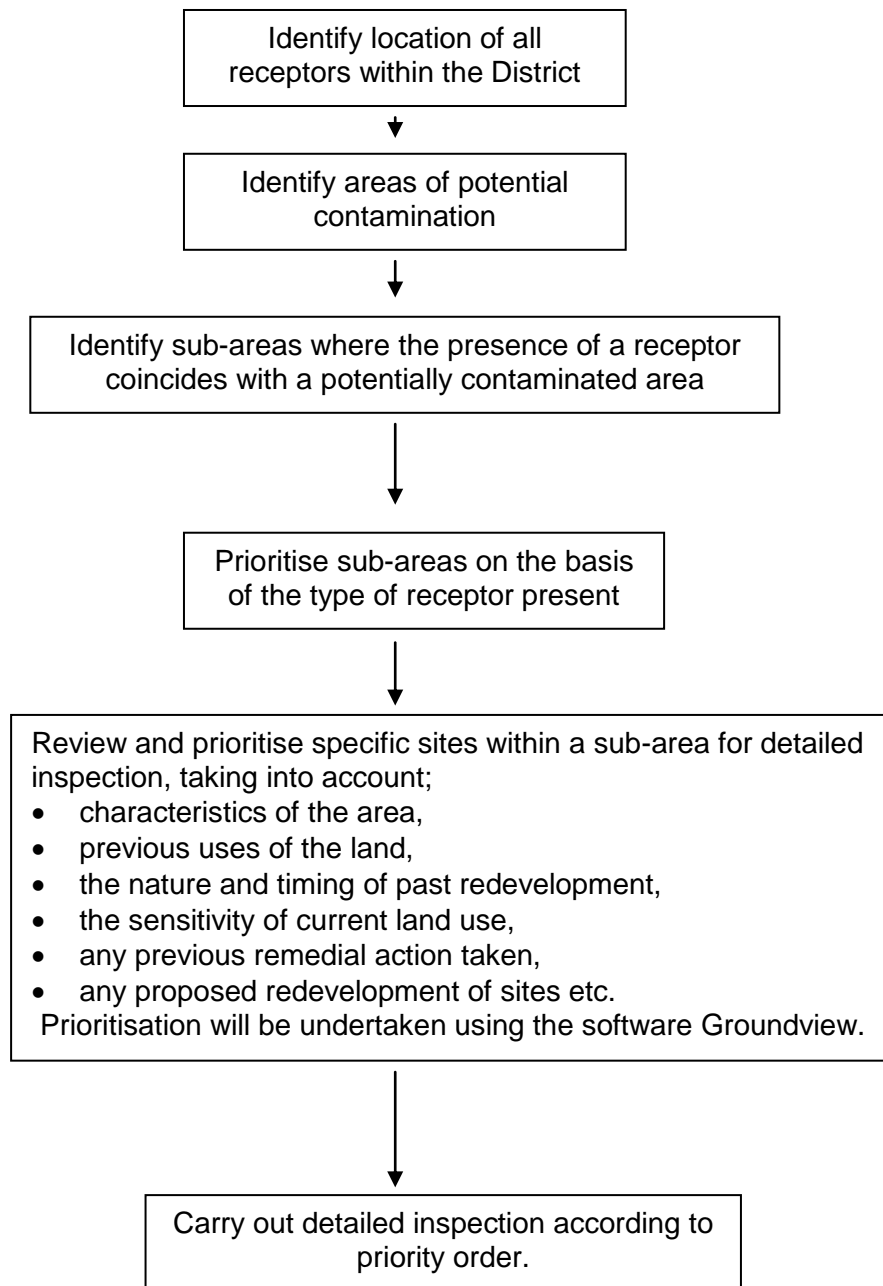
As one of the Council's key aims is to protect human health, areas where there is the potential for significant harm to human health are assigned a high priority. This will include cases where contaminated land affects controlled waters used for public water supply, or likely to be used for the same, as this is also potentially a human health issue. After this the order of priority in relation to receptors will be as follows;

1. Where there is the potential for the pollution of controlled waters in general
2. 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.

It is recognised that some sites may need to be given a high priority for urgent investigation. For example this may include land occupied by or relevant to any Part IIA receptor where there is already evidence of significant harm or pollution of controlled waters.

The strategy allows for a flexible approach to dealing with contaminated land. If necessary, urgent cases will be investigated immediately.

### **Identifying Priority Areas for Detailed Inspection**



## **5.0 What has been done to date?**

### **5.1 Production of the initial inspection strategy**

Produced in July 2001.

### **5.2 Reviewed land in the district**

Commenced in July 2001

Completed January 2010

#### **5.2.1 Identify nature and location of all Part IIA Receptors**

A desk study was carried out, using the information sources outlined in Chapter 6, to identify the location and vulnerability of all Part IIA receptors.

Completed July 2007

#### **5.2.2 Identify potentially contaminated sites**

The desk study also involved the identification of sites where industrial or other activities have taken place in the past or are currently taking place.

Landmark digital map data was acquired showing historic land uses within the district in July 2003, identification of all sites of potential concern was completed in December 2006.

There is currently a list of 398 sites. This was reduced from an initial list of over 900. Most sites removed from the list were done so following in-house desk studies and risk assessments. The majority of the remainder are likely to be low risk sites where small areas of ground have been filled with inert material over time. These sites will not be investigated further unless new information is found or if development takes place on or near the site. The list is reviewed as new information becomes available or if the sites are remediated via planning conditions. The statutory guidance encourages private land owners to have their own assessment carried out. If the Council receives reports on such assessments and are satisfied with the work undertaken we will remove the site from the potentially contaminated list.

#### **5.2.3 Initial categorisation / prioritisation of land**

As one of the Council's key aims is to protect human health, areas where there is the potential for significant harm to human health are assigned a high priority. This includes cases where contaminated land affects controlled waters used for public water supply, or likely to be used for the same, as this is also potentially a human health issue. After this the order of priority in relation to receptors will be as follows;

1. Where there is the potential for the pollution of controlled waters
2. 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.

Prioritisation was completed in 2008.



#### 5.2.4 Consideration of the existence of significant pollutant linkages

Following identification of sites based on existence of a source, pathway and receptor. The next step was the undertaking of a detailed investigation to further evaluate the potential risk associated with the site.

Where it was clear that no risk was posed by the site (i.e. a significant pollutant linkage is absent), no further investigation was necessary.

#### 5.2.5 Urgent cases

- Action on urgent cases will commence within 3 working days of notification.
- Detailed investigations will begin within 3 months,

Urgent cases may include pollution incidents such as heating oil spills. Where groundwater is the primary receptor the Environment Agency will be the main consulting body.

