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Assessment and remediation of land contamination through the planning system

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Executive summary

The planning system is an important mechanism for addressing the risks posed by historic land contamination. This research aims to provide an overview of the contaminated land activity that has taken place in England since the introduction of specific planning policy guidance in 1994 and also since the introduction of Part 2A of the Environmental Protection Act in 2000 (referred to in this report as Part 2A or the contaminated land regime). Data on the extent and number of sites where potentially contaminated land has been addressed through the planning system has not been collated before, therefore the research provides an opportunity to gain a more comprehensive understanding of progress made to manage historic land contamination in England.

Following pilot assessment, a full survey was sent to a representative number of local authorities in England to collect data on the number and area of sites where land contamination was specifically considered in the planning process from 1994 to 2009. Data was also collected on the most commonly encountered contaminants where land was specifically considered in the planning process and on the range of concentrations of contaminants which had been accepted by local authorities as remediation standards.

Responses were received from only 21 of the 171 local authorities invited to participate in the survey (12.3%) and within the responding group there was a poor response to the specific data requests. Therefore, the limited data gathered at best points to a common practice amongst respondents.

The research found that land contamination is generally included in local authorities' development management and control policy documents. For individual planning applications where land contamination is known or suspected to be present, there does not appear to be a consensus on the minimum amount of information that applicants are required to submit to validate the application. It also appears that the degree of checking on the adequacy of information at this stage is variable. The use of planning conditions to deal with land contamination issues appears to be common practice.

The most detailed responses were received for the period 2007-2009. In this period, the issue of land contamination was considered for between 160 to 214 sites per year per authority with an average area for each of these sites estimated to be between 7 and 25 hectares. The authorities that responded dealt with between 44 and 54 sites per year where land contamination issues were addressed through planning conditions.

The research highlighted that local authorities do not generally store retrievable data on land contamination assessment and remediation activity through the planning system. In particular, there is very little information available on land area where contamination has been considered in applications. Where the information is available, it is not readily accessible and so its retrieval would be overly burdensome on local authorities.

The research indicated that data is more likely to be available post 2000 when contaminated land officers starting collecting and recording data as part of their inspection duties under Part 2A. It also appears that since circa 2007 data management has improved.

There is a strong indication that whilst numerical remediation standards are not currently routinely specified in planning conditions, this appears to have been common in the past. Numerical remediation standards that have been accepted are generally based on human health minimal or tolerable risk assessment criteria since 2000 (Soil Guideline Values and CLEA derived standards¹) but before 2000 they were usually set at screening levels from the UK (ICRCL²) and internationally.

The survey returns indicated that the contaminants most commonly encountered on land being redeveloped are arsenic, lead, polycyclic aromatic hydrocarbons, total petroleum hydrocarbons and benzo(a)pyrene.

The research has shown there to be substantial variations in data availability and storage and consequently difficulties retrieving the data in order to assess the effectiveness of the planning system in dealing with land contamination since 1994. Whilst there is clear indication that records are increasingly more accessible due to improvements in data management and availability of electronic systems, these are not anticipated to dramatically improve the situation because the systems used vary substantially, as does the type of information that is stored.

¹ CLEA refers to the Contaminated Land Exposure Assessment model devised by the Environment Agency, <http://www.environment-agency.gov.uk/research/planning/33714.aspx>.

² ICRCL stands for the Interdepartmental Committee for the Redevelopment of Contaminated Land.

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1 Introduction

1.1 Background

England has a substantial legacy of land contamination, mainly resulting from historical industrial pollution. The presence of contaminants in soil was first recognised by local authorities as being a barrier to redevelopment of previously used land in the mid-1970s (Harris and Denner 1997). In 1987, Government guidance to local planning authorities advised that the presence of, or the potential for, contamination was a material consideration³ for planning purposes (DoE 1987). Government also established the Interdepartmental Committee for the Redevelopment of Contaminated Land (ICRCL) around this time to provide a centralised resource of information and advice to local authorities.

Policy of successive Governments has maintained that, where possible, land contamination should be dealt with 'voluntarily' with the main mechanism being the planning system which encourages remediation to be funded by redevelopment (Defra 2008). A key piece of policy advice is provided to local authorities in Planning Policy Statement 23: Planning and Pollution Control (PPS23) first published in 1994 as Planning Policy Guidance 23 (PPG23) and revised in 2004. This states that:

'the presence of contamination in land can present risks to human health and the environment, which adversely affect or restrict the beneficial use of land but development presents an opportunity to deal with these risks successfully'

Contaminated land provisions were introduced into the Environmental Protection Act 1990 (Part 2A) through the Environment Act 1995 which came into force in England on 1 April 2000 and conferred new responsibilities and powers on local authorities and the Environment Agency to identify 'contaminated land'⁴ and secure its remediation. Annex 2 to PPS23 (ODPM, 2004) explains the relationship between Part 2A and the planning system. Part 2A addresses historical contamination and the risk it poses in the current use and circumstances of the land. The planning system deals with risk that may be realised through redevelopment of the land for a new use.

