



# Caerphilly County Borough Council Contaminated Land Inspection Strategy



Directorate of the Environment

March 2010

# Caerphilly County Borough Council

## Contaminated Land Inspection Strategy

### Executive Summary

On 1<sup>st</sup> July 2001 section 57 of the Environment Act 1995 introduced the first comprehensive framework for dealing with contaminated land into UK law. This framework, introduced as Part IIA of the Environmental Protection Act 1990, placed a duty on every local authority to inspect its area for contaminated land. The role of implementing and enforcing the legislation has been given to local authorities to undertake in a strategic manner. The legislation required local authorities to publish a strategy in 2002 detailing how they would inspect their areas for contaminated land. Due to the changes in timescales and amended legislation the strategy has been updated to reflect this and the recent progress that Caerphilly County Borough Council has made in dealing with contaminated land.

The revised strategy explains the context behind the legislation and how the Government has adopted a 'suitable for use' approach to the remediation of contaminated land. This approach recognises that land must be assessed on a site-by-site basis and must take into account factors such as the nature of the contamination and the land use.

The legislation defines contaminated land as being

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

- (a) Significant harm is being caused or there is a significant possibility of such harm being caused, or
- (b) Pollution of controlled waters is being, or is likely to be caused."

This definition is based on the risk of any contamination on a site causing significant harm to human health, the wider environment or the pollution of controlled waters. Before land can be determined that it is contaminated in accordance with the legal definition, the Council must establish that a 'significant pollutant linkage' exists, which means that the three parts of a pollutant linkage must be identified:

- A **contaminant**, at concentrations that it could affect health or the environment
- A sensitive **receptor**, such as people, livestock, property or surface water, that could be affected if exposed to the contaminant
- A **pathway** or means through which the contaminant is, or is likely to be causing significant harm to that receptor.

Where a significant pollutant linkage can be demonstrated, the Council will be responsible for the enforcement and ensuring the remediation of the land concerned. In certain circumstances i.e. special sites, the Environment Agency will become the enforcing authority.

It is important to note that the presence of a contaminant in, on or under the land will not by its self be sufficient to determine that the land is contaminated land.

Historically, the Caerphilly County Borough area has been a major provider of coal and iron products etc, with various supporting industries springing up around these heavy industrial sites. Quarrying and mineral extraction activities in the past have lead to the re-use of land for waste disposal activities. In more recent times, a wide variety of industries have been successfully operating within the borough such as chemical and paint manufacturers, metal smelting and extrusion, and major food manufacturing companies. It is known that the heavy industries that once dominated many parts of the Borough could have contaminated the land. Similarly, the locations of human and environmental receptors are spread throughout the borough rather than being concentrated in any one area. Therefore, the Council will continue to inspect the whole of its area to identify potentially contaminated sites and prioritise them according to the potential level of risk.

In order to carry out an ordered and efficient assessment of the contaminated land within the area, the Council has prepared the revised inspection strategy which will provide details of the methods selected for assessment of land, how the information will be stored and the timescales involved in carrying out the inspections. Procedures have been put into place to ensure the effective exchange of information between the Authority and the Environment Agency, who will provide a variety of information and guidance.

As a landowner, the Council recognises the need to assess land in its ownership for potential contamination. The revised inspection strategy will include the assessment of land within the Councils ownership to ensure that it is suitable for use, and carry out remediation work where necessary.

## Priorities and actions of the strategy

### Completed Stage

- Examination of historical site data and enter all information onto the Arc View GIS

### Short Term Action

- Finalise the risk assessments to place potentially contaminated sites into priority categories for detailed inspection. This will include any local authority owned land,

### Medium Term Action

- Carry out detailed investigations of sites that are probably or are certainly not suitable for the present use and environmental setting and action is needed in the short term (high risk sites).

### Long Term Action

- Carry out detailed investigations of sites that may not be suitable for the present use and environmental setting and action may be needed in the medium term (medium risk sites).

### Review

- Undertake a review of the inspection strategy every three years. Reviews maybe undertaken more frequent due to changed in legislation/guidance

Whilst undertaking the risk assessments is a short term action, this work has been completed, with the exception of number of remediation scores still outstanding. The assessment of potentially contaminated land aims to undertake detailed assessment of the highest priority sites as a medium term action, some of this work has also already been initiated.

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# Chapter 1      The Contaminated Land Regime

## 1.0 Introduction

Part IIA of the Environmental Protection Act 1990 (hereafter referred to as Part IIA) aims to address the legacy of contaminated land through primary legislation, Regulation and Statutory Guidance. It aims to identify land affected by contamination that presents an unacceptable risk in its present state. Where land is identified as contaminated, Part IIA requires that where it is reasonable and practicable, remediation is carried out so that the land no longer presents an unacceptable risk. The Government has identified that the existence of contaminated land presents its own threats to a sustainable future by affecting the living environment, damaging the natural environment and burdening the economy as a whole through the pressure to utilise Greenfield sites for development. In response, the Governments objectives with respect to contaminated land are:

- To identify and remove unacceptable risks to human health and the environment,
- To seek to bring damaged land back to beneficial use, and,
- To seek to ensure that the cost burdens faced by individuals, companies and society as a whole are proportionate, manageable and economically sustainable.

The Government considers that the most effective way of delivering these objectives is by the 'suitable for use' approach. This approach focuses on the risks caused by contaminated land and recognises that the risks presented by any given level of contamination will vary greatly according to many factors such as the historical use of the land and its underlying geology. The 'suitable for use' approach will aim to reconcile the various environmental, social and economic needs in relation to contaminated land and bring about progressive improvements in the condition of the land to pass on to future generations.

The Contaminated Land Regime, as introduced by Part IIA, has been extended to include land contaminated with radioactive substances (radioactive contaminated land). This extension came into force in Wales in December 2006. Caerphilly County Borough Council do not anticipate investigating any sites as radioactive contaminated land at this time.

## 1.1 Roles and Responsibilities

Local authorities are the main regulatory body for the implementation of Part IIA. Their key responsibilities are outlined below:

1. To have a strategy for inspecting their area for contaminated land
2. Implement the Inspection Strategy

3. Determine whether particular areas are contaminated in accordance with the Statutory Guidance
4. Determine whether contaminated land is required to be designated as a 'special site'
5. Undertake urgent remediation action where there is imminent danger of serious harm
6. Undertake consultation with the Environment Agency Wales
7. Identify and notify the appropriate persons involved with the land
8. Ensure that the appropriate remediation takes place
9. Maintain a public register of regulatory action

The Environment Agency are responsible for providing information on the progress of the regime through the production of the 'State of Contaminated Land' Report. It also acts as the main provider of information and formal advice to local authorities in connection with their inspection, identification and determination duties. The Environment Agency can make an important contribution to the inspection of land in the follows areas:

- The provision of information
- Provision of specific advice in relation to the pollution of controlled waters
- The inspection of land on behalf of the local authority, which if it were determined as contaminated land is anticipated to be designated as a Special Site.

## 1.2 Existing Regimes for dealing with contaminated land

Part IIA contaminated land regime is complimentary to existing regulatory controls. The primary mechanism for ensuring the remediation of contaminated land will remain within the current planning and development control legislation. The current procedure undertaken by Caerphilly County Borough Council ensures that Officers of Public Protection are consulted on any planning application that may have an impact on health or the environment. This procedure is not restricted to the development of potentially contaminated land. Through the planning consultation process, Officers may make recommendations to ensure that planning conditions are imposed on the developer to address or reduce any detrimental effects that may arise through the development.

Potentially polluting industries and the management of waste will be controlled through the appropriate permits and licenses. Regulatory controls specific to these areas will continue to be within the remit of local authorities and the Environment Agency as appropriate. Certain cases of water pollution continue to be regulated under the Water Resources Act 1991.

## 1.3 What is Contaminated Land?

'Contamination' is a frequently used term or expression implying that a harmful substance is present in the environment that should not be there. As the term contamination may mean different things to different people, the very nature of its subjectivity has caused confusion. For the first time, a clear definition of contaminated land has been formulated and placed into the regulatory context of environmental legislation.

Section 78A (2) of Part IIA of the Environmental Protection Act 1990 defines contaminated land as

“any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that-

(a) significant harm is being caused or there is significant possibility of such harm being caused: or

(b) pollution of controlled waters is being or is likely to be caused”

The Guidance provides the definition of 'harm' to mean

'harm to the health of living organisms or other interference with the ecological systems of which they form part and, in the case of man includes harm to his property'.

For harm to be regarded as 'significant' the local authority should regard as significant only harm, which is both

- (a) To a receptor of a type listed in Table A, and
- (b) Within the description of harm specified for that type of receptor in that Table.

(See Appendix A)

The guidance describes the conditions required for there to be a 'significant possibility of significant harm'. These are given in Table B (See Appendix B). The following factors should also be considered when deciding whether the possibility of harm being caused is significant:

- The nature and degree of harm
- The susceptibility of the receptors to which the harm might be caused, and
- The timescales within which the harm might occur.



## 1.4 Identifying contaminated land

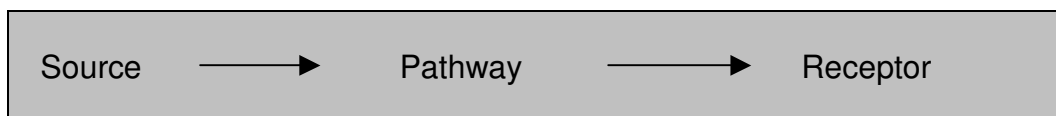
The definition of contaminated land is based on the principles of risk assessment. Risk assessment in relation to contaminated land will establish whether a site or area of land is posing or is likely to pose unacceptable risks to health or the environment. Risk assessment is a staged approach requiring the identification of hazards, considering uncertainties, formulating options and making decisions. Risk is defined as the combination of

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

The risk must be assessed in terms of whether a pollutant linkage relationship exists.

## 1.5 Pollutant Linkages

For land to be classified as contaminated land a pollutant linkage must be established between the three key elements. A pollutant linkage consists of three parts;



- The **source** or contaminant is a substance which is in, on or under the land and which has the potential to cause harm or pollution of controlled waters
- The **pathway** is one or more routes or means by which a receptor is being or could be exposed to or affected by contaminant.
- The **receptor** may be one or more of the following and includes humans, animals, nature reserves, crops and controlled waters.

All three elements of the pollutant linkage must be identified before the land is designated as contaminated land. A site cannot be identified as contaminated land unless at least one pollutant linkage is present. The next phase of the risk assessment in determination of contaminated land is determining whether the pollutant linkage is significant. This depends on demonstrating that

- Significant harm is being caused to the receptor in the pollutant linkage
- a significant possibility of significant harm is being caused to the receptor, or
- there is or is likely to be pollution of controlled waters.

It is important to note that a site will not meet the definition of contaminated land purely because contamination is present in, on or under it: there must be a demonstrable pollutant linkage.