It is recognised that some sites may need to be given a high priority for urgent investigation. For example, this may include land occupied by or relevant to any Part IIA receptor where there is already evidence of significant harm or pollution of controlled waters.

The strategy allows for a flexible approach to dealing with contaminated land. Land considered at any stage to be an urgent case will be investigated immediately to confirm whether or not there is a pathway between a potential contaminant and a receptor. In addition it may be necessary to proceed with detailed investigative work at these particular sites, irrespective of progress made on the development of a general prioritised programme of inspection work.

#### 5.2.6 Council owned land

Whilst identifying other sites, the Council has also identified potentially contaminated land where the local authority itself is the appropriate person. These sites were evaluated and prioritised in the same way as any other site.

#### 5.2.7 How will work continue?

Work undertaken to date means the council has a database of potentially contaminated land across the district. The Council therefore have a list of sites ranked according to highest potential risk (priority). The list undergoes changes when new information on sites comes to light e.g. through remediation work carried out as a result of planning conditions. This priority list is therefore not a public document. Any land formally determined as contaminated will go on the Contaminated Land Register, which is a public document. There are currently no sites within the district on the register.

The council will use existing resources to identify former potentially contaminated land sites that have already been developed. This will be largely confined to "desktop" based work adding to and refining the information that we currently have. Where it is established that a site is of

particular concern, the responsible officer will present the information to the council/senior management on site specific basis to decide what further action shall be taken.

#### 5.2.8 Enabling residents

If a householder living on or near a site identified as potentially contaminated, but considered to be low risk on the priority list, they may wish to engage a contaminated land consultant to investigate further. Such situations may arise if mortgage lenders insist on having any uncertainty removed. In such instances the council will assist through liaison with consultants on the scope of investigations and reviewing the results of reports and surveys. If it is found the site does not meet the definition of contaminated land, as detailed in Part IIA of the Environmental Protection Act 1990, the address will be removed from the list. The council will provide written confirmation of this for use in any mortgage dealings. If the site is found to have high levels of contamination the priority rating shall be revised.

### **5.3 Reports Submitted to the Council**

#### 5.3.1 Contaminated Land Exposure Assessment

The CLEA (Contaminated Land Exposure Assessment) package and the Soil Guideline Values for individual substances (SGV) were considered by the Government and Environment Agency to represent the key instruments for generic assessment of the human health risks from land contamination. The CLEA 'package' deals with the direct assessment of risks to human health from soil contamination. It is based on:

- Toxicological criteria that establish a level of unacceptable human intake of a contaminant derived from soil.
- Estimates of human exposure to soil contamination based on generic land-use, which take into account the characteristics of adults and children, their activity patterns and the fate and transport of the contaminant in soil.

Soil Guideline Values for individual substances have been published covering a range of contaminants. They represent a cross-Government consensus on the technical approach to undertaking such assessments and are based on the latest scientific knowledge and thinking.

The following reports were used for determining site-specific guideline criteria for risks to human health, as a part of the process of deciding whether land is contaminated: Some of these reports, marked (W), have been withdrawn since this strategy was first written.

**CLR 7** – Assessment of risks to human health from land contamination. (W)

**CLR 8** – Priority Contaminants for the Assessment of Land.

**CLR 9** – Contaminants in soils. Collation of Toxicological data and intake value for humans. (W)

**CLR 10** – Contaminated Land Exposure Assessment Model (CLEA). (W)

**CLR11** – Model Procedures for the management of land contamination

**TOX Series** – detailing the derivation of tolerable daily soil intakes and index doses for each contaminant.

**SGV Series** – sets out the derivation of Soil Guideline Values for which toxicological data has been determined.

#### 5.3.2 What about when there was no Soil Guideline Value available?

A risk assessment at the site using site-specific criteria is considered. This means an approach based on a conceptual site model. In this way, an appropriate level of site-specific risk assessment can be used to inform the decision-making process.

Consultants reports submitted to the Council must be undertaken in accordance with CLEA guidelines and risk assessment carried out using CLEA UK or other appropriate risk assessment methods (full justification for the use of which must be provided) for them to be accepted.

#### 5.4 **Periodic reviews**

The assumptions and inspection priorities will be reviewed at appropriate intervals, to include any new information received. In addition, reviews will also be carried out of;

- the Strategy document
- inspection procedures

## **6.0 Procedures and arrangements for dealing with contaminated land issues.**

### **6.1 Internal Management and arrangements for identification and inspection**

The Council's Environmental Protection Team, within the Regulatory Services Department, has responsibility for the implementation of Part IIA EPA 1990.

The Environmental Protection Team will deal with the day-to-day implementation of the strategy and be responsible for serving remediation notices, subject to consultation with the Councils' solicitor.

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

Under Section 108 (6) of the Environment Act 1995, the council has been granted powers of entry to carry out investigation. Where possible, entry onto land will be by arrangement with the occupiers and/or owners of the land, unless, for example, there is the possibility of immediate risk. Officers will be authorised by virtue of section 108 and will carry a certificate of authorisation with photograph. Action under the Act will be in accordance with the Regulator's Code to ensure consistent, fair and transparent practice.

### **6.2 Considering local authority interests in land**

Dover District Council itself currently owns, or has responsibility for, various areas of land. This land is often linked with potentially sensitive uses such as allotments, recreational grounds and public open spaces. The council has also inherited potentially problematic sites linked with past waste management or industrial activities. In addition, the authority recognises that it may have been the party responsible for an historical activity which has caused potential contamination, but are no longer the landowner. Investigation of all Council linked land will be carried out alongside the identification and inspection of all other sites within the district. The duties of the Council as regulator will be kept clearly separate from the responsibilities which arise as a landowner or polluter.

### **6.3 Cross boundary Contamination**

Any Local Authority can take action on contaminated land outside its area where the receptors are within its own area. In these circumstances Dover District Council will liaise with the relevant neighbouring authority and/or the Environment Agency (in the case of pollution of controlled waters) to agree an appropriate course of action. This will also be the case where the contaminated land lies across the local authority boundaries.

### **6.4 Information collection**

Many sources of information will be required to identify potential and/or actual sources of contamination and receptors. The information required may be available within the local authority itself, or from external sources. The statutory guidance directs local authorities to make specific arrangements for

obtaining information relevant to the identification of contaminated land from other regulatory bodies. It is imperative that the advice and information held by other statutory bodies and other relevant parties, on the condition of land is taken into account when deciding priority areas of land.