Part 2A includes a requirement for the Environment Agency to prepare reports on the state of contaminated land and for local authorities to provide the necessary information for such reports. Two reports have been published to date (Environment Agency 2002 and 2009). The most recent report confirms that land contamination in England is mainly dealt with through the planning system, with estimates that this equates to as much as 90% of the potentially contaminated sites that have been managed. However, there are currently no

³ A material consideration is a matter that must be taken into account when determining a planning application.

⁴ "Contaminated land" is any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that: (a) significant harm is being caused or there is a significant possibility of such harm being caused; or (b) pollution of controlled waters is being, or is likely to be, caused.

formal requirements for local planning authorities to record the nature or extent of remediation activity which has taken place through the planning system.

The management of land contamination in the UK (either through planning or Part 2A) is centred on a risk based framework, recognising that whilst contamination can be present, it has to be present at such concentrations and in such circumstances that it has the potential to cause harm. Government policy is clear that the risks need to be addressed on a site-by-site basis, due to the different circumstances and risk scenarios at each site. It is therefore the case that the extent of remediation will vary from site to site.

One aim of this research was to quantify what impact the introduction of PPG23 and the commencement of Part 2A have had on the remediation activity taking place through the planning system.

1.2 Research requirements

The aim of the research was to assess the extent of, and gather key data on, land contamination activity in relation to the planning process. Data on the extent and number of sites where potentially contaminated land has been addressed through the planning system has not been collated before, therefore the research provides an opportunity to gain a more comprehensive understanding of progress made to manage historic land contamination in England.

The specific research requirements were to:

- Provide total number (and total area) of sites where land contamination was specifically considered in the planning process;
- Provide total number (and total area) of sites where specific conditions were included in planning permissions requiring measures to tackle risks posed by land contamination;
- Express the above estimates as both annual totals and totals since 1994;
- Detail the contaminants most commonly encountered where land was specifically considered in the planning process;
- Specify the range of concentrations of different contaminants as limit values in planning permission conditions and associated use of land; and
- Provide an overview of extent and types of records typically kept relating to land contamination activity and policies that are employed.

1.3 Project objectives

The following project objectives were formulated to meet the research requirements.

Objective 1

To develop a pilot and full survey in accordance with the requirements of the Survey Control Liaison Unit (SCLU) in Defra. The surveys to be used to gather data from a representative number of local authorities on the extent and nature of land contamination activity that has taken place in England (1) since the introduction of PPG23 in 1994 and (2) since the introduction of Part 2A.

Objective 2

To conduct a pilot study to establish the feasibility of collecting sufficient and reliable data to be able to provide an overview of land contamination activity as required by the project specification.

Objective 3

To conduct the main survey of a representative number of local authorities.

Objective 4

To conduct regional workshops to provide further feedback from local authorities on how their authority deals with land contamination in their area, their successes and any lessons learnt. These would be used to get maximum engagement on the more general aspects of the project as well as to 'test' the initial findings from the quantitative portion of the main survey.

Objective 5

Collation, assessment and reporting of the survey (and workshop) findings.

1.4 Extent to which project objectives have been met

All of the research objectives have been completed except for research objective 4 which, based on the results of the survey, was not required.

In terms of meeting the aims of the project, the extremely low response rate to the main survey has meant that the data gathered has been limited. This is discussed further in section 3.4.

1.5 Methodology

A review of statutory planning requirements over the specified time period (1994-2009) was undertaken. Analysis of available national statistical information on planning applications was also carried out to ensure that the data requested was not available elsewhere. This information was also used in the participant selection process (see section 2.2).

There is no statutory requirement for local authorities to specifically collect the data required for this research project. It was considered possible that some local authority contaminated land officers may collect some of this information as part of their statutory duties under Part 2A to help inform their prioritisation list for inspection. However, it was acknowledged from the outset that any such information could be stored in many different forms and therefore be time consuming to retrieve and collate. It was anticipated that data quality could be a challenge by virtue of the individual practice in each local authority and the various methods used to collect and record it.

In view of the uncertainties about data quality, format and storage; and to avoid the data gathering exercise being burdensome, a phased approach was used for the collection of the data. Firstly, a pilot study was undertaken to establish the feasibility of collecting sufficient and reliable data. The content of the survey and the number of local authorities that were

asked to participate were amended for the second phase as a result of the information gathered from the pilot.

1.6 Reporting

The data from both the pilot and the main survey have been collated and assessed and are presented in chapters 2 and 3 of this report. Summary statistics for the data returns for the main survey were created (presented in Appendix) and their evaluation is presented in chapter 4. The key research findings and conclusions are summarised in chapter 5.

2 Pilot Survey

2.1 Introduction

A pilot survey was developed to establish the feasibility of collecting sufficient and reliable data. Informal consultations were conducted with two local authority contaminated land officers from Environmental Protection UK's (EPUK's) membership who provided valuable input to the early development of the pilot survey.