## 1.6 A strategic approach to inspection

The Statutory Guidance produced by the Welsh Assembly Government details the aspects of the regime concerned with the local authority's inspection duty. The approach to the inspection procedure shall be

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

Underpinning the requirements for a strategic approach, the local authority must have consideration of the local circumstances. In particular it should consider:

- Any available evidence that significant harm or pollution of controlled waters is actually being caused,
- The extent to which any receptor from Table A or controlled waters is likely to be found in any of the different parts of the authority's area,
- The extent to which any of those receptors is likely to be exposed to a contaminant (as defined in Chapter 1) for example as a result of the use of the land or of the geological and hydro geological features of the area,
- The extent to which information on land contamination is already available,
- The history, scale and nature of industrial or other activities which may have contaminated the land in different parts of its area,
- The extent to which remedial action has already been taken by the authority or others to deal with the land-contamination problems or is likely to be taken as part of an impending redevelopment, and,
- The extent to which other regulatory authorities are likely to be considering the possibility of harm being caused to particular receptors or the likelihood of any pollution of controlled waters being caused in particular parts of the local authority's area.

## Chapter 2 Policies and Statutory Functions

### 2.0 Introduction

This chapter outlines the principal Council policies alongside which Part IIA will be implemented in Caerphilly County Borough Council.

#### 2.1 Ambitions for Improvement

The four main ambitions for improvement are:

- Building better public service
- Building Better Lifestyles
- Building a Vibrant Economy, and
- Building Futures, Changing Lives

These are consistent with and fully support the Local Agenda 21 process, particularly with regard to the conserving of resources and the well being of the community.

Caerphilly County Borough Council's revised Contaminated Land Inspection Strategy will provide additional processes that will allow a structured progression towards the achievement of the corporate ambitions for improvement, in particularly the higher level Community Strategy themes of the living environment, regeneration and health, social care and well being.

### 2.2 Existing controls to address contaminated land

#### 2.2.1 Planning policies

Planning Policy Wales (March 2002) provides the basis for land contamination and development control in Wales. The planning policies adopted by Caerphilly County Borough Council and contained in the Unitary Development Plan define the current controls imposed on developers where land is known or suspected to be contaminated. The aim of these policies is to ensure that the development of contaminated land is 'suitable for use' and that the physical constraints on the land are taken into account at all stages of the planning process. The present system often requires the developer to provide the Planning Authority with sufficient information on the proposed site to assess its contamination status and to ensure that remedial treatments are sufficient to protect end users and the environment. The Welsh Local Government Association, Environment Agency and Welsh Assembly Government jointly produced a guidance document in July 2006 entitled 'Land Contamination: A Guide for Developers' to help maintain consistency throughout Wales in dealing with land contamination through the planning process. It will remain the policy of the Authority to control development and land use through the planning policies defined in the UDP. Part IIA will

however be closely related and interconnected. The collation of site-specific information within the development of the Inspection Strategy will aid the planning process, particularly with regard to derelict and Brownfield sites (see Appendix G for glossary of terms). Part IIA will also provide a mechanism for checking that remediation previously carried out during development has been to a sufficient standard and that sites are suitable for use.

The UDP is in the process of being replaced by the Local Development Plan (LDP), Environmental Health is being consulted in this process.

Pollution Control is an important consultee in the planning process, particularly in the redevelopment of brownfield sites. In 2007 Pollution Control dealt with 90 planning applications for brownfield sites, 31 in 2008 and 27 in 2009, on which appropriate planning conditions were recommended. The planning conditions ensure that each site provides site investigation data, a remediation strategy on how they are going to deal with a clean up of the site to a suitable standard and a validation report to show the remediation has been carried out satisfactorily. An Officer in Pollution Control assesses all the relevant documentation submitted by the developer.

Over the past few years the Borough has seen the remediation and on going redevelopment of a large industrial sites; the former Cray Valley 'Paint Works', Waterloo. The remediation of these large sites has resulted in a vast amount of officer time in developing appropriate planning conditions, reviewing data, communicating with local residents and dealing with service requests. The Former Saint Gobain Foundry, Risca is another large industrial site that is in the process of being remediated and redeveloped. In addition, several smaller sites have also been remediated such as; the former Gas Holder, Abercarn; the Bus Depot, Crosskeys; the former Varman's Yard, Abercarn and the Scrap Yard, Ystrad Mynach.

Since the implementation of the Hazardous Waste Landfill Directive in 2005, brown field remediation has moved away from the traditional 'dig and dump'. Pollution Control is now involved with many new, innovative techniques for dealing with different types of contamination. During the last few years, the Borough has considered unique techniques such as stabilisation/solidification, capillary break layers/vapour barriers and bioremediation used on a number of sites. These new techniques take significantly more time to research and assess due to current limited use in the UK.

### **2.2.2 Building Control**

The Building Regulations 1991 require that contaminated land issues are taken into account early during the construction phase. Unlike the Part IIA controls however, the Building Regulations 1991 only considers the effects of contamination where it comes into direct contact with the building materials themselves as opposed to the whole development site. It is anticipated that data gathering and collation of information as part of the inspection strategy will inform Building Control Officers and assist them in the determination of

the appropriate safeguards and standards required to protect buildings and services.

### **2.2.3 Pollution Prevention Control and Integrated Pollution Prevention and Control**

Environmental Permitting Regulations 2010 is the legislative tool to control polluting activities to all media. This legislation introduced controls, which require that certain new and existing activity operators must be responsible for the conditions of the land both during and following the closure of the activity. The framework for the site assessment will in principle be based on the identification and consideration of a contamination source, pathway and receptor. In this respect, the information collected through IPPC/LA-IPPC applications will add to the database of information concerning the condition of land within the Borough. This legislation does provide that where a contaminant is already subject to IPPC control, it cannot also constitute contaminated land under Part IIA.

### **2.2.4 Waste Management**

The legislation that controls waste management is contained in Part II of the Environmental Protection Act 1990 and in the Environmental Damage Regulations 2010. Waste management functions of the Authority include the disposal of municipal wastes, recycling initiatives, the provision of civic amenity sites and the strategic management of waste minimisation initiatives. A further duty of the Authority is the maintenance of ten Local Authority closed landfill sites. Landfill gas and leachate are routinely monitored and a proactive maintenance program is carried out through the provision of an annual revenue budget. Information and monitoring results from the existing programme will be vital to the data gathering exercise required for Part IIA. Where waste is subject to the waste management regime of the Environmental Damage Regulations 2010 and the Environmental Protection Act 1990, it cannot also be determined as contaminated land. Where contaminants are removed from a site as part of a remediation operation under Part IIA, the removal of contaminated waste would be controlled under the waste management regime.

### **2.2.5 Health and Safety**

Health and safety issues are controlled by both the Health and Safety Executive (HSE) and the Local Authority, as defined in regulations made under the Health and Safety at Work Act 1974. Remediation operations involving the 'handling' of contaminants will require that the relevant safety standards and guidelines be followed. Caerphilly County Borough Council will liaise with the HSE to ensure that no duplication of safety controls occur during remediation work.

## **2.2.6 Statutory Nuisance**

Until the introduction of Part IIA legislation, the statutory nuisance provisions of Part III of the Environmental Protection Act 1990 were the traditional means of achieving remediation of any risk of pollution arising on premises. This legislation has now been amended to provide that no land in a 'contaminated state' can now be defined as a statutory nuisance. Both the implementation of the revised contaminated land inspection strategy and the investigation of statutory nuisance issues will be conducted by Environmental Health Officers of the Directorate of the Environment, so permitting the coordination of information gathering.

## **2.2.7 Environmental Damage**

The Environmental Damage (Prevention and Remediation) Regulations came into force in 2009 and implement the European Directive on Environmental Liability. They are based on the 'polluter pays principle' so those responsible prevent and remedy environmental damage. 'Environmental damage' has a specific meaning in the Regulations and covers only the most serious cases. The emphasis, in the first instance, is on the business or other 'operator' identifying when there is an imminent threat or actual damage and taking immediate action. Enforcing authorities must determine whether there is environmental damage and decide on the necessary remedial measures. These Regulations cannot be used to deal with contaminated land.

## **2.3 Directorate of the Environment**

Prior to the enactment of the Contaminated Land Regulations (Wales) 2001, the responsibility for the regulation of contaminated land within the County Borough lay with the Environmental Health Service. Environmental Health Officers (EHOs) will be responsible for the development and implementation of the Part IIA Inspection Strategy. Additionally, EHOs and Scientific Officers will continue to carry out the investigation and enforcement of land in the Borough where other contamination issues arise that do not fall within the contaminated land legislation, as well as the monitoring of the Authority's closed landfill sites.

## **2.4 Legal Services-Local Land Charges**

The implementation of Part IIA has brought about the requirement for local authorities to maintain a public register of contaminated land. Whilst this requirement only applies to information on land that has been determined as 'contaminated land' within the meaning of the Part IIA definition, information is requested from the Local Land Charges Division with regard to contamination. Enquiry 3.12 of CON 290 deals with contaminated land for search purposes. The questions relating to environmental regulatory activities and contaminated

land issues will continue to be responded to by the Officers of the Directorate of the Environment.

## 2.5 Enforcement Policy

Caerphilly County Borough Council affirms the importance of achieving and maintaining consistent, balanced and fair enforcement. The Directorate of the Environment have adopted the principles contained in the Enforcement Concordat. To this end regard will be given to relevant statutory guidance, Secretary of State process guidance notes and any relevant codes of practice.

All enforcement action considered by Caerphilly County Borough Council, be it the issue of informal action, statutory notices, simple cautions or prosecution will primarily be based upon an assessment of risk to public health or harm to the environment and will be proportionate to the degree of the said risk, the severity of the incident, the previous history associated with the premises and the proprietor and the need to prevent a recurrence.

Where there is a shared or complimentary enforcement role, Caerphilly County Borough Council will consult with the relevant body whenever enforcement action is considered necessary.

All Authorised Officers, when making enforcement decisions will abide by this Policy and Procedural Document. Any departure from this Policy must be exceptional, capable of justification and must be fully considered and approved by the Director, or the Head of Service, or Environmental Health Manager prior to implementation, unless it is considered that there is significant risk to the public in delaying the decision.

The implementation and enforcement of Part IIA will be carried out in accordance with the existing policies and procedures outlined above.

## 2.6 Agencies and Collaborations

### 2.6.1 Welsh Assembly Government Collaboration

The Council have successfully bid for funding from the Welsh Assembly Government Capital Funding Programme between 2006 and 2010. As a result of this funding, eight sites have been investigated, twenty-five properties have been determined as contaminated land and two sites have been remediated.

## **2.6.2 Improving Health and Wellbeing**

The Caerphilly County Borough Community Strategy includes objectives for the protection of the environment and measures to improve health. Within the theme of “Health, Social Care and Well-Being”, Health Challenge Caerphilly county borough (HCCcb) works in partnership to promote health improvement and address the factors that contribute to health and well-being including tackling health inequalities.

HCCcb provides information and raises awareness of the benefits of healthy lifestyle choices and through the work of its sub groups and its contribution to a number of key health improvement activities in the borough.