Some of the resources that the Council uses are outlined below;

#### 6.4.1 Information on receptors

##### **Human receptors;**

- Residential properties with gardens
- Residential properties without gardens
- Allotments
- Schools and nurseries
- Recreational land
- Commercial/industrial premises

Source – Dover District Council - Planning and building control, economic development records

##### **Ecologically sensitive areas**

- European sites (SACs & SPAs)
- Ramsar sites
- National nature reserves
- SSSI's
- AONB's
- SLA's
- Ancient Woodlands
- ALLS
- Other designated Nature Reserves
- Local wildlife Sites (formerly Sites of Nature Conservation Interest (SNCIs))

Source – Natural England, Dover District Council planning and land use records

##### **Property in the form of buildings**

- Ancient monuments
- Listed Buildings
- Sites of archaeological importance
- Other buildings (E.g. affected by landfill gas migration)

Source – English Heritage, Dover District Council records and knowledge

##### **Other forms of property**

- Crops including timber
- Produce grown domestically
- Livestock
- Other owned animals
- Wild animals subject to shooting and fishing rights

Source – Department of Environment, Food and Rural Affairs

### **Controlled waters**

- Surface waters
- Groundwaters
- Water abstractions
- Source protection zones
- Nitrate vulnerable zones
- Surface and groundwater quality data

Sources for this type of information include maps produced by the BGS and EA in addition to DDC records on private water supplies.

#### 6.4.2 Information on actual or possible sources of contamination

##### **Historical maps**

Source – Dover District Council records, County/borough archives, Local studies centres, OS, British map library.

##### **EPA 1990 Part A industrial processes**

Source – EA

##### **EPA 1990 Part B industrial processes**

Source – Dover District Council

##### **Location of consents to discharge**

Source – EA

##### **Closed and current landfill & other waste management license sites**

Source – Dover District Council planning and archive records, EA, Kent landfill atlas, Landmark digital data.

##### **Records of incidents, spills, fires**

Source – Dover District Council records, Local knowledge, HSE, EA

##### **Location of 'industrial cases' and 'defence cases' for special sites**

Source – Land use and planning records, trade directories

##### **Mining activities**

Source – The Coal Authority, BGS

#### 6.4.3 Additional relevant information

##### **Records relating to past remediation / reclamation activities**

Sources – Planning, building control, EA

##### **Other legislative regimes that apply to sites / areas**

Sources – Kent County Council, Dover District Council Environmental Health, HSE, EA

##### **Areas of proposed development**

Sources – Strategic plans and planning records

##### **Geology**

Sources – BGS, local museums

**Hydrogeology**

Sources – BGS, EA

**Topography**

Sources – OS maps, local knowledge, digital elevation models

**Soil Geochemistry**

Sources – EA, BGS

**Flooding Information**

Sources – EA

**Location of greenbelts**

Sources – Local authority plans

**6.4.4 Requests for service and voluntary information provision**

Information relating to potentially contaminated land may also be received in the form of service requests and enquiries from members of the public, businesses or community groups. In addition, interested residents may voluntarily supply information relating to land contamination. Details of the procedures for dealing with these sources of information are described below:

**a) Requests for service**

A service request regarding possible contaminated land will be dealt with in the following manner;

- A record of the information or request will be entered onto the Environmental Health complaints system
- The information or complaint will be referred to the appropriate officer(s). This officer may contact the complainant / informant to obtain further details if necessary.
- The officer will be responsible for undertaking any research necessary to respond to the information or complaint. The complainant will be kept informed of any progress made and a record of the content of any response will be maintained.
- Depending on the nature of the information or complaint it may be necessary to maintain a site-specific case file.

It is not possible to determine a time scale for completion although every effort will be made to resolve complaints quickly and efficiently. In some cases the information or complaint received may result in a requirement to undertake a further investigation of land in accordance with the investigation procedures described in paragraph 6.6.

**b) Voluntary provision of information**

If a person or organisation provides information relating to contaminated land that is not directly affecting them, their family or their property, this will not be treated as a complaint. The information will be recorded and may be acted upon. There will, however, be no obligation for the Council to keep the person or organisation informed of the progress towards resolution.

All callers will be asked to supply their name and address. Every case is looked at individually but, in general, anonymous complaints will be given lower priority. The identity of any complainant will remain confidential. The only circumstance in which this information might be made public is where a remediation notice is appealed in a court of law and an adverse effect on the complainants' health was an important reason for the original contaminated land designation.

## **6.5 Information evaluation**

In the first instance, evaluation of information obtained will enable the Council to categorise land within the district to determine where contaminated land could exist. This information will then be used to prioritise areas for more detailed investigation. Ultimately, however, the aim of the Council is to verify and evaluate any information that may be used in support of a contaminated land designation. Where further information is required to enable a satisfactory evaluation the Council will take any action available under its statutory powers.

Although the main purpose of investigation and inspection is to identify land which may be contaminated, the information obtained will also be relevant to other local authority functions, such as land use planning and development control. Therefore, all information obtained and evaluated will be carefully maintained and documented.

### **6.5.1 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 evaluate whether or not;

- there is evidence that all 3 elements of the pollutant linkage are present
- the evidence was collected using reliable and scientifically defensible techniques and methods
- observed effects fall within one or more of the definitions of "significant harm" listed in the Statutory guidance and in Appendix C1
- 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 the statutory guidance and in Appendix C1

### **6.5.2 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 evaluate if;

- there is evidence that all 3 elements of the pollutant linkage are present
- the evidence was 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
- the assessment has taken into account the requirements set out in the statutory guidance and in Appendix C2



### 6.5.3 Evaluation of the effectiveness of previous actions or other regimes in preventing or dealing with contamination

The Council will need to consider what remedial action has already taken place to address land contamination. The remedial action may have been taken by an existing / former landowner or pro actively by the Council or other third party

The nature and timing of past redevelopment will be relevant, as it will influence the extent to which contamination was understood and addressed. This in turn will enable a view to be taken on the effectiveness of the remedial works that were undertaken.

Enquiries will also be made to determine whether any of the following regimes have applied to sites

- EPA 1990 Part A industrial processes
- Waste management licensing
- EPA 1990 Part B industrial processes
- 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, as it will influence the extent to which contamination was understood and addressed.

## **6.6 Identification of potentially contaminated land**

### 6.6.1 Identification of any key geographical areas

The Council will identify key geographical areas (sub-areas) during an initial review of the information obtained relating to nature and location of all Part IIA receptors and of sites/areas that are potentially contaminated (source). The geographical coincidence of these two elements of a potential pollutant linkage will enable the Council to focus upon establishing whether there is also a pathway present. Prior to this, areas will be prioritised based on the receptors at risk. In this case priority will be given to locations where human receptors coincide with areas of potential contamination.