The pilot survey was issued to ten targeted local authorities who had agreed to participate. They were asked to complete the survey as far as possible and to record the time taken to complete each question (or provide an estimate if they were unable to complete the survey in the time provided). Comments were invited on the content, layout and clarity of the survey, in particular, whether the questions were clear and unambiguous and whether they were considered to be appropriate and necessary. Participants were also asked whether they thought the survey would be able to provide the information required to meet the project objectives and whether they could foresee any difficulties for other local authorities when answering any of the questions and to highlight where there might be data quality issues. Respondents were invited to provide details of any other barriers to completion of the main survey in the proposed four week timescale. Suggestions which might maximise the return rate and gain support for the research were also invited.

The returns from the pilot survey were assessed and the findings used to improve the main survey.

2.2 Selection of participants

The following criteria were considered when selecting the pilot participants: geographical region; total number of residential planning applications in 2007; whether they were known to have determined any land under Part 2A; and perceived activity in the contaminated land sector (for example their involvement in forums and committees and frequency of posts on the discussion forum 'Jiscmail'⁵). Whilst efforts were made to ensure the selection was as representative as possible, judgement was used with the aim of selecting local authorities who were thought most likely to participate in the pilot based on their general activity in contaminated land forums.

The 10 local authorities who agreed to participate noted that time and access to the information would likely prove to be obstacles to the provision of data. Most were uncertain about exactly how the data was recorded or what retrieval would entail but believed it to be a valuable research project and wished to contribute.

2.3 Survey contents

The pilot survey developed was a draft of the proposed main survey and it was decided that it would be best delivered as a free form Word document which could either be completed by hand or offline electronically.

⁵ <https://www.jiscmail.ac.uk/cgi-bin/webadmin?A0=CONTAMINATED-LAND-STRATEGIES>

The survey comprised eighteen questions which were provided in order of increasing detail, to address strategic, process and practice evidence. They were divided into three sections to reflect the general themes of the research. The first section asked how local authorities dealt with land contamination through the planning system in their area at a strategic and planning application level. Most questions in this section were closed, with tick boxes and Likert-scaled⁶ questions to elicit forced choices. Open questions were also used to gather opinion on how the introduction of guidance and legislation (namely PPG23 and Part 2A) impacted on how land is dealt with through the planning system.

The second section of the survey was designed to collect the data required to quantify the progress of dealing with land contamination through the planning system on a year by year basis from 1994 to 2009. Respondents were asked to complete a table which requested the total number of planning applications, the number and area of sites where land contamination had been considered in planning applications and the number of applications where planning conditions had been used to deal with land contamination issues. A comments box was also provided to allow for additional information or relevant comments to be recorded such as comments on the accuracy or bias of the data being provided, changes in recording procedure, introduction of new guidance or new legislation, or the appointment of a new member of staff. Participants were also asked to use their professional judgment to provide an indication of their level of confidence in the data provided for each year. Open questions were used in this section to ask what types of data management were employed to record the data requested.

The third section of the survey was used to gather data on the type of contaminants that were most commonly encountered in the local authority area and the remediation limit values prescribed in planning conditions. Participants were asked to provide opinion on whether there had been any change in remediation standards over the research period, namely from 1994 to 2000. Questions in this section included closed Likert-scale questions, data entry table and open questions.

A copy of the survey used for the pilot phase of the project is provided in Appendix 1 together with a copy of the cover letter inviting participation.

2.4 Pilot survey results

Nine of the ten local authorities who agreed to take part in the pilot survey provided responses; these varied in completeness.

The main issue revealed by the pilot phase was how difficult it is to retrieve the requested data. The pilot demonstrated that there would be difficulties gathering the data required both for the numbers/areas of sites dealt with through planning on an annual basis and for contaminant concentrations accepted as remediation endpoints. None of the pilot participants were able to easily extract the data from a database and most said that although collecting some of the data was possible, they did not have the resource to do it. The responses from the pilot survey participants confirmed that there is no standard way of

⁶ Likert scaling is a rating scale measuring either a positive or negative response to a statement or a respondent's level of agreement to a statement.

recording or storing the required data and that the ease of retrieval, and therefore resource impact, would vary considerably between local authorities.

The responses indicated that the availability of data might vary from pre and post 2000 due to improvements in data management systems and the commencement of Part 2A. It highlighted that data pre 2000 may not be stored electronically and where this is the case, collection would involve a manual search through individual planning applications. In some local authorities the information may be even more inaccessible because site investigation reports are not archived or archives are held by an external company.

The results highlighted that collecting data for the period from 2000 might prove more successful, with the availability of data for the last five years looking even more promising. However it also indicated that in many cases data may not be readily available on 'areas' but only on a 'number of sites' basis. For some, to gain information on areas would involve first generating the number of sites where planning conditions had been requested and then manually searching through each of the original applications to extract information on the size of each site.

In response to the data collection question on remediation standards using defined limits, most respondents clearly stated that they did not, and indeed should not, use limit values in planning conditions and stressed that this was for the planning applicant to decide. Collecting data about what concentrations have been accepted to determine suitability for new use was again likely to involve a manual search through applications, meaning that these aspects of the survey may also result in low data retrieval rates and low data quality.