A major focus of Part IIA is the identification and remediation of land that could cause harm to health. The removal of hazards and return of land to beneficial safe use, whether for commercial, residential or recreational purposes, also contributes to achieving the objectives of Health Challenge Caerphilly as it delivers on the objectives of the Health, Social Care and Well-Being Strategy.

## **2.6.3 Emergency Planning**

The role of Emergency Planning is to co-ordinate the planning and preparation of the Local Authority’s response to a major incident. To achieve this role the main services provided are:

- Planning – continually assessing the risks that may affect Caerphilly County Borough by developing and maintaining plans to control and mitigate their impacts
- Training and Exercising – this is undertaken by staff and partner agencies enabling integrated and effective working when needed
- Liaison – the Council works closely with neighbouring Local Authorities, emergency services, utilities, voluntary and other appropriate organisations, to share information and ensure plans and procedures fit together to provide a co-ordinated and integrated response to emergency incidents
- Operational – the council has a 24-hour Emergency Duty Officer system, which provides an urgent response to major incidents. This demonstrated the authorities capacity to deal with events, including those relating to problems of contamination.

## **2.6.4 Centre for Radiation, Chemical and Environmental Wales**

The Health Protection Agency advises Local Health Boards and Local Authorities on the management of chemical releases to the environment. Caerphilly Public Protection liaise with CRCE Wales and have access to a wealth of information to support the identification of substances in the investigation of contaminated land.



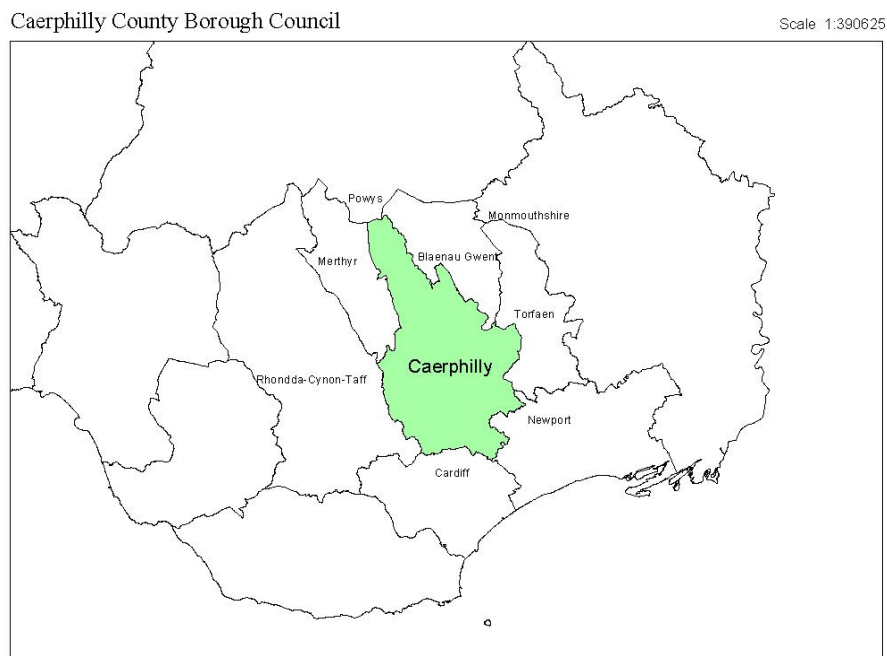
### **2.6.5 Communicating risks**

The Council recognises that the revised Contaminated Land Inspection Strategy and its potential outcome of designating land as 'contaminated' may give rise to concern to people from all parts of society; for example communities, individuals, landowners and conservation groups. It will be the policy of the Council to manage and coordinate the communication of the risks relating to contaminated land to all stakeholders in a responsible manner. The Council will follow the guidance given in the document '*Communicating understanding of contaminated land risks*' (produced by the Scottish and Northern Ireland Forum for Environmental Research) and will draw on the expertise of the Councils Communications Officer.

## Chapter 3 Characteristics of the Caerphilly Area

### 3.0 Introduction

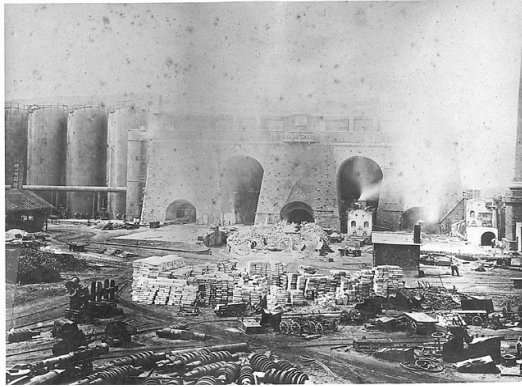
The County Borough of Caerphilly was created in 1996 as part of the reorganisation of local government. It occupies some 28,000 hectares of the South Wales valleys with a population of 170,000. It stretches over 40 kilometres between the urban centres of Cardiff and Newport in the south and the Brecon Beacons to the north taking in all or parts of the valleys of the rivers Rhymney, Sirhowy and Ebbw. It contains some 50 distinct towns and villages, many of which (particularly in the north) are linear settlements located on the valley floors. The largest settlement is the historic town of Caerphilly itself situated in the southwest corner of the county borough. Other significant settlements include Bargoed, Blackwood, Newbridge, Risca and Ystrad Mynach



**Figure 1. South Wales area map**

### 3.1 History

Prior to the eighteenth century Caerphilly was a predominantly rural area. However with the arrival of the industrial age, the next 100 years saw the transformation of this rural backwater into an industrial heartland. Caerphilly's iron ore and coal provided the support for the growth of the British Empire and her expansion throughout the world.



**The Egyptian Furnaces at the Bute Town Ironworks, Rhymney circa 1870**

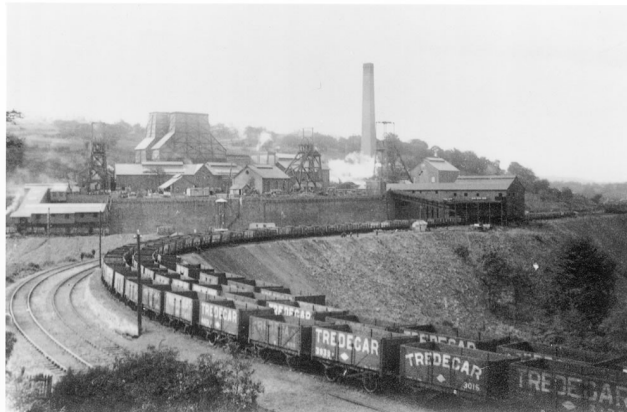
The iron industry flourished in the north of the borough at Bute Ironworks and at the nearby Tredegar Ironworks. Transporting iron, along with provision and supply of coal caused the inevitable need to improve transport networks throughout the borough.

Tram roads were developed linking with the Monmouthshire and Brecon canal to allow the transport of goods to Newport. The hilly landscape of the borough did not prevent the building of road and rail networks and instead gave rise to the building of structures such as the Llanbradach and Crumlin viaducts. Only the Maesycwmmmer to Hengoed viaduct remains today.



**Llanbradach Viaduct (date unknown)**

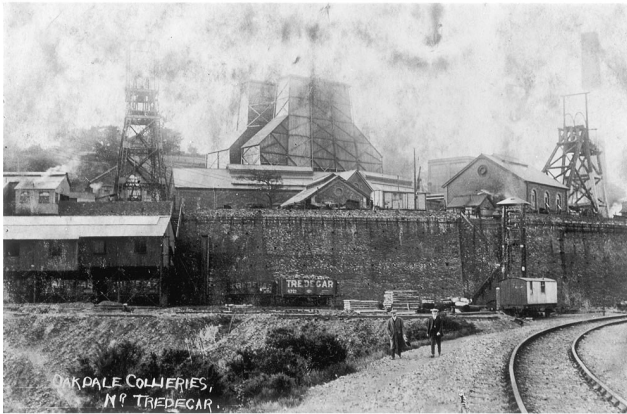
### **Oakdale Colliery circa 1900**



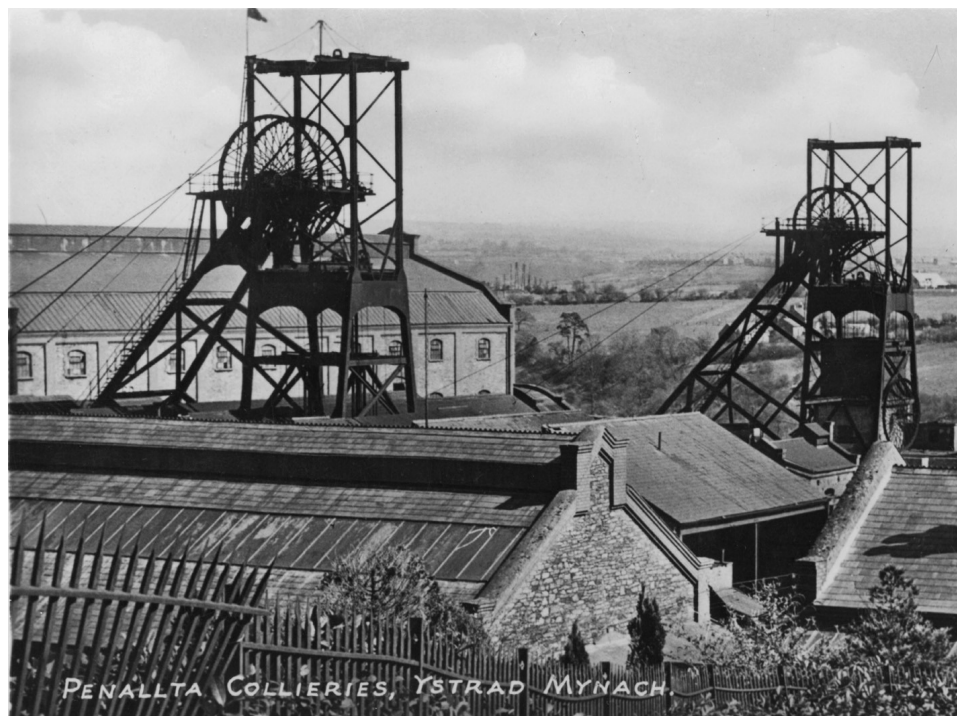
Peak production of coal from the borough occurred between the 1920's and 1930's with the major towns growing up around these key industries. In 1950 there were 29 pits in the area that employed 24,000 people. However deep mining in the county borough ceased with the closure of Penallta colliery in 1990's. Many settlements in

the county borough grew up based on the employment opportunities at local pits.

Each pit community was unique and before the demise of the coal industry, largely independent.



**Oakdale Colliery circa 1900**



**Penallta Colliery (date unknown)**

Following the closure of the collieries, the subsidiary industries such as the British Benzol plant (Bedwas) and the Thomas Ness Tar plant (Caerphilly) remained as major employers for several years. Throughout the latter half of the last century, new large-scale specialist industries from the manufacturing sector also began to develop in the County Borough and provided key employment sites, such as Cray Valley, Glynwed Foundry and the Oakdale Sintering plant, some of which have ceased operations. Currently, industrial estates exist throughout the county borough, providing the sites for many new cleaner industries. Commercial development, service sector industries and training and technology centers now play a major role in the provision of employment to the population of the County Borough today.