### 6.6.2 Identification of significant pollutant linkages

Based on the information collated relating to SOURCE and RECEPTORS, it may be possible to identify any PATHWAYS. This will assist in determining the extent to which the receptors may be exposed to contamination. Areas within the district will be broadly assessed for pathways, and hence pollutant linkages in accordance with the priority order determined in the previous stage.

In order to determine whether there is a pathway the nature of the contaminant and the characteristics of the land will be considered. To assist this process the following characteristics will be considered;

- Geology - to determine the potential for sub-surface migration of liquids, gases and vapours. Sites located on clays for example will be of a lower priority than those located directly on chalk.
- 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 (from the sea, rivers or drainage network) or rising groundwater.
- Topography - to determine the direction of surface water runoff and possible direction of sub-surface flow.
- Current land uses including children's play areas, gardens, hard surfacing and allotments.

It is recognised that, in the majority of cases, insufficient information will be available at this stage to determine the presence of a pathway. This will be clarified during the detailed inspection stage of the process. However, should it be clear that a pathway does not exist, no further investigation will be necessary. Where a pathway is uncertain, an assumption will be made that one exists.

### 6.6.3 Identification of individual sites

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

A more detailed review of sites within a sub-area will be carried out before individual sites can be prioritised. Additional information to be considered will include for example;

- The characteristics of the area
- The previous uses of the land
- The sensitivity of the current land use
- The nature and timing of past redevelopment to determine whether and to what extent contamination may have been addressed already through past redevelopment activity.
- The extent to which remedial action has already taken place (or is planned to be taken) to address contamination, in order to determine whether Part IIA is likely to be the most appropriate legislation to achieve the necessary results.
- Any proposed redevelopment of sites

Sites will then be prioritised for detailed inspection using Groundview, as outlined previously.

The boundaries of individual sites may be determined after considering the following factors;

- The spatial distribution of the contaminants that form part of the pollutant linkage relevant to a particular area of a site
- The nature and extent of the remedial works that may be required
- The likely identity of the individuals who may be responsible for the remedial works.

#### 6.6.4 Identification of Special Sites

At any point during the process of identifying contaminated land the Council becomes aware of a potential special site; advice will be obtained from the EA as to the best way to proceed. For further details relating to Special Sites see paragraph 6.7.4.

### 6.7 Detailed inspections

The local authority should carry out a detailed inspection of any area where a possible pollutant linkage exists. The purpose of the detailed inspection is to ensure that the LA has the information it needs to decide whether or not a particular area of land is contaminated and, if so, whether the land is likely to be a special site.

The criteria for identifying key geographical areas and individual sites areas and the method for prioritising site inspections has been discussed in paragraph 6.6

Detailed inspections may involve a range of activities including;

- a more detailed analysis of documentary records on the land and its setting;
- a review of any existing information on ground conditions;
- visual inspection of the land;
- intrusive investigation of the land.

#### 6.7.1 Methods of inspection

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

##### **a) Desk based study**

During this stage Dover District Council will review all available documentary information from in house sources, agency sources and landowner / occupiers (see paragraph 6.3). A more detailed desk based review of the characteristics of the area of land will help in:

- understanding whether and what pollutant linkages exist
- defining boundaries of land
- designing any necessary visual inspection and intrusive investigation so that all relevant information is obtained
- ensuring that appropriate health and safety and environmental protection measures are taken
- evaluating any information on the condition of the land that is provided by others such as the landowner or occupier.

This assessment may be sufficient for the Council to make a determination without having to carry out any more detailed work. However, if the information continues to indicate that one or more pollutant linkages exist but the information is not sufficient the Council may decide to carry out more detailed work.

**b) Visual inspection / Site reconnaissance (possibly to include limited sampling)**

The aim of this action is to help refine the picture of the pollutant linkages that may be relevant to the site. Visual inspection may help to either corroborate or disprove any suspected pollutant linkages identified during the desktop study. In addition the visual inspection may indicate whether an emergency situation exists.

**c) Intrusive investigation**

Intrusive investigation will only proceed where the information from desk top study and visual inspection indicate that one or more potential pollutant linkages are present. In addition, this will only be carried out if the Council is unable to determine if the land is contaminated or obtain the necessary information in any other way.

In some cases it will be sufficient to collect only a small number of samples, whereas in other cases it may be necessary to take a greater quantity of samples to show that contaminated soil poses an unacceptable risk to human health.

**6.7.2 Internal procedures**

The Council intends to develop / adapt internal procedures and technical specifications to be used by external contractors in accordance with technical guidance relating to investigations of this nature (e.g. British Standard Code of Practice for investigation of potentially contaminated sites BS 10175:2011+A1:2013). In all investigations the Council will ensure that good technical practice will be followed in carrying out and recording detailed inspection work. The Council will also ensure that such work does not harm people (site workers, local residents and general public) or damage the wider environment.

Before carrying out any detailed inspections the following will be considered;

- The type of additional information required at each stage of the inspection
- The practical arrangements needed for visual inspection or intrusive investigations
- How the information will be recorded and interpreted
- Arrangements for public access to the information

As in the case of the visual inspection, intrusive sampling will only be carried out by a "suitable person". This person will be appropriately qualified and experienced to carry out the necessary inspection and analysis. Suitable persons would include, for example, suitably experienced consultants or professionals (for example, those holding a relevant charter or SiLC status or a Suitably Qualified and Experienced Person as detailed in the National Quality Mark Scheme for Land Contamination Management). Reports prepared by a suitable person should provide the Council with the information required to determine whether the site should be designated as contaminated land, and if so, what remediation is required to make the site suitable for its current or intended use.

A contractor will not be instructed to proceed with a visual site inspection or intrusive investigation until the following criteria have been satisfied:

- Written confirmation has been received from the owner and occupier of the site allowing the contractor to enter the land for the purposes of the site investigation (or alternatively when section 108 power of entry requirements have been met (see below))
- All necessary planning consents and environmental licences have been obtained
- Full details of existing site services have been received and considered in the design stage of the sampling strategy
- All potential locations for exploratory boreholes and other intrusive works have been identified
- The health and safety procedures will be implemented by the contractor
- Suitable arrangements have been made for environmental protection.

If at any stage it is considered, on the basis of the information obtained from a detailed inspection, that there is no longer a reasonable possibility that particular pollutant linkage exists on the land, the authority will not carry out or instruct any further detailed inspection for that linkage.

The Council recognises that in some cases insufficient information will be available for determination purposes but additional data collection would not be possible or likely to help in deciding whether or not land is contaminated land. In this case the Council will determine the status of the land on the basis of the available information but will keep the decision under review in the event that additional information comes to light.