In summary, the pilot study highlighted that the amount of time needed to complete the survey would be highly variable depending upon how the data is stored and whether respondents are able to retrieve it. Most questions in the survey could be answered within a few hours but the key data collection would be the variable element, and could take up to five days to collate. The pilot results suggested that the majority of local authorities would not be able to complete the quantitative data collection elements of the survey in full.

3 Main Survey

3.1 Main survey development

The findings of the pilot survey (see section 2.4) were used to inform both the level of participation in the full survey and to revise the content of the survey in response to participants' observations. The anticipated response rates for the main survey were revised down to 40% for a survey completed to some degree and 10% for a full survey including providing detailed data.

The survey was also revised to take account of comments from Defra's survey control liaison unit (SCLU). The main changes made to the survey were as follows:

- Ambiguous wording was changed and clarity was provided as to what information was being requested.
- Some boxes were included as prompts to ensure that participants understood that a number was required.
- Some questions were reformatted to provide a ranking response for ease of data analysis.
- The requirement to input the total number of planning applications was removed as this data could be accessed from national planning statistics.
- An additional question was added in section 2 to be used where data was incomplete for the preceding Question 12 (i.e. the main data quantification question on the number of sites dealt with through the planning process) to elicit further details of why the participant was unable to provide the requested data.
- Significant changes were made to the question requesting information on the range of concentrations specified as limit values for remediation (Question 18 in the pilot survey). The question was simplified and split into three questions. The first (Question 18 of the main survey) asked how frequently, since 1994, the contaminants listed had been encountered when land contamination was specifically considered in the planning process. Question 19 (main survey) invited respondents to indicate which well known generic assessment standards have been accepted for particular contaminants. Question 20 then invited a concentration range to be recorded where site specific standards had been accepted for particular substances. Further guidance was also provided in the preamble to the questions. References were included for the historical generic assessment criteria.

A copy of the main survey is provided in Appendix 2 together with a copy of the cover letter inviting participation and the list of Frequently Asked Questions which was produced.

3.2 Selection of participants

Statistical input was used to ensure that the survey selection process would capture local authorities in different areas of the country with differing levels of planning activity. The overall objectives were to ensure that the sample was representative of the local authority population and to achieve a sufficient response rate whilst limiting the burden placed on local authorities. With this in mind it was decided to sample 50% of the population.

Firstly, the local authorities were split into three geographically representative areas. The regions were as attributed in the National Planning Applications Statistics (CLG 2008) as shown in Table 1.

Table 1: Allocation of local authorities to areas for selection process

Allocated area	Planning statistics regions	Total number of local authorities
North	Northeast Northwest Yorkshire	87
Midlands and East	East midlands West midlands East of England	124
South	London Southeast Southwest	147

Within each region the local authorities were sorted on a single variable, namely the total number of minor and major planning decisions. This metric was chosen as it was directly relevant to the survey aims and it would ensure representation of local authorities with differing planning activity and also because the metric had good variability. Data from national planning application statistics was used for planning decisions by development type (CLG, 2008). For the selection process, a complete data set which included every local authority was required. The data from 2007 was selected as this was the most recent year with the most complete data set on planning applications.

Local authorities were sorted from the lowest to the highest number of planning decisions (total of major and minor decisions) and numbered sequentially. Alternate local authorities were then selected from the list.

3.3 Survey delivery

We asked contaminated land officers to take charge of the completion of the survey because they were likely to hold some of the information requested as part of their duties under Part 2A and because the output from the survey would be of most relevance to them. We noted that it was expected that they would have to liaise with planning colleagues in order to gather some of the data.

The survey was issued to 171 local authorities (equivalent to 180 in 2007 due to boundary changes) via an electronic mailing system. This system provides visibility over which recipients opened the email. The initial email could not deliver to 11 recipients, and for these the contact details were verified and the email sent separately.

Participants were contacted in three separate batches. This was so that the content of the email could be tailored for participants who had also taken part in the pilot project and for those working for an authority that had undergone a boundary change.

The email invited participants to be part of this research project. The email contained a link to a web page where the survey document could be downloaded. In addition to the information provided in the body of the email, additional information on the research project was set out on the web page. This explained that the information provided would be used to

estimate the contribution that the planning system has made to land contamination remediation and by inference provide an indication of what is yet to be dealt with through other routes, such as Part 2A.

It was made clear that the survey was being carried out on behalf of Defra as part of their current research programme and that it aimed to provide valuable information to help Government fully assess the effectiveness of the various policies related to land contamination. Participants were given six weeks to complete the survey. Survey returns were requested either electronically or by post.

EPUK encouraged participation with two subsequent follow up emails. Whilst completion of the survey was not mandatory, participants were encouraged and incentivised to complete the survey and provide the quantitative data requested.

3.4 Response rate

Responses were received from 21 local authorities (12.3%) which was much lower than anticipated and most were incomplete (discussed in section 3.7).