## 3.2 Geology

The area covered by Caerphilly County Borough lies largely within the basin structure of the South Wales coalfield, providing a reflection of the sequence at the north of the borough is evident to the southern part. The sequence passes from Pennant sandstones of the Upper Coal Measures down through mudstones, siltstones and coal seams of the Middle and Lower coal measures (at Rhymney) to the Millstone Grit at the northernmost boundary of the county. In general the rocks underlying this area comprise variously of interbedded units of sandstone, mudstone, siltstones and coals that form the Upper Coal Measures (Pennant Measures). The exception to this is the area around Risca that lies on the eastern edge of the South Wales coalfield syncline and is underlain by rocks comprising Lower Carboniferous limestones, Devonian Old Red Sandstones, quartz conglomerates and marls.

Overlying the majority of the area are Quaternary deposits consisting mainly of Till or Boulder Clay which is generally a yellow to gray sandy clay containing clasts ranging in size from gravels to boulders. In general the boulder clay grades into glacial sands and gravels towards the valley bottoms. Areas of peat often occur at higher levels while the valley floors often contain alluvium deposited by rivers.

More detail of the typical geological succession is given in Appendix H

## 3.3 Hydrogeology

It is essential to identify the major hydro-geological features within the borough in order to adequately inform any risk assessment process. The Environment Agency's Policy and Practice for the Protection of Groundwater, map sheet 36 identifies the geological strata that contain groundwater. All groundwaters are controlled waters due to their potential for use as a public water supply.

The classification of geological strata within the borough comprises minor aquifers with variable permeability. Minor aquifers are fractured or potentially fractured rocks that seldom produce large quantities of water for abstraction. They are important however for both local supplies and in supplying a base flow to rivers. There are 96 properties on private water supplies in the county borough. The minor aquifers in the Caerphilly area comprise the following solid formations: blue lias, Penarth group and sandstones of Marcia mudstone group, coal measures, Millstone grit, upper/lower limestone shales and Old Red Sandstone.

Across the southernmost border of the borough lies a major aquifer crossing the county boundary near Thornhill (Cardiff), then through to Draethen, Pontymister and Risca. Major aquifers are highly permeable formations, with a known or probable presence of significant fracturing. These aquifers are highly productive and capable of supporting large abstractions for public water

supply. This aquifer consists of limestone and dolomite of the Carboniferous limestones series. There is a Source Protection Zone extending up across this aquifer for the public water supply abstraction at Rhymney Bridge, which lies at the extreme north of the borough (see section 3.4).

### 3.3.1 Soil Classification

Soil classification for Caerphilly indicates that the borough is covered with predominantly coarse textured, shallow soils which readily transmit non-adsorbed pollutants and liquid discharges, but which have some ability to attenuate pollutants because of their clay or organic matter contents. Soil classification in urban areas and areas where mineral extraction is current or has occurred is more difficult to determine with precision. A worst-case vulnerability classification of high permeability is assumed for these areas that assumes that they will readily transmit liquid discharges because they are either shallow or susceptible to rapid flow directly to rock, gravel or groundwater. Throughout the Borough, low permeability drift deposits occur at the surface comprising of mostly alluvium and peat.

## 3.4 Hydrology



**Figure 2. Rivers and watercourses within Caerphilly**

Caerphilly County Borough has three main rivers, the Rhymney, the Ebbw, and the Sirhowy. The Rhymney has its beginnings just above Rhymney town itself, and flows southwards for approximately 58km where it flows into the Severn Estuary at Cardiff. It has a total catchment area of 233km<sup>2</sup> with 275km of rivers streams and tributaries as it passes through the towns of Rhymney, New Tredegar, Bargoed, Ystrad Mynach and Caerphilly, before crossing the boundary into Cardiff City Council.

The Ebbw Fawr starts with several small streams and tributaries north of Carno Reservoir, in the Brecon Beacons. The Ebbw itself is formed where the Ebbw Fawr and Ebbw Fach converge in Aberbeeg just north of Crumlin. This river flows south and converges with the Usk just south of Risca where it flows to Newport and discharges into the Severn Estuary. From source to confluence with the Usk it travels 47km. Towns located on its banks include Crumlin, Newbridge, Abercarn, Crosskeys and Risca.

The Sirhowy is the Ebbw's largest tributary, and has its source west of Shon Sheffrey's Reservoir in Trefil located within the County Borough of Blaenau Gwent. It travels 32.6km south before entering the Ebbw north of Risca and has a catchment area of 76.1km<sup>2</sup>.

Ninety-six properties within the County Borough are known to have their own private water supply, which are tested periodically by the Authority to monitor fitness for use. The vast majority of these properties are isolated farms the locations of which are registered with the Authority.

There are no natural lakes occurring within the Borough but there are several examples of manmade lakes and ponds on former colliery sites e.g. Pen-y-fan pond. Currently there are ten registered reservoirs in the County Borough, only one of which is owned by the Authority. Only two of the ten registered reservoirs in the County Borough have the potential to supply drinking water to the local population, but at present this is not carried out. The current public water supply comes from reservoirs although treatment works that are located outside the Borough.

The Source Protection Zone at Rhymney Bridge has been designated by the Environment agency and is delineated to protect potable water supplies against the polluting effects of human activity. Three zones are normally defined around each selected groundwater source, i.e. a borehole, well or spring. The three zones are defined as Zone I – Inner protection Zone, Zone II – Outer Protection Zone and Zone III – Total Catchments. A fourth zone or 'Zone of Special Interest' may also be defined.

### 3.5 Land Use Characteristics

The changing nature of employment within the County Borough from former colliery sites and large-scale heavy industry has in part been responsible for the current distribution of industrial land use today. Many of the former colliery sites have undergone reclamation and are now sites of industrial and commercial development, such as at Oakdale and Nine Mile Point. Other colliery reclamation schemes have provided recreational land such as at Deri and Bargoed. Windsor Colliery in Abertridwr and McClarren Colliery in Abertwssyg are examples of colliery reclamation for housing developments. There are approximately 104 hectares of industrial land within the County Borough that will be preserved for this type of land use in the future. Many of

the sites are within or on the edge of urban areas and are well served by good highway links. The following sites were identified for expansion, conversion or redevelopment in the UDP:

- Heads of the Valleys, Rhymney
- Capital Valley, Rhymney
- Maerdy, Rhymney
- Lawn, Rhymney
- Angel Lane, Aberbargoed
- Bowen, Aberbargoed
- Britannia, Pengam
- St. David's, Pengam
- New Road, Tiryberth
- Penallta
- Hawtin Park
- Penyfan, Croespenmaen
- Penmaen
- Newbridge Road, Pontllanfraith
- Woodfieldside, Penmaen
- Tram Road, Pontllanfraith
- Switchgear, Pontllanfraith
- North Celynen, Newbridge
- Prince of Wales, Abercarn
- Dyffryn Business Park,
- Caerphilly Road, Ystrad Mynach
- Nine Mile Point, Cwmfelinfach
- North and South Blackvein, Wattsville
- Newtown, Crosskeys
- Parkroad, Risca
- Pontymister
- Bedwas House, Bedwas
- Trecenydd, Caerphilly
- Western, Caerphilly
- Caerphilly Business Park

Over the past years several of these sites have been or are in the process of being expanded, converted or redeveloped:

- Angel Lane, Aberbargoed
- Bowen, Aberbargoed
- St. David's, Pengam
- New Road, Tiryberth
- Penallta
- Penyfan, Croespenmaen
- Penmaen
- Newbridge Road, Pontllanfraith
- Woodfieldside, Penmaen



- Tram Road, Pontlanfraith
- North Celynen, Newbridge
- Dyffryn Business Park,
- Caerphilly Road, Ystrad Mynach
- Waterloo, Machen
- Caerphilly Business Park

### **Oakdale Business Park**

The site of the former colliery, now transformed into a major new industrial development.

(2001)



Urban settlements are dispersed throughout the length and breadth of the Borough, having in the main developed alongside the collieries and other major employers. Much of the housing in some parts of the County Borough is now old, with a substantial proportion dating from before the First World War. The demand for higher quality housing has led to the development of Greenfield sites due to the limited number of Brownfield sites that are suitable for residential development. The County Borough has achieved area improvements to the quality of housing stock through the Area Renewal schemes that have successfully transformed both the visual appearance and the quality of the accommodation in these areas. Based on the distribution of the environmental capacity to develop areas of the Borough, the strategy contained within the UDP divides the County Borough into three broad bands of Consolidation in the south, Growth in the mid valley and Regeneration in the north of the Borough and the Aber Valley.

### **3.5.1 Waste management facilities**

The County Borough's existing waste civic amenity and recycling sites are at Trehir, Aberbargoed, Penallta, Rhymney, Penmaen and at the Full Moon Transfer Station at Crosskeys. There are also 26 mini recycling centres throughout the area. There are a number of privately owned waste disposal/recycling centres within the County Borough.

Council owned closed landfill sites within the County Borough are located at Hafodyrynys, Dan-y-Graig Quarry, Craig-yr-trwyn, Trinant, Coed Top Hill, Old and New Trehir, Old Coed-y-Brain and Aberbargoed.

### **3.5.2 Protected Areas**

There are 10 sites of special scientific interest (SSSIs) in the County Borough that are protected under the Wildlife and Countryside Act 1981 from certain potentially harmful operations. The main aim of SSSIs is to identify and give protection to areas that are considered to be of national importance and to ensure that habitats and geological features remain as large and diverse as possible.

There are 3 Local Nature Reserves (LNRs) and 242 sites of Importance to Nature Conservation (SINCs) in the County Borough. 17 Special Landscape Areas also exist that are considered to be important to the overall landscape of the County Borough.

### **3.5.3 Listed Buildings and Structures**

There are currently 369 Listed Buildings in the County Borough, which reflects the historic environment and development through the 19<sup>th</sup> and early 20<sup>th</sup> Centuries. Many of the buildings and conservation areas are the important civic, religious and industrial buildings, structures that provide the backdrop to the boroughs landscape. Whilst the preservation of the historic environment is protected within the Local Plan Policy, the identification of such structures will be considered within the revised Contaminated Land Inspection Strategy where they are likely to be identified as a receptor.

There are currently 47 Scheduled Ancient Monuments within the Borough that demonstrate the wealth of historic remains in the area. Although the majority of sites are not legally recognised, the Gwent-Glamorgan Archaeological Trust provides the Council with a comprehensive planning service and holds records of over 100 sites within the Borough. These finite resources are vulnerable and prone to damage, and will be recognised as a receptor where appropriate within the revised Contaminated Land Inspection Strategy.