### 6.7.3 Powers of entry

The LA has powers under Section 108 Environment Act 1995 to enter, or authorise others to enter premises to carry out investigations. However, Dover District Council will only carry out detailed inspections using these powers where there is a reasonable possibility that a pollution linkage exists, and (for intrusive work) it is likely that the contaminant is present and a receptor exists or is likely to exist given the current use. These powers will not be used for carrying out intrusive investigations if the information needed to make a determination is already available or someone (such as the landowner) has offered to make the information available. Seven days notice will be given for residential premises or where heavy equipment will be involved. If necessary the Council will obtain a magistrates warrant (under s108 Of Environment Act 1995) to gain access. The powers of entry may be used forthwith in an emergency. The legal department will be consulted in these situations.

**In some circumstances, as outlined in schedule 18 of the Environment Act 1995, the LA may be liable to pay compensation for any disturbance caused by inspection carried out under s108 powers. Therefore, it is imperative that good technical practice is followed.**

#### 6.7.4 Special Sites

A desk study is likely to be the earliest stage at which the Council will become aware of a potential special site. At this stage advice will be obtained from the EA on the best way to proceed.

There are two potential scenarios;

- a) The Council notifies the EA of a potential special site
- b) The EA becomes aware of a potential special site and notifies the Council.

In both cases the EA may undertake a further investigation on behalf of the Council. When the EA has completed the investigation it will then be in a position to confirm whether or not the site is a special site in accordance with the Contaminated Land (England) Regulations 2006. If the site is a special site the Council will no longer have a role in its remediation (other than as the Local Planning Authority). The Environment Agency will be the enforcing Authority for Special Sites. If the site is not a special site and is contaminated land then the Council will be responsible for dealing with it under Part IIA.

#### 6.7.5 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 its condition of the land.
- The EA for advice about the effect upon controlled waters and potential special site status.
- English Nature for effects upon ecological systems and when intrusive investigation is to be undertaken within a Site of Special Scientific Interest (SSI).
- English Heritage, when sensitive archaeological remains or buildings are likely to be present.

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

#### 6.7.6 Health and Safety Procedures

The Council will ensure that the contractor undertaking the site investigation is aware of the health and safety procedures contained within the British Standard Code of Practice on the Investigation of Potentially Contaminated Sites (BS 10175:2011+A1:2013). The contractor will also have regard to the HSE document on protecting workers and the general public during the redevelopment of contaminated land. Certain site activities, for instance particular remediation methods may require particular risk assessment with regards to public safety.

### 6.7.7 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, visual inspection and intrusive investigation (where appropriate)
- Analytical results of soil, gas, ground and surface water samples (if 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.

### 6.7.8 Periodic review

A periodic review of all sites identified as contaminated land and land found to be in a contaminated state will be undertaken. This is to ensure that any changes that may occur either in, on or around any particular site may be noted. Changes in either pathways or receptors could lead to a change in classification. This is discussed further in paragraph 6.9. Periodic changes in legislation may also warrant the re-inspection of a particular site.

### 6.7.9 Potential outcomes of a detailed inspection.

The statutory guidance details possible outcomes. Sites will go into one of 4 categories.

Category 1 – in general these sites will require immediate action through being designated as contaminated land.

Category 2 – may require immediate action.

Category 3 – may not meet the statutory definition of contaminated land. But further monitoring and observation may be necessary.

Category 4 – Unlikely to meet the statutory definition of contaminated land.

The following table outlines the action the Council may take with regard to the above categories

Category	Action
1	Intrusive investigation required. Full review of existing site data necessary to develop detailed inspection strategy and conceptual model. The Council will seek funding to carry out an investigation from the original developer or polluter if possible.
2	Medium risk – intrusive investigation required to resolve potential risks. Clean up considered likely under Part IIA and priority action recommended. The Council will seek funding to do the investigation, from the original polluter or developer if possible.
3	Low to Medium Risk- Intrusive investigation recommended to resolve potential risks. Clean up can not be excluded under part IIA. Residents will be assisted to undertake their own investigations and risk assessments. Should these assessments indicate that the site should be reassessed as category 1 or 2 the council will re-evaluate its position
4	Low risk. Likelihood of contamination is considered low and if present the impacts is such that clean up could not be reasonably justified. It is highly unlikely that further work will be required on these sites. Should residents wish to do so the same approach to category 3 sites will be followed.

#### 6.7.10 Funding of works

Part IIA of the Environmental Protection Act 1990 makes clear that wherever possible, the original polluter and/or a developer that knowingly developed a contaminated site without ensuring suitable levels of remediation are completed should pay for any remediation needed in later years. The council will make every effort to ensure this is the case. However the legal process is time consuming and difficult particularly when pollution and/or development were many years ago, or the people and companies involved no longer exist. Where it is not possible to make the original polluter or developer pay for remediation the legislation makes the current person in ownership (residents) of the land a responsible person for funding remediation.

### 6.8 Liaison and communication

Effective liaison and communication is an essential part of the Contaminated Land Regime. Much of the work proposed in this strategy will be collaborative and require effective liaison with other bodies. As part of its strategy the Council established communication links with a variety of statutory and non-statutory consultees as well as other interested parties to ensure the efficient and effective transfer of information. It is important that all stakeholders are aware of the implications of potentially contaminated land as early as possible.

It is recognised that the complex nature of contaminated land issues does not lend itself to easy explanation. In particular it may appear somewhat complicated as the process under Part IIA relies upon a risk based approach to identifying contaminated land. The need for involvement of a complete spectrum of representatives from the community means that good risk communication skills and a sound communication plan is needed. This is briefly outlined below but it should be noted that resource and financial constraints may limit the actual form and extent of communication.

#### 6.8.1 Statutory consultees

When the strategy was initially drafted formal contact was made with the Environment Agency and other statutory organisations that have a particular regulatory interest or expertise in relation to contaminated land. These organisations hold relevant information and can provide advice that will assist the Council to operate efficiently under Part IIA. These organisations are as follows;

- Natural England
- English Heritage
- Department of Environment, Food and Rural Affairs
- Food Standards Agency
- Kent County Council

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



### 6.8.2 Non Statutory Consultees

There is great scope for members of the public, businesses, external organisations and voluntary organisations to play an important role in identifying and dealing with contaminated land in the district. All stakeholders will be considered in the broadest possible extent and may include those with professional expertise and financial interests, alongside those with local knowledge or community status.

The strategy was therefore made more widely available, for example to

- Parish Councils,
- Major Landowners,
- Housing Associations,
- Chamber of Commerce,
- Professionals working in land management,
- Local Agenda 21 groups,
- Neighbouring LA's,
- Developers,
- National Farmers Union
- Members of the public via main libraries and the Councils website.