The mailing system used to distribute the survey indicated that some invited participants did not open any of the emails sent. In addition, of those that opened the mailing, some did not appear to open the actual survey. A selection of those who appeared not to have opened the survey/ mailing were contacted and asked for some feedback. The main reasons provided were that:

- It got lost amongst other emails and forgotten about.
- It was seen as a low priority compared to other work (statutory obligations, sheer volume of other work, pressure due to staff cuts etc.).
- It may have been mistaken for an event mailing or EPUK newsletter.

The mailing system indicated that not all those who opened the survey actually responded. Again, a selection of these local authorities were contacted and asked for feedback. The main reasons provided for not completing the survey were:

- The length of the survey put them off.
- It would take too much time to collate as the data is not readily available and the survey asked for a lot of information at once.
- They were not sure whether the information was available.
- It was received when they had other priorities such as air quality work or managing staff cuts.
- It was such a big task and they had heard from others that they wouldn't be providing the information which meant there was less incentive to do so themselves.

3.5 About the respondents

The majority of respondents (57%, 12 respondents) indicated that they were contaminated land officers or technical officers, whilst 24% (5 respondents) described themselves as environmental protection or pollution officers. The remaining 19% (4 respondents) were environmental health officers. The respondents work within a range of different departments including (in order of frequency) Environmental Health, Environmental Protection, Regulatory

Services, Public Protection, Environmental Services, Development and Enforcement, Neighbourhoods & Regeneration, Technical Services, Public Services and Community Services.

The majority of the respondents (around 70%, 14 respondents) confirmed that they had consulted with planning colleagues before submitting their response.

3.6 Representativeness of the returns

Out of the local authorities that responded to the survey, just under half (47.6%, 10 respondents) are located in the South of England; 28.6% (6 respondents) based in the Midlands and East; and 23.8% (5 respondents) in the North. Most respondents work for a district (38.1%, 8 respondents) or borough council (23.8%, 5 respondents) with a relatively large proportion from a London borough (19.0%, 4 respondents). The remainder (14.3%, 3 respondents) work for a city council or for a town council (4.8%, 1 respondent).

Due to the low response rate, we analysed the returns to determine whether they were representative in terms of regional location and planning activity (as indicated by the number of major and minor planning applications in the 2007 planning statistics).

Firstly, the response rate, while low, is not significantly different by region. This was determined using the statistical chi-square test⁷ which is valid even with low sample sizes.

However, when comparing the mean number of applications in each region for the population and the sample responses, there is no inference test that can sensibly be run due to the sample size of the returns and the non-normal distribution of the data. Even using non-parametric tests, the power of the test is too low to be of any value.

However, the distribution of sample responses does not seem very different from the population although the responses do have less variability with data being captured from the middle of the distribution. Unfortunately, data from local authorities with very high and very low levels of planning activity have not been captured.

3.7 Completeness of responses

The majority of the returns were incomplete. In particular, there were only a few responses to the key data collection questions, Questions 12 and 20, and none were complete. Details of the response rates to individual questions can be found in Appendix 3.

Some of the reasons given for not being able to provide complete data are summarised below under common themes.

Data not available

- The planning application database does not specifically record where land contamination has been considered.
- The information requested is not recorded or retained.

⁷ The chi-square test is a statistical test which tests how closely experimental observed values fit theoretical expected values.

- Historical information cannot be retrieved due to obsolete recording systems.
- Information on land area is not recorded for individual applications in a readily accessible way.

Data available but unable to provide it

- Collection of meaningful and accurate data would involve manual checking of thousands of individual paper based applications (especially pre-2000) which would be overly burdensome.
- There is insufficient resource to collate the data required.
- Files have been archived and are not readily accessible.

Incomplete data

Where data was provided it was mainly limited to site numbers, with information on land areas generally not available. Only two respondents were able to provide data on the areas of land dealt with through the planning system and one of them had low confidence in the records for years prior to 2004.

Also, it appears to have been easier to provide information on the number of sites where conditions were used as opposed to the number of sites where land contamination was considered as part of the planning process.

Other responses indicated that some of the requested information had only been recorded since around 2002.

3.8 Data Analysis

The results from the main survey were collated and assessed. The analysis of responses received has been compiled in a statistical manner, summing returns and converting to numerical indices where possible. Given the very low response rate and incomplete answers to questions in many cases, these do not and cannot be provided with any degree of statistical confidence. The results at best point to a common practice amongst respondents. Of the summary descriptive statistics (Appendix 4) the mean results have been used to undertake comparative analysis (chapter 4).

4 Analysis of Responses

4.1 Descriptive analysis of responses – Section 1

Whilst land contamination is a material planning consideration, each local authority has its own procedure and process for deciding whether information about land contamination is required to enable a planning decision to be made. Government policies on how land contamination should be considered and approached through the planning system are set out in PPS23.

This section of the survey asked for information on how the local authority currently deals with the issue of land contamination in the planning system and how that has changed over the study period (1994-2009).

Questions 1-5: how the local authority deals with land contamination through the planning system

1. Is the issue of land contamination considered in specific planning development framework documents?
2. How does your planning authority decide whether land contamination should be considered when determining a planning application?
3.
 - a) Where land contamination is thought to be present and to pose a potential constraint to the proposed development, what level of information is required to validate the application?
 - b) What level of checking does your local authority usually carry out as part of the application validation process?
4. What level of information about land contamination risks and remediation does your local authority allow to be produced as part of planning conditions?
5. What is usually involved in the discharge of conditions?