### **3.5.4 Mineral Extraction**

There are 3 currently active hard rock quarries in the County Borough: Machen, Hafod and Bryn. Machen quarry provides dolomitic limestone aggregate for a variety of uses including railway ballast. Hafod quarry near Abercarn provides sandstone for High Specification Aggregate, valued for its high skid resistant surfaces needed for motorways and airport runways. Bryn quarry near Nelson is a small-scale operation providing general aggregate and some sandstone for building and walling stone

### **3.5.5 Known information on contamination**

The Authority holds three main data sets that relate to the former Islwyn and Rhymney Valley Council areas. These are divided into two studies based on contaminative land uses specific to each area and historic information relating to landfill sites. Landfill site information is discussed in paragraph 2.2.4. The information relevant to the former Islwyn Borough Council was collated in 1990 and was part of an all Wales survey of contaminated land. The industry in the area was until the 1960's dominated by coal. The mining activity was carried out on a large scale, dominating the valley floor space. The eastern valleys are particularly narrow with the exception of the Blackwood area, which resulted in the overall lack of construction space for industry and residential accommodation. Development of new industry has most often occurred on old colliery sites and through this type of regeneration, contaminative issues have been identified.

The former Rhymney Valley Authority carried out initial surveys of potentially contaminated land in accordance with the requirements of s143 of the Environmental Protection Act 1990, the previous legislative regime which was not enacted. Due to the geography of the district and the greater quantities of available valley floor space, industry was more diverse in nature, although coal was still a major sector. The previous regime required the assessment of land based on land use and the presence of noxious substances.

In 2004 the Council purchased Landmark data sets for GIS, which identifies historical land use that could have resulted in the presence of contamination, changes in land form, petrol stations and energy generating processes. This data has substantially increased the number of potentially contaminated sites.

## Chapter 4      The Inspection Strategy

### 4.0 Introduction

Chapter 2 of this document outlines the Authority's policies and statutory functions currently in place and details how the implementation of Part IIA will interface with the existing controls. In Chapter 3, the County Borough is described in broad terms with respect to the geographical, industrial and historical information currently known and how these factors will influence the inspection strategy development. This chapter draws together these factors and will form the basis of the overall direction of the revised Inspection Strategy.

### 4.1 General Liaison and Consultation

The Directorate of the Environment has revised this Strategy, and are responsible for implementing Part IIA on behalf of the Council. The Strategy has been revised in close consultation with the contaminated land-working group that includes representatives from the following departments:

- Policy and Central Services
- Planning Division
- Property Services
- Legal Services
- Development control
- Engineers Division

The draft revised Strategy was subject to an internal consultation exercise. Comments and observations received were given due consideration and incorporated into the final document where appropriate.

### 4.1 Aims of the strategy

The statutory guidance requires that the Council is to set out its aims, objectives and timescales for achieving those objectives with regard to the inspection strategy. This Chapter will bring together the information in the preceding Chapters into a set of aims and objectives that will drive the revised Contaminated Land Inspection Strategy. It must be noted that these aims and objectives are intended to compliment the Councils overall aims for the delivery of services to the public.

The Council will adopt a strategic approach to its inspection duties in relation to contaminated land that will be rational, ordered and efficient. The overall aim of the revised strategy is to ensure that no land within Caerphilly County Borough Council area is creating an unacceptable risk to human health or the environment by way of contamination in relation to its current or future use.

The principle aims of the revised strategy will be to:

### **Aim 1: Protect Human Health and the Environment within the County**

Objective: Ensure that the Inspection Strategy and its implementation meet the legislative requirements of Part IIA

Objective: Identify those sites where land contamination is presenting unacceptable risks

Objective: Identify and apply the most appropriate remediation method

### **Aim 2: Encourage Regeneration and Redevelopment**

Objective: Identify contaminated sites where regeneration and redevelopment could effect remediation.

Objective: Expand data sets to enable informed decisions on future land use

## **4.2 Priorities and Timescales**

With regard to the timescales involved in achieving the objectives of the strategy the Authority will address matters in accordance with a risk-based approach to the inspection process. Where a risk assessment identifies that an immediate or potentially serious risk to receptors (see Appendix A) exists, the Authority will carry out detailed investigation on a priority basis as appropriate. The following list of priorities is based on currently held information. As new information becomes available regarding potentially contaminated sites, there will be a requirement to review the timescales for action as appropriate. The activities will be reviewed annually and any necessary amendments published. The initial priority activities are:

#### Completed Stage

- Examination of historical site data and enter all information onto the Arc View GIS

#### Short Term Action

- Finalise the risk assessments to place potentially contaminated sites into priority categories for detailed inspection. This will include any local authority owned land,

#### Medium Term Action

- Carry out detailed investigations of sites that are probably or are certainly not suitable for the present use and environmental setting and action is needed in the short term (high risk sites).

#### Long Term Action

- Carry out detailed investigations of sites that may not be suitable for the present use and environmental setting and action may be needed in the medium term (medium risk sites).

#### Review

- Undertake a review of the inspection strategy every three years. Reviews maybe undertaken more frequent due to changed in legislation/guidance

In 2004 the Council purchased information from Landmark on historical, potentially contaminative land uses. This information increased the number of potential contaminated sites in the Borough. Pollution Control has completed risk assessing these potential sites (with the exception of some remediation scores) to prioritise the sites for further investigation. The remaining remediation scores will be completed by July 2010.

## Chapter 5      Procedures

### 5.0 Introduction

This chapter of the strategy will introduce the procedures that will be followed in implementing the Inspection Strategy. The inspection process will necessitate the collection and review of varying quantities of data and site-specific information. The procedures given in this chapter will outline how the authority will handle, store and use the data obtained through the life of the Inspection Strategy.

### 5.1 Internal Arrangements for the Inspection and Identification of Contaminated Land

The implementation of the contaminated land regime is the responsibility of the Director of the Environment. Officers based within the Pollution Control section will coordinate the operational activities and the day-to-day implementation of the strategy, under the direction of the Head of Public Protection. The Director of the Environment will have delegated powers to sign Remediation Notices and will provide the Authority's Scrutiny Committee with Reports and information when appropriate.

Inspections of the Authority's area will be carried out in accordance with good practice publications and current technical guidance. A list of publications used to assist in the inspection and determination of contaminated sites is shown in Appendix D.

#### **5.1.1 Development Control and Building Control Services**

The Councils Development Control and Building Control sections hold records and planning histories for the County Borough on both paper and microfiche. During the course of the strategy implementation, both these services areas may be approached for specific site information during the inspection process.

#### **5.1.2 Legal Services**

The Legal Services department will be consulted for legal advice regarding the service and content of remediation notices and other aspects regarding responsibilities and the identification of landowners.

#### **5.1.3 Land in Local Authority ownership**

All land where Caerphilly County Borough Council is the owner or through the implementation of Part IIA may become the 'appropriate person' will be inspected to determine if the historical usage may have created potentially

contaminated land. Where land is identified as potentially contaminated in accordance with the definition, the Council will follow the same procedures for dealing with that land that it would for land in private ownership and act as if a remediation notice had been served.

#### **5.1.4 Information from other sources**

It is likely that new information relating to potentially contaminated sites will be forthcoming from a variety of sources over the operational life of the inspection strategy. Information received through and sought from agencies such as the Environment Agency and the Countryside Council for Wales for example will be added to the existing datasets and reviewed as appropriate. Information received through complaints or requests for service from the public will be dealt with in accordance with the existing council procedure. Information from the public will be logged onto the computerised APP system, the receipt of the information will be acknowledged within 5 working days and the site subject to inspection. Any information gathered would then be fed into the risk assessment process.

It is not the Council's policy to respond to anonymous complaints from the public however with regard to information relating to potentially contaminated land, any information received will be recorded and assessed with respect to existing information on the site in question. Further actions in relation to information from anonymous complaints will be made at the discretion of officers. Contact details for the contaminated land enquiries are given in Appendix E.

#### **5.1.5 Information provided to third parties**

The provision of information to third parties such as members of the public, those undertaking consultancy work or any other interested party will be in accordance with the existing Council policy. Where information is received and is designated as 'confidential' or information that is defined as confidential in accordance with the Environmental Information Regulations 2004, shall be the only information withheld from third parties on the grounds of protecting confidentiality.

In all other cases, requests for general site information will be provided in compliance with the aforementioned legislation. Requests must be made in writing and must include the following information:

- The full site address
- An OS grid reference
- A plan of the site clearly indicating site boundaries
- Details of the information required
- Search fee



A response will be made in writing to search requests, usually within 10 working days. There will be two types of response to searches for information involving contaminated land:

1. Where the search site in question has been investigated and has been determined as contaminated land within the meaning of the statutory definition. In this instance, a remediation notice will be in existence along with supporting information on which the land as was determined as contaminated land.
2. Where the search site in question has not been determined as contaminated land but the Authority holds information that the site is potentially contaminated.

The type of information supplied will be generated from the GIS and supporting datasets held at the time of the search response. A search fee is charged for the provision of information in writing.

With regard to information held on detailed site investigations for example, information collected and presented in the form of an independent consultant's report, or risk assessment findings, may be made available to third parties under certain circumstances.

#### **5.1.6 The Public Register**

In accordance with Part IIA and the Contaminated Land (Wales) Regulations 2001 the Council is required to maintain a public register of contaminated land. The register will serve as a public record of regulatory action taken by the authority to ensure the remediation of contaminated land. The register will be available for inspection at the Directorate of the Environment, Pontllanfraith House, Pontllanfraith, Blackwood during normal office hours. The Public Register will contain copies of

- Remediation Notices where land has been determined/designated as contaminated land.
- Appeals against such notices
- Remediation statements or declarations
- Notices designating a contaminated site as a special site
- Notices of the termination of the designation of land as a special site
- Notifications received by the authority of what has been done by them in the way of remediation and what has been done to the land by way of remediation
- Convictions for failing to comply with the requirements of a remediation notice.

The register will not contain information on land still under investigation, or hold information relating to sites where detailed investigations have been carried out and are still being assessed. Information that affects national security or is deemed to be classed as commercially confidential shall be

excluded from the public register. There is currently no legal requirement to remove any notice from the public register once it has been entered thereon.

As contaminated land sites are identified and details of the extent and nature of contamination emerges it will be essential to share the information with potentially affected parties. That includes planning and, in particular, the Strategic and Development Planning Team so that policies and allocations can be adjusted as necessary. Where an entry is made onto the public register information will be shared with these departments, to advise and inform the strategic planning activities of the Authority.

## 5.2 Programme for inspection

The programme for inspection will be determined based on the prioritisation of sites in the Borough depending on the methodology outlined in the following sections. The method is based on the geographical coincidence of the three elements that create a pollutant linkage; a source of contamination; a receptor close to the contamination; and a pathway that links the two. Scores generated, based on the pollutant linkage concept, can then be used to prioritise detailed inspection/assessment for those sites that pose the highest risk.

The tool will only be used for basic screening purposes and is based solely on information collated from a limited range of resources, namely historical map data, aerial photography and officer knowledge. All scoring information is therefore based largely on a subjective interpretation of the perceived risk for a site, based on the information available. This means that the actual risk from the site may vary considerably where data and information are lacking. Scores for sites and therefore their perceived risks could change where new information becomes available.

### 5.2.1 Site prioritisation

This tool is based on 3 scores; the source score; the receptor score; and the pathway score, which are multiplied together to obtain the overall risk score.