The need to keep up to date with current regulation and guidance is recognised by the council and regular conferences and training sessions are attended. In addition to this, the Council is a member of the Kent and Medway Contaminated Land forum whose members include representatives of the EA, Local Authorities and other relevant bodies. The council also subscribes to RIAMS whereby many local authorities throughout the country may be consulted for advice on specific issues.

### 6.8.3 Communication with owners, occupiers and other interested parties in relation to specific sites.

The Councils approach to its regulatory duty under the contaminated land regime is to seek voluntary action before taking enforcement action. This should, in many cases, provide a more effective remediation process. It is recognised that this approach will require effective communication with owners, occupiers and other interested parties.

Once potential contamination and a Part IIA receptor has been identified for a site the Council will contact the appropriate stakeholders to seek their co-operation and assistance as early as possible. Stakeholders will be able to raise their concerns and their views will be carefully considered as part of an open two way communication process. Overall it is important to try and ensure that all stakeholders understand and support the risk assessment process, the results obtained and how they will affect decisions about any remedial works required.

The Council will keep all relevant parties informed at each stage of an investigation. Where a formal designation of contaminated land is required the council will continue to try to work with all stakeholders to ensure all necessary remediation is carried out either voluntarily or following service of a remediation notice.

#### 6.8.4 Communication with the general public

The Council will treat any concerns raised by members of the public seriously and with respect, recognising the importance of the issue to the individual. In all instances the Council will recognise and try to overcome the critical barriers to effective communication;

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

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

### 6.9 Information management

#### 6.9.1 Information storage

Under the requirements of Part IIA the Council is likely to obtain a great deal of information from a wide range of different sources. This information, which may be in the form of bound documents, reports, letters, maps or electronic records, will need to be collated and managed efficiently.

The Councils Geographical Information System (GIS) will be the primary tool used to store and manage contaminated land information. The system will manage the information arising from the initial review of "sources" and "receptors" which will assist with the subsequent identification of key sub areas within the district.

#### 6.9.2 Access to information

##### **Within the Council**

The GIS system will allow certain designated users within the Council access to view the information stored within it. Any additional information related to the contaminated land regime will be available on request to the Environmental Protection section.

##### **To the Environment Agency**

The Environment Agency is required to prepare and publish a report on the state of contaminated land in England. The information required by EA from LA's to fulfil this function include:

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

A memorandum of understanding has been drawn up between the Environment Agency and the Local Government Association that describes how the information will be exchanged. The Council will provide information to the EA following the guidelines agreed through this national forum.

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

### **External 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 public register, or which relates to a non designated site. 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 and any information given would be done so as to be in line with the Environmental Information Regulations 1992 (as amended). All requests for information should preferably be made in writing to the Council, and, where possible the relevant information will be provided within 14 days.

The council will undertake a search within a radius of a property to establish the former use of the site and that of the adjacent land. The search includes examination of the Council's historic map archive (as provided by Landmark digital data), IPPC authorisations and the Kent Landfill Atlas; in addition to a search of the council's corporate data management database.

There is a charge for this service; further details can be obtained from the council's online question and answers service or by contacting the Environmental Health Department.

### **Public register**

The Council is required under Part IIA of the Environment Act 1995 to keep a register detailing information regarding contaminated land. The Environmental Health Department located at the Council Offices on the White Cliffs Business Park in Dover will hold the register. This will be accessible on request by members of the public during office hours, Monday to Friday (please enquire for further details).

The particular details to be included in the register are prescribed in Schedule 3 of the Contaminated Land (England) Regulations 2006. In compliance with the Regulations, the register for Dover District will include:

- Remediation Notices
- Details of site reports obtained by the authority relating to remediation notices
- Remediation declarations, remediation statements and notifications of claimed remediation
- Designation of sites as "Special Sites"
- Any appeals lodged against remediation and charging notices
- Convictions

The public register will not include details of historic land use or other records used during investigations of potentially contaminated land. These are classed as research documents and as such will not be available to the public.

### **Confidentiality**

Section 78 of the Environment Act 1995 (Part IIA) specifies certain exclusions from registers of information. Therefore, before anything is entered on the register or disclosed to third parties, the Council will consider whether the information should be excluded on the basis that its inclusion or disclosure would be against the interests of national security or the information is commercially confidential. Certain grounds of commercial confidentiality are excluded from anonymity by the legislation. If the Council excludes any information then a note must be entered on the register stating that additional information is available but has been removed for specific reasons.

## **6.10 Review mechanisms**

The Council is recommended to build two aspects of review into this strategy to ensure the strategy itself and any assumptions and/or decisions resulting from it relating to individual sites are kept up to date.

### **6.10.1 Reviewing inspection decisions**

A review of the assumptions made and information held about the condition of individual sites will be undertaken periodically. It is difficult at this stage to determine the frequency of these reviews. In practice, it is likely that inspection will be a continuum, balancing a systematic approach to the inspection with available resources.

It is also recognised that, in addition to the routine review of inspection findings, there are likely to be situations (triggers) when changes in the condition or circumstances of the land or its surrounding environment prompt a review of the inspection findings. Examples of such circumstances or events include;

- Proposed changes in the use of surrounding land
- Unplanned changes in the use of the land
- Unplanned events such as flooding, spillage's, fire etc
- Reports of localised health effects which appear to relate to a particular area of land
- Verifiable reports of unusual or abnormal site conditions being received
- Change in legislation

Any of these circumstances, or similar, will trigger an immediate review of the inspection findings outside the routine review cycle.

An earlier review will also take place in response to information received from;

- Statutory bodies such as Environment Agency, Health and Safety Executive, Department of Environment, Food and Rural Affairs
- Owners or occupiers of land and other relevant stakeholders.