A general observation from the responses is that land contamination is generally, though not comprehensively, considered by local authorities in major policy documents. The balance between generic/core policy consideration and site specific planning varied between respondents.

Responses to Question 1 highlighted that land contamination was considered in nearly all development management and control policies (>50% of respondents), but the inclusion in area action plans⁸ and site specific consideration was much reduced.

When asked how the planning authority decides whether land contamination should be considered in determining an individual planning application (Question 2), the responses indicated the main deciding factors to be the assumption of a potential problem being present as a result of previous development in the area plus the inhouse knowledge developed from the assessment for other regulatory functions (e.g. Part 2A). Some local

⁸ An area action plan is a type of Development Plan Document focused upon a specific location or an area subject to conservation or significant change (for example major regeneration).

authorities confirmed that sometimes reliance is placed solely on the applicant to decide whether land contamination needed to be considered in their application.

When land contamination is identified as a potential issue, the level of information required to validate an application is normally a desk study (Question 3a) supplemented by site investigation data. It does not appear usual for local authorities to require more than this level of data at this stage, such as remediation options appraisals or remediation strategies.

The level of evaluation of the technical information submitted in support of an application appears to rely very strongly on the technical capability available inhouse through the contaminated land officer and is carried out purely as a desk based evaluation (Question 3b). Only occasionally are external consultants employed and rarely does the local authority undertake its own sampling and analysis. There is evidence that some local authorities (~14% of respondents) do not regularly check the adequacy of submitted land contamination reports as part of the validation process.

The level of information provided for contamination risk assessment and remediation as part of planning conditions (Question 4) is usually desk study and site investigation focused with verification reports supplied in most, but not all cases. Where verification reports have not been submitted to the local authority then the suitability for use of the land has not been demonstrated.

It is clear that planning conditions are being used to specify the requirement for various levels of information from desk study to full verification. Once reports have been submitted to the local authority to satisfy a planning condition, it is the contaminated land officer that has the main responsibility within the planning process to check the adequacy of them, very rarely supplemented by additional data (Question 5). It is noted that there appears to be more checks made for adequacy at this stage in the process than at the application validation stage.

Questions 6 and 7: the impact of the introduction of guidance and legislation

6. When PPG23 was first introduced in 1994, please describe what impact, if any, it had on how your local planning authority dealt with land contamination?
7. Since the introduction of Part 2A in 2000, please describe what impact, if any, it had on how your local planning authority has dealt with land contamination?

The impact of the introduction of PPG23 in 1994 prompted a wide range of comments which suggested that, whilst in some cases its introduction improved interaction between planning departments and environmental health officers (at that time responsible for land contamination), the introduction of Part 2A improved this interaction to a greater degree. This improvement is said to have been aided by the requirements of Part 2A to proactively review land contamination in the area.

Questions 8 to 10: contaminated land technical resource

8. What total resource is available in your local authority to deal with land contamination? What resource was available 5 years ago?

9. Out of this total resource for land contamination, what would you estimate is used solely in connection with planning applications i.e. excluding Part 2A work? What resource was available 5 years ago?
10. Please provide any other comments on the trends in resource available to deal with land contamination through the planning system since 1994.

Whilst not statistically significant, it seems that the resource allocated to deal with land contamination has been reduced between 2004/05 and 2009/10. In contrast the proportion of effort used in assessing planning applications has generally increased, although the range of responses is very wide (-0.24 to +0.58 Full Time Equivalents (FTE)). Other trends identified over the period commonly cite that staff reductions are likely to become severe and therefore the technical and specialist resource available to local planning departments could be at risk. As the planning process provides a mechanism to deal with land contamination then there is likely to be an impact on progress.

4.2 Descriptive analysis of responses – Section 2

This section formed the main data collection part of the research project. The data requested in this section sought to estimate the contribution of the planning system in dealing with land contamination.

Question 11: extent of land contamination

11. What is the estimated total number of sites within your authority that are considered to be potentially affected by land contamination? What estimated total area (in hectares) does this represent?

The distribution of data returned for Question 11 was observed to be highly skewed. The data are more complete for estimates of the total number of sites which range from 400 to 6,220 for each local authority area. A much lower response rate (<50%) was obtained for estimates of the land area represented by the total number of sites and a range of 250 hectares to 4,720 hectares was provided as an estimate for each local authority area. Many respondents used second party data sources within inhouse geographic information system (GIS) to count the number of sites potentially affected by land contamination. However, the computation of the corresponding area (unless sites are directly known and information recorded), is either not technically feasible or subject to large errors due to lack of validation and the way the GIS has been constructed. This may provide some explanation for the low response rate for land area in the subsequent question (Question 12).

Question 12: planning activity data (key data collection question)

12. In how many of the planning applications received by the local authority has land contamination been specifically considered? What approximate area (in hectares) does this equate to? For how many of these sites were specific planning conditions used to deal with the risks associated with land contamination?