The overall 'source score' for a potential source of contamination is calculated as a result of three multiplied factors:

- Source of contamination (type of industry and expected contamination)
- Duration that industry was present
- Whether or not the contamination has been addressed

There are five different categories for 'receptor scores'. The overall 'receptor score' is then calculated by adding all the individual receptor scores. The receptor categories are:

- Human receptors
- Natural environment
- Property

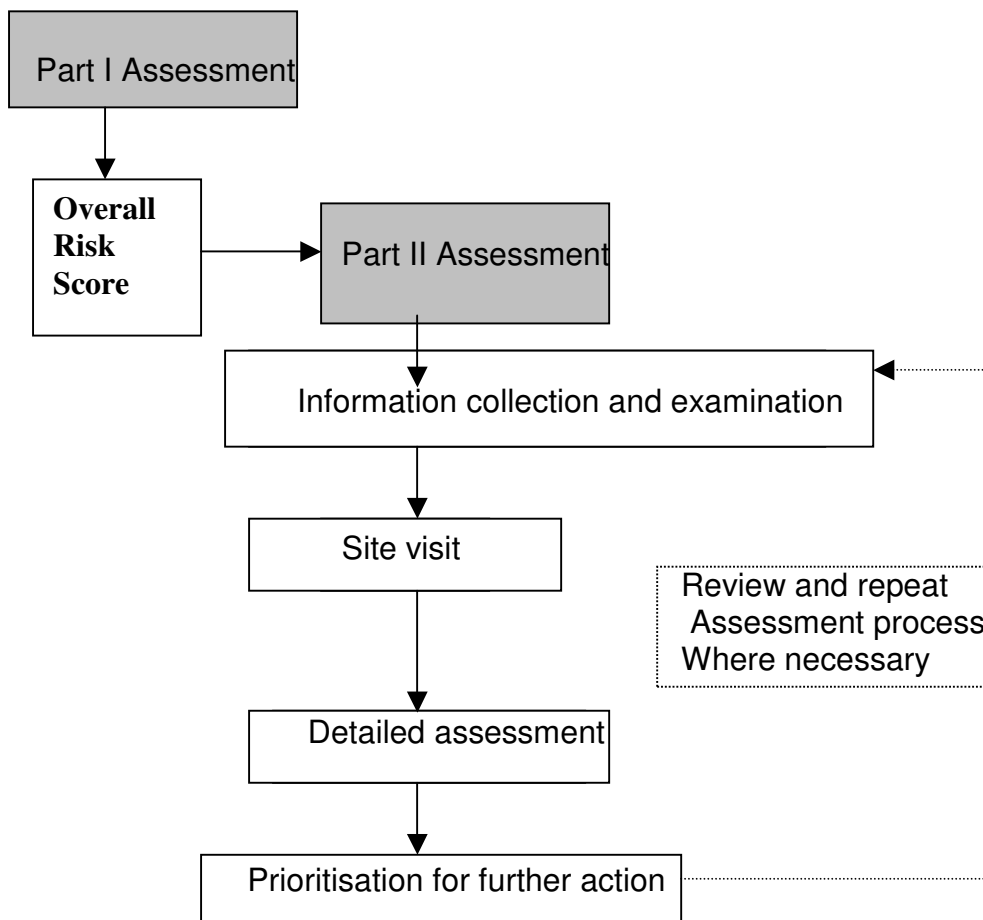
- Surface waters
- Ground waters

Two simplistic pathways are used to gain the 'pathway score' for screening purposes. These are:

- A preferential pathway; and
- Accessibility to site surface

The preliminary stage of the prioritisation process will be carried out by way of a desktop study, based on the information on the location and current use of the site. The GIS system used by the Council contains historical land use and has sufficient data to identify all sensitive receptors for example, the location of property, surface water features, buildings, SSSIs and nature reserves. As new information becomes available, this data will be added to the GIS system. In the light of any new information the initial prioritisation assessment may need to be reviewed and the site re-categorised. The prioritisation and site categorisation procedure will be as follows:

**Figure 3. Prioritisation and classification procedure** (DETR CLR6)



The priority categories determined from the part II assessment will define how the identified 'contaminated' sites will be dealt with in terms of timescales to protect health and/or the environment:

High Risk – the site is probably or certainly not suitable for its present use and environmental setting. Contaminants are probably or certainly present and are very likely to have an unacceptable impact on key targets. Urgent action needed in the short term.

Medium Risk – the site may not be suitable for its present use and environmental setting. Contaminants are probably or certainly present and are likely to have an unacceptable impact on key targets. Action may be needed in the medium term.

Low Risk – The site is considered suitable for present use and environmental setting. The contaminants may be present but are unlikely to have an unacceptable impact on key targets. Action is unlikely to be needed while the site remains in its present use and remains undisturbed.

No Current Risk – the site is considered suitable for its present use and environmental setting. Contaminants may be present but are very unlikely to have an unacceptable impact on key targets. No action is needed while the site remains in its present use and remains undisturbed.

A qualified officer of the Authority or the Authority's appointed consultant will carry out the prioritisation of the potential sites. However, where more detailed assessments are required for example, for geological or toxicological data assessment, advice from external consultants may be sought.

### **5.2.2 Powers of entry**

In carrying out any site investigation, there will be a requirement to visit the site and the surrounding area to investigate the presence of contamination. Where the Council owns the land, Officers will not be required to obtain permission to enter that land. Where there is a requirement to inspect land in private ownership, the authority has powers of entry under section 108 of the Environment Act 1995. However, before using these powers of entry, the authority will, based on the information already obtained, be satisfied that:

- there is a reasonable possibility that a pollutant linkage exists on the land.

The landowner will be notified in writing and given seven days notice that there is a requirement to enter private land where the land involved is used for residential purposes or, the inspection will involve the use of heavy plant and machinery. Where the landowner does not give consent for an authorised person to enter the land, a warrant can be sought from a Magistrate.

The Council will consult with landowners or occupiers where there is a need to carry out a detailed ground investigation. However, there may be cases where in an emergency, it is necessary to take urgent action. In these cases there may not be sufficient time to provide the owner or occupier with the usual notice period of seven days and Officers will use the power of entry provided in section 108 of the Environment Act 1995. It is a requirement of this legislative provision however, that for immediate powers of entry, the officer of the Council must be satisfied that there is either:

- an immediate risk of serious pollution of the environment or serious harm to human health, or,
- that circumstances exist that are likely to endanger life or health.

The requirement to carry out any form of intrusive investigation on any land will be carried out in accordance with the appropriate technical guidance. All reasonable precautions will be taken to avoid harm or pollution to natural resources or historical features. Before carrying out any intrusive investigation on land that has been designated as an SSSI, the Council will consult the Countryside Council for Wales.

### **5.2.3 Special sites**

When a site has been determined as contaminated land it may be further designated as a special site, if it falls within the scope of Regulations 2 and 3 of the Contaminated Land (Wales) Regulations 2001. If a contaminated site falls into the category of a special site, the responsibility of enforcement of the site will pass to the Environment Agency rather than the local authority.

Regulation 2 of the Contaminated Land (Wales) Regulations 2001 sets out the categories of land by way of its use, ownership or occupation is required to be designated as a special site. The full list of the categories of land within this definition is shown in Appendix I, but includes examples of land where activities such as oil and petroleum purification has taken place and the manufacture of chemical weapons has occurred.

Regulation 3 of the Contaminated Land (Wales) Regulations 2001 expands on Regulation 2 (1)(a) and defines certain categories of water pollution that regardless of land use, ownership or occupation will cause contaminated land to be a special site. The main focus of Regulation 3 applies to the protection of controlled waters. Reference will be made to the document 'Environment Agency technical advice to third parties on Pollution of Controlled Water for Part IIA of the Environmental protection Act 1990' for clarification of definitions.

## 5.2.4 Detailed investigations

Applying the inspection strategy will result in the identification of particular areas of land where it is possible that a pollutant linkage exists. The main objectives of a detailed ground investigation are to determine the nature of the contamination present on that site, the extent of contamination and its relationship with the surrounding media. A detailed investigation may include the collation and assessment of information from other bodies, a visit to the site for the purpose of visual inspection and possibly surface sampling, or intrusive or exploratory investigation.

The outcome of a detailed ground investigation should provide sufficient information on which the final determination of the site can be made. The investigation may involve the collection of data on both the contamination and its surroundings that will include geological, hydro geological and hydrological aspects. Examples of common intrusive investigation techniques that may be employed in a detailed ground investigation are:

- **Surface sampling:** spot samples, surface scrapes
- **Excavations:** trial pits, trial trenches
- **Borings:** probes and augers, percussion drilling, rotary drilling
- **Vapours and gas surveys:** gas spiking, probes/searcher bars, permanent monitoring wells
- **Groundwater:** standpipes and piezometers

In order to obtain sufficient data on which to make a proper assessment of the site following a detailed ground investigation, it may be necessary to carry out either repeat sampling programmes or an extended monitoring exercise. Officers or the Council's term consultants will undertake a planned approach to sampling or monitoring programmes in accordance with the appropriate guidance documents.

## 5.3 Information Evaluation

### 5.3.1 Evaluation of Information on actual harm or pollution

Where the desk based risk assessment process has shown that there is sufficient evidence of the existence of a pollutant linkage with sufficient information to make a determination, no further detailed investigation of the site should be required. The Authority is then obligated to identify and give notice to all concerned parties. Where the authority considers that there is not sufficient evidence of the presence of a pollutant linkage at the risk assessment stage, no intrusive investigation of the land will be undertaken. It is possible that the land has undergone development that has been a

condition of a planning consent. In these circumstances the individual record of the land concerned will not be removed from the inspection list, but will be given a lower priority in the detailed inspection programme.

## Chapter 6 Information and data storage

### 6.0 Introduction

The collection and storage of information is crucial to the success of the inspection strategy, as it will provide the basis for the determination of all of the decisions on a site-specific basis. This chapter will outline how the information data will be stored and the quality assurance procedures necessary to safeguard the data storage system. Guidance on the storage and handling of data relating to contaminated land is presented in the Department of the Environment document *Information systems for land contamination CLR 5* which will be used as a framework for this chapter.

### 6.1 Features of the data storage methods

Information on contaminated land will be used to determine long-term policies concerning both current and future land use. It is vital therefore that the information held on any specific site should be both accurate and accessible so as to provide a basis for future decisions.

In the first instance, the quality of newly obtained information is likely to be limited in detail. As the inspection regime progresses however, more detail will be acquired through surveys or sampling investigations which will provide site-specific assessment criteria. This information will be used to inform the risk assessment process outlined in Chapter 5.

Information currently held by the Council is in two formats: paper and a Geographical Information System (GIS). Both storage systems will be maintained throughout the inspection process. The Council is currently exploring the use of electronic data management systems specifically designed for the field of contaminated land.