#### 6.10.2 Review of the inspection strategy

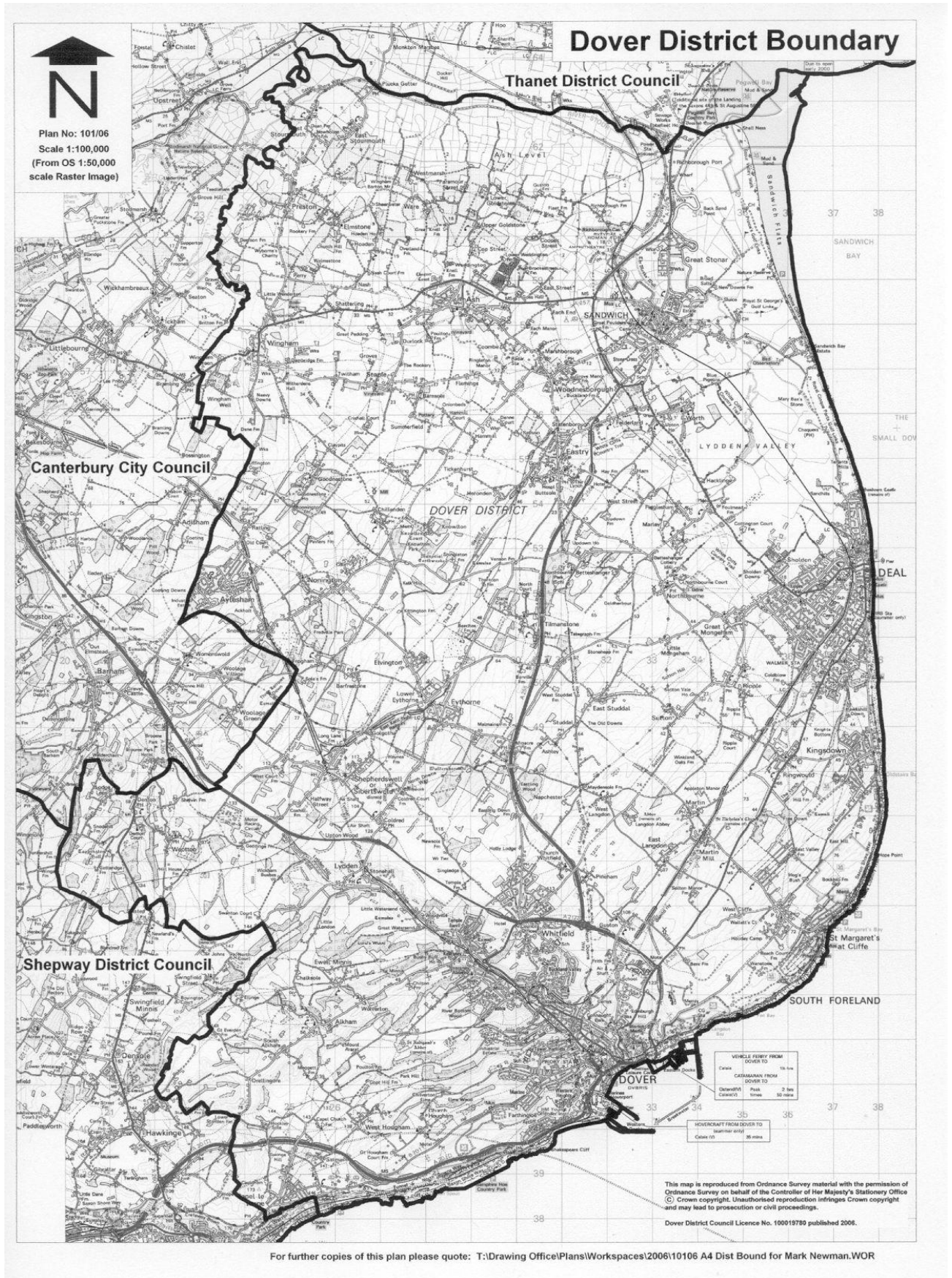
As part of the overall quality management of this work, it is important to consider the need to review the strategy from time to time. This will be undertaken at least once every 5 years. If there are significant changes to the strategy it is accepted that it may be appropriate to carry out further annual reviews in the following years.

#### 6.10.3 How this strategy interacts with the planning system.

The statutory guidance and the National Planning Policy framework (NPPF) operate on the concept that potentially contaminated land must be shown to be suitable for its intended use. As an absolute minimum this means sites must be incapable of being designated as contaminated land as defined under Part IIA of the Environmental Protection Act 1990..

The council will expect any planning application for potentially contaminated to be accompanied by the report of a desktop study and site walkover as defined in British Standard 10175:2011+A1:2013 - Investigation of potentially contaminated sites - Code of practice. Such reports should identify that the site has been assessed as suitable for use or in the event that further works are needed, to detail them and discuss how the site can reasonably be made suitable for the proposed use. All reports should be completed by a suitably qualified "competent" person as defined in the NPPF.

# APPENDIX A



## **APPENDIX B**

### **Glossary and Useful Abbreviations**

**ALLS** - Area of Local landscape Significance

**Alluvium** – Defined as soil or sediment deposited by running water

**AONB** – Area of Outstanding Natural Beauty

**Aquiclude** – A layer of rock impermeable to water

**Aquitard** – A layer of rock with low hydraulic conductivity

**Aquifer** – Groundwater bearing rock formations sufficiently permeable to transmit and yield water in usable quantities. (See definition of groundwater below)

**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.

**BGS** – British Geological Survey

**BTEX** – Benzene, Toluene, Ethylbenzene and Xylene

**CCA** – Chromated Copper Arsenate

**CIEH** – Chartered Institute of Environmental Health

**CLEA** – Contaminated Land Exposure Assessment, a tool for the assessment of risks to human health

**COCs** – Contaminants of concern

**Contaminated Land [Legal Definition]:** 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:** These include:

- a) Inland waters (river, streams, underground streams, canals, lakes and reservoirs),
- b) Groundwaters (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).

**DCLG** – Department for Communities and Local Government

**DDC** – Dover District Council

**DEFRA** – Department for the Environment, Farming and Rural Affairs

**DETR** – Department for the Environment, Transport and Regions

**DNAPL** – Dense Non-Aqueous Phase Liquid

**Drinking water abstraction** – The taking of water from a source (primarily an underground source within the Dover District) for drinking water

**DRO** – Diesel Range Organics

**DWS** – Drinking Water Standard

**EA** – Environment Agency

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

**EN** – English Nature

**EPA** – Environmental Protection Act (1990)

**EPH** – Extractible Petroleum Hydrocarbons

**EQS** – Environmental Quality Standard

**FID** – Flame-Ionising Detector (used to detect hydrocarbon vapours)

**FSA** – Food Standards Agency

**GIS** – Geographical Information System

**GQA** – General Quality Assessment

**GRO** – Gasoline Range Organics

**Groundwater:** Is that portion of the water beneath the surface of the earth that:

- Can be collected with wells, tunnels or drainage galleries,
- or that flows naturally to the surface via seeps and springs.