The level of detail provided for land contamination in planning applications (Question 12) was incomplete in nearly all cases. Trends in responses for different years suggest that this might be due to the effort required to look as far back as 1994 and the capability of recording systems to be interrogated for that period. The latter period (2004-2009) has been more

successfully evaluated. The most detailed responses (however only ~50% of respondents completed) were for the period 2007-2009. In this period, the issue of land contamination was considered for between 160 and 214 sites per year per authority, with an average area for each of these sites estimated to be between 7 and 25 hectares. The authorities that responded dealt with between 44 and 54 sites per year where land contamination issues were addressed through planning conditions. The response rate was highest in identifying the number of sites where planning conditions were used (52% of respondents). For the total number of sites where land contamination was considered there was a 38% response rate and for estimating the number of hectares affected a 10% response rate was achieved. Where data was supplied it reflected calendar year return periods.

The respondents stated that the main reason for missing data was that either the information is not available or is not easy to review and collect. However, six respondents, who did not complete the question, did identify that the information was present but cited the reasons described in section 3.7 as preventing completion. Further details on the completeness of responses are provided in section 3.7.

Questions 13 and 14: recording systems

13. Do you, as contaminated land officer, currently have a system to record sites being dealt with through the planning system? If so, how long has this been running?
14. Was there a previous system to record such data?

The results show that the recording systems in use vary in terms of the nature of the platform, the software employed and the degree of sophistication used to query databases. Where these have been identified, the system has often been in use for much less than a decade and is likely to be the first generation of recording systems for this purpose in the local authority. It emphasises the lack of common recording methods and that electronic systems are not uniformly used. Just over 20% of respondents do not currently have a recording system specifically to handle land contamination through the planning process. The great variety of recording methods and number of “no system” responses indicate that recovery of data to support this data request would be a considerable resource undertaking. The methodology required to complete it would also vary greatly from authority to authority.

4.3 Descriptive analysis of responses – Section 3

This section of the survey aimed to gather data on the contaminants most commonly encountered where land was specifically considered through the planning system.

It also sought to gain information about the range of concentrations which have been accepted by the local authorities as being suitable for the proposed new use in the period from 1994 to 2009. The purpose of this section was to gauge whether the standard of remediation has changed over the study period (1994-2009). It is acknowledged that in some instances numerical standards are not the most appropriate measure of successful remediation, but for the purposes of this research project, the interest was in gaining information about contaminant concentrations.

In answering this section, participants were asked to consider ‘acceptance by the local authority’ as including instances where contaminant concentrations may have been

prescribed directly in planning conditions as well as acceptance by virtue of 'signing off' of applicants' reports which include remediation targets.

Questions 15-17: application of numerical remediation standards

15. Does your local authority **currently** specify contaminant concentrations for the standard of remediation in planning conditions? Since 1994, has your local authority **ever** specified contaminant concentrations for the standard of remediation in planning conditions?
16. In your opinion, have there been any clear differences in the level or application of remediation standards from 1994 to 2009?
17. In your experience, what currently is the main driver when deciding on the standard of remediation?

There is a strong indication that whilst remediation standards are not currently routinely specified in planning conditions, this was common practice in the past (Question 15). For the majority of respondents, free field comments (Question 16) highlighted that the introduction of recognised risk based assessment protocols and guidance on the application of standards has improved the uptake and use of standards by planning applicants. Comments also highlighted concerns about the absence of authoritative standards (CLEA, SGVs) for individual substances and that the use of a wide range of information sources to derive criteria can be an issue in dialogue between the contaminated land officer and the applicant/consultant.

The identification of human health as the top driver for remediation standards (Question 17) is a strong indicator that risk based land management is considered in the development process. However, such a strong indicator may point more to a higher priority being given to human receptors than other receptors such as controlled waters. There is some evidence that cost is also considered in the setting of remediation standards.

Question 18: common contaminants

18. Since 1994, how frequently are these common contaminants encountered when land contamination is specifically considered in the planning process? Please add others as required?

The types of contaminants encountered (Question 18) were generally confirmed as those which were supplied as options in the response. This may be indicative of the types of contaminants that are present on sites that are being redeveloped or may be those that are routinely analysed. The group of potentially toxic elements and hydrocarbons (arsenic, lead, polyaromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPH), benzo(a)pyrene (BaP)) dominate over others cited in the response list. The remaining substances⁹ are still observed relatively frequently as a concern. There were a few substances that were identified in addition to those provided in the survey (i.e. BTEX¹⁰, VOCs¹¹, phenols, cyanide,

⁹ Mercury, chromium (total), chromium (6), nickel, zinc, copper, selenium, polychlorinated biphenyls, asbestos.

¹⁰ BTEX stands for benzene, toluene, ethylbenzene and xylenes.

¹¹ VOCs refers to volatile organic compounds.

and ground gases) although these were not noted to be of repeated concern by respondents.