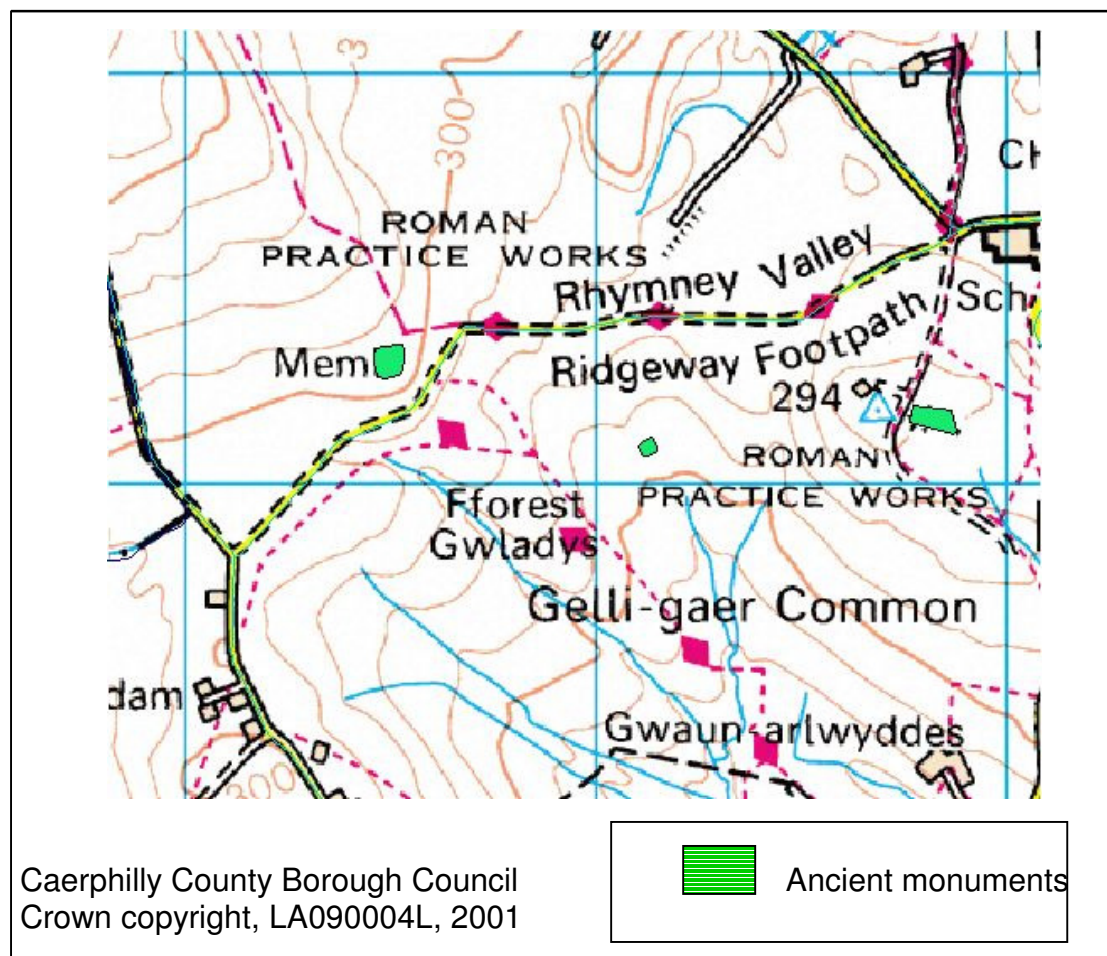
The Council is currently in the process of transferring onto an electronic document management system, know as IDOX. The quality control and security of the information collected and stored will be carried out in accordance with the council's procedures and the requirement of the Data Protection Act 1998.

### 6.2 Digital data

Caerphilly Council has for some time been a licensed user of the Arc View Graphical Information System, or GIS. Figure 4. is a visual example of how the GIS information is presented.



Figure 4. GIS plan showing ancient monuments above Gelli-gaer common



### 6.3 Paper records

As outlined in paragraph 3.5.4 of chapter 3, the Council currently holds information on sites within the borough that were identified as potentially contaminated under the provisions of the previous legislation. Considerable quantities of paper-based records were accrued during the 1990's that have provided the basis for the currently held datasets. Much of the geographical information has been transposed into the GIS system, but the vast majority of individual site information remains in paper format. The advantage of maintaining a paper based system on an individual site basis is that as additional information becomes available, through site sampling etc, raw data in its original format can be held securely by the Council and its confidential status maintained until a final decision on the condition of the land has been made.

## 6.4 Integrating the information storage system

The GIS system will hold data sets of information depicted as shapes or point sources on a mapping system. An example of the type of data is shown in Figure 4 above. In support of each data set, the GIS is capable of storing additional text data in the form of tables. Within the table, a variety of information can be stored on a site-specific basis such as descriptions of former land use, records of pollution incidents and suspected contaminants. Digital photographs of the site can further support this information by linking in to each data set. The benefit of the GIS system of information storage is that it can quickly highlight issues about a site and direct the research to the paper based records held by the Contaminated Land Officer where more detail will be held. As the GIS system is used corporately throughout the Authority, only brief outlines of the additional supporting data will be presented in the supporting table. Access to the detailed GIS contaminated land information will be restricted until such time that a site is determined as contaminated.

The Contaminated Land Officer will continue to use both paper records and the GIS data storage system throughout the inspection regime. In accordance with the requirement to review the strategy from time to time, the methods of handling and the storage of information will be reviewed and assessed during the strategy review process.

## 6.5 Information Management

Details of the Authority's procedures for dealing with the provision of information to third parties are given in Chapter 5, section 5.1.5. which will also include reference to matters of confidentiality.

## 6.6 Information Requirements for the Environment Agency Wales

The Environment Agency Wales will, at the request of the Secretary of State/Welsh Ministers, be required to prepare reports on the State of Contaminated Land. These reports will be a compilation of information on the extent, nature and distribution of contaminated land in Wales. The reports will also provide information on the levels of remediation and details of regulatory action taken under the Part IIA regime. The Environment Agency and the Local Government Association have agreed a protocol for the exchange of information and have prepared a series of forms that each local authority will be required to complete. Caerphilly County Borough Council will be providing the required information to the Environment Agency Wales using the standard forms for the exchange of information.

## Chapter 7      Strategy Review

### 7.0 Introduction

The statutory guidance requires Local Authorities to keep their inspection strategy under review. There are no fixed timescales for the review, as this will depend on the progress of each individual authority and a variety of different circumstances and events. This chapter will outline the reasons for reviewing the Caerphilly Inspection Strategy.

#### **7.1 The purpose of a strategy review**

The main reason for carrying out any review is to look for ways to improve the current system and amend the procedures as appropriate. In order to assess the progress of the Inspection Strategy, performance indicators will be measured against the targets set out in the strategy's aims and objectives. Factors that may affect the achievement of targets and inform the review of inspection decisions may arise through a variety of reasons, examples of which are given below:

- Proposed changes in the use of the surrounding land, for example through the receipt of a planning application
- Informal changes in the use of the land such as persistent trespassing
- Reports of unusual or abnormal site conditions from third parties such as flooding of the site
- Responding to information from statutory bodies
- Pollution incidents
- Changes in legislative requirements or improved technical guidance

#### **7.2 Strategy review**

The review of the 2008 Inspection Strategy has been undertaken to revise the targets and actions contained in Chapter 4 and take into account new legislation that has come into force. The revised Strategy will be reviewed every three years. This review will be undertaken more frequently if there are changes in legislation/guidance.

## Appendix A

### Table A – Categories of Significant Harm

	Type of Receptor	Description of harm to that type of receptor that is to be regarded as significant harm
1	<b>Human Beings</b>	<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>This description of significant harm is referred to as a “human health effect”.</p>
2	<p>Any <b>ecological system</b>, 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>• Ant candidate Area of Special Conservation, potential Special Protection Area or listed Ramsar site, or;</li> </ul> <p>Any nature reserve established under section 21 of the National Parks and Access to the Countryside Act 1949.</p>	<p>For any protected location:</p> <ul style="list-style-type: none"> <li>• harm which results in an irreversible adverse change, or in some other 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 incompatible with the favoured 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 the Countryside Council for Wales and to the requirements of the Conservation (Natural Habitats etc) Regulations 1994.</p> <p>This description of significant harm is referred to as an “ecological system effect”.</p>
3	<p><b>Property</b> in the form of:</p> <ul style="list-style-type: none"> <li>• crops, including timber;</li> <li>• produce grown domestically, or</li> </ul>	<p>as occurring only when a substantial proportion of the animals or crops are dead or are otherwise no longer fit for their intended purpose. Food</p>

	<ul style="list-style-type: none"> <li>• on allotments, for consumption;</li> <li>• livestock;</li> <li>• other owned or domesticated animals;</li> <li>• wild animals, which are the subject of shooting or fishing rights.</li> </ul>	<p>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>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 when the damage significantly impairs the historic, architectural, traditional, artistic or archaeological interest by reason of which the monument was scheduled.</p> <p>This description of significant harm is referred to as a “building effect”.</p>

## Appendix B

### Table B – Significant Possibility of Significant Harm

	<b>Description of Significant Harm (As defined in Table A)</b>	<b>Conditions for there being a significant possibility of significant harm</b>
1	<p><b>Human health effect</b> arising from</p> <ul style="list-style-type: none"> <li>• the intake of a contaminant, or</li> <li>• other direct bodily contact with a contaminant.</li> </ul>	<p>If the amount of the pollutant in the pollutant linkage in question:</p> <ul style="list-style-type: none"> <li>• which a human receptor in that linkage might take in, or</li> <li>• to which such a human might otherwise be exposed, as a result of the pathway in that linkage, would represent an unacceptable intake or exposure, assessed on the basis of relevant information on the toxicological properties of that pollutant.</li> </ul> <p>Such an assessment should take into account:</p> <ul style="list-style-type: none"> <li>• the likely total intake of, or exposure to, the substance or substances, which form the pollutant, from all sources including that from the pollutant linkage in question.</li> <li>• The relevant contribution of the pollutant linkage in question to the likely aggregate intake of, or exposure to, the relevant substance or substances and</li> <li>• The duration of intake or exposure resulting from the pollutant linkage in question.</li> </ul> <p>The question whether an intake or exposure is unacceptable is dependant of the number of people who might experience or be affected by that intake or exposure.</p> <p>Toxicological properties should be taken to include carcinogenic, mutagenic, teratogenic, pathogenic, endocrine disrupting and other similar properties.</p>
2	<p><b>All other human health effects</b> (particularly by way of explosion or fire)</p>	<p>If the probability or frequency of occurrence of significant harm of that description is unacceptable, assessed on the basis of relevant information concerning:</p> <ul style="list-style-type: none"> <li>• That type of pollutant linkage, or</li> <li>• That type of significant harm arising from other causes.</li> </ul> <p>Such an assessment should take into account the levels of risk that have been judged unacceptable in other similar contexts.</p>

3	<b>All ecological system effects.</b>	If significant harm of that description is more likely than not to result from the pollutant linkage in question, taking into account relevant information for that type of pollutant linkage, particularly in relation to the ecotoxicological effects of the pollutant.
4	<b>All animal and crop effects</b>	If significant harm of that description is more likely than not to result from the pollutant linkage in question, taking into account relevant information for that type of pollutant linkage, particularly in relation to the ecotoxicological effects of the pollutant.
5	<b>All building effects</b>	If significant harm of that description is more likely than not to result from the pollutant linkage in question during the expected economic life of the building (or in the case of a scheduled ancient monument, the foreseeable future), taking into account relevant information for that type of pollutant linkage.