The legal definition from EC Groundwater Directive [80/68/EEC] is: -'All water which is below the surface of the ground in the saturated zone and in direct contact with the ground or subsoil'

**Head** – Defined as reworked deposits deposited during tundra conditions as a result of soil creep

**HMSO** – Her Majesties Stationary Office

**HPA** – Health Protection Agency

**HSE** – Health and Safety Executive

**Hydraulic Conductivity** – Describes the ease at which water is able to flow through a rock (i.e. its permeability)

**ICP** – Inductively Coupled Plasma (method of soil analysis)

**ICRCL** - Interdepartmental Committee for the Redevelopment of Contaminated Land

**IPC** – Integrated Pollution Control

**IPPC** – Integrated Pollution Prevention Control

**LGA** – Local Government Association

**LNAPL** – Light Non-Aqueous Phase Liquid

**LNR** – Local Nature Reserve

**MoD** – Ministry of Defence

**NMR** - National Maritime Reserve

**NOx** – Oxides of Nitrogen

**NRA** – National Rivers Authority

**NRPB** – National Radiological Protection Board

**NSA** – Nitrate Sensitive Area

**NVZ** – Nitrate Vulnerable Zone

**OS** – Ordnance Survey

**PAH** – Polycyclic Aromatic Hydrocarbons

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

**PCB** – Polychlorinated Biphenyls

**PCE** – Tetrachloroethylene (Other names include - Perchloroethylene / Perc)

**PCP** – Pentachlorophenol

**PID** – Photo-Ionisation Detector (instrument used to detect hydrocarbon vapours)

**Pollutant Linkage:** The relationship between a contaminant, a pathway and a receptor.

**RAMSAR** – A site protected under an international convention on protection of wetlands of international importance, especially as habitats for waterfowl, named after the city in Iran where the convention was signed in 1971.

**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 the following: -

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

**SAC** – Special Area of Conservation

**SEPA** – Scottish Environmental Protection Agency

**SiLC** – Specialist in Land Contamination



**SINC** – Site of Importance for Nature Conservation

**SIS** – Spatial Information System

**SLA** – Special Landscape Area

**SNCI** – Site of Nature Conservation Interest

**SNIFFER** – The Scotland and Northern Ireland Forum for Environmental Research

**SoS** – Secretary of State

**SOx** – Oxides of Sulphur

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

**SPA** – Special Protection Area for birds

**Special Sites:** Defined in regulation 2 and 3 and Schedule 1 of the Contaminated Land [England] Regulations 2000, a summary is given below: -

- Any of the following activities have been carried out at any time: disposal of waste acid tars in a retention basin; purification of crude petroleum or oil; manufacture or processing of explosives; the manufacture, production or disposal of chemical weapons or biological agents or weapons

- The land is currently used for naval, military or air force purposes, an atomic weapons establishment, within a nuclear licensed site, subject to section 30 of the Armed Forces Act 1996;

- The land appears to be contaminated as a result of the escape of substances from land meeting any of the above descriptions;

- Land which is affecting controlled waters that; are used as drinking water supply, and are likely to require treatment in order to be fit for human consumption, or; are not likely to meet the requirements for water quality specified in regulations made under the Water Resources Act 1991, or are contained within one or more defined aquifers and where pollution relates to one or more defined substances.

**SPT** – Source Pathway Target

**SPZ** – 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.

**SSSI** – Site of Special Scientific Interest

**TCE** – Trichloroethylene (aka Trike) used as a dry-cleaning fluid

**TNT** – Trinitrotoluene (an explosive)

**TPH** – Total Petroleum Hydrocarbons

**Urban Task Force, The** - The Urban Task Force was set up in October 1998, with a remit:

- to develop a framework for the future of the urban areas of England which is capable of being translated into locally defined solutions, in co-ordination with the development of Government policy;
- to identify ways of overcoming existing barriers drawing on available best practice, and to propose practical and realistic new measures for achieving quality urban development, with specific reference to housing, considering both new development and the potential for re-use of existing buildings;
- to act as a sounding board for the work on the assessment of previously developed land and to advise ministers accordingly; to work alongside, advise and help develop initiatives through English Partnerships, local authorities and others in identifying, targeting and promoting development on key demonstration sites throughout the country.

**Vadose Zone** - The portion of land between the land surface and the water table (i.e. the unsaturated zone)

**VC** – Vinyl Chloride

## **APPENDIX C**

### **C1 Categories of significant harm**

SEE TABLE OVERLEAF

The local authority should not regard harm to receptors of any type other than those mentioned in the table below as being significant harm for the purposes of Part IIA. For example, harm to ecological systems outside the descriptions in the second entry in the table should be disregarded. Similarly, the authority should not regard any other description of harm to receptors of the types mentioned in the table as being significant harm.

The authority should disregard any receptors which are not likely to be present, given the "current use" of the land which might be affected.

The "current use" means any use which is currently being made, or is likely to be made, of the land and which is consistent with any existing planning permission (or is otherwise lawful under the town and country planning legislation). This definition is subject to the following qualifications:

- (a) the current use should be taken to include any temporary use, permitted under town and country planning legislation, to which the land is, or is likely to be, put from time to time;
- (b) the current use includes future uses or developments which do not require a new, or amended, grant of planning permission;
- (c) the current use should, nevertheless, be taken to include any likely informal recreational use of the land, whether authorised by the owners or occupiers or not, (for example, children playing on the land); however in assessing the likelihood of any such informal use, the local authority should give due attention to measures taken to prevent or restrict access to the land; and
- (d) in the case of agricultural land, however, the current agricultural use should not be taken to extend beyond the growing of the crops or rearing of animals which are habitually grown or reared on the land.

	Type of Receptor	Description of harm to that type of receptor that is to be regarded as significant harm
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 an unhealthy condition of the body or a part of it and can include, for example, cancer, liver dysfunction or extensive skin ailments. Mental dysfunction is included only insofar as it is attributable to the effects of a pollutant on the body of the person concerned.</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 candidate Special Areas of Conservation or potential Special Protection Areas given equivalent protection;</li> <li>• any habitat or site afforded policy protection under paragraph 13 of Planning Policy Guidance Note 9 (PPS9: Biodiversity and Geological Conservation) on nature conservation (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>For <u>any</u> protected location:</p> <ul style="list-style-type: none"> <li>• 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</li> <li>• 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.</li> </ul> <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 compatible 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>

	<b>Type of Receptor</b>	<b>Description of harm to that type of receptor that is to be regarded as significant harm</b>
3.	<p>Property in the form of:</p> <p>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>	<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>
4.	<p><b>Property in the form of buildings.</b></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>

## **C2 The Pollution of Controlled Waters.**

Land should not be designated as contaminated land where:

- (a) a substance is already present in controlled waters;
- (b) entry into controlled waters of that substance from land has ceased; and
- (c) it is not likely that further entry will take place

Substances should be regarded as having entered controlled waters where:

- (a) they are dissolved or suspended in those waters; or
- (b) if they are immiscible with water, they have direct contact with those waters on or beneath the surface of the water.

## **APPENDIX D**

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