The standard of remediation is usually related to the proposed use and in many cases human health soil assessment criteria are used to set the standard of remediation. Derivation of remediation standards may have been through the use of generic assessment criteria or site specific criteria. Since 1994, a range of generic soil assessment criteria have been available in the UK as well as in Europe and the USA. These standards may have been used by applicants (and their consultants) to set remediation standards to make a site suitable for its proposed new use.

Questions 19 and 20: contaminant concentrations used as remediation standards

19. What generic published human health assessment criteria have been accepted as remediation standards for the periods 1994-1999 and 2000-2009?

20. What site specific contaminant concentrations have been accepted as remediation standards in the periods from 1994-1999 and 2000-2009?¹²

Question 19 had a >60% response. It shows that in the 1990s a range of reference standards, derived from Governmental bodies both internationally and from within the UK, were accepted as remediation concentrations. ICRL dominates in this period for all substances. During the second period (2000-2009), SGVs or CLEA derived assessment criteria are used more frequently than other standards. However, other standards, also used pre-2000, remain as reference levels with ICRL still dominating the group of alternative standards.

When asked to specify a range of numerical remediation standards used (Question 20) where applications require consideration of special receptors (where generic assessment criteria (GAC) are absent or where non standard land uses are to be considered), very few respondents indicated alternative data. This may be due to the automatic adoption of the GACs highlighted in Question 19, or the implicit acceptance of peer reviewed/authoritative data, on a case by case basis or from the output from site specific assessment/models. The debate on application of SGVs is also identified as a reason for lack of data in response to this question. Very few numbers can reliably be extracted for summary here. Those that were supplied have been summarised in Appendix 3 on a range and frequency basis. The response has marginally improved for the second time period reviewed.

¹²These are numerical remediation standards which were proposed by the applicant and accepted by the local authority through planning as remediation standards to demonstrate soil suitability criteria for proposed new use.

5 Conclusions

5.1 Key research findings

Due to the low response rate and incomplete responses, the research has at best pointed to a common practice amongst respondents. The main research findings can therefore be summarised as follows:

- Land contamination is generally included in local authorities' development management and control policy documents.
- For individual planning applications where land contamination is known or suspected to be present, there does not appear to be a consensus on the minimum amount of information that applicants are required to submit to validate the application. It also appears that the checking of the adequacy of information at this stage is variable.
- Planning conditions appear to be commonly used to deal with land contamination issues.
- Local authorities do not generally store data on land contamination assessment and remediation through the planning system. Where they do, access to the data would involve the use of significant resources.
- There is a lack of a common recording method and electronic systems are not uniformly used.
- There is very little information available on land area where contamination has been considered in applications.
- Data is more likely to be available post-2000 when contaminated land officers started collecting and recording data as part of their inspection duties under Part 2A. It appears that since around 2007 data management has improved.
- There is a strong indication that whilst numerical remediation standards are not currently routinely specified in planning conditions, this appears to have been common in the past.
- Numerical remediation standards that have been accepted are generally based on human health minimal risk levels since 2000 (SGVs and CLEA derived standards) but before 2000 they were usually set at screening levels from the UK (ICRCL) and internationally.
- The contaminants most commonly encountered on land which is being redeveloped are arsenic, lead, polycyclic aromatic hydrocarbons, total petroleum hydrocarbons and benzo(a)pyrene.

In light of the substantial variations in data storage and the difficulties of retrieving it, which have been outlined in this report, it is evident that it is difficult to ascertain data to confirm the effectiveness of the planning system in dealing with land contamination. Whilst there is clear indication that records are increasingly more accessible due to improvements in data management and availability of electronic systems, these are not anticipated to dramatically improve the situation because the systems used vary substantially, as does the type of information that is stored.

5.2 Collection of historical data options

Data availability appears to be better for more recent years, particularly from 2007 because contaminated land officers have been recording information for their own purposes, related to the implementation of Part 2A. Whilst respondents were asked to provide what data they could, it may be that they were deterred from completing the survey due to the quantity of data being requested. An option may be to constrain the quantitative data request to these more recent years and perhaps make estimations for other years based on land use change statistics or residential planning statistics.

The burden on respondents could be reduced further by requesting only the numbers of sites and not land areas. Land area could then be estimated by extrapolating an average site area based on other national statistics such as change in land use data.

5.3 Collection of data going forward

A key factor in the lack of readily available data is that there is no statutory requirement to specifically collect such information. As demonstrated by this project, there is little consistency between local authorities in terms of the processes used to validate planning applications or to store data. This leads to an incomplete understanding of the effectiveness of policy to assess and remediate land contamination through the planning system.

The fact that data is more readily available in recent years indicates that a greater volume of data can be expected to be stored electronically in the future; however it remains likely that this will be stored in many different forms which will be time consuming to retrieve and collate. The introduction of a requirement to store specific information when a planning application is made on land affected by contamination would enable comprehensive future assessments to be made.

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Appendices

Appendix 1: Pilot survey and cover letter

Appendix 2: Main survey, cover letter and FAQs

Appendix 3: Response rates for individual questions

Appendix 4: Descriptive analysis of planning and land contamination survey