## Appendix C

### Information gathered to date

Type of information	Source	Format
Residential properties	CCBC	GIS
Schools	CCBC	GIS
Recreational land	CCBC	GIS
SSSIs	CCBC	GIS, Regional OS maps
Local Nature reserves	CCBC	GIS
Ancient monuments and listed buildings	CCBC	GIS
Buildings	CCBC	GIS
Agricultural land	CCBC	GIS
Allotments and gardens	CCBC	GIS
Forestry areas	CCBC	GIS
Surface waters	Environment Agency	GIS
Source protection zones	Environment Agency	GIS
Private water supplies	CCBC	GIS
Sites identified as potentially contaminated under s143	CCBC	GIS, Regional OS maps
Location of landfill sites	Environment Agency	GIS
Waste disposal sites	Environment Agency	GIS, Regional OS maps
Part B & A2 industrial processes	CCBC	GIS, Public Register file,
Part A1 industrial processes	CCBC/ Environment Agency	GIS, Public Register file
Aquifers (Groundwater)	Environment Agency	Groundwater vulnerability map Sheet 36



## **Appendix D**

### **Reference documents**

- Part IIA, Environmental Protection Act 1990
- DETR. Contaminated Land Inspection Strategies: Technical Advice For Local Authorities 2001
- The National Assembly for Wales. Remediation of Contaminated Land. 2001
- Welsh Assembly Government. Part 2A Statutory Guidance on Contaminated Land. 2006
- The National Assembly for Wales. Environmental Protection, Wales. The Contaminated Land (Wales) Regulations 2001.
- The Environment Act 1995
- The Environmental Information Regulations 2004
- The Environmental Damage Regulations 2009
- Planning Guidance (Wales) May 1996
- The Environment Agency, LGA, DEFRA, CIEH. Local Authority Guide to the Application of Part IIA of the Environmental Protection Act 1990
- WDA. The Remediation of Contaminated Land. 1993
- SNIFFER. Report SR (97) 11F. Communicating Understanding of Contaminated Land Risks. 1999
- DoE. CLR Report No. 5: Information systems for land contamination. 1994
- DoE. CLR Report No. 6: Prioritisation and categorization procedure for sites, which may be contaminated. 1995
- Construction Industry Research & Information Association (CIRIA) 078-Building on derelict land. 2001.
- DoE. Industry Profiles
- CCBC. 1996-2011 Unitary Development Plan. Deposit Plan 1999 and Topic Papers
- CCBC. 2006-2021 Deposit Local Development Plan and Background Papers
- CCBC. Countryside Strategy 1998
- CCBC. Biodiversity Action Plan 2002

- Environment Agency. Policy and Practice for the Protection of Groundwater: Groundwater Vulnerability 1:100,000 Map Series
- HMSO. British Regional Geology South Wales 1970
- Countryside Council For Wales. Sites of Special Scientific Interest 1:100,000 Map series

**Appendix E**  
**Providing information on contaminated land**

Please address all correspondence to

Caerphilly County Borough Council  
Directorate of the Environment  
Pontllanfraith House  
Pontllanfraith  
Blackwood  
NP12 2YW

For the attention of the Contaminated Land Officer, Pollution  
Control.

Telephone 01495 235026/5276

## Appendix F Glossary of terms

<b>Brownfield site</b>	Land that is or was occupied by a permanent structure and associated fixed surface infrastructure
<b>Contaminant</b>	A substance which is in, on or under the land and which has the potential to cause harm or to cause pollution of controlled waters
<b>Contaminated land</b>	<p>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</p> <p>a) Significant harm is being caused or there is a significant possibility of such harm being caused, or</p> <p>b) Pollution of controlled waters is being, or is likely to be caused.</p> <p>Land contaminated by a nuclear occurrence” means land which is contaminated land by reason of the presence in, on or under that land of any substances, in so far as by reason of that presence damage to that land has occurred, being</p>
<b>Controlled waters</b>	Defined in Part IIA s78A(9) which references s104 of Water Resources Act 1991. This includes territorial, coastal, inland fresh waters and groundwater.
<b>Current Use</b>	<p>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, including</p> <p>a) any temporary use permitted under the TCPA legislation</p> <p>b) including future uses or developments which do not require a new or amended grant of planning permission</p> <p>c) any likely informal recreational use of the land with or without the owners consent.</p> <p>d) in relation to agricultural land, the current use should not be taken to extend beyond the growing or rearing of crops or animals, which are habitually grown or reared on the land.</p>
<b>Derelict land</b>	Land where former structures are no longer in use and are in a general state of ruin or disrepair

<b>Greenfield site</b>	Undeveloped land in its original or natural state
<b>Harm</b>	Harm to the health of living organisms or other interference with the ecological systems of which they form part and, in the case of man, includes harm to his property.
<b>Pathway</b>	One or more routes or means by which a receptor is a) is being exposed to, or affected by, a contaminant, or b) could be so exposed or affected
<b>Pollutant</b>	A contaminant which forms part of a pollutant linkage
<b>Pollutant linkage</b>	The relationship between a contaminant, a pathway and a receptor
<b>Pollution of controlled waters</b>	The entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter.
<b>Possibility of significant harm</b>	A measure of the probability, or frequency of the occurrence of circumstances, which would lead to significant, harm being caused.
<b>Receptor</b>	Either; a) a living organism, a group of living organisms, an ecological system or a place of property which i) is in a category listed in Table A (see Appendix A) as a type of receptor, and ii) is being, or could be, harmed by a contaminant or b) controlled waters that are being, or could be, polluted by a contaminant.
<b>Risk</b>	The combination of: a) the probability or frequency of occurrence of a defined hazard and b) the magnitude or seriousness of the consequences
<b>Significant Harm</b>	Means any harm which is determined to be significant in accordance with harm defined in Table A (see Appendix A)
<b>Significant pollutant linkage</b>	A pollutant linkage that forms the basis for a determination that a piece of land is contaminated land.
<b>Significant possibility of</b>	A possibility of significant harm being caused which is determined to be significant in accordance with the

<b>significant harm</b>	statutory guidance (see Appendix B)
<b>Substance</b>	Any natural or artificial substance, whether in solid, liquid, gaseous or vapour form.

## Appendix G

### Typical Geological Succession

Superficial Deposits (Drift)  
Recent and Pleistocene

Peat, Alluvium

Glacial deposits including sands and gravels, Boulder Clay,

Carboniferous

Coal Measures- Upper Coal Measures or Pennant Measures

Grovesend Beds- measures above the Mynyddyslwyn coal seam; mudstones and pennant sandstones with a few workable coals.

Minor Unconformity

Hughes Beds - measures between the Cefn Glas and the Mynyddyslwyn; pennant sandstones, mudstones and a few thin coals.

Brithdir Beds - measures between the Brithdir (Tillery) the Cefn Glas - pennant sandstones, mudstones and a few coals - mostly thin.

Rhondda Beds - measures between the No.2 Rhondda and the Brithdir (Tillery);pennant sandstones, mudstones and a few coals.

Llynfi Beds - measures between the Upper Cwmgorse Marine Band and the Rhondda; mudstones, sandstones and thin coals.

Middle Coal Measures

Measures between the Amman Marine Band and the Upper Cwmgorse Marine Band; mudstones, subordinate sandstones and many workable coals - particularly in the lower part.

Lower Coal Measures

Measures between the Gastrocerus Subcrenatum Marine Band and the Amman Marine Band; Mudstones, subordinate sandstones and many workable coals particularly in the upper part.

## Lithological Description. The Coal Measures

This sequence underlies the majority of Caerphilly County Borough

The South Wales Coal Measures consist largely of mudstones, siltstones and sandstones with numerous coals and associated seathearts. The sandstones, particularly in the upper Lower and Upper pennant measures, may be up to 150m thick and form the largest percentage of the strata.

The Coal Measures were laid down under cyclic sedimentation conditions which gives rise to the typical Coal Measures cyclothem (i.e. a general sequence of sedimentation in which clastic sediments coarsen upwards and the contained fossils suggest an increasingly non-marine environment, finally giving way to the seathearts and coals).

## Superficial Deposits Quaternary, Pleistocene and Recent.

The predominant superficial drift deposits represented in the area of interest are of glacial origin and formed during the Pleistocene era. For the most part the glacial deposits are confined to the lower slopes and valley bottoms where they form a single coextensive deposit ranging from heavy stony clay till to sandy boulder gravels. In general the deposits become increasingly gravelly when traced 'down Valley'. For the most part the boulders and stones are well rounded and contained in a clayey matrix. The deposit is characterized by an irregular hummock topography in which thickness vary.

Other superficial deposits which overly the area are deposits often formed by the processes of solifluction, down wash, hill creep etc. and in general overlie the boulder clay, although they may be contemporaneous with it. This type of deposit is often referred to as Head and although it appears to be the product of a periglacial climate some movement may still take place in extreme winters.



## Appendix H

Contaminated Land is required to be designated as a special site in accordance with Regulation 2 of the Contaminated Land (Wales) Regulations 2001 comprise the following descriptions:

- Land to which Regulation 3 applies
- Land contaminated by waste acid tars
- Land where the purification of crude petroleum, shale or other bituminous substances has been carried out
- Land where the manufacture or processing of explosives has occurred
- Land where a prescribed process has been or is being carried on
- Land within a nuclear site
- Land owned or occupied by a Defence organization such as naval, military or air force
- Land where the manufacture, production or disposal of chemical weapons or biological agents has been carried on
- Premises designated under the Atomic Weapons Establishment Act 1991

Contaminated land required to be designated as a special site in accordance with Regulation 3(c) of the Contaminated Land (Wales) Regulations 2001 comprise the following descriptions:

### Schedule 1

Substances or families of substances:

- Organohalogen compounds and substances which may form such compounds in the aquatic environment
- Organophosphorous compounds
- Organotin compounds
- Substances which possess carcinogenic, mutagenic or teratogenic properties in or via the aquatic environment
- Mercury and its compounds
- Cadmium and its compounds
- Mineral oil and other hydrocarbons
- Cyanides

Formations of rocks

- Pleistocene Norwich Crag
- Upper Cretaceous chalk
- Lower Cretaceous sandstones
- Upper Jurassic corallian
- Middle Jurassic limestone
- Lower Jurassic Cotswold sands
- Permo-Triassic Sherwood sandstone group
- Upper Permian magnesium limestone

- Lower Permian penrith sandstone
- Lower Permian collyhurst sandstone
- Lower Permian basal breccias
- Conglomerates and sandstones
- Lower carboniferous limestone

NB The information here is a summary of the Contaminated Land (Wales) Regulations 2001. Reference should be made to the Regulations for a full interpretation of the legislation.